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Poster Abstracts II

Radiotherapy/IORT

P184

Thyroid function post supraclavicular lymph node irradiation in patients with breast cancer

F. Rubagumya[1]*, K. Makori[2], L. Shulman[3], N. Dharsee[2], T. Mafta[2].
[1]Muhimbili University of Health and Allied Sciences, Dar es Salaam, United Republic of Tanzania, [2]Ocean Road Cancer Institute, Dar es Salaam, United Republic of Tanzania, [3]University of Pennsylvania, Philadelphia, United States

Goals: In East Africa, the estimated incidence of breast cancer comes second only to cervical cancer. Supraclavicular irradiation post modified mastectomy is a crucial component of breast cancer management; it improves local control and overall survival. This is however associated with adverse effects including hypothyroidism (HT) which is usually under-reported. The purpose of this study was to evaluate the radiation induced thyroid gland functional changes following treatment of supraclavicular lymph nodes in breast cancer patients.
Methods: This was a prospective descriptive study of patients with breast cancer from May 1, 2017 to May 30, 2018. Pre and post treatment TSH, fT4 and fT3 values were compared using a Wilcoxon signed-rank test.
Results: A total of 42 patients were recruited for this study with a mean age of 55.7 (32–71) years. The mean for baseline TSH level was 2.90(±6.37) (normal range: 0.27–4.2 uIU/mL) while that for T4 and T3 were 15.77(±4.83) (normal range: 10.16–22 pmol/l) and 3.46(±6.22) (normal range: 1.06–3.3 nmol/l) respectively. A Wilcoxon signed-rank test indicated that there was a statistically significant rise in mean TSH level over baseline when measured at 3, 6 and 9 months post treatment with a p-values of 0.0047, 0.0002 and less than 0.0001 respectively. In total 4 (10%) patients had thyroid functions tests outside normal ranges. None of the patients developed clinical HT in the time period studied.
Conclusions: As it was hypothesized, supraclavicular radiation led to subclinical HT, but the incidence of clinical HT over time remains unknown.
Conflict of Interest: No significant relationships.

P185

Antihormonal treatment with or without whole breast irradiation in low risk breast cancer patients after breast conserving surgery: 10-year results of the ABCSG 8A trial

G. Fastner[1]*, F. Sedlmayer[1], J. Widder[2], M. Metz[3], H. Geinitz[4], K. Kapp[5], L. Sölkner[6], R. Greil[7], R. Jakesz[6], M. Gnant[6,8], ABCSG. *[1]Radiotherapy and Radio-Oncology, Paracelsus Medical University, University Hospital Salzburg, Landeskrankenhaus, Salzburg, Austria, [2]Radiation Oncology, Medical University of Vienna, Vienna, Austria, [3]Radiooncology and Radiotherapy, Wiener Neustadt Hospital, Wiener Neustadt, Austria, [4]Radiation Oncology, Ordensklinikum Barmherzige Schwestern Linz, Linz, Austria, [5]Therapeutic Radiology and Oncology, Comprehensive Cancer Center (CCC), Medical University of Graz, Graz, Austria, [6]Austrian Breast and Colorectal Cancer Study Group, Vienna, Austria, [7]Medical Oncology, Paracelsus Medical University, University Hospital Salzburg, Landeskrankenhaus, Salzburg, Austria, [8]Surgery and Comprehensive Cancer Center, Medical University of Vienna, Vienna, Austria*

Goals: To investigate long term results of hormonal receptor positive breast cancer patients with a favorable risk profile after breast conserving surgery (BCS) and consecutive antihormonal treatment (AH) with or without whole breast irradiation (WBI).
Methods: Within the 8 A trial of the Austrian Breast and Colorectal Cancer Study Group (ABCSG), altogether 869 patients received AH after BCS which was randomly followed by WBI (n = 439) or observation (n = 430). All patients were defined as "low-risk" with grading G1 or 2, small tumor sizes (<3 cm) and a node negative status. WBI was applied up to mean total dosages of 50 Gy in conventional fractionation. 71% received an additional tumor bed boost with a 10 Gy mean dose. Of the whole study cohort, 251 (30%) and 519 (60%) were consecutively included in ABCSG-trial 16 and the PAM50 gene expression assay trial, respectively.
Results: After a median follow-up (FUP) of 9.89 years, 10 in-breast recurrences (IBR) were observed after WBI (group 1) and 31 with AH only (group 2), resulting in 10-years local control rates (LCR) of 97.5% after radiotherapy versus 92.4% ($p < 0.01$) without, respectively. This translated into significantly higher disease free survival (DFS) rates: 94.5% group 1 vs 88.4% group 2, $p = 0.01$. Advantage in DFS after WBI was also observed after sentinel-node exstirpation only (n = 258) (HR 0.25, $p = 0.007$) but not after axillary dissection (HR 0.7, $p = 0.2$; n = 590). For MFS and OS, respective 10-year rates amounted 96.7% and 86.6% for group 1 versus 96.4% and 87.6%, for group 2 (ns). For development of IBR, WBI (HR 0.27, $p < 0.01$) and Gx tumor grading (HR 3.76, $p = 0.03$) were detected as significant predictors in multiple cox regression analysis. For the 519 patients of the PAM50 trial where gene expression information was available, a biological high-risk constellation (KI67 > 20 and/or positive for Her-2 neu) of patients did not translate into significantly higher IBR rates (HR 2.12, $p = 0.14$).
Conclusions: After 10 years long term follow up, WBI after BCS of hormonal receptor positive "low-risk" breast cancer maintained significantly better local control as well as disease free survival rates compared to AH alone. In patients after sentinel node exstirpation only, DFS was significantly improved after WBI. In this trial, the omission of WBI and tumor grading Gx, respectively, turned out to be the only negative predictors for IBR.
Conflict of Interest: No significant relationships.

P186

Hypofractionated whole breast irradiation and IOERT in breast cancer: toxicity and cosmetic outcome

G. Fastner[1]*, R. Reitsamer[2], W. Hitzl[3], D. Murawa[4], P. Milecki[5], J. Reiland[6], A. Ciabattoni[7], W. Budach[8], R. Brimmer[9], F. Sedlmayer[1], HIOB. *[1]Radiotherapy and Radio-Oncology, Paracelsus Medical University, University Hospital Salzburg, Landeskrankenhaus, Salzburg, Austria, [2]Gynecology, Paracelsus Medical University, University Hospital Salzburg, Landeskrankenhaus, Salzburg, Austria,*

[3]Research Office - Biostatistics, Paracelsus Medical University Salzburg, Salzburg, Austria, [4]Oncological Surgery Clinic, Wielkopolska Cancer Centre, Poznań, Poland, [5]Oncological Radiotherapy Clinic, Wielkopolska Cancer Centre, Poznań, Poland, [6]Institut Breast Surgery, Avera Regional Medical Center, Sioux Falls, United States, [7]Radiotherapy, San Filippo Neri Hospital, Rome, Italy, [8]Medical Faculty- Dep. of Radiation Oncology, Heinrich Heine University, Düsseldorf, Germany, [9]General Surgery, St. Lukes Hospital, Cedar Rapids, United States

Goals: To prospectively assess the role of an intraoperative electron tumorbed-boost (IOERT) in combination with hypofractionated whole breast irradiation (HF-WBI) after breast conserving surgery (BCS) in terms of in breast recurrence (IBR), treatment tolerance and cosmetic outcome.
Methods: Patient recruitment within the study protocol (NCT01343459) started in 2011. Treatment consisted of BCS, IOERT of 11.1 Gy and HF-WBI up to total dosages of 40.5 Gy in 15 fractions. Acute toxicity, late reactions and cosmesis were evaluated by CTC-scoring (Vers. 2), LENT-SOMA criteria and by a 5-point-Scoring System (van Limbergen et al), respectively. 5-year IBR will be analyzed in 3 different age groups (35–40y, 41–50y, >50y) and tested against predefined benchmarks by the sequential probability ratio test (SPRT).
Results: Of 627 eligible patients 583 were evaluated. For acute effects CTC-score 0-1 was observed in 91–92% at the end of HF-WBI and 4 weeks later. Late toxicity Grading 0-1 (mean values) by LENT-SOMA criterions occurred in 92.7% (89.6–97.3) at 4/5 months up to 96.5% (91–100) at 6 years after HF-WBI. Baseline cosmesis was first assessed after wound healing prior to HF-WBI. Of 583 patients cosmesis was scored as satisfactory (excellent/good) in 84% by subjective (patient) and in 67% by objective (doctor) assessment with no impairment thereafter. After a median follow-up of 45 months (range 0–74), no in-breast recurrence was noted.
Conclusions: Acute and late treatment tolerance of a combined IOERT/HF-WBI regimen is excellent in mid-term assessment. With regard to postoperative appearance, early cosmetic results are not impaired.
Conflict of Interest: No significant relationships.

P187
Predicting radiation resistance in breast cancer with expression status of phosphorylated S6K1

J. Choi[1]*, N. Kim[2], Y.N. Yoon[3,4], E. Kim[1], C.S. Park[2], H. Seol[5], J.-S. Kim[3,4], H.A. Kim[2], W.C. Noh[2], M.-K. Seong[2]. [1]General Surgery, National Medical Center, Seoul, Korea, Republic of, [2]General Surgery, Korea Cancer Center Hospital, Seoul, Korea, Republic of, [3]Division of Radiation Cancer Reserach, Korea Institute of Radiological and Medical Sciences, Seoul, Korea, Republic of, [4]Radiological and Medico-Oncological Sciences, University of Science and Technology, Daejon, Korea, Republic of, [5]Department of Pathology, Korea Cancer Center Hospital, Seoul, Korea, Republic of

Goals: While radiation therapy is a critical treatment modality for loco-regional control in breast cancer patients, resistance to radiation therapy still remains a challenge. Predicting the likelihood of radio-resistance may enable a more personalized radiation therapy such as applications of radio-sensitizers for tumors with radio-resistance.
Phosphorylated ribosomal S6 Kinase 1 (p-S6K1) is a key downstream effector of the mTOR pathway that promotes further oncogenic translation. As emerging evidence suggests that the mTOR pathway is associated with radio-resistance, p-S6K1 might play a role in developing radio-resistance in breast cancer. We evaluated the association of p-S6K1 expression status with radio-resistance in breast cancer in vivo and in vitro.
Methods: The expression status of p-S6K1, as well as radiotherapy and recurrence status of 1770 patients who underwent surgery for primary breast cancer were retrospectively analyzed. Radio-resistance was defined by the development of loco-regional recurrences after radiation therapy. Positive or negative p-S6K1 expression was defined based on an immunohistochemical analysis. Loco-regional recurrence free survival(LRFS) of patients who received radiation (n = 1317), versus none (n = 513) were analyzed respectively according to p-S6K1 status. In vitro, the expression of p-S6K1 in breast cancer cells and radio-resistant breast cancer stem cells were compared. Furthermore, changes in the expression of p-S6K1 in response to radiation with everolimus, an inhibitor of the mTOR-S6K1 pathway, were evaluated.
Results: Median follow up period was 33 (range, 0.1–111) months. Patients with positive p-S6K1 expression showed poorer LRFS compared to patients with negative p-S6K1 expression after radiation therapy (median 97.8 vs 98.2 months, p = 0.015). Multivariate analysis revealed positive p-S6K1 expression (HR 7.9, 95% CI 1.1–58.5, p = 0.044) as a significant predictor of radio-resistance. In vitro study of the $CD44^{high}/CD24^{low}$ MCF7 cells, the radio-resistant breast cancer stem cells, expressed a higher level of p-S6K1 than control MCF7 cells. The combination radiation with everolimus sensitized the radio-resistant $CD44^{high}/CD24^{low}$ MCF7 cells rather than MCF7 cells.

Table:
Multivariate analyses on potential predictors of loco-regional recurrence.

Variables	Subgroups	Radiation therapy		No radiation therapy	
		Hazard ratio (95% CI)	p-value	Hazard ratio (95% CI)	p-value
Age	<50 vs ≥50	1.82 (0.86–3.87)	0.120	0.93 (0.34–2.56)	0.881
Estrogen Receptor	(+) vs (–)	0.48 (0.20–1.16)	0.105	0.62 (0.17–2.28)	0.470
Progesterone Receptor	(+) vs (–)	0.90 (0.38–2.14)	0.818	1.17 (0.30–4.53)	0.823
HER2 (Human epidermal growth factor receptor)	(+) vs (–)	2.00 (0.94–4.28)	0.074	3.88 (1.18–12.75)	0.026
T stage (mass size)	≥2 cm vs <2 cm	2.77 (1.06–7.23)	0.038	1.38 (0.48–3.97)	0.556
Node stage	(+) vs (–)	2.34 (0.95–5.77)	0.660	1.04 (0.36–3.04)	0.940
Histologic grade	Gr1,2 vs Gr3	1.0 (0.45–2.22)	1.000	1.59 (0.53–4.73)	0.405
p-S6K1	(+) vs (–)	7.86 (1.06–58.47)	0.044	1.16 (0.35–3.79)	0.809

Conclusions: Expression of p-S6K1 was associated with radio-resistance in vivo and in vitro. This study is the first to demonstrate the potential importance of p-S6K1 expression status as a predictor of resistance to radiotherapy and as a novel target for radio-sensitization in breast cancer.
Conflict of Interest: No significant relationships.

P188
Role of short-course radiotherapy in post-operative carcinoma of the breast

This abstract has been withdrawn.

P189
Late adverse effects after post-mastectomy hypofractionated radiotherapy

G. Soulimioti[1]*, A. Fotopoulou[1], A. Theodoridou[1], S. Tzorakakis[1], I. Maravelis[1], K. Girlemis[1], P. Grigoropoulos[2], E. Athanasiou[1]. [1]Radiation Oncologist, Hospital Agioi Anargyroi, Kifisia, Athens, Greece, [2]Surgeon, Hospital Agioi Anargyroi, Kifisia, Athens, Greece

Goals: The aim of this study is to evaluate the late toxicity in breast cancer patients after mastectomy using the hypo fractionated schema and three-dimensional conformal radiotherapy (3D-CRT).
Methods: Between 01/2010 and 01/2017,109 patients with breast cancer, aged 41–87 years old, were treated in our department with three-dimensional conformal radiotherapy (3D-CRT), after mastectomy. All the patients received a total dose of 42,5 Gy in 16 fractions. The late toxicity has being evaluated according to the LENT-SOMA criteria.
Results: The median follow up was 18 months. 72 patients reported grade 1 edema and 21 patients grade 2 edema. 49 patients complained about pruritus and 27 about intermittent pain. 11

patients reported telangiectasia grade 1 and 3 pt grade 2 and in 29 patients observed fibrosis grade 1 and in 7 pt fibrosis grade 2.
Conclusions: Radiation late toxicity in breast cancer patients after mastectomy using the hypofractionated schema is acceptable. Except the radiation schema, other parameters such as the extent of the surgery, the axillary dissection, the age and the skin care after RT, are also responsible for the late toxicity.
Conflict of Interest: No significant relationships.

P190
Value of biomarkers and mammographic microcalcification in guiding adjuvant radiotherapy after breast-conserving surgery for ductal carcinoma-in-situ

L. Cao*, F.F. Xu, J.Y. Chen. *Department of Radiation Oncology, Ruijin Hospital, Shanghai Jiaotong University School of Medicine, Shanghai, China*

Goals: To explore role of whole breast radiotherapy (WBRT) in ductal carcinoma-in-situ (DCIS) subtypes with different ipsilateral breast recurrence risk (IBTR)
Methods: We retrospectively reviewed medical records of consecutive breast cancer patients with pathologically confirmed pure DCIS and received breast conserving surgery (BCS) at our institution between January 2009 and December 2015. IBTR was defined as any pathologically confirmed recurrence of DCIS or invasive carcinoma in the ipsilateral breast. The time-to-event curves were calculated by the Kaplan-Meier methods and compared by the log-rank test. Multivariate analyses were performed using Cox regression analysis.
Results: In total, 113 patients were enrolled in this analysis and 94 out of them received WBRT. After a median follow-up of 4.9 years (range, 2.1–8.9), 10 (8.8%) IBTR events occurred. By univariate and multivariate analysis, tumor size >2.5 cm ($p = 0.01$), Ki67 index >14% ($p = 0.02$) and presence of mammographic clustered microcalcifications ($p = 0.01$) were found to be independent risk factors for IBTR.
Based on three independent risk factors, patients were further subdivided into three subgroups as follow: low-risk (with no risk factor); intermediate-risk (with one risk factor) and high-risk (with two or three risk factors). Significant differences in IBRT existed in low-, intermediate- and high-risk subgroups, with a 5-year rate of 2.3%, 5.5% and 33.8%, respectively ($p < 0.001$).
Among patients with hormonal receptor (HR) negative tumor, 5-year IBTR risk was significantly reduced from 33.3% to 14.6% with use of WBRT ($p = 0.03$). WBRT was also found to significantly decrease the 5-year rate of IBRT from 25.0% to 0% in HR positive tumor with intermediate-risk ($p = 0.03$). However, no significant reduction in risk of IBTR was not observed with use of WBRT in HR positive tumor with low-risk (with a 5-year rate of 0% vs 3.3% in WBRT vs BCS alone, $p = 0.66$) or high-risk (with a 5-year rate of 25% vs 25% in WBRT vs BCS alone, $p = 0.99$).
Conclusions: In the modern era, for the whole cohort of DCIS, the benefit from WBRT varied in a large span. For HR negative tumor and HR positive tumor with intermediate-risk, WBRT could significantly decrease the risk of IBTR.
Conflict of Interest: No significant relationships.

P191
Intraoperative radiotherapy provides advantage in short-term outcomes for patients with local breast cancer

A. Zandaryan*, R. Murashko, A. Keshabyan, A. Stepanov. *Regional Cancer Centre, Krasnodar, Russian Federation*

Goals: To demonstrate that intraoperative radiotherapy (IORT) would be modest compared to the external beam radiation therapy (EBRT).
Methods: We performed retrospective analysis of short-term outcomes of 100 breast cancer patients, who underwent breast-conserving surgery(BS) combined with radiotherapy (RT) (2017). Patients are in the under 62 ± 3, the tumor size was 2.5 cm with luminal biological subtype of tumor. The Intraoperative radiotherapy (IORT) was carried out using "INTRABEAM PRS 500," the external beam radiation therapy (EBRT) was conducted with the help of "Electra Synergy,"
Results: The patients were divided into 2 groups. The first group consists of 42 breast cancer patients with stage I and 8 breast cancer patients with stage II. The BS was combined with the IORT on "INTRABEAM PRS500." A single dose in first group ranged from 12 to 20 gy. The overall time of BS + IORT was 70–120 minutes. At the first group the post radiotherapy skin is not revealed. The average time of the treatment is approximately 35 ± 4 days. The second group of patients (41 breast cancer patients with stage I, 9 patients with stage II) were followed by external beam radiotherapy on "Electra Synergy" after the BS during 3–5 weeks after the surgery. The single tumor dose was 2,5 gy. Time of EBRT ranged from 50 to 80 minutes. The post-operative drawbacks connected with radiotherapy are epidermitis – 88%, dermic ulcers – 0.1%. The average time of the treatment is approximately 35 ± 4 days.
Conclusions: The analysis of the results showed that the using of IORT slightly increases the time of the operation, completely eliminates the possibility of skin manifestations of radiation therapy. Treatment regimen using IORT has several advantages and can be considered as an alternative treatment option in a strictly selected category of patients with LBC. d from 12 to 20 gy. The overall time of BS + IORT was 70–120 minutes. At the first group the post radiotherapy skin is not revealed. The average time of the treatment is approximately 35 ± 4 days. The second group of patients (41 breast cancer patients with stage I, 9 patients with stage II) were followed by external beam radiotherapy on "Electra Synergy" after the BS during 3–5 weeks after the surgery. The single tumor dose was 2,5 gy. Time of EBRT ranged from 50 to 80 minutes. The post-operative drawbacks connected with radiotherapy are epidermitis – 88%, dermic ulcers – 0.1%. The average time of the treatment is approximately 35 ± 4 days.
Conflict of Interest: No significant relationships.

P192
Dosimetric evaluation of hypofractionated 3D conformal whole breast radiotherapy (HF-WBRT) with simultaneous integrated boost (SIB) after conservative breast surgery for early stage breast cancer

A. Eldesoky*, R. Omar, A. Elshahat, M. Magdy Halim, M. Fouda. *Clinical Oncology and Nuclear Medicine department, Mansoura University, Mansoura, Egypt*

Goals: Our study aimed to examine the dosimetric feasibility of using 3D conformal radiotherapy to generate a WBRT-SIB plans in a limited resources facility with no access to intensity modulated radiotherapy (IMRT).
Methods: Eighteen successive female patients with stage I-II breast cancer were included. CT planning was performed in the treatment position. Target volumes including the whole breast (WB), tumor bed (TB) and lymph nodes (LNs) were delineated based on the recent ESTRO guidelines. Organs at risk (OAR) including the ipsilateral lung and heart were also contoured. A 3D conformal plan was conducted for each patient. Dose coverage for target volumes was analyzed. Doses to OAR were also assessed. WB and LNs received 40 Gy over 15 fractions for 3 weeks and TB received 48 Gy over 15 fractions for 3 weeks simultaneously.
Results: The dosimetric data and dose volume histograms (DVHs) of nine right and nine left breast cancer patients were analyzed. For CTV WB, the mean V95% was 98.8%, the mean homogeneity index (HI) was 0.27, and the mean (Conformity index) CI was 0.97. For CTVTB, the mean V95% was 99.8%, the mean HI was 0.07 and the mean CI was 0.99. For CTVLN the mean V90% was 99.8%, the mean HI was 0.11 and the mean CI was 0.95%. The mean global Dmax was 108% of the high dose. The mean volume of the breast outside the CTVTB which received 95% of high dose was 32%. The mean V17% of the ipsilateral lung was 17%, the mean V17% of the heart was only 3% and the mean heart dose was 4 Gy.

Table.
Individual Dose volume Histogram data for each patient.

Patient	Side	CTVWB V95% (%)	CTVTB V95% (%)	CTVLN V90% (%)	Global Dmax (%)	CTVWB-CTVTB V95%(%)	V17Gy lung (%)	V17Gy Heart (%)	Mean Heart dose (Gy)
1	LT	94	100	100	106	25	31	21	11
2	LT	98	99	100	110	42	10	7	4
3	RT	94	98	100	110	38	15	0	4
4	LT	99	100	99	104	41	11	3	4
5	LT	100	100	100	110	35	17	3	5
6	RT	99	100	100	110	30	23	0	2
7	RT	98	100	100	106	19	22	0	1
8	RT	99	100		110	35	12	0	5
9	RT	100	100		110	55	13	0	1
10	LT	100	100	100	110	30	14	0	5
11	RT	100	100		115	29	25	0	2
12	RT	100	100		108	36	19	0	2
13	RT	100	100	99	109	33	20	0	4
14	RT	100	100	100	109	41	25	0	6
15	LT	100	100		106	26	12	1	2
16	LT	98	100		106	15	8	2	2
17	LT	100	100	100	108	16	19	10	6
18	LT	100	100		108	22	11	7	4

Conclusions: HF-WBRT with SIB using 3D conformal radiotherapy is a promising technique with homogenous dose distribution and OAR sparing. This technique will shorten the overall treatment time which may help to overcome the waiting list of patients and increase compliance to radiotherapy in a low resources facility. A clinical evaluation study is ongoing.
Conflict of Interest: No significant relationships.

P193

Is there a need of radiation boost after hypofractionated radiotherapy in breast cancer (BC) patients post breast conservation surgery (BCS)?

B.S. Yadav[1], S.C. Sharma[2], D. Dahiya[3], R. Singh[4]. *[1]Radiation Oncology, Post Graduate Institute of Medical Education & Research, Chandigarh, India, [2]Radiation Oncology, MIMS, Mullan, Ambala, India, [3]General Surgery, Post Graduate Institute of Medical Education & Research, Chandigarh, India, [4]General Surgery, CMC, Chandigarh, India*

Goals: To compare outcomes with or without radiation boost in BC patients treated with hypofractionated radiotherapy after BCS.
Methods: Between Jan 2005 and Dec 2014, 350 patients with BC after BCS were included in this prospective study. All patients were treated with WBI of 40Gy/16#/3weeks. Tumor bed boost of 10–16Gy/5–8#/1–1.5 weeks was given to 158 patients and no boost in 192 patients. Systemic therapy was used as per indication. The primary end point of the study was local control. Secondary end points were acute and late radiation toxicities assessed by RTOG scores and LENT-SOMA scales, cosmetic outcome by HARVARD/NSABP/RTOG grading scale, disease-free survival (DFS) and overall survival (OS). Fisher's exact test was used to compare tumor characteristics, toxicities and cosmesis. DFS and OS were estimated using Kaplan-Meier method and compared using log rank tests. All statistical tests were two-sided; p values <0.05 were considered statistically significant.
Results: Mean age of the patients was 46 years (range 22–60 year). Tumor characteristics were balanced between the two groups except pT2s were more in boost group.

Table 1.

Variable	Boost (N = 158) N(%)	No boost (N = 192) N(%)	p-value (Fisher's exact test)
cT Stage T1 T2 T3	39(25) 98(62) 21(13)	54(28) 111(58) 27(14)	0.708
pT stage T0 T1 T2 T3 Missing	7(5) 48(32) 78(52) 17(11) 8	10(6) 82(46) 66(37) 22(12) 12	0.037
Histology Infiltrating ductal Infiltrating lobular	150(95) 8(5)	174(91) 18(9)	0.153
Margins Positive Negative	10(6) 148(94)	14(7) 178(93)	0.833
pNodes N0 N1 N2 N3	101(64) 34(22) 16(10) 74)	111(58) 51(27) 24(13) 6(3)	0.520
Oestrogen receptors Positive Negative Unknown	82(63) 48(37) 28	91(59) 62(41) 39	0.544
Progesterone receptors Positive Negative Unknown	57(44) 73(56) 28	72(47) 81(53) 39	0.633
Her2-neu Positive Negative Unknown	30(26) 87(74) 41	41(29) 101(71) 50	0.579

Median follow up was 60 months (range 9–164 mo). Local recurrence occurred in 4 (3%) vs 9 (5%) patients with and without boost, respectively(p = 0.27). Acute grade ≥1 skin toxicity was observed in 57% of patients with boost, compared to 46% of patients without boost (p = 0.042). Grade ≥2 induration was seen in 16% and 8% of patients with and without boost, respectively (p = 0.027). Grade 2 oedema was seen in 3% of patients with boost, but in none of the patients without boost (p = 0.041). Grade 2 pigmentation was observed in 6% and 2% of patients with and without boost, respectively (p = 0.055). Grade ≥2 fibrosis was 16% versus 6% in patients with and without boost, respectively (p = 0.002). Grade 2 breast shrinkage was observed in 13% and 6% of patients with and without boost, respectively (p = 0.028). Cosmetic score was good/excellent in 73% vs 75% with and without boost, respectively (p = 0.806). Distant metastases occurred in 11 (7%) vs 15 (8%) patients with and without boost, respectively. At 5 years, DFS and OS were 83% vs 84% (p = 0.51) and 85% vs 87% (p = 0.57) with and without boost, respectively.
Conclusions: Local control, DFS, OS and cosmetic scores were comparable between patients with and without boost. Acute skin and late toxicities were higher with boost radiation. Breast cancer patients after BCS treated with hypofractionated radiotherapy may not need further radiation boost.
Conflict of Interest: No significant relationships.

P194

Patterns of failure observed with omission of internal mammary chain irradiation in central/inner vs. outer quadrant tumors in a retrospective audit of an unselected breast cancer patient population

D. Kumar[1,2]*, R. Yadav[1], P. Lal[1], S. Agrawal[1], S. Misra[1], S.K. Misra[3], A. Agrawal[3], G. Agrawal[3], A.K. Verma[3], S. Kumar[1], Breast Multidisciplinary Team. *[1]Radiotherapy, Sanjay Gandhi PostGraduate Institute of Medical Sciences, Lucknow, India, [2]Radiotherapy, AIIMS (All India Institute of Medical Sciences), New Delhi, India, [3]Endocrine Surgery, Sanjay Gandhi PostGraduate Institute of Medical Sciences, Lucknow, India*

Goals: An audit comparing the overall patterns of failure with mapping of regional nodal failure patterns in breast cancer patients presenting with central/inner (C/I) vs. outer quadrant, with/without axillary node positivity and no internal mammary chain (IMC) radiotherapy given.
Methods: Records of 307 breast cancer patients treated between Jan'10 and July'13 with either conventional fractionation (CFRT) (50Gy/25fr) or Hypofractionation (HFRT) (40Gy/15) to chest wall/whole breast ± SCF ± Axillary region were retrospectively accessed. SCF RT was given in any node positivity and axilla in N3 disease/inadequate dissection/ physician preference. IMCRT was not used in any patient. Analysis was done in Sept'18.

Results: At a median follow-up of 57 months (1–102 mos), 307 patients, 147 (48%) received CFRT and 160(52%) received HFRT. Median age was 48yrs. 151 patients (49%) underwent BCS and 156 patients (51%) MRM. 110/307 (36%) patients presented with C/I quadrant tumors and 197/307 (64%) presented with outer quadrant tumors and 157/307 (51%) were axillary node positive. During follow up a total 54/307 (18%) presented with distant failure, as the most common site, 20/110 (18%) in C/I and 34/197 (17%) outer quadrant tumors (p = 0.35). Also, 13/307 (4.3%) presented with loco-regional recurrences (LRR) out of which, 1/110 (0.9%) in C/I and 12/197 (6%) in outer quadrant tumors and among all LRR, 46% in ipsilateral chestwall, 20% ipsilateral breast, 8% axillary and 16% in SCF. There were no clinically obvious recurrences observed in the IMC.
At 5 yrs OS, was 64% for C/I and 69% in patients with outer quadrant tumors (p = 0.8). Also, lost to follow up with or without disease were 32% (35/110) and 25% (49/197) in patients with C/I and outer quadrant tumor respectively.
Conclusions: In this audit, patterns of failure were no different between C/I and outer quadrant lesions, as most common regional failure was ipsilateral chest wall and there were no overt IMC relapses. So omission of IMC radiation does not proves to be detrimental in this unselected group of patients. Further studies are needed to prove merits of IMC radiation.
Conflict of Interest: No significant relationships.

P195
Radiomic analysis of CE-MRI for prediction of lymphovascular invasion in early-stage breast cancer patient candidate to conservative surgery and IORT

This abstract has been withdrawn.

P196
Capsular contractures following postmastectomy radiotherapy in patients with breast cancer receiving implant-based breast reconstruction

S.G. Ahn[1,2]*, S.J. Bae[2], C.I. Yoon[2], S.E. Park[1], C. Cha[1], Y.S. Kim[3], T.S. Roh[3], J. Jeong[2]. *[1]Surgery, Gangnam Severance Hospital, Seoul, Korea, Republic of, [2]Gangnam Severance Hospital, Seoul, Korea, Republic of, [3]Plastic Surgery, Gangnam Severance Hospital, Seoul, Korea, Republic of*

Goals: In breast cancer with nodal involvement, immediate breast reconstruction (IBR) after neoadjuvant chemotherapy has increased. Therefore, it raised the issue concerning postmastectomy radiotherapy (PMRT) following IBR with implants. In this study, we investigated the incidence of severe capsular contracture after PMRT in patients with breast cancer receiving implant-based IBR.
Methods: Seventy-nine patients underwent PMRT after IBR between January 2005 and December 2017. Among them, 66 had implants-based IBR. Two were excluded due to implant failure prior to PMRT.
Results: In 77 patients, 12 (15.6%) had severe capsular contractures. In 66 women treated with implants-based IBR, 12 (18.2%) contractures occurred. The major complications including implant-malposition and migration were identified in 16 (24.2%). Medians of periods between operation and contractures or between completion of PMRT and contractures were 11 (6–26) and 7 (3–12) months, respectively. The receipt of chemotherapy or methods of operation were not associated with the occurrence of contractures.
Conclusions: Severe capsular contractures developed approximately in one fifth of the patients treated with PMRT after implant-based IBR. The newer method of IBR such as pre-pectoral implant insertion deserves attention and is worth to be prospectively evaluated to reduce severe capsular contractures in those women.
Conflict of Interest: No significant relationships.

P197
Enhanced nodal coverage and conformity of dose in breast and supraclavicular fossa irradiation

H. Curtis[1]*, N. Storey[2], B. Sethugavalar[2], K. Burke[1], J. Daniel[1], J. Brand[2]. *[1]Department of Medical Physics, The James Cook University Hospital, Middlesbrough, United Kingdom, [2]Directorate of Radiotherapy and Oncology, The James Cook University Hospital, Middlesbrough, United Kingdom*

Goals: Beam arrangements for breast plans at our centre are geometrically determined and constructed in a virtual simulator (Prosoma v4.1, Medcom) using CT data. Plans are prepared using Oncentra MasterPlan (v4.3, Elekta) and dose is calculated using the collapsed cone algorithm. Wedges and field in field (FiF) techniques are employed as appropriate to comply with ICRU hotspot guidance. An anterior SCF field prescribed to d_{max} is matched where indicated. To improve homogeneity and conformity of breast and nodal volumes, we commissioned a dynamic MLC (dMLC), inverse planning technique using a Monte-Carlo algorithm in Monaco (v5.11, Elekta) to include both the breast and lymph node targets.
Methods: Data from 15 patients (10 left and five right sided) treated for breast and SCF tumours was used for a retrospective planning study. A ProSoma script generated a breast planning target volume (PTV) based on field-placed beam intersections and excluding OARS, consistent with the IMPORT HIGH[1] trial. Lymph node (LN) clinical target volumes (LNCTVs) were outlined enabling LNPTVs to be created using ESTRO consensus guidelines[2]. Monaco was used to develop a planning class solution involving an inverse planned optimised dMLC delivery sequence with tangential beams covering the breast PTV and two anterior oblique beams covering LNPTV. The planning solution is mono-isocentric, has no match-plane border, and has enhanced beam positioning at the individual PTV junctions to optimise dose in this region.
Results: Plans had combined PTV coverage which conformed to dose homogeneity criteria given in the IMPORT HIGH trial protocol. Dose conformity and homogeneity compared favourably to wedged, FiF plans. LNPTVs had greater dose volume coverage compared to single anterior field placed beams. OAR doses were comparable to OMP plans. See Table 1.

Table 1.

	Patient 1		Patient 2		Patient 3		Average of all patients	
	dMLC Monaco	Wedged OMP	dMLC Monaco	Wedged OMP	dMLC Monaco	Wedged OMP	dMLC Monaco	Wedged OMP
Breast PTV V95% (>95%)	97.0	96.7	96.4	96.3	95.4	97.8	96.3	94.4
LNPTV V95% (>90%)	93.5	76.0	94.3	83.1	99.1	84.3	96.1	88.6
Homogeneity Index (HI) Breast PTV	0.09	0.12	0.18	0.11	0.10	0.19	0.11 ± 0.02	0.11 ± 0.01
Homogeneity Index (HI) LNPTV	0.13	0.19	0.16	0.28	0.10	0.19	0.13 ± 0.02	0.20 ± 0.05
Ipsilateral Lung (V30% (%)	33.3	40.0	38.1	39.0	37.8	31.0	33.5	33.6

Delta[4] (ScandiDos) delivery of plans produced acceptable gamma[3] comparison results (>98% at 2%/3mm pass criteria).
Conclusions: A class solution for breast and SCF patients using a dMLC technique has been commissioned using Monaco v5.11. Superior dose conformity, homogeneity and nodal coverage is seen compared to field based OMP plans. We aim to introduce this new technique for all breast and SCF patients within a year.
Conflict of Interest: No significant relationships.

References

1 IMPORT HIGH, Cancer Research UK, CRUK/06/003
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3 Low *et al.*, *Med Phys*. 1998, 25(5): 656–61.

P198

Cardiac sparing radiotherapy in left tangential breast irradiation: geometric conformity of chest wall and heart volume as useful clinical parameters for a tailored radiation approach

A. Chalaszczyk[1]*, C. Sorce[1], G. Grimaldi[1], F. Vittorini[2], E. Varrassi[1], P. Franzese[1], V. Ruggieri[1], L. Ferella[3], F. Marampon[4], G.L. Gravina[1]. *[1]Radiotherapy, University of L'Aquila, L'Aquila, Italy, [2]Service of Medical Physics, University of L'Aquila, L'Aquila, Italy, [3]Radiotherapy, The National Tumor Institute of Milan, Milano, Italy, [4]Radiotherapy, Sapienza University of Rome, Rome, Italy*

Goals: We evaluated the predictive role of chest wall geometric conformity on dose distribution to the left anterior descending coronary artery (LAD) and whole heart (WH) in patients with left-side breast cancer treated with adjuvant three-dimensional conformal radiation therapy (3DCRT).
Methods: We retrospectively reviewed dosimetric parameters of 50 women with left-side breast cancer treated with adjuvant 3DCRT. For each patient LAD and WH were contoured according to Feng indications on CT scans acquired in supine position and in free breathing. The geometric conformity of chest wall was determined drawing a line between the posterior part of the sternum and the anterior part of the vertebral body (*a* distance) and between the insertion point of *a* distance on the anterior part of the vertebral body and the internal surface of the left chest wall with an angle of 45° (*b* distance) in three different parts of thorax: at the most cranial, at the middle and at the distal part of the sternum. The ratio between *a* and *b* distances (*a*/*b* ratio) was determined on each of the aforementioned three thoracic wall level. The resulting median value was used as the parameter for the geometric conformity of chest wall. Dmax, Dmean, V5 and V20 for LAD and WH were chosen as dosimetric outcome measures. A partial correlation, weighted for WH and PTV volume, between *a*/*b* ratio and dosimetric parameters was determined. The *a*/*b* ratio cut-off point predictive of pre-specified dosimetric parameters was determined by the sensitivity analysis.
Results: When WH and PTV volumes were used as covariates in the partial correlation, a significant association between the *a*/*b* ratio, heart Dmax (r_p = 0,37 and p = 0,008) and V5 (r_p = 0,33 and p = 0,02) was found with a trend toward the significance for the V20 (r_p = 0,26 and p = 0,07). When the LAD was contoured as single structure any of the analyzed dosimetric parameters significantly correlated with the *a*/*b* ratio. Interestingly, when the LAD was contoured according to proximal, middle and distal segments, a significant correlation between the *a*/*b* ratio and proximal LAD was found for Dmean (r_p = 0,48; and p = 0,03). For an *a*/*b* ratio cut-off ≤0,91 and for a WH volume <570 cm^3 the probability of having a heart V5 = 0 was of 76,3% and 84%, respectively.
Conclusions: Geometric conformity of chest wall together with WH volume may be useful to assist clinicians and physicians in an individualized cardiac-dose sparing planning definition.
Conflict of Interest: No significant relationships.

P199

Eliminating permanent tattoo marks in breast radiotherapy

P. Zuvic, W. Chen*. *Radiation Medicine, Northwell Health, Bay Shore, United States*

Goals: Several studies have noted the negative psychological impact of dark ink permanent tattoo marks utilized for radiotherapy setup. The purpose of this pilot was to assess the feasibility of foregoing tattoos in setup and treatment of breast cancer patients at a high-volume center when utilizing stereo vision technology with three-dimensional (3D) surface guided radiation therapy (SGRT).
Methods: The data from 15 consecutive breast cancer patients treated in the supine position at a single facility were retrospectively evaluated. Each patient underwent CT simulation on a breast board with appropriate tilt angle for the upper torso, with both arms extended above the head. Biangulation was set longitudinally mid-breast and laterally 2 cm posterior to breast tissue, with BB markers placed on biangulation prior to scan. Up to 6 permanent tattoo marks were placed for center, biangulation, superior, and inferior alignments.
For patients with tattoo markers, daily treatment setup began with alignment to biangulation marks followed by adjustments utilizing 3D surface matching with AlignRT (London, UK). For patients without tattoos, AlignRT was the primary setup modality.
Time from patient entry of the treatment vault to completion of radiation beam delivery was recorded to assess efficiency of initial patient setup and intrafractional reliability. Verification imaging with kV films were taken every 5th fraction, and included in treatment room time.
Results: A total of 285 treatment fraction times were evaluated. The average treatment time for patients with permanent tattoo marks was 21.52 minutes (CI 17.85–25.18) versus 19.16 minutes (CI 18.37–19.96), ($p > 0.05$) for patients without tattoos. Within each group, data was further subdivided into left versus right breast, deep-inspiration breath hold versus free breathing, and tangents only versus regional nodal irradiation; no statistical differences were noted in each subgroup analysis of average treatment room time.
Conclusions: The use of SGRT without tattoos was feasible without any perceptible increase in setup difficulty or treatment room duration. We are encouraged by the early results and have begun implementation of this technique at other facilities within our health system. We hope this may improve patient experience by eliminating permanent reminders of breast cancer treatment.
Conflict of Interest: No significant relationships.

P200

Delayed initiation of radiotherapy after the last cycle of chemotherapy was associated with inferior outcome for breast cancer patients with negative hormone receptor after breast conserving surgery

Z. Liu[1,2]*, X. Ma[1,2], J. Chen[3], K. Yu[1,2], M. Mo[4], S. Chen[1,2], X. Yu[2,5], J. Wu[1,2], G. Di[1,2], Z. Shao[1,2]. *[1]Department of Breast Surgery, Key Laboratory of Breast Cancer in Shanghai, Department of Breast Surgery, Fudan University Shanghai Cancer Center, Shanghai, China, [2]Department of Oncology, Shanghai Medical College, Fudan University, Shanghai, China, [3]First People's Hospital of Taicang, Taicang, China, [4]Department of Cancer Prevention, Fudan University Shanghai Cancer Center, Shanghai, China, [5]Department of Radiotherapy, Fudan University Shanghai Cancer Center, Shanghai, China*

Goals: To investigate the effect of optimal interval between the last cycle of chemotherapy and initiation of radiotherapy (ICR) after breast conserving surgery on the subsequent risk of ipsilateral breast tumor recurrence (IBTR) or survival according to breast cancer subtype.
Methods: Patients who was diagnosed as breast cancer in Shanghai Cancer Center between 2005 and 2014, and who were treated with radiotherapy after breast conserving surgery were included in the study, among which 1483 patients accepted adjuvant chemotherapy followed by adjuvant radiotherapy (CT+), 402 accepted adjuvant radiotherapy only (CT-). All the patients started adjuvant chemotherapy within 8 weeks after BCS. A delay in ICR was defined as >6 weeks in CT+ group and >10 weeks in CT- group. IBTR, local recurrence-free survival (LRFS), distant free survival (DFS), and overall survival (OS) were estimated by Kaplan-Meier method. Multivariate cox regression was used to test for the independent effect of ICR after adjusting for known confounding factors.
Results: The median follow-up time was 54 months. There was association between a delay in ICR and an increased IBTR in CT+ group p = 0.036 for intervals ≤6weeks vs. > 6weeks, which was also confirmed by the multivariate analyses that especially in hormone receptor negative subgroup, patients who started radiotherapy more than 6 weeks after chemotherapy were more likely to recur in the ipsilateral breast (hazard ratio (HR) of 2.743; P = 0.032). Compared

with the >6 weeks group, HRs were not significantly different for LRFS, DFS, OS among patients who were treated with radiotherapy up to 6 weeks after chemotherapy in the CT+ subgroup. As to patients who accepted adjuvant radiotherapy only (CT- group), longer delay of initiation of adjuvant radiotherapy (≤10 weeks vs. >10 weeks) significantly decreased the DFS (HR of 4.699; P = 0.013), there were no correlation between delay of radiotherapy and the risk of IBTR, LRFS and OS.
Conclusions: Outcomes showed that ICR were inferior for intervals beyond 6 weeks. Delay of the radiotherapy after chemotherapy or surgery among the patients who underwent breast conserving surgery should be avoided, especially among the negative hormone receptor subgroup.
Conflict of Interest: No significant relationships.

P201
Evaluation of follow-up findings in mammography and ultrasound after intraoperative electron radioteraphy and breast conservation surgery

A. Altinok[1]*, B. Soysal[2], E. Arikan[3], H. Kara[3], G. Esen Icten[2], N. Bese[1], C. Uras[3]. *[1]Radiation Oncology, Acibadem Research Instituite of Senology, Istanbul, Turkey, [2]Radiology, Acibadem Research Instituite of Senology, Istanbul, Turkey, [3]Breast Surgery, Acibadem Research Instituite of Senology, Istanbul, Turkey*

Goals: In selected cases of early breast cancer, intraoperative electron radiotherapy (IOERT) can be applied as partial breast irradiation or as a boost treatment. Radiological effects of IOERT, are unclear. The aim of this study was to evaluate radiological changes, by ultrasound (US) and/or mammography, in the tumor bed after breast conservation surgery (BCS) and IOERT.
Methods: A total of 43 breast cancer patients (stage I/II) treated between 2012 and 2018 were included. Radiological data was available for 22 of these patients. All patients underwent BCS. IOERT was applied as a boost in 3 patients (10 Gy) and as primary in 19 patients (21 Gy). Boost patients received whole breast irradiation after IOERT. Patients were evaluated as 2 groups according to their follow-up period (short term <2 years and long-term >2 years). The follow-up mammography and US images were retrospectively evaluated by two radiologists, experienced in radiological breast imaging. Breast parenchymal pattern, calcifications, masses, distortions and oil cysts were assesed both in the short term and long term groups. Minimal distortion and well defined oil cysts were classified as minor, distortion and mass-like lesions were classified as major findings.
Results: Median follow-up time was 46 months (6–70 months). Only short-term, both short and long- term, and only long-term follow-up examinations were available in respectively 12, 8 and 2 patients. There were minor findings in 9 patients and major findings in 13 patients. In all patients with major findings in early follow-up period, findings partially resolved and then stabilized over time. Calcifications were detected in 6/8 patients who were followed-up for more than 2 years and also had available mammograms. They were first detected 18–48 months after therapy. All were typical benign calcifications, although 3 appeared nonuniform at the time of initial detection. When the relation of these findings to breast density was statistically evaluated, it was found that minor findings were more frequent in fatty breasts (80%) and major findings were more frequent in dense ones (p = 0.015).
Conclusions: Early radiological findings in the tumor bed after IOERT may be confusing. However, they resolve and stabilize over time and in long-term follow-up do not escalate.
Radiologists and clinicians should be aware of these early radiologic findings in order to avoid unnecessary biopsies and further examinations.
Conflict of Interest: No significant relationships.

P202
Five day Accelerated Partial Breast Irradiation (APBI) using Stereotactic Body Radiation Therapy (SBRT) in Stage 0-II breast cancer: a report of 48 cases

R. Mark[1]*, V. Gorman[2], S. McCullough[1]. *[1]Radiation Oncology, Baylor Scott and White, Waxahachie, United States, [2]Surgery, Baylor Scott and White, Waxahachie, United States*

Goals: Randomized trials in early stage breast cancer have proven that Accelerated Partial Breast Irradiation (APBI) given via High Dose Rate (HDR) implant bid in 5 days is equivalent to whole breast External Radiation Therapy (XRT) given qd in 5–6 weeks in regard to breast tumor local recurrence (LR). However, reported complications with APBI implant have included soft tissue necrosis leading to surgical repair, infections, rib fractures, fat necrosis, and breast pain. Recently APBI using non-invasive Intensity Modulated Radiation Therapy (IMRT) or Stereotactic Body Radiation Therapy (SBRT) given qd in 5 fractions has been shown in a randomized trial to be equivalent to qd XRT in 6 weeks, with respect to LR. IMRT/SBRT was superior in regard to acute effects, late effects, and cosmesis.
In the randomized trial of APBI IMRT/SBRT, the Clinical Target Volume (CTV) was defined by the injection of individual fiducial markers bordering the surgical cavity. At our institution, we have used the Biozorb fiducial system to localize the CTV for SBRT. We sought to confirm the APBI SBRT/IMRT results with a simpler fiducial system.
Methods: Between 2017 and 2018, 48 patients have undergone SBRT targeted to a Biozorb defined CTV. Eligible patients were older than age 40, had tumor sizes ≤3 cm, negative surgical margins, and negative lymph nodes. SBRT dose was 30 Gy given in 5 fractions. Dose Constraints were : V-30 Gy <105%, Ipsilateral Breast V-15 Gy <50%, Ipsilateral Lung V-10 Gy <20%, Contralateral Lung V-5 Gy <10%, Heart V-3 Gy <20%, Contralateral Breast Dmax <2 Gy and Skin Dmax <27 Gy. The Planning Target Volume (PTV) ranged from 27 to 355 cc with a median of 80 cc. PTV = CTV + 1–2 cm.
Results: Follow-up ranged from 1 to 12 months with a median of 6 months. LR has been 0% (0/48). There were no skin reactions. One patient developed pain around the Biozorb site. This resolved within 2 days on a short course of steroids. Cosmetic results as rated by the Surgeon, Radiation Oncologist, and Nurse, were rated excellent in 100% (48/48) of cases.
Conclusions: Non-invasive APBI with SBRT given qd over 5 days targeted to Biozorb has resulted in LR, complications, and cosmetic results which compare favorably to invasive APBI given bid with HDR implant. At last follow-up, there have been no LR, skin reactions, or complications. Cosmesis has been excellent in 100% of patients.
Conflict of Interest: No significant relationships.

P203
Comparison of cardiotoxicity among left sided breast cancer patient treated with either hypofractionated or conventional fractionated radiotherapy: a single center experience

A. Das*, F. Sharmeen, S. John. *Square Hospitals Ltd, Dhaka, Bangladesh*

Goals: Hypofractionated Radiotherapy (HFRT) for breast cancer has become a standard of care particularly in developing countries with resource constrain and limited access to radiotherapy. However, for left sided breast cancer HFRT is still considered as risk factor for cardiotoxicity. Aim of this study is to compare the incidence of cardiotoxicity among left sided breast cancer patient treated with either HFRT or Conventional Fractionated Radiotherapy (CFRT)
Methods: Patients who received adjuvant radiotherapy for left sided breast cancer at Square Hospitals Ltd between 2016 and 2018 were included in this study for a retrospective review. Primary outcome was to observe cardio toxicity (including myocardial infarction, admission for chest pain, coronary angiogram positive and death due to cardiac cause) among patient receiving radiotherapy for breast cancer. Cardiac toxicity was compared among HFRT and CFRT group.

Results: 106 patients were indentified among which 51 received HFRT and 55 received CFRT. Median age was 54 years and median follow up was 1 year. There were total 14 cardiac events including 2 cardiac deaths. Among them 7 cardiac events were observed in HFRT group and 7 in CFRT group. Odd Ratio was 0.92 (CI 0.2–2.82, p-value 0.88)
Conclusions: This study finds no difference in cardio toxicity among all left sided breast cancer treated with either Hypofractionated or Conventional Fractionated Radiotherapy. However, further prospective studies are needed to confirm the finding of this study.
Conflict of Interest: No significant relationships.

P204
Comparative analysis between continuous vs biweekly hypofractionated palliative radiotherapy (RT) to the breast - a prospective single institutional study

P. Basu[1]*, A. Bandyopadhyay[2], R. Jena[2]. *[1]Department of Radiotherapy, West Bengal University of Health Sciences, Kolkata, India, [2]Department of Radiotherapy, Medical College Kolkata, Kolkata, India*

Goals: Trials of locoregional therapy (surgery/RT) in metastatic breast cancer (MBC) have failed to improve outcomes in terms of survival. Hypofractionated RT to the breast/lymphnodes is often to employed provide local palliation. Prospective studies are lacking to evaluate the effect of this locoregional radiation in metastatic breast cancer. The purpose of the study is to evaluate the efficacy of a twice weekly hypofractionated palliative RT schedule. We report the safety & efficacy of a more convenient, hypofractionated schedule of 30 Gy in 6# twice weekly RT to the breast in such a cohort.
Methods: Between january 2016 to december 2017, 36 MBC patients with provided consent for palliative whole breast RT were included in this study. All the patients were stage T3, T4, no visceral crisis. Out of 36 patients 18patients received palliative Rt to chest 30Gy/10#/2weeks (Arm A). 16 patients receive Local Palliative RT to Breast (30Gy/6#/3weeks) (Arm B). Primary objective was the symptomatic response, quality of life (EORTC-QLQC-C!5-PAL), patient compliance rate and metabolic improvement of post RT (at 1 & 3 months) with secondary objectives exploring the the toxicity.
Results: Median age was 45 years in both arm. Two out of 36 patients defaulted. Pain, ulceration, arm edema at baseline was reported by 60% and 70% patients respectively. In Arm A Overall response rate(CR +PR) was noted in 45% cases (8/18) and in Arm B in 75% cases (12/16) developed (CR+PR). Grade 2 acute dermatitis was found in 26% cases in Arm A and 20% in Arm B with with no Grade 3, 4 toxicity. There was no significant difference in reduction of pain score between the two arms. There was significant difference in improvement of Quality of life score at 1 month as compared to baseline in the two arms, with more in the Hypofractionated twice weekly Arm (Arm B) (p = 0.03). None of the patients had local metabolic progression at 6 months.
Conclusions: This novel RT regime delivers a moderately high dose while being logistically simple for the patient. The response and quality of life improvement in the hypofractionated Arm probably makes a case for dose escalation (higher EQD2) beyond the continuous 30 Gy /10# for local RT in metastatic Breast Carcinoma.
Conflict of Interest: No significant relationships.

P205
Cosmetic result and safety in synchronous bilateral breast cancer (SBBC) patients treated with hypofractionated simultaneous integrated boost intensity modulated radiotherapy (HF-SIB-IMRT)

J. Kociolek[1,2]*, M. Possanzini[3], J. Morales[1,2], S. Viera[1], M.J. Cardoso[2], F. Cardoso[2], M.J. Brito[2], C. Greco[1]. *[1]Department of Radiotherapy, Champalimaud Foundation, Lisbon, Portugal, [2]Breast Unit, Champalimaud Foundation, Lisbon, Portugal, [3]Department of Radiotherapy, Businco Oncological Hospital, Cagliari, Italy*

Goals: To evaluate safety and cosmetic results of HF-SIB-IMRT as adjuvant treatment after breast-conserving surgery for SBBC patients.

Methods: From January 2013 to September 2017, 12 consecutive SBBC stage IA-IIIA patients underwent HF-SIB-IMRT to irradiate the whole breast (WB) with concomitant boost on surgical bed (SB). Prescribed doses to whole breast and surgical bed were 40.5 and 48 Gy, respectively, delivered in 15 fractions. Supraclavicular and infraclavicular nodes were included in the low dose volume in 1 case monolateral. Treatment planning parameters were analysed including the planning target volume (PTV) dose coverage and the dose reaching the critical organs at risk (OARs). Acute skin toxicities were recorded according to RTOG scoring criteria. Cosmetic result (CR) was assessed after radiotherapy using patients and radiation oncologist (RO) directed questionnaires (subjective and objective). For comparison between the different methodologies, we used the interclass correlation index and the Kappa (k) index.
Results: The mean age is 59 years (range 45–75). The median follow up was 21.8 months (range 5–49). PTV median coverages were 98,5% (range 95,92–99,79). Median Lung-V20 was 17.6% (range 7,44–28,11) and heart-V10 was 23.4% (range 15,72–38,76). These results are within the limits established in our clinical practice. No more than acute G1 skin toxicity was recorded in 42% of the patients. The RO reported cosmetic results were graded in excellent, good, fair observed 50%, 50%, 0%; but the self-evaluation showed 83%, 8.3%, 8.3% respectively. There was a substantial agreement (k = 0.077).

Table:
Cosmetic results.

subjective/ objective	Global cosmetic result n (%)		Appearance of the surgical scar n (%)	Breast size n (%)	Colour of the skin n (%)	Position of the nipple n (%)
Excellent	10 (83,3) 6 (50)	no difference	4 (33,3) 5 (41,7)	4 (33,3) 6 (50)	11 (91,7) 7 (58,3)	6 (50) 6 (50)
Good	1 (8,3) 6 (50)	small difference	7 (58,3) 6 (50)	5 (41,7) 6 (50)	1 (8, 3) 3 (25)	5 (41,7) 6 (50)
Fair	1 (8,3) 0	moderate difference	1(8,3) 1(8,3)	2 (16,7) 0	0 1 (8,3)	1 (8,3) 0
Poor	0 0	large difference	0 0	1 (8,3) 0	0 1 (8,3)	0 0
K	0,077		0,43	–0,47	0	–0,25

After an early evaluation of clinical outcomes only one patient had an In-Breast-Recurrence.
Conclusions: The present retrospective analysis showed the feasibility, tolerability and safety of HF-SIB-IMRT treatments for SBBC patients. In the majority of patients, the cosmetic effect was assessed as excellent or good. Patients have a better self-evaluation of the cosmetic results according to global cosmetic results and worse in specific questions. No consistent agreement between the opinions has been demonstrated.
Conflict of Interest: No significant relationships.

Health politics/Guidelines

P206
Comparison of subjective, objective and patient reported cosmetic outcomes between accelerated partial breast irradiation (APBI) and whole breast radiotherapy (WBRT): a prospective propensity score matched pair analysis

T. Wadasadawala[1]*, S. Sinha[1], V. Parmar[2], S. Verma[1], S. Kannan[3], M. Mondal[1], R. Pathak[1], R. Sarin[1], M. Gaikar[1]. *[1]Radiation Onoclogy, Tata Memorial Centre, Mumbai, India, [2]Surgical Oncology, Tata Memorial Centre, Mumbai, India, [3]Biostatistics, Tata Memorial Centre, Mumbai, India*

Goals: We compared the cosmetic outcomes after whole breast radiotherapy (WBRT) and accelerated partial breast irradiation (APBI) by various methods: subjective (physician rated), objective (software based) and patient reported.

Methods: Consecutive patients with breast cancer who were on follow up at a duration of 18 to 36 months post radiotherapy (either WBRT or APBI) were accrued after obtaining informed consent. Single cross-sectional assessment of the breast cosmesis was done by the radiation oncologist (RO) and surgical oncologist (SO) (subjective method) using the modified Harvard scale and by photographic assessment using the BCCT.core (the Breast Cancer Conservative Treatment. cosmetic results, version 3.1) software (objective method). In addition, patients scored their own cosmesis and reported self-satisfaction with the outcome of BCT. The APBI cohort was matched with the WBRT cohort using the propensity score matching in 1:2 ratio balancing for menopausal status, cavity size, pathological tumor size, tumor location and treatment with systemic therapy. The difference between the two groups was tested using Chi-square test for the variables with binary outcomes while Mann Whitney U test was used for continuous variables.
Results: Cosmetic results were significantly better for APBI as compared to WBRT cohort by both subjective and objective methods as well as in patient self-assessment (Table 1). Individual subjective parameters significant for excellent/good cosmesis were size of breast (49.2% vs 88.8%, p = 0.001), shape of breast (63.3% vs 86.3%, p = 0.01), location of nipple areola complex (NAC) (50 vs 75%, p = 0.001) and appearance of scar (30.5% vs 53.8%, p = 0.001). Amongst the individual BCCT.core parameters lower breast contour (pLBC) (p = 0.02), breast compliance evaluation (pBCE) (p = 0.05) and breast area difference (pBAD) (p = 0.007) were significantly better in APBI cohort. There was no significant difference in patient satisfaction between the two cohorts (Extremely satisfied/moderately satisfied: 97.7% vs 97.8%, p = 0.9).

Table 1.
Cosmetic outcomes of WBRT vs APBI by subjective (RO/SO), objective and patient reported methods.

Cosmetic outcome	WBRT Excellent/ Good	WBRT Fair/Poor	APBI Excellent/ Good	APBI Fair/Poor	p value
RO	45 (35.2%)	83 (64.8%)	59 (73.8%)	21 (26.3%)	0.0009
SO	44 (34.4%)	84 (65.6%)	43 (53.8%)	37 (46.3%)	0.0009
BCCT	57 (44.5%)	71 (55.5%)	55 (68.8%)	25 (31.3%)	0.001
Patient	71 (55.5%)	57 (44.5%)	69 (86.3%)	11 (13.7%)	0.0008

Conclusions: Cosmetic outcomes with APBI are superior to WBRT by all methods of assessment of cosmesis. However, patients in both the cohorts showed high levels of satisfaction which highlights the fact that Asian women are not very sensitive towards cosmetic outcome.
Conflict of Interest: No significant relationships.

P207
VALETUDO project: VAlidation study of the LEarning machine Technique (neUral networks) for big Data in the breast tumor in ReggiO Emilia region, Italy

F. Giovanardi[1]*, F. Lolli[2], E. Balugani[2], D. Pezzuolo[1], G. Prati[1], C. Degli Esposti[1], D. Cerioli[1]. *[1]Oncology, IRCCS USL Reggio Emilia, Guastalla, Italy, [2]Engineering, UNIMORE, Reggio Emilia, Italy*

Goals: The management of big data in oncology has become a necessity not only to be able to better allocate the available resources but also to be able to create the conditions for the progress of research.
Methods: The project will use classifiers to predict the onset of recurrences based on medical data of patients undergoing treatment. The data (input) and the corresponding presence of recurrences (output) will be divided into two groups:

- Training and validation set.
- Test set.

The training and validation set will be used to define which patterns predict the onset of recurrences (training phase), to select the best meta-features of the classifiers and the best classifier through cross-validation (validation phase). The test set will be used to verify the performance of the best classifier (test phase), measured through a ROC curve and evaluated through the area under the ROC curve. The training and validation set will also be used for the calibration of the classifiers, through Platt Calibration or Isotonic Regression, evaluated in the test set through reliability diagram. Precision measurements and recalls will be calculated both in the validation phase and in the test phase, before and after calibration.
The classifiers compared will be:

- Logistic regression.
- AdaBoost and/or other boosting methods.
- Decision tree and/or random forest.
- Dense neural networks with one or more layers.
- SVM with and without kernel.

It is not possible to identify a priori the most effective technique, more or less complex methodologies are proposed to approach a difficult data set or take advantage of a simple one avoiding under-fitting and over-fitting. The validation phase will select the best classifier and the test phase will objectively measure its performance. The continuous data will be provided to the classifiers as such while the categorical data will be transformed into binary flags. Where the dimensionality of the data has a negative impact on performance, dimensionality reduction techniques such as:

- PCA.
- MDS.
- LLE.
- Laplacian eigenmaps.
- MVU

Results: Validation of the machine learning technique, with comparison with the classical epidemiological statistics on the prediction of OS and DFS in relation to data obtained from the cancer registry of Reggio Emilia, Italy.
Conclusions: The results will be used to validate the data of the new technique, to be able to "weigh" the different characteristics of breast disease with different methodologies (classical and machine learning)
Conflict of Interest: No significant relationships.

P208
Time – Driven Activity – Based Costing: cost analysis of trastuzumab in the treatment of early stage HER-2 positive breast cancer in southern of Brazil

K. A Tiscoski*, A.P. Beck da Silva Etges, R.J. Vargas Alves, T. Belladona Cardoso, F. Pontes Grando. *Oncology, Santa Rita Hospital, Porto Alegre, Brazil*

Goals: Evaluating the cost of trastuzumab in adjuvant treatment for breast cancer with overexpression of Epidermal Growth Factor 2 receptor (HER-2) based on the Time-Driven Activity-Based Costing (TDABC) model as *HERA Trial.*
Methods: TDABC analysis was conducted to estimate indirect costs (trastuzumab infusion process) of adjuvant treatment with Trastuzumab in early stage HER -2 breast cancer. The database Banco de Preços em Saúde (bps.saude.gov.br) was used to estimate the trastuzumab cost. The cost of medical visit, exams (ventriculography) and inputs were extracted from microcosting method. The costs of each stage which included labor, structure, equipment and material were identified and, for each one, the capacity cost rates was calculated in per-minute cost. Each capacity cost rate was then multiplied by the relevant process time and the products were summed to determine the total cost of the service. The cost was converted to international dollars.
Results: The total cost of 18 Trastuzumab applications was $73.648,7. The cost of trastuzumab presented the highest percentage 97% (inputs 0,9%, application 0,7%, consults 0,1% and exams 0,5%).
Conclusions: According to local epidemiology, the cost of treatment with trastuzumab results in a considerable cumulative impact for a developing country.
Conflict of Interest: No significant relationships.

Predictive and prognostic factors

P209

Mammographic breast density: visual and automated measurement, its role in tumor size and prognostic factors

M. Izquierdo*, J. Browne, S. Garcia, F. Tresserra, M. Garcia, S. Baulies, C. Ara, M.A. Pascual, R. Fabregas, Hospital Universitari Dexeus
Barcelona, Spain

Goals: Study the visual and automatic measurement of mammographic breast density and its implications as a prognostic factor.
Methods: Study the visual and automatic measurement of mammographic breast density according to the breast imaging data system (BI-RADS) in 212 patients with invasive unifocal breast cancer (not microinvasive) who did not perform neoadjuvant chemotherapy and surgery before.
Analyze the tumor size globally and with the BIRADS mammographic breast density categories, comparing the histological tumor size, versus the clinical size, ultrasound size, mammographic size and size of the magnetic resonance, a regression is made to study which test values the size better, and the correlation of DMR with prognostic factors (RE, RP, HER2, Ki67, p53).
Results: The comparison of Visual DMR and Automatic DMR, visual DMR 2 the DMR Automatic matches in 40.6% (41/101), in 58.4% (59/101) the DMR is 1, the visual DMR 3 matches with DMR 3 automatic in 32.1% (9/28), in the DMR 3 automatic 64.3% (18/28) is lower ($p < 0.001$). When comparing Visual DMR and Automatic DMR, visual DMR 2 the DMR Automatic matches in 40.6% (41/101), in 58.4% (59/101) the DMR is 1, the visual DMR 3 matches with DMR 3 automatic in 32.1% (9/28), in the DMR 3 automatic 64.3% (18/28) is lower ($p < 0.001$). The study of BMI with DMR, a BMI> 30 there are 0 cases DMR BIRADS 4 (visual and automatic), BMI 15–29.9 there are 0 cases DMR BIRADS 4 automated and 4 cases (14.8%) with DMR BIRADS 4 visual. DMR is not correlated ($p = ns$) with prognostic factors (ER, PR, HER2, Ki67, Histological Grade). The study of size using linear regression shows us a better estimate with less variability with ultrasound and magnetic resonance. ($\bar{x} + 1.96\ \sigma$)
Conclusions: *Visual measurement* overestimate MBD versus automatic measurement according BIRADS categories. Ultrasound and magnetic resonance estimate tumor size better with less variability. MBD is not related to tumor prognostic factors.
Conflict of Interest: No significant relationships.

P210

The mathematical model for predicting the *earliest diagnostics period* of the secondary distant metastases growth process of breast cancer

E. Tyuryumina*, A. Neznanov. *International Laboratory for Intelligent Systems and Structural Analysis, National Research University Higher School of Economics, Moscow, Russian Federation*

Goals: Previously, the mathematical models (CoMPaS and CoM-III) of primary tumor (PT) growth and secondary distant metastases (sdMTS) growth of breast cancer (BC) considering TNM classification have been presented (Tyuryumina E., Neznanov A.; 2017, 2018).
Goal: To detect the *earliest diagnostics period* of visible sdMTS via CoMPaS and CoM-III.
Methods: The models CoMPaS and CoM-III rest on exponential growth model and complementing formulas and correspond to TNM classification. The CoMPaS and CoM-III allow for calculating: (1) the tumor volume doubling time (TVDT) of the PT and the sdMTS (CoMPaS); (2) the correction coefficient of the sdMTS spreading rate in patients with lymph node MTS related with the PT growth rate (CoM-III); (3) the earliest diagnostics periods of the sdMTS. The CoMPaS model reflects the stages I-II (T1-3N0M0), the growth processes of PT and sdMTS in BC patients **without** lymph nodes MTS. The CoM-III describes the stages II-III (T1-3N1-3M0), the growth processes of PT and sdMTS in BC patients **with** lymph nodes MTS.
Results: The critical growth periods have been defined via the models CoMPaS and CoM-III: (1) the non-visible growth period of PT of BC; (2) the non-visible growth period of sdMTS of BC; (3) the visible growth period of sdMTS of BC. The CoMPaS and CoM-III correctly describe the growth period of PT and corresponds to TNM classification (parameter T), the growth period of the sdMTS (parameter M) and the 10–15-year survival of BC patients considering TNM classification. The CoMPaS correctly describes the growth of PT in BC patients with T1-3N0M0 stages and helps to calculate the period in which the sdMTS might appear (M1). The CoM-III correctly describes the growth of PT in BC patients with T1-3N1-3M0 stages and helps to calculate the period in which the sdMTS might appear (M1).
Conclusions: The models CoMPaS and CoM-III and the corresponded software tool can help: (1) to optimise the process of detecting the *earliest diagnostics periods* of sdMTS in BC patients (T1-3N0-3M0) considering TNM classification and the growth rate of PT and sdMTS of BC; (2) to improve the effectiveness of the *earliest diagnostics* and to start the earliest treatment of small sdMTS in BC patients (T1-3N0-3M0); (3) to increase the survival of BC patients with sdMTS (T1-3N0-3M0).
Conflict of Interest: No significant relationships.

P211

Integration of whole-genome sequencing and functional screening identifies a prognostic signature for lung metastasis in triple-negative breast cancer

G. Xie[1]*, H. Yang[1], D. Ma[1], Y. Sun[2], H. Chen[2], X. Hu[1], Y. Jiang[1], Z. Shao[1,3]. *[1]Department of Breast Surgery, Fudan University Shanghai Cancer Center, Shanghai, China, [2]Department of Thoracic Surgery, Fudan University Shanghai Cancer Center, Shanghai, China, [3]Institutes of Biomedical Sciences, Fudan University Shanghai Cancer Center, Shanghai, China*

Goals: Lung metastasis is one of the leading causes of death for triple-negative breast cancer (TNBC). We sought to characterize the genetic alterations underlying TNBC lung metastases by integrating whole-genome sequencing and functional screening. Further, we aimed to develop a metastasis-related gene signature for TNBC patients to improve risk stratification.
Methods: In this prospective observational study, we first conducted whole-genome sequencing of paired primary tumor and lung metastasis from one TNBC patient to identify potential genetic driver alterations. An *in vivo* gain-of-function screening using an amplified open reading frame library was then employed to screen candidate genes promoting lung metastasis. Finally, we applied Cox proportional hazard regression modeling to develop a prognostic gene signature from 14 candidate genes in TNBC.
Results: Compared with the primary tumor, copy number amplifications of chromosomes 3q and 8q were identified in the lung metastasis. We discovered an enrichment of 14 genes from chromosomes 3q and 8q in mouse lung metastases model. We further developed and validated a four-gene signature (*ENY2*, *KCNK9*, *TNFRSF11B* and *KCNMB2*) that predicts recurrence-free survival and lung metastasis in TNBC. Our data also demonstrated that upregulated expression of *ENY2* could promote invasion and lung metastasis of TNBC cells both *in vitro* and *in vivo*.
Conclusions: In conclusion, our study reveals functional genes with copy number amplifications among chromosome 3q and 8q in lung metastasis of TNBC. And we develop a functional gene signature that can effectively stratify patients into low- and high-risk subgroups of recurrence, helping frame personalized treatments for TNBC.
Conflict of Interest: No significant relationships.

P212

Quantitative analysis of plasma cell-free DNA and its DNA integrity in patients with metastatic breast cancer using ALU sequence

A. Fawzy*. *Clinical Pathology, National Cancer Institute Cairo University, Cairo, Egypt*

Goals: Breast cancer(BC) is the most common cancer affecting women. DNA is normally released from an apoptotic source which generates small fragments of cell-free DNA, whereas cancer patients have cell-free circulating DNA that originated from necrosis, autophagy, or mitotic catastrophe, which produce large fragments.
Aim of work Differentiate the cell free DNA levels (cfDNA) and its integrity in breast cancer patients and control group composed of benign breast lesions and healthy persons
Methods: cf-DNA levels were quantified by real-time PCR amplification in breast cancer
patients (n = 50), breast cancer lesions(n = 25) and healthy controls (n = 30)using two sets of ALU gene (product size of 115 bp and 247-bp) and its integrity was calculated
as a ratio of qPCR results of 247 bp ALU over 115 bp ALU.
Results: Highly significant levels of cf-DNA and its integrity in breast cancer patients compared to control groups. Twenty-eight (56%) patients with breast cancer had metastasis. ALU115 qpcr is superiorto the other markers in discriminating metastatic patients with a sensitivity of 96.4% and a specificityof 86.4% and (AUC = 0.981).
Conclusions: ALU115 qpcr could be used as a valuable biomarker helping in identifying high risk
patients, indicating early spread of tumor cells as a potential seed for future metastases.
Conflict of Interest: No significant relationships.

P213

Evaluation of the AJCC 8th staging system in patients with T1-2N0M0, estrogen receptor-positive, HER2-negative invasive breast cancer: a population-based analysis

S. Ding*, L. Zhu, J. Wu, C. Lin, L. Andriani, C. Goh. *Ruijin Hospital, Shanghai Jiao Tong University School of Medicine, Shanghai, China*

Goals: The current study aimed to evaluate the predictive performance of American Joint Commission on Cancer (AJCC) eighth edition staging system in patients with invasive breast cancer based on the Surveillance, Epidemiology, and End Results (SEER) database.
Methods: Patients diagnosed with T1-2N0M0, estrogen receptor-positive, human epidermal growth factor receptor 2 -negative breast cancer from 2010 to 2014 was retrospectively recruited in this analysis. Patients were re-assigned to different stages according to the anatomic staging system (AS), prognostic staging system (PS) and prognostic and genomic staging criteria downstaging patients with recurrence score (RS) lower than 11 (PGS_RS11). Cox models were conducted for multivariate analyses, and likelihood ratio (LR) χ^2, Akaike information criterion (AIC) and Harrell's concordance index (C-index) were calculated for the comparison of different staging systems. Additionally, adjustments were made to generate prognostic and genomic staging criteria downstaging patients with RS lower than 18 (PGS_RS18) and RS lower than 25 (PGS_RS25).
Results: The AJCC eighth edition PGS_RS11 were independent predictor for BCSS, as well as the PS and AS. Adjusted for age and ethnicity, PGS_RS11 (AIC = 2322.763, C-index = 0.7482, LR χ^2 = 113.17) showed superiority in predicting survival outcomes and discriminating patients than AS (AIC = 2369.132, C-index = 0.6986, LR χ^2 = 60.80), but didn't outperform PS (AIC = 2320.992, C-index = 0.7487, LR χ^2 = 114.94). The predictive and discriminative ability of PGS_RS18 was the best (AIC = 2297.434, C-index = 0.7828, LR χ^2 = 83.50) compared to PS and PGS_RS11. The predictive and discriminative ability of PGS_RS18 was the best (AIC = 2297.434, C-index = 0.7828, LR χ^2 = 138.50) compared to PS and PGS_RS11.

Table.
Likelihood χ2, AIC and C-index of different staging systems.

Staging system	Likelihood χ2	AIC	C-index
AS	60.80	2369.132	0.6986
PS	114.94	2320.992	0.7487
PGS_RS11	113.17	2322.763	0.7482
PGS_RS18	138.50	2297.434	0.7828
PGS_RS25	114.31	2321.617	0.7329

Conclusions: PGS_RS11 was superior to AS, but comparable with PS in predicting prognosis. Further validations and refinements were needed for the better incorporation of RS into staging systems.
Conflict of Interest: No significant relationships.

P214

The role of systemic therapy for overall survival in breast cancer patients according to molecular substances

S. Nikolov[1]*, E. Enchev[1,2], G. Minkov[3], M. Galabova[4], T. Vlaykova[5], Y. Yovchev[2]. *[1]Trakia University, Stara Zagora, Bulgaria, [2]General Surgery, University Hospital Stara Zagora, Stara Zagora, Bulgaria, [3]General Surgery, Trakia University, Stara Zagora, Bulgaria, [4]Pathology, Trakia University, Stara Zagora, Bulgaria, [5]Biochemistry, Trakia University, Stara Zagora, Bulgaria*

Goals: Breast cancer (BC) is a heterogeneous disease associated with clinical, pathological and biological factors. The molecular classification is an important tool for managing the treatment of patients. Our aim was to evaluate the overall survival (OS) of 94 patients with BC according to molecular subtypes and the relationship with the systemic therapy performed.
Methods: We analyzed 94 patients with non-metastatic BC for the 2004–2010 period with a median follow-up of 60 months. The mean age of the patients was 60.03 years (SD±10.52). We divided the study group into Luminal A, Luminal B/HER2 (–), Luminal B/HER2 (+), HER2 overexpressed and triple negative subtype and analyzed the OS in each subtype. Statistical analyzes were performed using SPSS v16.0 (SPSS, Inc.). the chi-square test and Fishe's exact test.
Results: The distribution of molecular subtypes is according to St. Gallen 2011: Luminal A – 59 (62.7%), Luminal B/HER2 (-) – 2 (2.1%), Luminal B / HER2 (+) – 8 (8.5%), HER2 overexpressed – 3 (3.2%), Triple negative subtype – 22 (23.5%). OS in the Luminal A group is 92%, Luminal B / HER2 (–) – 50%, Luminal B / HER2 (+) – 62.5%, HER2-overexpressed subtype – 67% and Triple negative subtype – 66.7%. The mortality rate in the analyzed period was 15.9% (n = 15). In the data analysis, we found that patients treated with adjuvant endocrine therapy had a better OS in early BC (I and II stage) (p = 0.025). In the adverse subtypes (Luminal B/HER2+, HER2+ and TNBC) receiving chemotherapy and / or endocrine therapy we found that chemotherapy did not significantly improve OS (p = 0.045)
Conclusions: The use of endocrine therapy and chemotherapy plays a crucial role in the treatment of breast cancer. Molecular subtypes detected by immunohistochemistry should be considered when deciding on adjuvant therapy.
Conflict of Interest: No significant relationships.

P215

CD39 promoting MDSC infiltration and remodeling of bone metastases in breast cancer

X. Ni*. *Department of General Surgery, Zhongshan Hospital, Fudan University, Shanghai, China*

Goals: In a previous study, we established a novel mouse model using human-derived orthotopic breast tissue, metastatic bone, and breast cancer cell lines. This model reflects the complete, natural, species-specific process of breast cancer metastasizing to bone. Using this model, we isolated two breast cancer cell lines: SUM1315-br (from

SUM1315 orthotopic tumor in implanted breast) and SUM1315-bo (from SUM1315 metastatic tumor in implanted bone). Gene and miRNA profiling analyses revealed that CD39 was over-expressed in the bone metastasis tissues relative to the orthotopic BC tissues. Nucleoside triphosphate diphosphohydrolase-1 (ENTPD1/CD39) is the rate-limiting enzyme in a cascade leading to the generation of immunosuppressive adenosine and plays an important role in tumor progression. This study aimed to evaluate the expression and function role of CD39 to determine their prognostic role in breast cancer bone metastasis.

Methods: Immunohistochemistry (IHC) were used to analyze CD39 expression in a cohort of 200 breast cancer patients who underwent curative resection. The quantification of CD39 expression levels was determined using a computerized image analysis system and was evaluated by mean optical density (MOD), which corresponded to the positive staining intensity of CD39. The number of positive CD39 cells in each 1-mm-diameter cylinder were counted under high-power magnification (×400). The "minimum P value" approach was used to obtain the optimal cutoff value for the best separation between groups of patients in relation to time to disease free survival (DFS) or overall survival (OS). The expression of CD39 in breast cancer cell lines were determined by reverse transcription-polymerase chain reaction, Western blotting, and immunofluorescence. The SPSS 19.0 statistical package was used for statistics.

Results: CD39 was principally expressed on macrophagocytes, Tregs, and tumor cells in breast cancer. Compared with paired peritumoral tissues, tumoral tissues had a significantly higher expression level of CD39 ($P < 0.0001$). Overexpression of tumoral CD39 was related to increased tumor recurrence and shortened overall survival. Furthermore, the expression level of peritumoral CD39 showed a prognostic role in DFS and OS.

Conclusions: Overexpression of CD39 protein in breast cancer was an independent predictor of poor outcome after radical resection, providing a potential target for breast cancer bone metastasis immunotherapy.

Conflict of Interest: No significant relationships.

P216

KRT19 and *CEACAM5* mRNA-marked circulated tumor cells indicate unfavorable prognosis of breast cancer patients

X. Wang, Z. Zhang, L. Pan, X. Cao, C. Xiao*. *Tianjin Tumor Hospital, Tianjin, China*

Goals: To investigate the clinical and prognostic significance of circulated tumor cells (CTC) marked by cytokeratin 19 coding gene *KRT19* mRNA and carcinoembryonic antigen coding gene *CEACAM5* mRNA in preoperative peripheral blood of breast cancer patients and provide molecular markers for breast cancer metastasis risk.

Methods: The mRNA levels of *KRT19* and *CEACAM5* in preoperative peripheral blood of breast cancer patients without ($n = 603$) and with ($n = 76$) distant metastases at the time of initial diagnosis were detected by reverse transcription-quantitative polymerase chain reaction (RT-qPCR). The relationship between CTC_{KRT19}、$CTC_{CEACAM5}$ and clinicpathological features, local recurrence free survival (LRFS), distant metastasis free survival (DMFS) or overall survival (OS) were statistically analyzed.

Results: In different pathological stages of breast cancer, the rates of $CTC_{KRT19\text{-}pos}$ and $CTC_{CEACAM5\text{-}pos}$ increased with the increase of the stages ($P = 0.077$ and $P = 0.004$). Preoperative $CTC_{KRT19\text{-}pos}$ in breast cancer patients was closely related to the lymph node metastasis statues ($P < 0.0001$), and had no significant correlation with other clinicopathological features. There was no significant correlation between $CTC_{CEACAM5}$ and the clinicopathological features. Patients with high levels of CTC double-marked by *KRT19* and *CEACAM5* mRNA had shorter DMFS ($P < 0.0001$) and OS ($P = 0.016$) for patients with breast cancer. The 7-year DMFS rates for the low-, intermediate-, and high-risk groups were 90.7%, 67.5%, and 59.1%, respectively ($P < 0.0001$). The prognosis of patients with decreased *KRT19* and *CEACAM5* mRNA after treatment is better than that of patients who have not decreased, and the combination of the two indicators is better than the single one for predicting PFS($P = 0.002$ compare with $P = 0.036$ or $P = 0.047$).

Conclusions: Double-marked CTC by *KRT19* and *CEACAM5* mRNA is a prognostic index of breast cancer patients before surgery and after chemotherapy. Single-marked CTC by *KRT19* mRNA indicates lymph node statues of preoperative patients. Therefore, the RT-qPCR-based molecular diagnosis of CTC could be used for prognostic prediction of breast cancer patients and guiding clinical treatment.

Conflict of Interest: No significant relationships.

P217

The comparison of prognosis between clinical axillary lymph node positive and negative in early breast cancer patients with one or two pathological lymph node metastases

N. Horisawa*, N. Gondo, Y. Adachi, H. Kotani, A. Yoshimura, M. Sawaki, M. Hattori, A. Kataoka, K. Sugino, H. Iwata. *Breast Oncology, Aichi Cancer Center, Nagoya, Japan*

Goals: The number of pathological axillary lymph node (ALN) metastasis is one of the important prognostic factors to determine the systemic therapy after surgery in early breast cancer (EBC). Currently ALN dissection (ALND) is not recommended in clinical node negative with 1 or 2 sentinel lymph node metastases cases. However ALND is performed in clinical ALN positive cases. The aims of this study are comparison of prognosis between clinical ALN positive and negative in EBC patients with 1 or 2 pathological ALN metastases.

Methods: We reviewed 873 patients who conducted ALND and 1 or 2 pathological ALN metastases in our institution from May 2000 to December 2016. We excluded patients with bilateral breast cancer or micro-metastasis or patients who underwent neo-adjuvant chemo-therapy, or positive for surgical margins. We classified two groups as follow, clinical ALN positive (cN1) and negative (cN0) according to findings of radiological examination or aspiration cytology. We compared the OS and DFS between two groups.

Results: A total of 578 patients were identified for analysis. Median follow-up time was 80.5 months. There were 399(69%) and 179(31%) patients in the cN0 group and the cN1 group, respectively. Almost 80% of patients in both groups were received adjuvant chemotherapy. Patients with 1 pathological ALN metastasis were 262(65%) and 97 (55%) in the cN0 group and cN1 group, respectively. The rate of ER positive was higher in the cN0 group than in the cN1 group (84.7% vs 72.2%). The HER2 positive rate was also higher in the cN0 group compared to the cN1 group (11.8% vs 1.2%). Among patients with 2 pathological ALN metastases, there were 137(35%) and 82(45%) patients in the cN0 group and cN1 group, respectively. The rate of ER positive was statistically higher in the cN0 group than in the cN1 group (85% vs 52%). The 10year OS is statistically significant better in the cN0 group (88.6%) than in the cN1 group (79.6%) in all patients (HR: 2.02(1.2–3.5), $p < 0.01$). Similar result was seen in DFS (HR 2.85 (1.6–5.2), $p = 0.01$). Although there were no statistically significant differences between two groups according to ER and HER2 status and each number of pathological ALN metastasis, the OS and DFS had tended to be worse in the cN1 group.

Conclusions: The diagnosis of clinical ALN positive may be prognostic factor in pathological 1 or 2 ALN metastases cases. It is important to consider the status of clinical ALN to determine the systemic therapy.

Conflict of Interest: No significant relationships.

P218

Deep molecular investigation of Epstein-Barr virus (EBV) and its correlation with breast cancer

M.H. Karbalaie Niya[1]*, F. Safarnezhad Tameshkel[2]. [1]*Institute of Immunology and Infectious Diseases, Iran University of Medical Sciences, Tehran, Iran, Islamic Republic of,* [2]*Gastrointestinal & Liver Disease Research Center, Iran University of Medical Sciences, Tehran, Iran, Islamic Republic of*

Goals: Breast cancer, the most common women invasive cancer, involved about 12% of women worldwide and estimates the highest number of cancer related death in women. The aim of this study was to investigate the viral etiology of breast cancer in Iranian patients.
Methods: In this study, which was conducted during year 2012–17 in Iran, 408 females were randomly divided to two groups: healthy 198 individuals in Control and 210 individuals in tumor groups. Paraffin tissue samples were achieved from hospitals affiliated to Iran University of Medical Sciences. After DNA extraction, a nested-PCR and a conventional-PCR targeting EBNA-2 and EBNA-3C genes were performed. A real-time PCR assay for viral load quantitation carried out. Standard curve analysis used for evaluation of amplification specificity. The EBV EBNA-1 and, LMP-1 genes were amplified for variant identification by PCR and then analyzed and confirmed by nucleotide sequencing.
Results: of 408 included patients, 122 (29.9%) were EBV positive in which 22.2% (44/198) in control and 37.1% (78/210) in cases. Also, the main genotype was genotype I (91.2%) which it follows by 8.8% genotype II. The real-time PCR assay showed the mean viral load ±std. deviation was $2.75 \times 10^3 \pm 1.202 \times 10^5$ copies/μg DNA and the higher viral load was related with higher grade of cancer ($p = 0.001$). Del-LMP1 variants found in 40.1% of EBV positive samples (49/122). Furthermore, the EBNA-1 predominant variants (81%) were P-ala and then P-thr and also there were thirteen P-ala-v2 sub variants. Statistics showed there was a significant correlation between EBV positivity and breast cancer outcome ($p = 0.002$).
Conclusions: EBV is a crucial risk factor for breast cancer involvement in Iranian patients. Del-LMP1 variants included nearly half of high grade malignant lesions that illustrates its association with severe illness. EBNA-1 variants was no significant association with any specific diseases type. The association of EBV with HNC requires further investigations by broader sample size.
Conflict of Interest: No significant relationships.

P219

A new tool for breast cancer screening: Dickkopf-3 (DKK-3) biomarker potential

F. Safarnezhad Tameshkel[1]*, M.H. Karbalaie Niya[2]. [1]*Gastrointestinal & Liver Disease Research Center, Iran University of Medical Sciences, Tehran, Iran, Islamic Republic of,* [2]*Institute of Immunology and Infectious Diseases, Iran University of Medical Sciences, Tehran, Iran, Islamic Republic of*

Goals: The Wnt/β-catenin signaling pathway activation in breast cancer is a new tool and critical in the pathogenesis of tumor. The aim of this study was to investigate the dickkopf homolog 3 gene *Dkk-3* predictive potential as a new biomarker for breast cancer screening.
Methods: Formalin-fixed paraffin-embedded resection specimens from normal and cancerous specimens in different pathological stages were used. The mRNA expression of *Dkk-3* was assessed by quantitative Real-time PCR in 161 patients with breast cancer and in 98 subjects with non-malignant lesion in breast biopsy.
Results: *Dkk-3* was silenced or down-regulated in 112 of 161 breast cancer specimens (69.5%) and in 30 of 98 normal subjects breast tissue (30.6%). The loss of gene expression was associated with higher grade and malignant lesions, which could be restored by tumor suppression. The prognostic value and clinical significance of *Dkk-3* expression also were examined by multivariate analysis which indicated that *Dkk-3* expression was significantly associated and independently with poor disease survival breast cancer.
Conclusions: Silencing or down-regulation of the *Dkk-3* gene is a common event in breast cancer and by our study results it associated with a poor outcome in such patients.
Conflict of Interest: No significant relationships.

P220

Prognostic value of vitamin-D level in non-metastatic breast cancer patients in Saudi Arabia

S. Elsamany[1,2]*, A. Zeeneldin[1,3], O. Elemam[1,2], S. Elmorsy[4,5], N. Abu Hashish[4]. [1]*Medical Oncology, King Abdullah Medical City, Makkah, Saudi Arabia,* [2]*Oncology Centre, Mansoura University, Mansoura, Egypt,* [3]*Medical Oncology, National Cancer Institute, Cairo University, Cairo, Egypt,* [4]*Research, King Abdullah Medical City, Makkah, Saudi Arabia,* [5]*Pharmacology, Cairo University, Cairo, Egypt*

Goals: Deficiency of vitamin-D (Vit-D) was associated with poor survival outcome in several studies across different tumour types. The present study aims to assess the prevalence and prognostic value of Vit-D deficiency among breast cancer patients in a single institution in Saudi Arabia.
Methods: In this retrospective study, we screened patients who presented with non-metastatic breast cancer to King Abdullah Medical City, Saudi Arabia from June 2011 to December 2015. We checked baseline Vit-D level before starting systemic therapy in addition to other clinicopathological factors. Low Vit-D level was defined as a level less than 30 ng/ml according to the local laboratory. To have enough numbers of patients for comparisons, the relations of Vit-D level (taking the median as the cutoff) with clinicopathological factors were assessed using Chi-Square test. Differences in survival outcome were compared using log rank test.
Results: We screened 340 patients with non-metastatic breast cancer. Baseline Vit-D levels were available for 189 patients. The median age was 50 years (range: 26–86 years). Vit-D level was low (<30 ng/ml) in 169 patients (89.4%) with a median of 14.9 ng/ml (range: 4.0–45.0). Low Vit-D level (below the median) was significantly more common in premenopausal ($p = 0.011$) and ER-negative patients ($p = 0.011$). However, lymphovascular invasion ($p = 0.001$), clinically ($p = 0.023$) and pathologically positive axillary LNs ($p = 0.041$) were linked with higher Vit- D level.
After a median follow up period of 58.2 months, 14 patients died and 40 relapsed. The 3- and 5-year disease-free survival (DFS) rates were 83.8% and 74.8%, respectively. The 5-year DFS rates were 78.8% and 71.1% in patients with higher (above the median) and lower Vit-D levels, respectively with no statistically significant difference ($p = 0.217$). Lower clinical and pathological stages (stage I, II) were the only factors associated with better DFS rates ($p = 0.001$ for both). Other clinicopathological parameters were not linked with survival outcome. The 3- and 5-year overall survival (OS) rates were 95.3% and 90.2%, respectively. Meanwhile, no difference in 5-year OS rate in patients with higher and lower Vit-D levels (90.3% and 89.7% respectively, $p = 0.6$).
Conclusions: Low Vit-D level was prevalent among the studied breast cancer patients. Low Vit-D level below the median was associated with ER-negative phenotype and premenopausal patients. Baseline Vit-D level was not significantly linked with survival outcome.
Conflict of Interest: No significant relationships.

P221

Ki67 index and its association with Oncotype Dx® recurrence score in Latin-American early-breast cancer patients

J.C. Samamé-Pérez-Vargas[1]*, O. Rua-Fernández[1], F.M. Runzer-Colmenares[2], A. Fernández-Butrón[1], E. Alanya-Rodríguez[1], H. Fuentes-Rivera[1], J.C. Revilla-Lopez[1], S. Falcón-Lizaraso[1]. [1]*Breast Cancer Unit, UICAM, Aliada Cancer Center, Lima, Peru,* [2]*Universidad Científica del Sur (UCSUR), Lima, Peru*

Goals: The aim of our study is to evaluate the association between ki67 index *and* Oncotype Dx (ODX) recurrence score (RS) in peruvian

patients from a private cancer center (ALIADA Cancer Center – ACC), using the new RS cut-off proposed by TAILORx study.
Methods: We reviewed 63 clinical charts that assessed ODX in ACC searching ki67 index (%), RS, and other clinical risk factors like menopause status, age at diagnoses, histology, estrogen receptor (ER), vascular invasion (LVI) and positive nodes. Then we perform a multivariate analysis, considering 25 as the RS cut-off point.
Results: Using a Poisson regression analysis to determine the association between the values of Ki67 and the RS with a cut-off point of 25, we found that the crude prevalence ratio (PRc) for the association between the variables was 9.21 (CI 95% 1.89 to 38.47). In the multivariate analysis, we observed that for each percentage point of ki67, the probability of having a RS above 25 increases by 5.23 times regardless of the menopause state, age at diagnosis, histology, hormone receptors, vascular invasion and number of affected lymph nodes Table 1.

Table 1.

Poisson Regression to analize association between Ki67 and new Recurrence Score cut-off 25

	PRc (CI 95%)	PRa (CI 95%)
Ki67%	9.21 (1.89–38.47)	5.23 (1.62–16.89)

[PRc] Crude analyze – Prevalence Ratio
Adjusted analysis (Menopause, Age at diagnosis, histology, ER, lymphovascular invasion, lymph nodes)

Conclusions: As some other reports we found that ki67 index could be an interesting surrogate of ODX RS. Our proposal is new because we describe this correlation in a Latin-American population and using the new suggested parameters in TAILORx. In summary, we showed that in a Latin-American population with early breast cancer a high percentage of Ki67 could be useful as a good surrogate marker to predict a high RS.
Conflict of Interest: No significant relationships.

P222
Clinical characteristics and prognosis of breast cancer with single hormone receptor positive phenotype- a population-based study of 531605 patients

M. Lv[1], H. Wang[2]*, M. Yan[1], S. Yuhua[1], W. Yongmei[1]. [1]*The Affiliated Hospital of Qingdao University, Qingdao, China,* [2]*Center of Diagnosis and Treatment of Breast Disease, The Affiliated Hospital of Qingdao University, Qingdao, China*

Goals: Estrogen receptor (ER) and progesterone receptor (PR) status are predictors of endocrine therapy in breast cancer. It has been usually thought that PR status should be the same with the ER status. The significance of the single hormone receptor positive phenotype is still poorly understood. In order to understand the clinical features and prognosis of single hormone receptor positive breast cancer (ER + PR– tumors and ER – PR+ tumors), we compared them with the double-positive (ER + PR+)/–negative tumors (ER – PR–).
Methods: 531605 cases of pathologically confirmed invasive breast cancer diagnosed from 1990 to 2012 were identified from the Surveillance, Epidemiology, and End Results database and categorized into four groups: ER+PR+, ER+PR–, ER – PR+ and ER – PR – group. Adjusted hazard ratios for known predictors of disease-specific survival (DSS) in breast cancer were obtained using a Cox proportional hazards regression model.
Results: In this study, 66091 (12.4%) cases were ER + PR – tumors and 9320 (1.8%) cases were ER – PR+ tumors. ER – PR+ tumors were found more frequently in young women. Liver metastasis (51.8%) was the most common in ER – PR+ group. However, in other three groups, the most common metastasis site was bone. In addition, the survival graph of ER+PR – tumors and ER – PR+ were located between that of ER + PR+ tumors and ER – PR – tumors. While the disease specific survival (DSS) of ER-PR+ tumors had no difference from those of ER – PR – tumors. With multivariate analysis, ER+PR-and ER-PR+ tumors were associated with an increased risk of death compared with ER+PR+ tumors with a hazard ratio of 1.422 (95% CI: 1.39–1.45) and 1.52 (95% CI: 1.43–1.57) for DSS. The risk of death of ER-PR+ tumors was the similar with the ER-PR-tumors (HR: 1.03; 95% CI: 0.98–1.08). In addition, cox proportional analysis showed that young age(<60 years old), tumor stage(I-III), tumor grade(I-III) and Her2 positive status were associated with a longer survival time for ER-PR+ group.
Conclusions: We have identified clinically and biologically distinct features of ER-PR+ and ER + PR- tumors through comparison with both ER+ PR+ and ER – PR- tumors. Single HR+ (ER-PR+ and ER + PR-) tumors were associated with poorer survival than ER + PR + tumors, and had longer survival than ER – PR- tumors. However, there was no statistical difference of the survival between ER – PR+ with ER – PR- tumors.
Conflict of Interest: No significant relationships.

P223
Factors influencing prognosis in elderly women with breast cancer

H. Kanaizumi*, C. Higashi, Y. Tanaka, M. Hamada, W. Shinzaki, Y. Hashimoto, Y. Komoike. *Surgery, Kindai University, Osakasayama-City, Japan*

Goals: We aimed to clarify the effect of age, comorbidities, and physical abilities on prognoses of elderly breast cancer patients.
Methods: Women with invasive breast cancer (aged ≥75 years) who underwent surgery at our hospital from 2000 to 2015 were retrospectively examined. Data on age, body mass index (BMI), tumor size, lymph node status, nuclear grade (NG), estrogen receptor (ER) status, Charlson Comorbidity Index (CCI), and Flemish version of the Triage Risk Screening Tool (fTRST) scores were collected. The relationships between these factors and survival times were analyzed using the Cox proportional hazard regression model.
Results: After excluding 8 patients who either had distant metastasis or did not consent, 210 patients were analyzed (median age, 80 years; range 75–98 years). Of 210 patients, 175 (83.7%) had normal BMI (18.5–29.9 kg/m^2) and 115 (54.3%) had a tumor size <2 cm. The median postoperative follow-up period was 61 months (range 1–217 months). Deaths were confirmed in 47 patients; 11 died due to breast cancer, 8 of whom died within 2 years of diagnosis. Results from 210 patients were as follows: 152 (72.4%) had pathological or clinical lymph node negative disease; 165 (78.6%) had ER-positive cancer; 174 (82.9%) had a CCI < 2; and 180 (85.7%) had fTRST scores <2. NG 1 or 2 tumors were observed in 140/205 patients (68.3%); 30/45 ER-negative patients did not receive postoperative adjuvant therapy. The overall 5-year survival rate was 84.7%. Multivariate analysis showed that age > 80 years [$p < 0.001$, hazard ratio (HR) = 4.317, 95% confidence interval (CI) = 2.192–9.152], ER-negative status ($p < 0.001$, HR = 3.249, 95% CI = 1.626–6.415), CCI ≥ 2 ($p = 0.026$, HR = 2.556, 95% CI = 1.115–5.563), and abnormal BMI ($p = 0.027$, HR = 2.367, 95% CI = 1.106–4.847) were independent prognosticators of overall survival. ER-negative status ($p = 0.009$, HR = 5.931, 95% CI = 1.545–29.80) and lymph node positive status ($p < 0.001$, HR = 16.63, 95% CI = 2.913–316.9) were independent prognosticators of disease-specific survival.
Conclusions: Prognoses of elderly patients after breast cancer surgery depend on age, comorbidities, and nutritional status; breast cancer is not always the cause of death. However, as ER-negative patients have a high risk of breast cancer-related death and poor prognosis, they may benefit from adjuvant therapy under careful management.
Conflict of Interest: No significant relationships.

P224

Role of multidisciplinary teams in the management of breast cancer patients of low-middle income regions in China: a single center analysis

B. Yang[1], X. Zhang[2], J. Gao[2]*. [1]*Graduate School, Shaxi Medical University, Taiyuan, China,* [2]*Breast Surgery, Shanxi Dayi Hospital, Taiyuan, China*

Goals: The incidence of breast cancer is rapidly increasing in China, particularly in urban areas. A multidisciplinary team (MDT) approach for the management of breast cancer is the standard of care in developed health systems. However, this model is still at an early stage of implementation in China. The aim of this retrospective study is to evaluate the effectiveness of MDT in the management of breast cancer patients of low-middle regions in China.
Methods: This study recruited a cohort of 531 early breast cancer patients who were managed by MDTs consisted of breast surgeons, medical oncologists, radiotherapy oncologists, radiologists, pathologists and breast care nurses, and underwent surgical procedures between 1 January 2014 and 31 December 2017 in Shanxi Dayi hospital, China. MDT decisions were documented as care plans. We assessed concordance between MDT decisions and subsequent patient managements. Logistic regression method was used to analyze factors involved in discordance.
Results: Overall, 70.6% (375 out of 531) of MDT decisions were concordant, whereas 29.4% (156 out of 531) were not. Age, family history of cancer and tumor biologic subtypes appeared to significantly affect implementation of MDT decisions. The discordance rate of patients older than 70 was 3.9 times higher compared with those aged under 40 years old (OR = 3.9, 95% CI: 1.3–12.5, p = 0.02). Patients with family histories of cancer were 3.5 times more likely to change their treatment plans than those without family histories (OR = 3.5, 95% CI: 1.2–10.2, p = 0.02). Compared to patients with HR+/HER2- breast cancer, those with HR-/HER2+ and HR+/HER2+ subtypes had 11.9 and 14.2 times higher discordance rates, respectively (OR = 11.9, 95% CI: 5.7–24.6, P < 0.001; OR = 14.2, 95% CI: 6.6–30.7, P < 0.001).
Conclusions: Our results demonstrate that although management by MDTs significantly improves clinical outcomes of breast cancer patients of low-middle income regions in China, the MDT decision discordance rate is noticeably high, especially in aged patients and those with cancer family histories. Patients with HER2+ tumours are also prone to discordance. Thus, implementation of the MDT approach in the treatment of breast cancer in patients from low-middle income population needs to be strengthened and measures should be taken to ensure adherence to MDT decisions.
Conflict of Interest: No significant relationships.

P225

Discordance of biomarkers in multifocal and lymph node positive breast cancer

M. Sundquist[1]*, P.-O. Bendahl[2], S. Janeva[3], A. Kovacs[4], R. Olofsson Bagge[3], H.M. Olofsson[5], F. Wärnberg[6]. [1]*Department of Surgery, Kalmar County Hospital, Breast Unit, Kalmar, Sweden,* [2]*Department of Clinical Sciences, Lund University Hospital, Lund, Sweden,* [3]*Department of Surgery, Sahlgrenska University Hospital, Institute of Clinical Sciences, Gothenburg, Sweden,* [4]*Department of Pathology, Sahlgrenska University Hospital, Institute of Clinical Sciences, Gothenburg, Sweden,* [5]*Department of Pathology, Uppsala University, Uppsala, Sweden,* [6]*Department of Surgical Sciences, Uppsala University, Uppsala, Sweden*

Goals: Tailored adjuvant therapy according to histological grade, biomarkers ER, PR and HER2 and proliferative indicators like Ki67 has been one of the most important factors improving survival in breast cancer. However, a number of reports show that in a small proportion of cases characteristics differ between primary tumour and lymph node metastasis and between different foci in multifocal cancers. Usually assessment of biomarkers is performed on one primary only. This might lead to that some patients receive suboptimal treatment. About 9000 women are diagnosed with breast cancer each year in Sweden. About 20% have more than one primary tumour and approximately 30% have lymph node metastases. Our aim is to explore concordance regarding tumour biology between different primary foci and between lymph node metastases and primary tumour in a large population based cohort.
Methods: In 3 Swedish breast units, for all consecutive breast cancer patients with more than one primary tumour and/or lymph node metastasis assessments of ER, PR, HER2 and Ki67 were performed with IHC and ISH on at least two lesions in multifocal cases and on one to two metastatic lymph nodes.
Results: So far 74 patients with more than one primary tumour and 58 patients with lymph node metastases have been included. In about 17% of cases there was discordance in tumour biology between foci. In eight cases Ki67 scored high in one lesion and low in another. Five of those also differed in histological grade between NHG 3 and 1–2. Three had different ER/PR status, two had HER2 amplification in one foci while the other was normal.
In metastatic lymph nodes the biology differed between primary and metastases in 5 of 58 cases, 8,6%. ER/PR nodal status was different from the primary in two cases. One triple negative tumour had an ER/PR positive metastasis and one ER/PR positive primary had an ER/PR negative metastasis. In three cases, HER2 normal primaries had an amplified lymph node metastasis.
Conclusions: Biomarker status is relatively consistent between foci in multifocal tumours and between lymph node metastases and primaries. However, our results indicate that there is a risk of suboptimal treatment that might have important consequences on the outcome for this subgroup of breast cancer patients if only the primary tumour is examined.
Conflict of Interest: No significant relationships.

P226

Tumor extension to the anterior surface of gland is the most critical factor affecting axillary lymph node metastases in early stage breast cancer

Y. Zhang*, H. Li, Z. Du. *Department of Breast Surgery, West China Hospital, Sichuan University, Chengdu, China*

Goals: Axillary lymph node metastasis (ALNM) is usually the earliest detectable clinical presentation of breast cancer. The study aimed to explore the influencing factors of axillary lymph node metastasis and to develop models that can precisely predict its occurrence before surgery.
Methods: Cases of sonographically visible T1-T2 clinical axillary lymph node-negative breast cancers treated with breast and axillary surgery at West China Hospital were retrospectively reviewed. Tumor anatomic location of invasion, other ultrasonographic characteristics, and clinicopathologic traits were collected. Univariate and multivariate logistic regression analyses were performed to select variables as possible predictors affecting axillary lymph node metastasis. Decision tree analyses were performed to construct predictive models using the C5.0 packages within the R environment.
Results: Of the 1671 patients, 541 (32.9%) showed axillary lymph node positivity on final surgical histopathologic analyses. In multivariate logistic regression analysis, tumor size ($p < 0.001$), extension to the anterior surface of gland (EASG)($p < 0.001$), extension to the posterior surface of gland (EPSG)($p = 0.031$), and tumor quadrant locations (TQLs)($p < 0.001$) were significantly correlated with axillary lymph node metastasis. Independent factors identified via multivariate logistic regression analysis were selected to build the decision tree. High consistency was obtained in the training set and test set after machine learning. The accuracy model had relatively high accuracy rate (training sample, 72.2%; test sample, 69.52%), but the false-negative rate (FNR) was not acceptable (training sample, 69.70%; test sample, 74.18%). Using cost matrix algorithm can reduce FNR especially for nodes 5, 8, 13, and 16

predicted ALNN with low FNR (training sample, 11.4%, 9.09%, 14.28%, and 11.53%, respectively; test sample, 18.1%, 14.7%, 20%, and 22.45%, respectively).
Conclusions: Tumors with larger size, lateral TQLs, EASG, and EPSG may have a higher risk of ALNM in clinical node-negative early stage breast cancer. EASG was the most important influencing factor for ALNM. The decision tree built by those attributes reached a slightly higher FNR than SLND in some selected patients in predicting ALNS.
Conflict of Interest: No significant relationships.

P227

Tamoxifen risk-of-recurrence score (TAM RORs): an algorithm model for assessing clinical outcome in breast cancer patients with tamoxifen

H. Pang[1]*, Y. Wang[2], J. Hu[1], N. Yan[3], J. Lang[3], Y. Liang[3], X. Wang[1], L. Cai[1], Y. Gu[2], D. Yuan[3]. *[1]Harbin Medical University Cancer Hospital, Harbin, China, [2]School of Electronics and Information Engineering, Harbin Institute of Technology, Harbin, China, [3]Geneis (Beijing) Co., Ltd., Beijing, China*

Goals: Tamoxifen (TAM) is the most commonly used adjuvant endocrine treatment for hormone receptor-positive breast cancer patients. However, how to accurately evaluate the risk of breast cancer recurrence and metastasis after adjuvant tamoxifen therapy is still a major concern. Recent years, many studies have shown that clinical outcome of TAM-treated breast cancer patients is significantly influenced by the activity of certain cytochrome P450 enzymes. We aimed to develop and validate an algorithm including gene polymorphism and clinicopathological signatures to predict a subpopulation of breast cancer patients who might benefit most from TAM adjuvant therapy.
Methods: A total of 504 patients with invasive breast cancer who received adjuvant endocrine therapy were selected. The genotypes at ten loci from three tamoxifen metabolism-related genes, including CYP3A5, CYP2D6 and CYP2C19, were detected by time-of-flight mass spectrometry platform and multiplex long polymerase-chain-reaction (PCR). Combined with 9 clinicopathological characteristics, the importance assessment was conducted via random forests. Finally, logistic regression analysis was adopted to develop the algorithm model TAM Risk-of-recurrence score (RORs) for verifying its feasibility.
Results: The sensitivity and specificity of the algorithm model in validation cohort were 87.50% and 66.67%, respectively. Among tamoxifen metabolism-related genes, statistical differences were observed between CYP2D6*1/*1 and CYP2D6*1/*10 ($P < 0.03$). The same phenomenon was found between CYP2D6*1/*10 and CYP2D6*10/*10 ($P < 0.01$).
Conclusions: This study showed that breast cancer patients with high TAM RORs had low sensitivity to tamoxifen, and manifested more invasive characteristics, whereas those with low TAM RORs were highly sensitive to tamoxifen, and their conditions were stable during follow-up period.
Conflict of Interest: No significant relationships.

P228

Prevalence and predictors of anxiety and depression after breast cancer treatment in North China

H. Liu, L. Wang, J. Gao*. *Breast Surgery, Shanxi Dayi Hospital, Taiyuan, China*

Goals: Breast cancer is now the most frequently diagnosed cancer and is the fifth leading cause of cancer-related deaths in Chinese women. Survival rates have improved in recent years due to the introduction of effective treatments. Nevertheless an increasing number of patients are presenting with psychological disorders associated with their diagnosis together with the side effects of treatments. The present cross-sectional study aimed to determine the prevalence of depression and anxiety among breast cancer patients in low-middle income regions of Northern China and to evaluate associations with sociodemographic and clinical characteristics.
Methods: This study was conducted among 405 consecutive breast cancer patients who received treatment and follow-up from October to December 2017 in the department of breast surgery of Shanxi Dayi hospital, China. Anxiety and depressive scores were assessed using Self-Rating Anxiety Scale (SAS) and Self-Rating Depression Scale (SDS) instruments respectively. Predictor analyses were performed using logistic regression model analyses.
Results: Median follow-up was 30 (interquartile range: 22–53) months after breast surgery. Prevalence of anxiety and depression was 16.5% (67 out of 405) and 34.3% (139 out of 405) respectively. Patients with treatment adverse events recorded 10 fold higher risk of anxiety than those without side effects (OR: 10.7, 95% CI: 1.4–80.7; $p = 0.02$). Compared with patients from rural regions, there was a 55% decrease in the odds of anxiety for those with other occupations (OR: 0.45, 95% CI: 0.22–0.92; $p = 0.03$). Overall, depression was significantly higher among subjects who had treatment side effects (OR: 3.68, 95% CI: 1.59–8.55; $p = 0.002$).
Conclusions: Our study demonstrated that nearly one fifth and one third breast cancer survivors suffered from anxiety and depression respectively. Treatment side effects and profession status were found as predictors of psychological outcome after breast surgery. These findings establish a rational basis for implementing and evaluating psychological Interventions in Chinese breast cancer patients from low-middle income regions.
Conflict of Interest: No significant relationships.

P229

Increased expression of apoptosis regulator bcl-2 is an independent prognostic factor for worse overall survival in triple-negative breast cancer patients

L. Beketic-Oreskovic[1]*, P. Ozretic[2], I. Alvir[3], Z. Rendic-Miocevic[4], A. Roguljic[4], B. Sarcevic[5]. *[1]Department of Clinical Oncology and Department of Radiotherapy and Medical Oncology, University of Zagreb, School of Medicine and University Hospital for Tumors, Sestre milosrednice Clinical Hospital Center, Zagreb, Croatia, [2]Division of Molecular Medicine, Rudjer Boskovic Institute, Zagreb, Croatia, [3]Department of Gynecologic Oncology, University Hospital for Tumors, Sestre milosrdnice Clinical Hospital Center, Zagreb, Croatia, [4]Department of Radiotherapy and Medical Oncology, University Hospital for Tumors, Sestre milosrdnice Clinical Hospital Center, Zagreb, Croatia, [5]University Hospital for Tumors, Sestre milosrdnice Clinical Hospital Center, Department of Pathology, Croatia*

Goals: Triple-negative ductal invasive breast cancer (TNBC) shows often very aggressive behavior with a high rate of recurrence and poor survival of patients. The objective of this study was to examine the prognostic significance of carbonic anhydrase IX (CAIX), an endogenous marker for tumor hypoxia; the cellular tumor antigen p53; and the apoptosis regulator Bcl-2, in TNBC patients.
Methods: Immunohistochemically determined expression of CAIX, p53, Bcl-2 and cellular proliferation marker Ki-67, analyzed in 64 formalin-fixed, paraffin-embedded TNBC tissue samples, was used to assess the relation of those markers to clinicopathological variables and prognostic implications for overall survival (OS).
Results: Bcl-2 expression was negatively correlated with histological tumor grade, while expression of p53 was positively correlated with the same clinical variable ($P = 0.036$ and $P = 0.033$, respectively). The p53 expression was also positively correlated with tumor size ($P = 0.010$). There were no correlations between markers' expression levels. Survival analysis showed that patients with high Bcl-2 expression (above the cutoff value determined by receiver operator characteristic [ROC] curve analysis) had shorter OS ($P = 0.020$). The same was observed for patients with tumors larger than 50 mm ($P = 0.034$) or positive lymph nodes ($P = 0.004$). Among all four examined markers, multivariate analysis showed that only elevated Bcl-2 expression was a strong independent prognostic indicator for

decreased OS (hazard ratio [HR] = 15.16, 95% confidence interval [95% CI], 2.881–79.727, P = 0.001).
Conclusions: Elevated expression of Bcl-2 was an independent prognostic maker for poorer OS in TNBC and as such a significant marker for tumor aggressiveness.
Conflict of Interest: No significant relationships.

P230
Clinical and molecular risk profiling differences: a single center experience

B. Oksuzoglu*, U. Demirci. *Uni of Health Sciences Ankara Oncology Hospital, Ankara, Turkey*

Goals: Although conventional risk assessment methods are relatively inexpensive with shorter turnaround times, their accuracy and value for risk reduction are suboptimal. According to our results, there is a substantial amount of difference between the clinical risk determining and Prosigna results. Hence, Prosigna assay can aid as a relevant tool for clinical decision-making process.
Methods: Formalin fixed tumor samples from 38 newly diagnosed, axilla negative (pN0), postmenopausal, hormone receptor-positive, HER2-negative early breast cancer T1-T3 patients were analyzed. Pre-test clinical judgements and Prosigna test results were compared.
Results: Although conventional risk assessment methods are relatively inexpensive with shorter turnaround times, their accuracy and value for risk reduction are suboptimal. According to our results, there is a substantial amount of difference between the clinical risk determining and Prosigna results. Hence, Prosigna assay can aid as a relevant tool for clinical decision-making process.
Conclusions: Although conventional risk assessment methods are relatively inexpensive with shorter turnaround times, their accuracy and value for risk reduction are suboptimal. According to our results, there is a substantial amount of difference between the clinical risk determining and Prosigna results. Hence, Prosigna assay can aid as a relevant tool for clinical decision-making process.
Conflict of Interest: No significant relationships.

P231
Imaging features and delayed diagnosis in triple negative breast cancer subtypes

C. Elfgen[1]*, Z. Varga[2], K. Reeve[3], L. Moskovszky[4], V. Bjelic-Radisic[5], U. Güth[1], C. Tausch[6]. *[1]Breast Center, Zurich, Switzerland, [2]Institute of Pathology and Molecular Pathology, University Hospital Zurich, Zurich, Switzerland, [3]Epidemiology, Biostatistics and Prevention Institute, Biostatistics Department, University of Zurich, Zurich, Switzerland, [4]Institute of Pathology and Molecular Pathology, University Hospital of Zurich, Zurich, Switzerland, [5]Helios University Clinic, Department Gynecology and Obstetrics, Division Senology, Witten-Herdecke, Germany, [6]Breast Center Zurich, Zurich, Switzerland*

Goals: Triple negative breast cancer (TNBC) refers to any breast cancer that does not express the genes for estrogen receptor (ER), progesterone receptor (PR), and human epidermal growth factor receptor (HER2), and are associated with poorer prognosis. Due to its growth pattern, misinterpretation in clinical imaging is more frequent. TNBC contains heterogeneous types of tumor with different marker-expression. We postulate that early detection rate in imaging features of ultrasound and mammogram is different within the subtypes of TNBC.
Methods: The imaging features of four TNBC subtypes in 151 patients were compared and related to the endpoint of early diagnosis, disease stage, possible diagnostic delay, and outcome (medium follow up time 60 month). TNBC subtypes of basal-like (BL), mesenchymal-like (ML), luminal androgen receptor (LAR), and immunomodulatory (IM) were defined based on molecular marker expression on tumor tissue.
Results: In almost every third patient (29.1%; 44 out of 151), malignant classification was missed in at least one imaging method. Misclassification, i.e. Breast Imaging Reporting and Data System (BI-RADS) classification II and III, in mammogram was more frequent in ML (32.3%; n = 10) compared to the other subtypes (BL 26.8%, n = 15; IM 25%, n = 5; LAR 22.7%, n = 10). Misclassification due to benign ultrasound features were reported slightly more often in the BL subtype (16.1%, n = 9 versus 15%, n = 3; 12.9%, n = 4; 9.1%, n = 4 in IM, ML, and LAR, respectively). Diagnostic delay due to misclassification in imaging led to tumor growth and/ or upgrading of the tumor stage in 8.6% overall (13 out of 151; 8.9%, n = 5 in BL, 5%, n = 1 in IM; 12.9%, n = 4 in ML, and 6.8%, n = 3 in LAR). Outcomes did not vary significantly across subtypes; however, ML tend to have better overall survival.
Conclusions: TNBC subtypes have different imaging features and diagnostic delay, which can lead to an upgrade of the tumor stage. To minimize delayed diagnosis due to benign features in at least one imaging method, combined diagnostic methods and clinical training are necessary. Future clinical studies on TNBC outcome should consider the confounder of clinical delay in the subtypes.
Conflict of Interest: No significant relationships.

P232
Development and validation of nomograms integrating immune-related genomic signatures with clinicopathologic features to improve prognosis and predictive prediction of triple negative breast cancer: a gene-expression-based retrospective study

K. Wang[1], Y. Shi[2], H. Li[1]*. *[1]Department of the Endocrine and Breast Surgery, The First Affiliated Hospital of Chongqing Medical University, Chongqing, China, [2]Division of Biostatistics and Data Science, Department of Population Health Sciences, Medical College of Georgia, Augusta University, Augusta, GA, United States*

Goals: We aimed to develop and validate composite clinicopathologic immune-related genomic nomograms for estimation of the risk of relapse/death and the benefit from adjuvant therapies in triple negative breast cancer(TNBC) patients.
Methods: We applied the CIBERSORT to screen 22 tumor-infiltrating lymphocytes(TILs) phenotypes and identify the most relevant prognostic immune cells in TNBC. Meanwhile, a systematic approach was conducted to evaluate and re-analyse the immunogenic or immune microenvironmental genomic signatures in TNBC and then construct a composite nomograms integrating immune-related genomic signatures with clinicopathologic features, which predicted a patient's probability of disease free survival (DFS) and overall survival (OS).
Results: We included 711 eligible TNBC samples from 11 independent gene-expression cohorts with follow-up data. For endpoint of OS, older age (per year increase: hazard ratio (HR), 1.02; 95% confidence interval (CI), 1.00 to 1.03; P = 0.019), advanced stage (stage III vs. I: HR, 2.72; 95% CI, 1.33 to 5.54, P = 0.006), poor prediction of B-cell/IL-8 metagenes (good vs. poor: HR, 0.19; 95% CI, 0.06 to 0.62, P = 0.006) and lower ratio of B cells naïve (high vs. low: HR, 0.40; 95% CI, 0.22 to 0.73, P = 0.003) were independently associated with inferior OS. Likewise, the multivariate Cox regression for DFS indicated that TNM stage (stage III vs. I: HR, 2.28; 95% CI, 1.34 to 3.88), prediction of 28-kinase metagenes (good vs. poor: HR, 0.64; 95% CI, 0.41 to 0.98, P = 0.041), proportion of activated NK cells (high vs. low: HR, 0.55; 95% CI, 0.36 to 0.83, P = 0.005) and mast cells (high vs. low: HR, 1.86; 95% CI, 1.22 to 2.81, P = 0.004) were independent prognostic variables. Clinicopathologic-genomic nomograms were cautiously constructed, which showed reasonable prediction accuracies (DFS: HR, 1.79; 95% CI, 1.46–2.18, P < 0.001; 5 year-AUC, 0.71; OS: HR, 1.96; 95% CI, 1.54–2.49; P < 0.001; 5 year-AUC, 0.73). The nomogram showed low-risk subgroup had higher immune checkpoint molecules (PD-L1, PD-1, CTLA-4, LAG-3) expression, and benefited from radiotherapy (HR, 0.2, 95% CI, 0.05–0.89; P = 0.034) rather than chemotherapy (HR, 1.26, 95% CI, 0.66–2.43; P = 0.485).
Conclusions: These findings offer evidence that immune-related genomic data provide independent and complementary prognostic information for TNBC, and the nomogram might be a practical

predictive tool to identify TNBC patients who would benefit from chemotherapy, radiotherapy and upcoming popularity of immunotherapy.
Conflict of Interest: No significant relationships.

P233
Functional mechanism on tumor-infiltrating lymphocytes in triple-negative breast cancer

M. Kai*, H. Mori, H. Kawaji, K. Kurata, M. Yamada, M. Kubo, M. Nakamura. *Surgery and Oncology, Kyushu University, Fukuoka, Japan*

Goals: Triple negative breast cancer (TNBC) is a high-grade, more aggressive disease with a high rate of metastasis and shows poorer outcome than the other breast cancer subtypes. Therefore, further classification and novel targeting therapies are needed for patients with TNBC. Tumor-infiltrating lymphocyte (TIL) is suggested to represent anti-tumor immune response in tumor environment and associated with prognosis in breast cancer. TILs are reported to be associated with high histologic grade, hormone receptor negativity and high Ki-67 expression. In our previous study, the association between TIL and programmed cell death ligand-1 (PD-L1) showed prognostic biomarker in TNBC. We have focused on the T-bet for the mechanism of TIL which is a novel functional target. On the other hand, it is reported that the neutrophil-to-lymphocyte ratio (NLR) from the peripheral blood sample may have the association with prognosis in breast cancer. In this study, we analyze the functional mechanisms of TIL and its factors such as T-bet, Granzyme B and PD1, and also verify the relationship between those immune markers and NLR in TNBC.
Methods: This study included 248 patients with primary TNBC who underwent resection without neoadjuvant chemotherapy between 2004 and 2014. The subtypes were identified by IHC (ER, PgR and HER2) on surgically resected breast cancer tissue. All resected specimens used for IHC were fixed in 10% formalin for 6 to 72 h. The stromal TILs were evaluated by H&E according to the guidelines published by the International TILs Working Group. The expression of PD-L1 and T-bet were assessed by IHC. The NLR from the peripheral blood samples in those patients with TNBC were calculated.
Results: Among the 248 TN tumors, PD-L1 expression was classified as strong-positive in 38 (15.3%), weak-positive in 65 (26.2%), and negative in 145 (58.5%). TILs were present at a high level in 118 (47.6%) and T-bet was positive in 67 (27.2%) of the tumors. The T-bet expression showed positive correlation with TILs, CD8 and PD-L1. The T-bet positive population showed significantly longer overall survival ($p = 0.04$) than the T-bet negative population. The NLR in the peripheral blood had inverse correlation with TIL.
Conclusions: T-bet may be a functional marker for TIL and NLR may reflect the local immunity.
Conflict of Interest: No significant relationships.

P234
Association between insurance status at diagnosis and survival among patients with de novo metastatic breast cancer: a population-based study

P. Ji*, Y. Gong, X. Hu, G.-H. Di, Z.-M. Shao. *Fudan University Shanghai Cancer Center, Shanghai, China*

Goals: With the development of new targeted therapies, a consistent improvement in survival time for patients diagnosed with metastatic breast cancer (MBC) has been achieved. However, access to care, medication cost, and adherence may be barriers to treatment. This study was designed to determine whether the insurance status at diagnosis influences MBC patient outcomes.
Methods: We identified 19,363 patients with de novo metastatic breast cancer diagnosed between 2007 and 2014 using Surveillance, Epidemiology, and End Results database. Time trends were evaluated for age standardized observed overall survival (OS) and breast cancer-specific survival (BCSS) at 12 months after diagnosis. Insurance status was classified as insured, Medicaid and uninsured. OS and BCSS were evaluated with log-rank tests and Kaplan-Meier estimates. We then restricted the cohort to patients diagnosed between 2010 and 2014 (n = 10,695), when human epidermal growth factor receptor 2 (HER2) was routinely collected, and examined factors associated with OS and BCSS by multivariate Cox regression analysis.
Results: 12-month age standardized observed OS and BCSS were elevated from 61.17% to 63.07% ($P < 0.01$) and 64.17% to 66.70% ($P < 0.01$) between 2007 and 2014, respectively. Among patients aged 18 to 39 years and 40 to 64 years, insured patients were more likely to have better survival than uninsured patients or patients with Medicaid ($P < 0.01$). Among patients who were 65 years old or older, insurance status was also associated with OS ($P < 0.01$) but not associated with BCSS ($P = 0.22$). Through multivariate analysis, we found that both uninsured patients (hazard ratio [HR]: 1.53, $P < 0.01$ for OS; HR: 1.59, $P < 0.01$ for BCSS) and Medicaid patients (HR, 1.21; $P < 0.01$ for OS; HR: 1.20, $P < 0.01$ for BCSS) had an increased hazard of death in comparison with insured patients. Older age, non-Hispanic black patients, higher tumor grade, unmarried status and triple negative subtype were also associated with poorer OS and BCSS. Among Medicaid subgroup, patients with hormone receptor negative/HER2 positive experienced the second worst survival, while among insured and uninsured subgroup, patients with hormone receptor positive/HER2 negative experienced the second worst survival.
Conclusions: Insurance status plays considerable roles in prognosis of MBC. Our findings may highlight the importance of developing health-related policies and the necessity of targeted social support-based interventions for those high-risk patients with MBC.
Conflict of Interest: No significant relationships.

P235
Prognostic value of 3D distribution of 1048 FFPE breast cancer samples based on absolute and quantitative protein levels of ER, PR and Her2

J. Lv[1], Y. Zhang[1], G. Yu[2], L. Ding[3], W. Zhang[1], J. Zhang[4,5]*, F. Tang[1]. *[1]Quanticision Diagnostics, Inc, Yantai, China, [2]Molecular Pathology, Yuhuangding Hospital, Affiliated Qingdao University, Yantai, China, [3]Xintai People's Hospital, Xintai, China, [4]Quanticision Diagnostics, Inc, Durham, United States, [5]Center for Precision Medicine, Binzhou Medical University, Yantai, China*

Goals: The success of molecular subtyping leads to numerous prognostic algorithms for personalized treatment of breast cancer patients. However, until now, immunohistochemistry (IHC)-based subtyping method still plays a dominant role in daily clinical practice. The discordance between mRNA based and protein based method is well recognized in the field. In this study, we aimed to reconcile these two types of subtyping methods by measuring ER, PR, Her2 and Ki67 as absolute and continuous variables in 1048 Formalin Fixed Paraffin Embedded (FFPE) specimens, and explore the 3D spatial relationship among these biomarkers.
Methods: Total protein from 2 × 15 mm FFPE slices provided by local hospitals sequentially and non-selectively were extracted and used for Quantitative Dot Blot (QDB) analysis using the same antibodies for IHC analysis, including SP1 for ER, 1E2 for PR, EP3 and 4b5 for Her2, and MIB1 and UMAB107 for Ki67. Purified recombinant proteins were used as protein standard to achieve absolute quantification of these biomarkers. The absolute values of these biomarkers were used as X, Y and Z axes to create 3D space for prognostic purpose.
Results: When using ER, PR and Her2 as X, Y, and Z axes, we found the samples naturally segregate into three distinct groups. Those samples with high Her2 levels were exclusively wrapped around Z axis (Her2 group), while samples with ER or PR overexpression were spread at the ER and PR floor (HR group). This pattern persisted until a small block with ER < 0.2 nmole/g, PR < 0.8 nmole/g and Her2 < 0.3 nmole/g can be observed with samples distributed inside randomly (corner group). Interestingly, when using 0.3 nmole/g as cutoff for Her2, we

observed 93.6% concordance between results from QDB and 786 IHC scores provided from local hospitals. The corner group was also found to be most heterogeneous, with those samples with highest Ki67 levels exclusively accumulated within this group.
Conclusions: The current prevailing IHC based subtyping method is severely limited by the relative and discrete nature of IHC method. We believe what we observed of the 3D distribution of samples by ER, PR and Her2 levels is the projection at protein levels of various molecular subtypes. Thus, the absolute and quantitative measurement of biomarkers at protein level may provide a simple, reliable 3D prognostic tool to incorporate what we have learned at both protein and mRNA level to be used in personalized treatment of breast cancer patients.
Conflict of Interest: JLv, YZ, WZ, JZ & FT are employees of Quanticision Diagnostics, Inc.

P236
Lack of concordance between Ki67 labeling index and 21-gene Breast Recurrence Score® test results in patients with ER+, HER2−, clinically node-negative breast cancer: a secondary analysis of TransNEOS neoadjuvant study

K. Narui[1]*, N. Masuda[2], Y. Yamamoto[3], T. Fujisawa[4], T. Toyama[5], M. Kashiwaba[6], T. Sakai[7], Y. Shibahara[8], H. Sasano[8], H. Iwata[9]. *[1]Yokohama City University Medical Center, Yokohama, Japan, [2]NHO Osaka National Hospital, Osaka, Japan, [3]Kumamoto University, Kumamoto, Japan, [4]Gunma Prefectural Cancer Center, Gunma, Japan, [5]Nagoya City University Graduate School of Medical Science, Nagoya, Japan, [6]Sagara Hospital, Kagoshima, Japan, [7]Cancer Institute Hospital of Japanese Foundation for Cancer Research, Tokyo, Japan, [8]Tohoku University Graduate School of Medicine, Sendai, Japan, [9]Aichi Cancer Center Hospital, Nagoya, Japan*

Goals: Incorporation of the nuclear proliferation marker Ki67 labeling index (LI) to guide decisions on adjuvant or neoadjuvant therapy varies across clinical guidelines. Ki67 LI in combination with other clinicopathologic factors is used in some regions to guide adjuvant or neoadjuvant therapy, although validation of this approach is pending. The Recurrence Score® (RS) result is validated for prognosis and prediction of chemotherapy benefit in the adjuvant setting, and for prognosis in the neoadjuvant setting. In TransNEOS, the Recurrence Score result predicted clinical response to neoadjuvant letrozole and was significantly associated with achievement of breast conserving surgery (Iwata *Breast Cancer Res Treat* 2018). Here, we present an analysis of the relationship between Ki67 LI and Recurrence Score results using pre-treatment core biopsies from TransNEOS patients.
Methods: TransNEOS patients were diagnosed with ER+, HER2−, clinically node-negative breast cancer, had tumors ≥2 cm, and had archived core biopsies taken before neoadjuvant letrozole that were later sent for 21-gene testing. Ki67 LI was evaluated by immunohistochemistry [IHC]) on core biopsy specimens using MIB1 as the primary antibody. The counting was performed in at least 100 tumor cells after identifying the hot spots of the specimens by two of the authors (YS and HS). Spearman correlation (95% confidence interval [CI]) between Ki67 LI and Recurrence Score result was examined. Recurrence Score groups were RS 0–25 and RS 26–100, as defined by TAILORx (Sparano *N Engl J Med* 2018).
Results: Of 295 patients (median age 63 y; median tumor size 2.5 cm; 66% grade 1), 76% had RS 0–25, and 24% had RS 26–100 (median RS 17; range RS 0–68). Of those with Ki67< 10%, 88% had RS 0–25. Of those with Ki67≥40%, 74% had RS 26–100. A weak correlation was found between Ki67 LI and Recurrence Score results (Spearman correlation 0.37; 95% CI 0.26 to 0.47).
Conclusions: Our findings demonstrated that Ki67 LI was rather weakly correlated with Recurrence Score results but did confirm that the two factors were independent in nature. Therefore, Ki67 LI and Recurrence Score results can by no means substitute for each other and both must be performed in the appropriate fashion in the management of patients.
Conflict of Interest: Dr. Iwata and Dr. Yamamoto have received remuneration from Genomic Health. Dr. Narui (corresponding author) has no conflicts of interest to declare.

P237
The BRCA1/2 mutations and ER status in Chinese patients with synchronous bilateral breast cancer

L. Huang*. *Department of Breast Surgery, Fudan University Shanghai Cancer Center, Shanghai, China*

Goals: BRCA1/2 mutations were associated with bilateral breast cancer. The extent of concordance between synchronous bilateral breast cancer (SBBC) tumors with respect to hormone receptor expression and BRCA1/2 mutations was unknown. We investigated the distribution of BRCA1/2 mutations and bilateral estrogen receptor (ER) status in SBBC. We also explored their roles in prognosis.
Methods: A retrospective analysis was performed of 15337 patients with primary breast cancer who underwent surgical treatment at the Fudan University Shanghai Cancer Center between 2007 and 2014. We included 163 patients with synchronous bilateral breast cancer, who received the germline BRCA1/2 mutation. BRCA1/2 pathogenic/likely pathogenic mutations and other clinicopathological characteristics were selected for further analysis.
Results: Patients with SBBC developed the malignant carcinoma at an older age than patients with unilateral breast cancer (UBC) (median age: 54y vs. 51y, $p < 0.001$). Compared with 9.6% UBC patients with family breast cancer history, 11.7% patients with SBBC had a similar family history of first-degree relatives. While 14.1% SBBC patients had carcinomas with a lobular carcinoma component in either breast based on pathological reports ($p < 0.001$). 12 patients had BRCA1 mutation and 14 patients had BRCA2 mutation, while no patients had both mutation. BRCA1/2 mutation rate was higher in younger patients (23.4% vs. 11.1%, $p = 0.036$). 7 carriers were found among 18 patients with family breast cancer history, which was significant more frequency than non-history cohort (38.9% vs. 11.3%, $p = 0.005$). BRCA1/2 mutation was significant higher in bilateral ER negative subgroup (33%, $p = 0.022$). Synchronous bilateral breast cancer patients with ER bilateral inconsistent had very low frequency of BRCA1/2 mutation (5.6%). No significant differences was observed in disease-free survival (DFS) and overall survival (OS) between the BRCA1/2 carriers and non-carriers. Pathological lymph node stage was the only prognostic factor for synchronous bilateral breast cancer in both univariate and multivariate cox analysis.
Conclusions: Our study shows that chinese women with SBBC have different characteristics to their UBC counterparts. SBBC patients with younger age, family breast cancer history or bilateral ER negative have higher BRCA1/2 mutations. SBBC patients who carry BRCA1/2 mutations have similar survival as non-carriers. Our results suggested that there may be more underlying the tumour biology and genetics of SBBC.
Conflict of Interest: No significant relationships.

P238
Does young age correlate with worse prognostics factors in breast cancer?

A. Boussarsar*, C. Zaidi, F. Noubbigh, A. Hamdoun, J. Yahyaoui, L. Kochbati. *Abderrahmane Mami Ariana Hospital, Ariana, Tunisia*

Goals: Describing clinicopathological features of breast cancer among young women.
Methods: Non menopausal breast carcinoma patients under 50 were identified and divided into age groups under and or over 40 years (Group A and group B respectively). Clinical and histo-pathological features were studied and compared between the two groups.
Results: Between August 2017 and November 2018, 133 women under 50 were treated for invasive breast carcinoma at the new Radiotherapy department of Abderrahman Mami Ariana Hospital (45% of all treated breast cancer). Non-menopausal 122 patients were

included in this study. There were 54 patients in group A (44%) and 68 women in group B (56%). Clinically there was no difference between the two groups in terms of personal and family history and stage. The mean age was 41 years [19–50 years]. A family history of cancer was reported in 41.8% of group A and in 44.8% of group B. Group A showed significantly higher mean Ki67 (30% for group AVs 10% for group B; $p < 0.001$). SBR 3 was reported in 51.9% in group AVs 32.4% in group B ($p = 0.04$). Hormone receptors were negative in 25% in group AVs 13.7% in group B ($p = 0.01$). The tumor was triple negative in 17% in group AVs 5.1% in group B ($p = 0.03$). In addition, no statistically difference in lymph nodes invasion was revealed, however there were more node capsular effraction in group A (37.1% Vs 20.2%; $p < 0.001$).

Conclusions: Our results indicate that breast cancer arising in women under 40 years have a worse features than their older counterparts. This difference in tumor profile reflects more aggressive disease and may reflect differences in tumor biology.

Conflict of Interest: No significant relationships.

P239

Prognostic and predictive impact of estrogen receptor alpha gene (*ESR1*) expression in postmenopausal women with early breast cancer: Results from the DBCG 77C trial

S.S. Nielsen[1]*, B. Ejlertsen[2], M.-B. Jensen[1], A. Knoop[2], A.-V. Lænkholm[3]. *[1]Rigshospitalet, Danish Breast Cancer Cooperative Group, Copenhagen, Denmark, [2]Rigshospitalet, Department of Oncology, Copenhagen, Denmark, [3]Zealand University Hospital, Department of Surgical Pathology, Slagelse, Denmark*

Goals: The 2011 EBCTCG meta-analysis showed that tamoxifen significantly reduces 15-year breast cancer recurrence and death in women with early and ER positive breast cancer. Meanwhile, *ESR1* amplification has been reported in up to 20% of primary breast tumors. Gene amplification may be diagnostic for response to targeted therapy, a prestigious example being targeting breast cancers in which HER2 is amplified by trastuzumab. We evaluated the prognostic and predictive properties of *ESR1* in DBCG77C, a randomized trial comparing one year of tamoxifen to no adjuvant systemic therapy in postmenopausal high-risk breast cancer patients.

Methods: *ESR1* copy number (CN) was assessed using fluorescence in situ hybridization (FISH), and tumors were classified as *ESR1* deleted, normal, gain or amplified according to predefined ratios of *ESR1*/centromere-6 ratio. The endpoints were overall survival and breast cancer recurrence (BCR), defined as the time from breast cancer surgery until recurrence or death due to breast cancer. All secondary carcinomas and death due to other causes were treated as competing risk events. Multivariate regression analysis was performed for BCR using the Fine-Gray proportional hazards subdistribution model.

Results: The correlative cohort consisted of 1,166 patients whose tumors were assessable for *ESR1* and where central ER, PR, HER2 and Ki67 was known. Deletion of *ESR1* was more often observed in HER2 positive tumors ($P = 0.0003$) and in tumors with Ki67 ≥14% ($P < 0.0001$). *ESR1* copy number was closely associated with ER ($P < 0.0001$) and PR ($P = 0.0008$) expression. *ESR1* CN and *ESR1* to centromere-6 ratio were not statistically associated with 10-year risk of breast cancer recurrence (BCR) in the systemically untreated patients as a continuous measure in neither the univariate nor the multivariate model (Table 1). Neither BCR ($P = 0.41$) nor overall survival ($P = 0.90$) were significantly different according to the four categories of *ESR1* status in systemically untreated patients. When comparing BCR rates among the *ESR1* amplified and non-amplified tumors for tamoxifen treated and control patients, both subsets were associated with a treatment benefit from tamoxifen and there was no evidence of heterogeneity of treatment effect among the two subsets (Table 1).

Table 1.
Breast cancer recurrence according to ESR1 status in a multivariate model. CI, confidence interval; HR, hazard ratio; BC, breast cancer.

Prognostic	P
No systemic therapy	
ESR1 Copy Number	0.67
ESR1/centromere-6-ratio	0.06
Predictive	$P_{heterogeneity}$
ESR1 status	0.33
ESR1 not amplified	
ESR1 amplified	

Conclusions: *ESR1* showed no prognostic effect on BCR in the systemically untreated patients. Both *ESR1* amplified and non-amplified tumors were associated with a treatment benefit from tamoxifen.

Conflict of Interest: No significant relationships.

P240

Do all patients with early breast cancer (T1 T2 N0-1) with ER, PR positive and Her 2 neu negative require adjuvant chemotherapy? – Role of risk score

R. Kumar*, G. Daga. *Surgical Oncology, Rajiv Gandhi Cancer Institute & Research Centre Delhi India, Delhi, India*

Goals: Background and objective: Traditionally any tumor more than 1 cm needs adjuvant chemotherapy. Risk stratification tools based on clinical, pathological and molecular markers have been developed and studied to determine the patients who do not need chemotherapy. Endopredict is one of such tool. Aim of the present study was to apply ENDOPREDICT a second generation risk score in an Indian cohort with early breast cancer.

Methods: We applied Endopredict in selected early breast cancer cases (T1-2, N0-1, M0, ER and PR positive, Her 2 neu negative).

Results: Total 42 patients with EBC were included. Mean age was 56.04 years. Breast conservative surgery was performed in 32 patients. Majority (31, 73.80%) patients had T2 disease. Only 3 patients had N1 disease Pathological grade wise distribution in grade 1, 2 and 3 was 12, 18 and 12 patients respectively. Total 22 (51%) were found to be under high risk and all were with T2 disease. Out of these 22, 5 patients denied adjuvant chemotherapy and are doing fine only on Hormonal therapy till present. Twenty (49%) fell under low risk group and were given adjuvant endocrine therapy only. Mean follow up was 35.64 months.

Conclusions: Risk assessment tools as Endopredict are of great utility in tailoring adjuvant therapy in EBC patients. Issues related to availability and cost need to be looked into for wider application of these.

Conflict of Interest: No significant relationships.

P241

Infiltration by Myeloperoxidase positive neutrophils is an independent prognostic factor in breast cancer

J. Zeindler[1]*, F. Angehrn[2], S. Piscuoglio[3], K.Y.C. Ng[3], E. Kilic[4], M. Ritter[1], R. Mechera[1], W.P. Weber[1], S. Münst[3], S.D. Soysal[1]. *[1]Breast Surgery, University Hospital of Basel, Basel, Switzerland, [2]Department of Surgery, St. Claraspital, Basel, Switzerland, [3]Institute of Pathology, University Hospital of Basel, Basel, Switzerland, [4]Institute of Pathology, Hospital Leverkusen, Leverkusen, Germany*

Goals: Myeloperoxidase (MPO) is an enzyme secreted by neutrophil granulocytes as a result of phagocytosis during inflammation. In colorectal cancer, tumor infiltration by MPO expressing cells has been shown to be independently associated with a favorable prognosis. In this study, we explored the role of MPO positive cell infiltration and its prognostic significance in invasive breast cancer.

Methods: We performed immunohistochemical staining for MPO on multiple tissue microarrays comprising a total of 928 human breast cancer samples with detailed clinical-pathological annotation and outcome data.
Results: MPO positive cell infiltration (≥5 cells/tissue punch) was found in 150 (16%) of the 928 evaluable breast cancer cases. In univariate survival analyses, infiltration by MPO positive cells was associated with a significantly better overall survival ($p < 0.001$). In subset univariate analyses, the infiltration by MPO positive cells was associated with significantly better overall survival in the Luminal B HER2-negative subtype ($p = 0.005$), the HER2 subtype ($p = 0.011$), and the basal-like subtype ($p < 0.001$). In multivariate analysis, MPO expression proved to be an independent prognostic factor for improved overall survival ($p < 0.001$).
Conclusions: This is the first study to show that infiltration of MPO positive cells is an independent prognostic biomarker for improved overall survival in human breast cancer.
Conflict of Interest: No significant relationships.

P242
High expression of prolactin receptor in breast cancer tissue was correlated with lower overall survival

D. Sa-nguanraksa[1]*, C. Thasripoo[1], N. Samarnthai[2], T. Kummalue[3], P. O-charoenrat[1]. *[1]Division of Head Neck and Breast Surgery, Department of Surgery, Faculty of Medicine Siriraj Hospital, Mahidol University, Bangkok, Thailand, [2]Department of Pathology, Faculty of Medicine Siriraj Hospital, Mahidol University, Bangkok, Thailand, [3]Department of Clinicalpathology, Faculty of Medicine Siriraj Hospital, Mahidol University, Bangkok, Thailand*

Goals: To evaluate the roles of *prolactin (PRL)* and *prolactin receptor (PRLR)* polymorphisms as well as PRLR expression in breast cancer risk and clinical outcomes in Thai breast cancer patients.
Methods: *PRL* (rs3756824 C/G and rs2244502 T/A) and *PRLR* (rs37364 G/T and 249537 A/G) polymorphisms were genotyped by real-time polymerase chain reaction. Immunohistrochemistry (IHC) was performed to assess PRLR protein expression in breast cancer tissue. The level of expression was designated as H score, the product of intensity and percentage of stained cell. The median of H score (140) was used to categorize the patients into low and high expression. The correlations between *PRL* and *PRLR* polymorphisms and breast cancer susceptibility/aggressiveness as well as the associations between PRLR expression and clinicopathological parameters were determined by Chi-square statistics. The survival outcomes were assessed by Kaplan Meier analysis and Cox proportion hazard model. *P*-values of <0.05 were considered as statistical significant. Statistical analysis was performed using SPSS software version 21.
Results: A total of 237 breast cancer patients and 119 controls were examined. *PRL* and *PRLR* polymorphisms were not correlated with breast cancer susceptibility. *PRL* rs2244502 TA and AA genotypes were more frequent in progesterone receptor (PgR) positive breast cancer patients ($p = 0.029$). *PRLR* rs3756824 CC genotype was associated with PgR negative and HER2 positive ($p = 0.010$ and $p = 0.011$, respectively). IHC was performed in 107 breast cancer tissues. There was no association between *PRLR* polymorphisms and PRLR expression. High expression of PRLR was significantly associated with presence of lymphovascular invasion ($p = 0.011$). Patients with *PRLR* rs249537 AA genotype had significantly poorer overall survival than other genotypes ($p = 0.012$). In addition, patients with high PRLR expression had lower overall survival ($p = 0.025$).
Conclusions: High PRLR expression was correlated with aggressiveness of breast cancer. PRLR expression might be used as a prognostic factor. Further study regarding the role of PRLR as a target for breast cancer therapy should be conducted.
Conflict of Interest: No significant relationships.

P243
Nectin-4 expression is a prognostic biomarker and associated with worse survival in triple-negative breast cancer

J. Zeindler[1]*, S. Münst[2], S. Piscuoglio[2], K.Y.C. Ng[2], M. Ritter[3], R. Mechera[3], S.D. Soysal[3], W.P. Weber[3]. *[1]Brustzentrum Universitätsspital Basel, Basel, Switzerland, [2]Institute of Pathology, University Hospital of Basel, Basel, Switzerland, [3]Breast Surgery, University Hospital of Basel, Basel, Switzerland*

Goals: Triple-negative breast cancer (TNBC) represents about 10–20% of all invasive breast cancers and is associated with a poor prognosis. The nectin cell adhesion protein 4 (Nectin-4) is a junction protein involved in the formation and maintenance of cell junctions. Nectin-4 has previously shown to be expressed in about 60% of TNBC as well as in TNBC metastases, but to be absent in normal breast tissue, which makes it a potential specific target for TNBC therapy. Previous studies have shown an association of Nectin-4 protein expression with worse prognosis in TNBC in a small patient cohort. The aim of our study was to explore the role of Nectin-4 in TNBC and confirm its impact on survival in a larger TNBC patient cohort.
Methods: We performed immunohistochemical staining for Nectin-4 on a tissue microarray encompassing 112 TNBC cases with detailed clinical annotation and outcomes data.
Results: A high expression of Nectin-4 was present in 86 (76.8%) of the 112 TNBC cases. In univariate survival analysis, high expression of Nectin-4 was associated with a significantly worse overall survival when compared with low expression of Nectin-4 ($p = 0.001$). No correlation of Nectin-4 expression with any other clinicopathological features could be found.
Conclusions: Our results confirm that expression of Nectin-4 serves as a prognostic biomarker in TNBC and is associated with a significantly worse overall survival. Nectin-4 thus represents a potential target in TNBC, and its role in this breast cancer subtype should be investigated in larger patient cohorts.
Conflict of Interest: No significant relationships.

P244
Use of second generation breast cancer recurrence test in Indian cohort of early breast cancer patients for adjuvant treatment recommendation: first prospective multicentric Indian study

S. Somashekhar[1]*, S.S. Zaveri[1], R. Kumar[2], C. Bahl[3], C. Rohit Kumar[1], Y. Ramya[1]. *[1]Surgical Oncology, Manipal Comphrensive Cancer Centre, Bangalore, India, [2]Rajeev Gandhi Cancer Institute, New Delhi, India, [3]Genomic Science Laisioner, Positive Biosciens, Bangalore, India*

Goals: In estrogen receptor (ER)-positive, HER 2/neu negative early breast cancer(EBC) patients, the clinical decision on adjuvant systemic therapy has been a challenge. Clinical parameters have been used to estimate the relevance of adding adjuvant chemotherapy to the endocrine regimen. Gene expression analysis is an emerging prognostic tool in guiding for therapy selection. EndoPredict (EPclin) score, a second generation prognostic tool, is the combination of gene expression analysis score (EP score), tumor size and nodal status. This study focuses on classification of these on the basis of EP score and EPclin score pertaining to the selection of treatment based on gene expression analysis alone and in combination with tumor size and nodal status.
Methods: Prospective study done from 2016 to 2018, included EBC patients from different hospitals across India for breast cancer recurrence test, EndoPredict (Myriad genetics, USA). They were classified into high-risk (requiring additional adjuvant chemotherapy along with endocrine therapy) and low-risk patients (only endocrine therapy) as per EP score and EPclin scores.
Results: Of 206 EBC patients (mean age: 58.4 ± 11.7 years), 91.2% were node-negative, 55.3% were postmenopausal. On the basis of clinical parameters, 40.8%, 58.7% & 0.5% were identified as T1, T2 and T3.

In the node negative cohort, 72.4% were classified into high risk on the basis of EP score & 43% on the basis of EPclin, who can be selected for additional adjuvant chemotherapy along with endocrine therapy. In node positive subgroup, on the basis of EP score 22.2% were classified in the low risk category, 33.3%were classified as low risk on the basis of EPclin score. In patients with low Ki67%, 20% had high risk on EPclin & in patients with high Ki67, 78% had low risk as per EPclin score.

Conclusions: Lymph node positivity or negativity & Ki67 alone are not sufficient enough to conclude patients as low or high risk as per the above results. In conclusion, it is evident that in Indian node negative breast cancer patients EPclin score classified 57% patients in low risk as compared to 27.6% patients on the basis of EP score alone. So, it widely establishes the relevance of inclusion of clinic-pathological parameters in calculation of distant recurrence of breast cancer as it could identify more than double the percentage of patients in low risk subgroup and indicates its prognostic power over EP score which only includes gene expression analysis.

Conflict of Interest: No significant relationships.

P245

Can digital mammography and digital breast tomosynthesis characteristics of palpable breast cancers reliably predict the HER2/neu status?

G. Agarwal[1], C. Sonthineni[1]*, N. Mohindra[2], S. Mayilvahnan[1], G. Chand[1], A. Mishra[1], A. Agarwal[1], Z. Neyaz[2], V. Agrawal[3]. *[1]Endocrine & Breast Surgery, SGPGIMS Lucknow, Lucknow, India, [2]Radiology, SGPGIMS Lucknow, Lucknow, India, [3]Pathology, SGPGIMS Lucknow, Lucknow, India*

Goals: Mammography is an essential and routine component of triple assessment of breast lumps. The digital breast tomosynthesis (DBT) and digital mammography (DM) characteristics vary considerably as per the tumor intrinsic biological sub-type of breast tumors. HER2/neu status determination in breast cancer by immunohistochemistry (IHC) is vital for planning anti-HER2 therapy. Fluorescent in-situ hybridization (FISH) is the most accurate method for assessment of HER2/neu status, but isn't always done as part of breast cancer evaluation. As considerable disparity exists in HER2/neu assessment on IHC and FISH, it may be useful to predict the HER2/neu status based on other tumor characteristics.

In this prospective study, we correlated the DM and DBT features of breast cancers with HER2/neu immunostaining (0, 1+, 2+ and 3+) to identify mammographic features that can predict the HER2/neu status of the tumor.

Methods: Between January 2016 to May 2017, 300 consecutive patients with self-detected lumps undergoing breast imaging had their DM and DBT reviewed by two radiologists independently. One hundred ninety patients with histology proven breast cancer without prior intervention were included in the study, and their DM and DBT findings were compared, and were correlated with HER2/neu status (IHC scores 0 to 3+). Rest of the patients were excluded owing to lack of some components of essential data.

Results: Forced BIRADS scores varied significantly ($p < .001$) with more intense HER2/neu immunostaining being more frequently associated with BIRADS 5 score (Table 1). Lesion morphology varied, though not significantly, with lower HER2/neu score more frequently visualized as mass lesions on mammography. Presence of micro-calcifications increased significantly with increasing HER2/neu score, and fine pleomorphic calcifications were predictive of high HER2/neu scores ($p < 0.001$, Table 2). Margins of mass lesions varied significantly on DBT but not on DM alone ($p = 0.012$ vs 0.078, respectively).

Table 1.
Forced BIRADS score on digital mammography with and without digital breast tomosynthesis.

Forced BIRADS scoring		DM + DBT				
		4a	4b	4c	5	Total
DM alone	4a	2	2	–	1	5
	4b	–	9	18	6	33
	4c	–	2	13	32	47
	5	–	1	1	103	105
	Total	2	14	33	141	190

DM = Digital mammography; DBT = Digital breast tomosynthesis; BIRADS = Breast Imaging and Reporting Data System.

Table 2.
Variation of morphology of calcification with HER2/neu score.

Calcification Morphology	HER2/neu score				p Value
	0 (n = 45)	1+ (n = 30)	2+ (n = 60)	3+ (n = 55)	
Amorphous	1 (2.22%)	3 (10%)	3 (5%)	5 (9.09%)	0.389
Coarse	1 (2.22%)	–	5 (8.33%)	1 (1.82%)	0.230
Fine Pleomorphic	6 (13.33%)	10 (33.33%)	22 (36.66%)	31 (56.36%)	<0.001
Fine Branching	1 (2.22%)	–	2 (3.64%)	4 (7.27%)	0.457

Conclusions: Forced BIRADS score and presence of microcalcifications vary significantly with the intensity of HER2 immunostaining. Though HER2-0 and 1+ and FISH negative HER2/neu 2+ are clubbed together as HER2/neu negative cancers, they have heterogeneous mammographic features.

Conflict of Interest: No significant relationships.

P246

Breast cancer-specific survival (BCSS) in patients (pts) with node-negative (N0) and node-positive (N+) breast cancer (BC) guided by the 21-gene assay: a SEER-genomic real-world evidence study

E.P. Winer[1]*, S. Shak[2], G.W. Sledge, Jr.[3], K.S. Albain[4], E.P. Mamounas[5], D.M. Jakubowski[2], V.I. Petkov[6], N. Wolmark[7], G.N. Hortobagyi[8]. *[1]Dana-Farber Cancer Institute, Boston, United States, [2]Genomic Health, Inc., Redwood City, United States, [3]Stanford University, Stanford, United States, [4]Loyola University Chicago Cardinal Bernardin Cancer Center, Maywood, United States, [5]Orlando Health UF Health Cancer Center, Orlando, United States, [6]National Cancer Institute, Bethesda, United States, [7]NSABP Foundation, Pittsburgh, United States, [8]University of Texas MD Anderson Cancer Center, Houston, United States*

Goals: The 21-gene Breast Recurrence Score® (RS) in the randomized NSABP B-20, SWOG S8814, and TAILORx studies predicted chemotherapy (CT) benefit for pts with N0 and N+ disease. Based on a new update of the SEER cancer registries with additional years of follow-up and additional pts, we now estimate 9-year BCSS and CT benefit, in the context of the TAILORx cutpoints.

Methods: RS results were provided electronically to SEER registries per their linkage methods (Petkov *npj Breast Cancer* 2016). Eligible pts were diagnosed Jan 2004 – Dec 2014 with N0 and N+(N1mic, 1–3 positive nodes[N1]), HR+, HER2-negative BC, and had no prior malignancy or multiple tumors, with follow-up information through Dec 2015. Unadjusted BCSS estimates without reported CT use were computed by nodal status, and CT benefit was estimated using propensity score weighting to account for the lack of randomization.

Results: There were 80,605 pts with RS results; 70,087 with N0 disease, 4,336 with N1mic, and 6,182 with N1. Median follow-up was 49 months, with 20,151 pts followed >76 months. 1,020 pts had

experienced breast cancer death. Reported CT use increased with increasing RS result. There was a significant positive association between higher RS results and decreased BCSS ($p < 0.001$) without and with adjustment for nodal status, age, tumor size, and grade. 9-y BCSS was >97% without CT for pts with RS 0–18 and N0 and N+ disease (Table). RS result was predictive of CT benefit in patients with N0 disease, with RS 26–100 vs. RS 0–25 predictive ($p = 0.009$), and no apparent CT benefit with RS 0–25.

Table.
9-year BCSS by RS group and nodal status in pts with no reported CT use.

		N0; No CT Use (N = 55726)	N1mic; No CT Use (N = 3004)	N1; No CT Use (N = 3810)
RS 0–10	n	13982	803	1005
	9-y BCSS±SE	98.6 ± 0.3	98.6 ± 0.9	97.8 ± 0.9
RS 11–17	n	23665	1378	1664
	9-y BCSS±SE	98.1 ± 0.2	99.4 ± 0.3	97.1 ± 1.1
RS 18–25	n	14281	682	918
	9-y BCSS±SE	96.8 ± 0.3	95.0 ± 1.6	95.8 ± 1.0
RS 26–30	n	2326	85	137
	9-y BCSS±SE	92.7 ± 1.0	NC	85.2 ± 6.1
RS 31–100	n	1472	56	86
	9-y BCSS±SE	89.0 ± 1.2	73.2 ± 10.5	83.9 ± 6.0

Conclusions: TAILORx has defined the RS-guided treatment paradigm for patients with N0 disease, with the cutoff for CT benefit around RS 26; SEER 9-year real world evidence for prognosis and prediction supports that paradigm. SEER 9-year real world evidence for prognosis supports the option of hormone therapy alone for patients with 1–3 positive nodes and RS < 18, while we await RxPONDER for randomized results in RS 18–25.
Conflict of Interest: EPW: consultant for Genentech, Infinite MD, Lilly; ownership interest in Verastem. SS and DMJ: employees of Genomic Health. KSA: consultant for Agendia, Biotheranostics, Genentech/Roche, Genomic Health, Myriad, Novartis, Pfizer, Puma. EPM: consultant for Biotheranostics and Genomic Health. GNH: consultant and contracted research for Novartis.

P247

Prognostic impact of breast cancer stem cells in metastatic breast cancer Egyptian patients

M.A. Elbaiomy[1]*, T. Akl[1], A.A. Elsayed[2]. [1]*Medical Oncology, Oncology Center Mansoura University, Mansoura, Egypt,* [2]*Pathology, Faculty of Medicine Mansoura University, Mansoura, Egypt*

Goals: Assess impact of **Breast Cancer Stem Cells** (BCSC) expression on PFS, OS and tumor response in metastatic breast cancer patients. And to correlate BCSC expression with different clinicopathological parameters.
Methods: This prospective study enrolled 76 denovo metastatic breast cancer patients recruited from Oncology Center Mansoura University, Egypt with a minimum age 31 and a maximum 70 years. Patients received different lines of treatment; hormonal or chemotherapy according to their biological subtypes. Anti Her2 was added for Her2 positive patients. Pretreatment BCSC markers (CD44 & CD24) assessed by immunohistochemistry on formalin-fixed paraffin-embedded tumor tissues from primary or metastatic site.
Results: BCSC markers (CD44+ve&CD24-ve) were expressed in 32 patients (42.1%) while 44 patients (57.9%) were not expressing BCSC markers. Out of 32 patients expressing BCSC; 15 patients (46.9%) were triple negative which is an aggressive disease while, seven patients (21.9%) Her2 amplifier, four patients (12.5%) Luminal A and six patients (18.8%) Luminal B. In contrast out of 44 patients lacking BCSC; 29 patients (65.9%) were Luminal A, two patients (4.5%) Luminal B, four patients (9.1%) Her2 amplifier and nine patients (20.5%) triple negative subtype 74 patients were candidate for response assessment. BCSC expressing patients showed poor response (five patients; 16.1% responsive versus 26 patients; 83.9% non-responsive) while non BCSC expressing patients showed better response to treatment (22 patients; 51.2% responsive versus 21 patients; 48.8% non-responsive) with significance relation (P 0.002). BCSC expression was associated with significant both short PFS (median, 18 months vs. 35 months; P = 0.001) and short OS (median, 25 months vs. 43 months; P = 0.003).
Conclusions: This study further validates BCSC expression as a poor prognostic biomarker correlated with poor response, short PFS and OS so; it could be used as a biological marker for tailoring treatment with different lines of therapies in further studies. BCSC expression was highly presented in triple negative subtype which is an aggressive disease that lacks different targets so, targeting BCSC may carry a hope in future for this group of patients.
Conflict of Interest: No significant relationships.

P248

A model using easily evaluated clinical features to identify triple negative breast cancer (TNBC) patients (pts) with high probability of achieving pathologic complete response (pCR) to neoadjuvant systemic therapy (NAST)

S. Moulder[1]*, B. Adrada[1], B. Lim[1], N. Ueno[1], R. Candelaria[1], G. Rauch[1], J. Litton[1], A. Thompson[2], L. Huo[1], K. Hess[1]. [1]*University of TX, MD Anderson Cancer Center, Houston, United States,* [2]*Baylor College of Medicine, Houston, United States*

Goals: Approximately 40–50% of pts with localized TNBC will obtain pCR with standard anthracycline/taxane based NAST. Trial designs that identify and exclude pts highly likely to achieve pCR with standard NAST are preferable because they reduce heterogeneity, enrich therapeutic trials with higher risk pts, and diminish exposure/toxicity from experimental drugs in pts who do not need them. We have previously demonstrated that ultrasound detection of substantial tumor volumetric reduction of ≥70% after 4 cycles of AC (SVR-AC) was a predictor of pCR/RCB-I to AC/taxane NAST (Adrada, SABCS 2018). The goal of this analysis was to identify clinical features that impact the pCR rate under the influence of SVR-AC.
Methods: 141 pts who had data prospectively collected while receiving AC-taxane in the ARTEMIS trial (NCT02276443) were evaluated. SVR-AC was assessed after 4 cycles of AC prior to initiation of neoadjuvant taxane. Overall pCR in pts with and without SVR-AC were 61% and 3%, respectively. Recursive portioning and logistic regression were used to analyze data cut-points and generate a predictive model of pCR in pts with SVR-AC.
Results: In pts with SVR-AC, our model identified cut-points of age >60 years [OR = 3.4 (95% CI: 1.0–11.7; p = 0.052] and TIL >35% [OR = 11.0 (95% CI: 1.3–90; p = 0.028] as the most prognostic of 13 pre-treatment clinical variables tested. Logistic regression predictions of pCR based upon TIL and age are listed in Tables 1 and 2 for pts with and without SVR-AC.

Table 1.
Pts with SVR-AC (n = 89).

Age (years)	%TIL	pCR (%)	N
</ = 60	</ = 35	29 (49)	59
</ = 60	>35	10 (91)	11
>60	</ = 35	13 (77)	17
>60	>35	2 (97)	2

Table 2.
Pts without SVR-AC (n = 52).

Age	%TIL	pCR (%)	N
</ = 60	</ = 35	1 (3)	31
</ = 60	>35	0 (0)	1
>60	</ = 35	1 (5)	20
>60	>35	–	0

Conclusions: In pts with SVR-AC, TIL>35% was associated with high rates of pCR (91–97%) regardless of age. Younger pts with TIL ≤35% were predicted to have lower rates of pCR (49%) despite having SVR-AC. Very few pts without SVR-AC achieved pCR or had TIL>35. Our model identified a group of patients highly likely to respond to standard NAST, but requires validation in an independent data set.
Conflict of Interest: No significant relationships.

P249

Ten-year clinical outcomes in >1000 node-negative (N0) Estrogen Receptor (ER)+ breast cancer (BC) patients (Pts) where treatment decisions incorporated the Recurrence Score Results: a registry analysis using TAILORx categorization

S.M. Stemmer[1,2*], M. Leviov[3], M. Tokar[4,5], N. Ben-Baruch[6], B. Uziely[7], G. Fried[8], O. Rosengarten[9], A. Itay[10], B. Nisenbaum[11], S. Shak[12].
[1]Davidoff Center, Rabin Medical Center, Petah Tikva, Israel, [2]Sackler Faculty of Medicine, Tel Aviv University, Tel Aviv, Israel, [3]Lin Medical Center, Haifa, Israel, [4]Soroka University Medical Center, Beer Sheva, Israel, [5]Ben-Gurion University of the Negev, Beer Sheva, Israel, [6]Kaplan Medical Center, Rehovot, Israel, [7]Hadassah-Hebrew University Medical Center, Jerusalem, Israel, [8]Rambam Health Care Campus, Haifa, Israel, [9]Shaare Zedek Medical Center, Jerusalem, Israel, [10]Sheba Medical Center at Tel HaShomer, Ramat Gan, Israel, [11]Meir Medical Center, Kfar Saba, Israel, [12]Genomic Health Inc., Redwood City, United States

Goals: To investigate 10-yr clinical outcomes in N0 ER+ BC pts where the Oncotype DX Breast Recurrence Score® (RS) results guided adjuvant treatment decisions in real-life clinical practice.
Methods: This exploratory analysis of the prospectively-designed Clalit Health Services (CHS) registry included all CHS pts with N0 ER+ HER2-negative BC who were RS-tested in Israel between 1/2006 and 12/2009. Ten-year Kaplan-Meier (KM) estimates for distant recurrence and BC specific mortality (BCSM) rates are reported.
Results: The analysis included 1365 pts (median follow-up: 9.0 yrs); 99.3% females; median age, 60 yrs; 50.3% grade 2 tumors, 77.1% tumors ≥2 cm. Distribution of RS results: RS 0–10, 17.8%; RS 11–25, 62.5%; and RS 26–100, 19.7%. Corresponding CT use: 0%, 9.4%, and 69.9%. Ten-year distant recurrence rates in RS 0–10, 11–25, and 26–100 pts: 2.6% (95% CI, 1.1–6.2%), 6.1% (95% CI, 4.4–8.6%), and 13.1% (95% CI, 9.4–18.3%), respectively ($P < 0.001$). The corresponding BCSM rates: 0.7% (95% CI, 0.1–5.1%), 2.2% (95% CI, 1.3–3.7%), and 9.5% (95% CI, 6.0–14.9%) ($P < 0.001$). Subdividing the RS 11–25 group, revealed 10-years distant recurrence rates of 4.0% (95% CI, 2.0–7.7%), 5.8% (95% CI, 3.2–10.3%), and 8.9% (95% CI, 5.4–14.5%) in the RS 11–15, 16–20, and 21–25 subgroups, respectively (corresponding CT use in these 3 subgroups, 1.8%, 7.0%, and 21.6%). When the analysis included pts treated with endocrine therapy alone (95.5%/87.5% of pts with RS 0–10/11–25), 10-year distant recurrence and BCSM rates for RS 0–10 pts were 2.7% (95% CI, 1.1–6.5%) and 0.8% (95% CI, 0.1–5.3%), respectively, and for pts with RS 11–25, 5.7% (95% CI, 3.9–8.3%) and 2.0% (95% CI, 1.1–3.7%), respectively. No statistically significant differences were observed in 10-year distant recurrence/BCSM rates in CT-treated vs untreated pts in the RS 11–25 subgroup; however, this should be interpreted cautiously since the number of events was low and pts were not randomized. Notably, of 243 pts with RS< 11, none received CT. Of the 853 pts with RS 11–25, 9/273, 13/344, and 16/236 distant recurrence events were observed in the RS 11–15, RS 16–20, and RS 21–25 groups respectively.
Conclusions: In N0 ER+ HER2-negative BC pts, where decision to use CT is closely aligned with RS result, pts with RS≤25 (~80% of patients) had excellent outcomes at 10 years, with CT use in < 10% of pts. Pts with RS 26–100 had high rate of distant recurrence despite CT use and are candidates for new treatment approaches.
Conflict of Interest: Study was supported by grant 1132 from Teva (awarded to SM Stemmer via Mor Research Applications Ltd). Genomic Health supported writing of the abstract. SM Stemmer received grant/research funding from Teva and travel expenses from Genomic Health. N Ben-Baruch received honoraria from Teva, and served on the speakers bureau of Genomic Health. S Shak is employed by and has intellectual property interest in Genomic Health. The remaining authors declare no competing financial interests.

P250

Long-term outcome of patients with luminal A breast cancer surrogate subtype according to chromosomal instability measured by securin expression

N. Dedic Plavetic[1,2*], M. Lovric[2], M. Majzec[2], A. Kulic[1], M. Sirotkovic-Skerlev[2], D. Vrbanec[3], P. Podolski[1], T. Silovski[4], J. Jakic-Razumovic[2]. *[1]Department of Oncology, University Hospital Center Zagreb, Zagreb, Croatia, [2]University of Zagreb, School of Medicine, Zagreb, Croatia, [3]Juraj Dobrila University of Pula, Zagreb, Croatia, [4]University Hospital Center Zagreb, Zagreb, Croatia*

Goals: Breast cancer is a heterogeneous disease and different molecular subgroups have a different therapeutic approach, prognosis, and response to therapy. Securin is known to participate in maintaining chromosomal integrity during the cell cycle through regulation of metaphase-anaphase transition, DNA damage repair, and apoptosis. The aim of this study was to evaluate the prognostic role of securin expression as a measure of chromosomal instability in luminal A surrogate subtype of breast cancer in order to separate those patients with worse prognosis despite luminal A characteristics.
Methods: Breast cancer paraffin-embedded tissue specimens of 107 breast cancer patients with luminal A surrogate subtype were obtained from a consecutive series of 215 patients with primary operable invasive breast carcinomas referred to the University Hospital Center Zagreb, Croatia, between September 2002 and September 2003. Immunohistochemical (IHC) staining of securin was performed on 4-micrometar thick formalin-fixed and paraffin-embedded sections. Surrogate subtpes were defined according to St Gallen-s IHC criteria and estrogen receptor, progresteron receptor and Ki-67 expression. All patients are followed-up prospectively according to standard institutional practise for local and distant reccurence (DFS) and overall survival (OS).
Results: From 213 female patients with breast cancer, 107 had surrogate subtype 1 (luminal A) breast cancer. Median value of securin in surrogate subtype 1 group was 6. We found statistically significant difference in overall and disesase free survival between patients who had breast cancer with securin higher than 6 in comparation to the patients who had breast cancer with securin lower or equal to 6. Kaplan-Meier analysis showed that patients with securin higher than 6 had shorther overall suvival time (p = 0.0429, Figure 1) and that patients with securin higher than 6 had shorter disease free survival time (p = 0.0029, Figure 2).

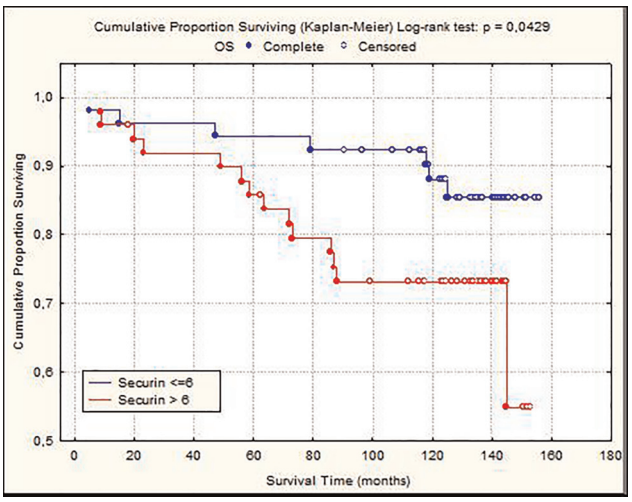

Figure 1:

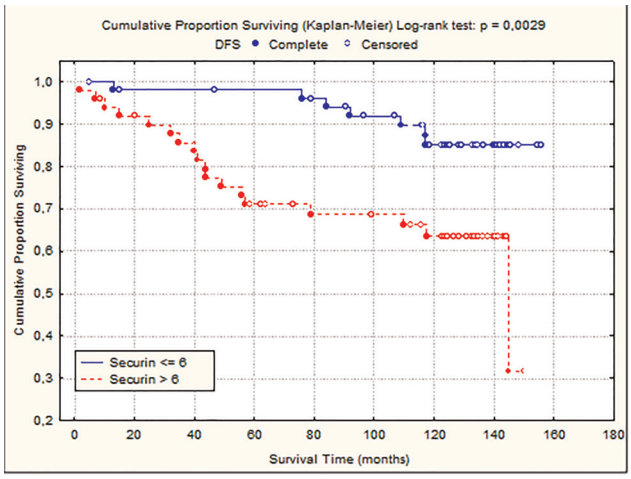

Figure 2:

Conclusions: Despite generally favorable prognosis for patients with luminal A surrogate subtype tumours defined immunohistochemically, patients with securin expression above the median had worse prognosis with statistically significant shorter overall and disease-free survival.
Conflict of Interest: No significant relationships.

P251
Utility of 18F FDG-PET/CT for systemic staging assessment of newly diagnosed breast cancer

W. Xing[1]*, Q. Li[2], Y. Sun[3], B. Chen[3], F. Tian[3]. *[1]Breast Surgery, China Japan Union Hospital of Jilin University, Changchun, China, [2]Hand Surgery, China Japan Union Hospital of Jilin University, Changchun, China, [3]China Japan Union Hospital of Jilin University, Changchun, China*

Goals: In this study we focused the utility of 18F-FDG-PET/CT for systemic staging of newly diagnosed breast cancer with different molecular subtypes.
Methods: In this retrospective study, we screened for 268 patients who had newly diagnosed with breast cancer by needle biopsy and underwent 18F-FDG PET/CT examine between May 2015 and April 2018 in China-Japan Union Hospital of Jilin University. Initial stage was determined from mammography, ultrasound, magnetic resonance imaging, and/or surgery, if performed prior to 18F-FDG-PET/CT. 18F-FDG-PET/CT was evaluated to identify unsuspected extra-axillary regional nodal and distant metastases, as well as unsuspected synchronous malignancies. Immunohistologicalchemistry staining was routinely examined by using paraffin specimens of the breast cancer tissue post-operation.
Results: A total of 268 patients with newly diagnosed breast cancer met inclusion criteria. According to molecular subtype classification, among all cases 58 were luminal A subtype, 113 were luminal B subtype, 57 were HER2 overexpression subtype and 40 were triple negative breast cancer. In luminal A group the concordance rate between initial clinical stage and post 18F-FDG-PET/CT stage was 81.0% (47/58), the concordance rate in luminal group was 73.6% (98/113), the concordance rate in HER2 overexpression was 68.4% (39/57) and the concordance rate in triple negative group was 57.5% (23/40). 25 cases which showed negative lymphnode by initial clinical charactersitcs were comfirmed with positive lymphnode by using 18F-FDG-PET/CT (luminal A:4, luminal B:3 HER2 overexpression:12, TN:6). 22 case which showed positive lymphnode by initial clinical charactersitcs were comfirmed with negative lymphnode by using PET-CT (luminal A: 7, luminal B: 10 HER2 overexpression: 2, TN: 3). 18F-FDG-PET/CT revealed unsuspected distant metastases in 14 (5.2%): 0/58 luminal A, 2/113 (1.8%) luminal B, 4/57 (7.0%) HER2 overexpression, 8/40 (20%) TNBC.
Conclusions: Our study provides the evidence that the concordance rate between initial clinical stage and post 18F-FDG-PET/CT stage in luminal subtypes were significantly higher than that in both HER2 overexpression group and TNBC group, which provides the implication that 18F-FDG-PET/CT test, could be of more value in predicating staging in breast cancer with a worse classification of molecular subtype.
Wanying Xing and Qiang Li contributed equally to this work.
Conflict of Interest: No significant relationships.

P252
Experience with Endopredict® implementation at La Paz Universitiy Hospital (2015–2018)

L. Frías[1]*, A. Peláez-Garcia[2,3], A. Berjón[1], L. Yébenes[1], P. Zamora[1], M. Sousa-Faro[1], C. Martí[1], M. Mendiola[3], J.I. Sanchez-Mendez[1,3], D. Hardisson[1,3,4]. *[1]Hospital Universitario La Paz, Madrid, Spain, [2]Hospital Universitario la Paz, Madrid, Spain, [3]IdiPaz, Madrid, Spain, [4]Universidad Autónoma de Madrid, Madrid, Spain*

Goals: A **retrospective** evaluation of the impact of the Endopredict test in the classification of the risk of distant metastasis in patients with breast cancer diagnosed in our center, as well as the study of its correlation with the clinical and pathological tumoral features.
Methods: We analyzed the EndoPredict tests results carried out in the Pathology Department of our Center, between **September 2015 and June 2018.**
We used Pearson and Fisher exact tests to analyze the relationship between the variables.
Results: We studied **174 patients**.
The mean age was 55.3 years, [33–79].

- The most frequent histological subtype were NOS Ductal Invasive (80.4%), and Lobular invasive (11.5%) carcinoma.
- 21.5% had pT2 tumours, and 78.5% had pT1 tumours.
- Most tumours were histological grade 2 (61.5%).
- 55 patients (31.6%) had micrometastases.

The **EndoPredict test results** were available within 5 days in 82.8% of cases. The EP index classified 116 patients (66.7%) as high risk and 58 patients (33.3%) as low risk.
The high risk group for EPClin was associated ($p < 0.05$) with high proliferative index (Ki67 ≥ 20%). All patients with grade 3 tumors, except one, were classified as high risk with both the EP and the EPClin.
There was no significative correlation with tumor size or lymph node status.
Taking into account the clinical and pathological characteristics, 19% of high-risk tumors were reclassified at low risk. Overall, EP Clin classified 47.7% of patients as high risk, and 52.3% as low risk.
When introducing clinical-pathological information, 2 cases of micrometastasis, and 11 pT2 tumors, were reclassified as low risk cancers.
ALL grade 3 tumours, except one, and 33.3% of grade 1 tumors were classified (EP and EPclin) as high risk tumours.
Conclusions: The EndoPredict (EP) test is a quick and useful tool to make decisions in the treatment of breast cancer with positive hormone receptors, HER 2 negative, which can be implemented easily within the normal routine of a molecular pathology laboratory. In our population, Endopredict (EP) reclassifies as low risk a large group of patients, considered as high risk according to classical criteria, and that is significantly increased when clinical pathological factors are introduced (EPclin).
Conflict of Interest: No significant relationships.

P253

Endopredict® risk stratification in luminal breast cancer: analysis of changes in adjuvant therapy indication in an institution

J. Zafra[1], N. Rguez-Ibarria[1]*, B. Pinar[1], M. Pavcovich[2], M.A. Cabezón[1], L. Garcia[1], M. Lloret[1]. [1]*Hospital Universitario de Gran Canaria Dr. Negrin, Las Palmas de Gran Canaria, Spain,* [2]*Complejo Hospitalario Universitario Materno Insular, Las Palmas de Gran Canaria, Spain*

Goals: Adjuvant therapy has improved breast cancer (BC) OS rates. Luminal B tumors (ER +, HER2 neg, PR < 20% or Ki67 high levels) have a slightly worse prognosis than luminal A tumors, so adjuvant therapy may be advisable. Genomic profiling assays could categorize patients' risk more precisely. In our institution, since Dec-2016, EndoPredict® (a genomic test that combines a molecular signature with tumor size and nodal status resulting in the EPclin Risk Score) has been used to guide adjuvant chemotherapy (CT).
To verify the change in clinical practice since EPclin introduction, differences in CT indication have been analyzed in comparison with traditional biomarkers and Ki67 levels.
Methods: From Dec-16 to April-18,180 patients were recruited: females, infiltrating BC, T1–2 < 2.5 cm, N0-N1a, M0, ER+ and HER2 neg. According to our treatment protocol, every ER+, PR >20% and Ki67 ≤ 15% patient was considered as low risk (LR). EndoPredict test was used to classify them as LR or high risk (HR) to guide adjuvant CT.
Results: Patients' characteristics: 85% ductal, 85.6% T1, 68.9% N0, 59% G1, 86.7% no LVI, 24.4% PR neg, Ki67-15 (180 patients): 43.3% ≤15% and 56.7% >15%, EPclin score: 58.3% LR and 41.7% HR.
We assessed whether CT recommendation based on Ki67 ≤ 15% cut-off adding IHC and other risk factors resulted in undertreatment or overtreatment in comparison to EPClin. Undertreatment: From the 27 patients considered as LR with our protocol that would not have received CT previously, only two were EPclin HR. Overtreatment: From the 153 patients (85%) considered as HR with our protocol, only 73 (47.7%) were EPclin HR patients. EndoPredict® avoided CT in 37.3% of previous CT candidates.
Without Epclin, two patients would have been undertreated (0.55%) but 80 patients (52.3%) would have been overtreated.
Conclusions: EndoPredict® can reduce CT use in BC patients. IHC criteria leads to overtreating compared to EPclin. Two Epclin HR patients would have been undertreated using IHC criteria.
Conflict of Interest: No significant relationships.

Surgery/Sentinels/DCIS

P254

Endoscopy assisted total mastectomy with immediate breast reconstruction for early breast cancer: reporting a multicentric result of 416 patients from nine-year experience

E.C.-H. Chang[1]*, H.-W. Lai[2], C.-S. Hung[3], Y.-L. Kuo[1]. [1]*Surgery, National Cheng Kung University Hospital, Tainan, Taiwan, Republic of China,* [2]*Endoscopic and Oncoplastic Breast Surgery Center, Changhua Christian Hospital, Changhua, Taiwan, Republic of China,* [3]*Surgery, Taipei Medical University Hospital, Taipei, Taiwan, Republic of China*

Goals: Endoscopy assisted total mastectomy (EATM) has advantages of treating small-to-medium breast cancer, which includes inconspicuous scars hidden in axillary and/or periareolar area, and facilitates preservation of nipple, skin, and investing muscle flap, which can therefore eliminate the need for costly acellular dermal matrix (ADM) and robotic instruments, and attain great cosmesis. However, clinical data is lacking and we herein present the largest cohort in the literatures.
Methods: Female patients were included for early breast cancer without clinical skin or chest wall involvement. All the surgeries were done endoscopically in three hospitals located in southern, central, and northern Taiwan, respectively. Nipple was spared if no tumor invasion. Immediate breast reconstruction was accomplished either with silicone implant or tissue expander under total muscular coverage, or with de-epithelialized transverse rectus abdominis myocutaneous (TRAM) flap.
Results: During May, 2009 to December, 2017, a total number of 416 patients undergoing 436 EATM were included, with mean follow-up period of 50.1 ± 22.4 months. The average age is 48.5 ± 9.9 years old, and 23.1% were DCIS, 35.3% stage I, and 35.8% stage II. Mean tumor size is 2.3 ± 1.9 cm, and mean mastectomy weight is 328 ± 138 g. Nipple sparing mastectomy is performed in 81.8% of patients, and 71.8% received immediate breast reconstruction, among which 76.4% received implant reconstruction, while 18.5% received TRAM flap. Mean operation time and blood loss for implant reconstruction is 230 ± 104 minutes and 115 ± 104 ml, respectively. Nipple necrosis rate is 6.0% overall, positive margin rate is 2.1%, and the explantation rate is 0.7%. When comparing learning and mature phase, we observed a trend of decreased nipple necrosis rate from 7.0% in learning phase to 2.8% in mature phase, with significantly less operation time and blood loss. Recurrence occurred in 3.2%, distant metastasis occurred in 0.7%, and mortality rate is 0.2%.
Conclusions: EATM is an oncologically safe, cost-effective, and esthetically promising surgery for small-to-medium breasts. Significantly less operation time, blood loss, and complication rate can be achieved after learning phase.
Conflict of Interest: This study was funded by the Ministry of Science and Technology of Taiwan (no. 104-2314-B-371-006-MY3).

P255

What is the most appropriate surgical procedure for Paget's disease?

K. Nakai[1]*, Y. Horimoto[1], R. Semba[1], A. Arakawa[2], M. Saito[1]. [1]*Breast Oncology, Juntendo University, Tokyo, Japan,* [2]*Human Pathology, Juntendo University, Tokyo, Japan*

Goals: Pure Paget disease of the nipple (PD) is a non-invasive breast carcinoma. However, choosing the optimal surgical procedure is difficult due to tumour location and spread into the breast. We retrospectively investigated PD cases in our institution to clarify the details of this disease. We also considered optimal surgical procedures.
Methods: Among 4341 breast cancer cases in the last 11 years at our institution, we retrospectively investigated 17 PD cases with no mass lesion in the breast.
Results: Total mastectomy was performed in 15 patients. One patient initially requested central lumpectomy but the procedure was switched to mastectomy due to a positive surgical margin, demonstrated intraoperatively. On final pathological diagnosis, two patients had PD alone (12%). PD with ductal carcinoma in situ and invasive ductal carcinoma were observed in 10 (59%) and 5 (29%) patients, respectively. As to intrinsic subtype, luminal HER2-negative, HER2 type and triple negative tumours were observed in 6%, 76% and 18%, respectively, of patients. Disease spread into the breast was preoperatively suspected in 8 cases, based on micro-calcifications on MMG, and in 8 cases with segmental enhancement on MRI. Sensitivity and specificity of intra-breast disease detection were 62% and 100%, respectively, in 14 patients who had both MMG and MRI findings of PD.
Conclusions: Our data confirm that breast conserving surgery is difficult in patients with PD. Breast size might have to be taken into consideration when the surgical procedure is chosen for a PD patient, aiming for a balance between curability and cosmesis.
Conflict of Interest: No significant relationships.

P256

New localisation technique for early stages of breast cancer using magnetic seeds

A. Faridová[1]*, K. Rauš[2], R. Šírová[3]. *[1]Department of Mother and Child Care, Prague, Czech Republic, [2]Ob/Gyn, Department of Mother and Child Care, Prague, Czech Republic, [3]Mammacentrum Medicon, Prague, Czech Republic*

Goals: Many procedures have been used to guide for lesions when performing breast conserving surgery. Nonpalpable lesions need to be marked to enable optimal breast tissue resection. In the Czech Republic we use two traditional techniques: carbon nanoparticles and wire localization technique. The carbon nanoparticles are injected under ultrasound guidance. Wire placement needs to be performed on the day of surgery under ultrasound or stereotactic guidance. Wire localization has many potential disadvantages such as wire displacement, delayed time of surgery, patients discomfort. We had the opportunity in the Czech Republic for the first time ever to test the Magseed tracking technique (using the Sentimag probe).
Methods: We recruited 20 patients with early stage breast cancer. 20 patients were indicated to undergo breast conserving surgery. We placed 20 seeds into the biopsy verified tumors (1 per patient) under the ultrasound guidance. We used Sentimag probe to detect the localization of the seed within the breast. Patients enrolled presented Tis, T1b, T1c a T2 N0 Mx status and also underwent sentinel node dissection after previous applications of the Sienna+ non radioactive tracer. The sentinel nodes have also been localised using the Sentimag probe.
Results: The average interval from the seed placement to surgery was 8,8 days in a total of 19 patients. One patient underwent surgery in another hospital. The average age was 64 years. The average tumor size was 12 mm. The average time of tumor resection was 4:45 minutes. 95% of the Magnetic seeds have been recovered as confirmed by specimen mammography. We observed one clip loss as a result of the specimen manipulation. The final histology confirmed the tumor within the resected tissue with disease-free margins. 10% had positive margins. One of them had multifocal DCIS, and a mastectomy was performed subsequently, the second underwent re-excision.
Conclusions: Magseed is a feasible method of localizing nonpalpable breast lesions and is safe to insert. Using this method could improve radiological and surgical approach to women with early stages of breast cancer. The radiologists found Magseeds easy to deploy, similar to the insertion of standard tissue markers. The surgeons confirmed easy detection and navigation while performing surgery. Our pilot study has proven the feasibility and non inferiority of this method as compared to the standard techniques.
Conflict of Interest: No significant relationships.

P257

False negative rate of the highest radioactive count of sentinel lymph node in early stage breast cancer patients

P. Chirappapha, R. Panawattanakul, W. Vassanasiri, Y. Kongdan, P. Lertsithichai, T. Sukarayothin, M. Leesombatpaiboon, Y. Wasuthit, R. Suvikapakornkul, T. Chatmongkonwat*. *Surgery, Ramathibodi, Bangkok, Thailand*

Goals: The present study was conducted to find the false negative rate of the sentinel lymph node with various radiologic count in early breast cancer patients.
Methods: Women with early stage breast cancer and clinically node negative who had undergone sentinel lymph node biopsy in the breast and endocrine surgery unit of Ramathibodi Hospital between July 1, 2014 and January 31, 2015 were recruited. Radiologic count of each sentinel nodes was documented and the false negative rate of the sentinel node with the highest radiologic count was calculated. False negative rate is defined as the rate of nodal metastasis in lymph nodes other than the node with the highest radiologic count.
Results: One hundred thirty sentinel lymph node biopsies were performed. Of this, 39 women had sentinel lymph node metastasis. The false negative rate of the node with the highest radiologic count is 17.9%. The false negative rate was reduced to 7.7% if we included the second and third highest nodes.
Conclusions: Removal of only the sentinel node with the highest radiologic count has an unacceptably high false negative rate. This can be improved by removing the second and third highest nodes.
Conflict of Interest: No significant relationships.

P258

Loco-regional recurrence after nipple-sparing mastectomy in breast cancer patients

P. Chirappapha, P. Thaweepworadej, P. Lertsithichai, T. Sukarayothin, M. Leesombatpaiboon, S. Pongratanakul*, S. Pondeenana, T. Chatmongkonwat, S. Phosuwan, J. Teerapradith. *Mahidol University, Bangkok, Thailand*

Goals: Background: Although Breast Conserving Surgery (BCS) was the gold standard in early breast cancer patients, mastectomy still plays an important role in multicentricity and prophylaxis surgery.
The previous series reported locoregional recurrence (LRR) after nipple-sparing mastectomy (NSM) that is comparable to BCS.
Until now, there's still no standardized method for patient selection.
We conducted this study to show the oncologic safety and risk factors of LRR by NAC-sparing mastectomy in our institute.
Methods: We prospectively analyzed 63 NSM that was performed on 65 patients for both therapeutic and prophylactic indications from Jan 2007 to June 2017. Patients' demographics, operative details, oncologic outcome, and post-operative complications were collected. Factors associated with LRR were also analyzed.
Results: The mean age of patients was 43 years (30–61 years).
The indications for surgery were 58 (89.2%) therapeutic and 7 Manuscript-Abstract (10.8%) were prophylactic risk reduction. Forty from fifty-one patients (78.4%) underwent operation for invasive breast cancer treatment, and the rest of them were carcinoma in situ. Necrosis was the most common complication (18.8%), but most of them were successfully managed conservatively. After 40.4 months of mean follow up period (8–128 months), no mortality was observed in our study. Three patients (5.9%) developed locoregional recurrence. Three-year disease-free survival was 89.7%. Only one of them had Paget's disease of nipple after surgery and required NAC excision. Most of them were recurrent in regional lymph node. In subgroup analysis, only triple-negative subtype showed an association with locoregional recurrence (28.6% vs 2.3% in another subtype; $p = 0.048$).
Conclusions: NSM has oncologic safety and is technically feasible in selected patients. Low rate of locoregional recurrence was observed. Necrosis was the most common complication.
Triple negative breast cancer subtype was associated with LRR.
Long term outcome should be followed up closely.
Conflict of Interest: No significant relationships.

P259

Abdominal bulging and hernia following pedicle transverse rectus abdominis muscle musculocutaneous flap reconstruction in breast cancer patient: Ramathibodís Hospital experience

Y. Kongdan[1], P. Chirappapha[1], P. Kensakoo[1]*, R. Sukpanich[1], P. Wibulpolprasert[2], T. Sukarayothin[1], M. Leesombatpaiboon[1], K. Kantornvichaiwat[1], C. Lawonggerd[1], P. Luadthai[1]. *[1]Surgery, Ramathibodi Hospital, Mahidol University, Bangkok, Thailand, [2]Radiology, Ramathibodi Hospital, Mahidol University, Bangkok, Thailand*

Goals: To identify incidence and risk factors of abdominal contour abnormalities after pedicled TRAM flap reconstruction.
Methods: We retrospectively reviewed the charts and operative notes of patients who underwent pedicled TRAM reconstruction

between January 2008 to December 2014. The abdominal deformities were recorded and the risk factors we believed to be the cause of complication were identified and analyzed. The difference between the two techniques of TRAM flap reconstruction being used at that time was also analyzed.
Results: 126 patients underwent pedicled TRAM flap reconstruction. We found that 23% of our patients had abdominal complications which were higher than previous published literatures. The most common complication was abdominal bulging (21%). However, we found that age was the risk factor associate with the abdominal contour deformities.
Conclusions: Although acceptable, the number of patients with abdominal wall bulging in the present study is still high compared to previous studies. Only age (>40 years old) was a significant risk factor found in the present study. A further refinement of the operating techniques are warranted to minimize the complications from this procedure.
Conflict of Interest: No significant relationships.

P260
Why do patients with oncoplastic breast conserving surgery not undergo contralateral symmetrisation? Results from a descriptive survey

G.H. Lim*, R.P. Ng. *KK Women's and Children's Hospital, Singapore, Singapore*

Goals: Oncoplastic breast conserving surgery (OBCS) can cause breast asymmetry and contralateral breast operation was offered to achieve symmetry. The uptake of symmetrisation was however variable. We aim to determine the factors which deter OBCS breast cancer patients from symmetrisation.
Methods: All breast cancer patients who had OBCS of displacement type and no symmetrisation were included. These patients were prospectively enrolled in a survey which explored social, economic, psychological and physical reasons against symmetrisation.
Results: 28 patients (100%) participated at an average of 25.2 months (range: 2–47) post operation. A combination of factors such as worry and the desire to treat breast cancer first (67.9%), not being overly concerned about breasts' cosmesis (57.1%) and fear of pain from additional operation (28.6%) deterred patients from immediate symmetrisation. Worry and the desire to treat breast cancer first was the most important single factor in 50% of patients.
The reasons for no delayed symmetrisation included not being overly concerned about breasts' cosmesis (70.4%), fear of cancer recurrence (FCR) (48.1%) and being happy with current breast cosmesis (33.3%), with the former 2 reasons equally cited in 30% of patients respectively as the single most important deterrent.
Conclusions: Though a combination of factors may deter patients from symmetrisation, worry and the desire to treat breast cancer first alone and not being overly concerned about breasts' cosmesis and FCR were the most significant factors deterring OBCS patients from immediate and delayed symmetrisation respectively. Reassurance of these patients may increase symmetrisation, hence improving patients' cosmesis and satisfaction.
Conflict of Interest: No significant relationships.

P261
Robot-assisted nipple-sparing mastectomy with immediate breast reconstruction: an initial experience

H.S. Park[1]*, J. Lee[1], H. Lee[1], K.B. Lee[1], K. Yoon[1], D.W. Lee[2], S.Y. Song[2], J.Y. Kim[1], S.I. Kim[1], Y.U. Cho[1]. *[1]Surgery, Yonsei University, Seoul, Korea, Republic of, [2]Plastic and Reconstruction Surgery, Yonsei University, Seoul, Korea, Republic of*

Goals: Despite its cosmetic efficacy, restricted maneuverability and inadequate operative field visualization are limitations of endoscopic breast surgery. A robotic system with 3-dimensional optics and intuitive robotic arm motion overcomes these limitations and is useful for breast cancer surgery. We investigated the outcome of robot-assisted nipple-sparing mastectomy (RANSM) with immediate breast reconstruction (IBR) with and without gas insufflation and analyzed the RANSM learning curve.
Methods: RANSM with IBR was safely performed in 3 cadavers between December 2013 and November 2014 after which 12 RANSM with IBR were performed in 10 women between November 2016 and April 2018. Exclusion criteria were tumors measuring >5 cm in diameter, skin or nipple-areolar complex tumor invasion, evidence of metastatic lymph nodes, or planned radiotherapy. All enrolled patients underwent physical examination, mammogram, breast ultrasonography and magnetic resonance imaging. Chest or abdominopelvic computed tomography, abdominal ultrasonography, or whole body bone scan were performed to assess metastasis. We recorded age, body mass index, breast weight, diagnosis, tumor size and grade, number of metastatic lymph nodes, hormone receptor status, type of adjuvant therapy, and operation time. Postoperative complications and final margin status of resected specimens were evaluated to assess postoperative outcomes.
Results: The median length of hospitalization was 11 days (9–13 days). The median operation time was 351 min (267–480 min). The median console time was 51 min (18–143 min). The cumulative sum graph of the console time decreased until the eighth case and then stabilized. Conversion to open surgery or mortality was not reported. Major postoperative complications including hematoma, infection, and total nipple or skin necrosis did not occur. Self-limited partial nipple ischemia occurred in 1 and partial skin ischemia in 2 patients.
Conclusions: RANSM with IBR is safe and feasible for early breast cancer and benign conditions. Although robotic technology is a recent introduction, the procedure showed a rapid learning curve. Prospective randomized trials are warranted to evaluate the stability and cosmetic efficacy of the surgery.
Conflict of Interest: No significant relationships.

P262
Sentinel lymph node mapping in breast cancer after neoadjuvant chemotherapy: a single institution experience

W. Salamoun[1]*, D. Abi Gerges[2], S. Khairallah[3], A. Yatim[4], J. El Khouri El Bourgi[5]. *[1]Surgical Oncology, Middle East Institute of Health, Bsalim, Lebanon, [2]Medical Oncology, Middle East Institute of Health, Bsalim, Lebanon, [3]Pathology, Middle East Institute of Health, Bsalim, Lebanon, [4]Nuclear Medicine, Middle East Institute of Health, Bsalim, Lebanon, [5]Plastic Surgery, Middle East Institute of Health, Bsalim, Lebanon*

Goals: Neoadjuvant chemotherapy (NCT) is the standard of care for patients with locally advanced breast cancer (LABC). Sentinel lymph node mapping (SLNM) is currently the most accurate staging procedure for the axilla. The aim of our study is to assess the accuracy of sentinel lymph node biopsy after neoadjuvant chemotherapy both for operable and locally advanced breast cancer.
Methods: Between August 2004 and December 2017, we performed 132 SLNM after NCT. Patients received all chemotherapy cycles before surgery. The procedures were performed by a single surgeon, using dual technique (radioactive tracer and blue dye).
Results: All patients were diagnosed by core needle biopsy and had clip placement before NCT. Patients' age: 23–71 years. Histology of the primary breast cancer: infiltrating ductal carcinoma (IDC): 89; Infiltrating lobular carcinoma (ILC): 27; IDC and ILC: 7; others (papillary, colloid, tubular): 9. Molecular subtypes: luminal A & B: 40: HER-2 overexpression: 36; triple negative breast cancer (TNBC): 56. Patients were divided into 3 groups according to axillary status. Group 1: histologically positive axillary nodes by fine needle aspiration (FNA): 35; group 2: clinically palpable and/or radiologically suspicious nodes: 49; group 3: unknown axillary status and NCT given for the primary breast cancer: 48. No patient progressed on chemotherapy. Identification rate: 97%. SLN negative: 72 (no axillary dissection). SLN positive: 55 (all patients, except one, had completion

lymph node dissection); SLN not found: 5 (completion axillary dissection). Group 1: SLN negative: 14; SLN positive: 19; SLN not found: 2. Group 2: SLN negative: 30; SLN positive: 17; SLN not found: 2. Group 3: SLN negative: 28; SLN positive: 19; SLN not found: 1. SLN positive patients: 55 (axillary lymph node dissection: 54). No evidence of disease: 26. SLN not found: 5 (axillary dissection: 5; no evidence of disease: 3).
Patients with SLN positive: macrometastasis: 42; micrometastasis: 12. In patients with SLN negative, 59 had no residual disease in the breast (luminal A + B: 4; HER-2 positive: 22; TNBC: 33).
The number of SLNs removed: 16 patients: 1 SLN; 18 patients: 2; 85 patients: 3; 8 patients: 4; 5 patients: SLN not found.
Follow-up: 5–177 month: no axillary recurrence as only site of disease.
Conclusions: Sentinel lymph node mapping is an accurate procedure after NCT. It provides an accurate staging and local control of the axilla, while preventing complications of axillary node dissection.
Conflict of Interest: No significant relationships.

P263
The symptoms in women undergoing breast conserving surgery and self care ability at home

G. Cankaya[1]*, R. Saglam[2]. *[1]Surgery, Nhs Marmara University Training Hospital, Istanbul, Turkey, [2]Nursing Faculty, Maltepe University, Istanbul, Turkey*

Goals: This research was conducted to determine the symptoms and self care power of women undergoing breast conserving surgery.
Methods: The universe of the study was composed of women who had breast conserving surgery in January – September 2018 at a public hospital in Istanbul. The sample of the study consisted of 65 women who agreed to participate in the study and met the inclusion criteria. Data assessed by SPSS for Windows. variance analysis, dunnet c test and spearman correlation tests are used.
Results: As a result of our study, it was determined that the women participated in the study gave the highest score for fatigue and weakness, pain and insomnia symptoms after breast conserving surgery. Women have the medium level of self-care power in the first interview and in the second interview. As the education and income level of the women increased, the self-care score increased too. It was determined that women who had a spouse and children and who had no chronic disease had a higher self-care score.
Conclusions: Postoperative symptom management has an important role for enhancing recovery specially for fatigue, pain, insomnia. Patients who are with low income, low education and high BMI should be assessed by nurse for self care power and directed for education programme.
Conflict of Interest: No significant relationships.

P264
Surgical treatment of young patients with breast cancer and our Institute experience in 2017

Z. Inic*. *Surgery, Institute for Oncology and Radiology in Serbia, Belgrade, Serbia*

Goals: Breast cancer in young women (≤40 years) has a 0.40–0.45% cumulative risk by 40 years of age, representing less than 7% of all women diagnosed with breast cancer in developed countries. Breast cancer in young women has greater morbidity than in older women and a greater case-fatality rate with increased risk of both local and systemic disease recurrence and death. Young women are diagnosed with more advanced disease, have a greater proportion of triple negative and HER2/neu positive disease and have less favourable outcome than older women. The consequences of treatments including premature menopause and impaired fertility have far reaching impact for these women both medically and psycho-socially, thus, specific multimodality care is paramount.
About 5–10% of breast cancer is associated with mutations in BRCA1 and 2 genes. The subsequent predisposition is much more common in young women and can affect decisions on managing local and systemic diseases. Gene testing is advised as a routine for very young women(<35 years). At the time of diagnosis and the presence of a high risk of hidden mutation, genetically counseling and testing can have a significant impact on the decision on the type of surgical procedure if the test result is known before the first intervention. So, the patient is at risk we can decide on a surgical method that leads to a reduction in breast cancer risk (bilateral mastectomy, bilateral salpingo-oophorectomy with the possibility cryopreservation of ovarian cells).
Optimal loco-regional treatment after neoadjuvant chemotherapy is still controversial, and decisions should be made regardless of age. Patients that are carriers of germline BRCA mutations are sensitive to platinum, PARP i and probably to PD/PD-L1 inhibitors.
The status of hereditary mutations should be an integral part of the individual decision-making algorithm when selecting a surgical procedure on the breast.
Methods: In 2017, a total of 73 young women with DCIS or invasive breast cancer had surgery at Institute, with the largest percentage of luminal subtypes of breast cancer.
Results: At 50.68% had BCS, in 34.25% subcutaneous mastectomy with primary reconstruction and 15.07% modified Madden mastectomy.
Conclusions: Despite a number of new prospective studies focusing on young women, further research and studies are needed in order to understand the unique biology of young women with breast cancer and improve outcomes in this population, indicating the necessary future guides with our young patients.
Conflict of Interest: No significant relationships.

P265
The usefulness and feasibility of lateral intercostal artery perforator flap reconstruction in breast conserving surgery as an optimal choice for immediate partial breast reconstruction

I. Sallam[1]*, G. Amira[2], A. Sherif[3], S.J. Wrmzyar[4], M. Sherif[3]. *[1]Surgical Oncology, Breast Unit, NCI Cairo University/ MISR Cancer Center, Giza, Egypt, [2]Surgical Oncology, NCI Cairo University/ MISR Cancer Center, Giza, Egypt, [3]Plastic and Reconstructive Surgery, MISR International Hospital, Al Jizah, Egypt, [4]Breast Unit, Erbil University Hospitals, Erbil, Iraq*

Goals: Breast-conserving therapy (conservative surgery combined with radiotherapy) is the treatment of choice for early stage breast cancer. The wider range of use of pedicled perforator flaps has gained popularity for its feasibility and effectiveness in the reconstruction of partial breast defects, lower complication rates, cost and simplicity in Egyptian women with medium sized and large breasts. Herein, we present our experience with the use of the lateral intercostal artery perforator flaps for most cases.
Methods: This study included 32 patients at our hospital from June 2012 to August 2016. With T1, T2 tumors who underwent BCS and intraoperayive histopathological examination of the lesion and axillary nodes (to study the safety margin and sentinel nodal status). With median age of 43 years. Immediate breast reconstruction was done for all indicated cases using the described pedicled flap of the lateral intercostal artery perforators. Operative time was from 110 to 165 minutes. Data collected from patient medical records (specimen weight, histology of tumor, lymph node status, postoperative follow up periods), and esthetic look, patient satisfaction surveys, which reviewed and evaluated one and two years postoperatively.
Results: Lateral intercostal artery perforator flap-based reconstructions performed in all patients, six patients developed complications (wound dehiscence, edge necrosis and seroma) that required additional intervention and needed a longer wound follow up(14 days on average) with a slight delay in adjuvant treatment. Overall, esthetic look and patient satisfaction reported to be excellent in 21

patients (64%) and good in 5 patients (20%). with a better short and long term outcomes regarding arm movement and motor functions of their arm and shoulder with no morbidity or disability reported issues.

Conclusions: Lateral intercostal artery perforator flaps can be safely used and widely applied on a broad scale with very low cost, less complications and no morbidity for all patients even with large and pendulous breasts, these flaps requires a thorough knowledge of the anatomy of the artery perforators and expertise in perforator flap surgery (flap harvesting and perforator preservation) with no extra cost even in the limited resources settings in the developing countries.

Conflict of Interest: No significant relationships.

P266

Comparison of oncological outcomes in breast-conserving surgery with immediate latissimus dorsi flap reconstruction versus breast-conserving surgery alone

Y. Hashimoto[1]*, M. Ishitobi[1], J. Okuno[1,2], H. Tashima[3], T. Kurita[3], R. Tokui[1], C. Ota[1], N. Kittaka[1], T. Nakayama[1], Y. Tamaki[1]. *[1]Department of Breast and Endocrine Surgery, Osaka International Cancer Institute, Osaka, Japan, [2]Department of Breast and Endocrine Surgery, Osaka University, Osaka, Japan, [3]Department of Plastic and Reconstructive Surgery, Osaka International Cancer Institute, Osaka, Japan*

Goals: The latissimus dorsi flap is used for immediate breast reconstruction following breast-conserving surgery. The cosmetic outcome is very good, but the oncological outcome and the long-term safety are not clear. In our previous study, the rate of positive margin has decreased in immediate reconstruction cases. The aim of this study was to examine the oncological outcome of breast-conserving surgery with immediate latissimus dorsi flap reconstruction.

Methods: We examined 1333 primary breast cancer patients who undergoing breast-conserving surgery with or without immediate latissimus dorsi flap reconstruction at our hospital between April 2012 and November 2017.

Results: One hundred eighty three patients underwent immediate breast reconstruction following breast-conserving surgery (Bp+LD) and 1150 patients underwent breast-conserving surgery alone (Bp). Median follow up time is 34 months (4–73months). Patients who did breast-conserving surgery with immediate reconstruction are younger and have more advanced stage of breast cancer. The rates of positive margin were 6% in the Bp+LD group and 10% in the Bp group ($p = 0.1$). The 3-year IBTR-free survival rates were 97.5% in the Bp+LD group and 99.4% in the Bp group, respectively ($p = 0.06$).

Conclusions: In the Bp + LD group, the rate of advanced case was higher than the Bp group. However, the rate of positive surgical margin in the Bp + LD group was lower. And the local-control is not different between the 2 groups and clinically acceptable. Our results suggest that Bp + LD is superior compared with Bp regarding both cosmetic and oncological outcomes. Further research is needed.

Conflict of Interest: No significant relationships.

P267

Microdochectomy experience for patients with nipple discharge from a single institution

M. Mori*, M. Sawaki, M. Hattori, A. Yoshimura, N. Gondo, H. Kotani, Y. Adachi, A. Kataoka, K. Sugino, H. Iwata. *Breast Oncology, Aichi Cancer Center, Nagoya, Japan*

Goals: Microdochectomy is one of the surgical techniques for a breast with nipple discharge. It is performed for diagnosis and treatment in patients (pts) that have abnormal nipple discharge when a diagnosis cannot otherwise be confirmed. It may be performed for a small DCIS lesion, if the lesion is contained in only a single duct. The aim of this study is to evaluate the usefulness and limitations of microdochectomy.

Methods: We analyzed retrospectively the microdochectomy pts at our hospital from January 2000 until December 2017 using medical records.

Results: 42 pts underwent microdochectomy at our hospital. 26 pts (23 pts of ductal carcinoma in situ, 3 pts of invasive ductal carcinoma) were pathologically diagnosed as malignant after resection, and 16 pts (14 pts of intraductal papilloma, and 2 pts of other benign lesion) were diagnosed as benign. The median age at operation was 53 and 48.5 years old in malignant pts and benign pts, respectively. One male was contained in malignant pts. Preoperative diagnosis was made by mammography, ultrasonography, MRI, ductography, cytology, and / or biopsy. In 13 pts of benign suspicion, 3 pts (15.4%) were diagnosed as malignant in surgical specimens. On the other hand, in 29 pts of malignant suspicion, 5 pts (17.2%) were benign in surgical specimens. In 26 malignant pts, the surgical margin was positive in half of the pts. In malignant pts, 15 pts (57.7%) had irradiation, 3 pts (11.5%) had additional resection, and 4 pts (15.4%) received hormone therapy. But, no pts received chemotherapy. Median follow up for 23 malignant pts without additional resection was 72.6 months. In the 23 pts, 19 pts had no recurrence. Three pts recurred in the ipsilateral breast, 1 patient recurred in the liver. Two pts in benign pts had a malignant lesion in the ipsilateral breast after microdochectomy. One was 13 years after microdochectomy, and the other 3 years after microdochectomy.

Conclusions: The local recurrence rate was 13% for malignant cases without additional resection in this study, which is similar to the previous report in partial mastectomy cases.

Microdochectomy is one of the optional methods as a useful minimum surgery doubled as confirmed diagnostic method for cases with abnormal nipple discharge.

Conflict of Interest: No significant relationships.

P268

Intraoperative imaging with a portable large field of view (LFOV) gamma camera improves sentinel lymph node detection in patients with early stage breast cancer

A. Kozlov[1]*, A. Terando[2], N. Hall[1,3]. *[1]Department of Diagnostic Radiology, University of Pennsylvania, Philadelphia, United States, [2]Department of Surgery, University of Southern California, Los Angeles, United States, [3]Nuclear Medicine, Corporal Michael J Crescenz VA Medical Center, Philadelphia, United States*

Goals: This study assessed the value of LFOV gamma imaging in addition to the use of intraoperative gamma-probe guidance for identification and verification of resection of SLNs in patients undergoing surgery for early stage breast cancer.

Methods: Twenty-eight patients (mean age 57, range 36–85) with early stage breast cancer were evaluated with preoperative lymphoscintigraphy using ~15 Mbq (mean 15.8, range 15.2–16.2) Tc-99m sulfur colloid. Pre-incision imaging was performed prior to gamma-probe guided unilateral SLN biopsy (SLNB) in 27 cases and bilateral SLNB in 1 case. Post-resection gamma imaging of the operative nodal basin was performed before or after skin closure, depending upon surgeon preference. A single surgeon retrospectively reviewed pre- and post-resection images to determine whether having the information in real time in the operating room either did or would have changed intraoperative management.

Results: Mean camera sensitivity at the injection site was 155 cps/MBq (range 25–439 cps/MBq). Pre-resection imaging identified at least one SLN in 27 of 29 operative nodal basins (mean 1.8 nodes, range 0–4 nodes). In 13 cases, post-resection imaging demonstrated that additional sites of radioactivity remained in the operative nodal basin. In 2 of these cases, additional SLNs were subsequently removed as a result of the surgeon utilizing the post-resection imaging data in real time in the operating room.

Conclusions: Intraoperative imaging with a LFOV portable gamma camera is a feasible, non-invasive procedure without added radiation exposure that can assist the surgeon by confirming successful

resection of SLNs. The additional information provided by intraoperative LFOV gamma imaging over gamma-probe guidance alone can help the surgeon determine whether or not all sentinel nodes have been removed, thus improving the accuracy of the staging information provided by this procedure.
Conflict of Interest: No significant relationships.

P269
TURBO study: TUmoR and Breast vOlumetry by clinical and radiological methods: results of breast volumetry

M. Gowda[1]*, S. Deo[1], E. Dhamija[2], S. Thulkar[2], S. Dwivedi[3]. [1]*Surgical Oncology, All India Institute of Medical Sciences, New Delhi, India,* [2]*Radiodiagnosis, All India Institute of Medical Sciences, New Delhi, India,* [3]*Biostatistics, All India Institute of Medical Sciences, New Delhi, India*

Goals: Breast volume measurement is necessary to establish the indications for breast conservation surgery, predict tumor/breast volume ratio, to select the type of oncolplastic breast reconstruction and to evaluate the cosmetic results more objectively. The aim of our study was to find a reliable and cost effective method for breast volume measurement in Indian breast cancer patients.
Methods: It's a prospective study conducted in Department of Surgical Oncology, AIIMS, New Delhi from December 2016 to May 2018. All T1 to T3 tumors admitted to surgical oncology ward were included in the study. Breast volume was calculated clinically by Qiao et al formula, by USG using high frequency transducer of Siemens Acuson S2000 HELX(Erlangen, Germany, 14L5 transducer, 5–10 MHz) sonography machine, by mammography using FDA-approved Hologic's Quantra volumetric software system v 2.0 and by NCCT breast using manual marking of breast tissue. To validate the above mentioned techniques, water displacement was used as the gold standard. Stata 14.2 software was used to analyse the data. The results were compared statistically using Wilcoxon signed rank test.
Results: A total of 59 patients were included in the study. 27 had right sided breast cancer and 32 had Carcinoma on the left side. Volumetry done by clinical method, CT scan and mammography correlated with the water displacement (p value>0.05). Ultrasound volumetry showed wide variation in the breast volume measured (p value = 0.0002).

Table 1.

	Clinical (ml)	Ultrasound (ml)	Mammography (ml)	CT Scan (ml)	Water displacement (ml)
Mean	724.83	173	813.66	721.93	772.22 ml
Median	761	162	766	766	845
Standard deviation	441.32	65.77	444.42	444.42	210
Minimum	195	80	190	134	210
Maximum	1426	387	1590	1376	1300

The mean of variation among clinical, mammography and CT scan in comparison to water displacement was 148.05 ml, 74.77 ml and 180 ml respectively.
Conclusions: Clinical and mammographic volumetry are reliable and cost effective methods for breast volume calculation. Since mean of variation is less with mammography, it should be the ideal method for breast volumetry.
Conflict of Interest: No significant relationships.

P270
Surgical management of multifocal/multicentric and locally advanced breast cancer with extreme oncoplasty

C. Koppiker[1]*, A.U. Noor[1], S. Dixit[1], L. Busheri[1], G. Sharan[2], U. Dhar[1], H.K. Allampati[3], S. Nare[1]. [1]*Prashanti Cancer Care Mission, Pune, India,* [2]*Inlaks and Budhrani Hospital, Pune, India,* [3]*Ruby Hall Clinic, Pune, India*

Goals: In patients with early breast cancer (BC), breast conserving surgery (BCS) followed by radiation therapy (RT) has become the preferred alternative to mastectomy. The oncoplastic breast conserving surgery (OBCS) allows large resections of the breast in BCS patients without compromising aesthetic outcome. Extreme Oncoplasty (EO) is a recent breast oncoplasty technique which extends the indications of BCS for patients who would otherwise require mastectomy, thereby, ensuring better aesthetic outcomes and oncological safety.
Methods: In our breast unit, BC patients with multifocal/multicentric (MF/MC) tumors, extensive DCIS or large tumors >50 mm underwent EO. In majority of cases, a dual pedicle therapeutic reduction mammaplasty (TRM) technique followed by adjuvant RT and optional boost to the tumor bed was used for oncoplastic reconstructions. Post-surgery outcomes were evaluated by onco-clinicians. Patient reported outcome measures (PROMs) were assessed using the validated Breast-Q questionnaire.
Results: 39 BC patients were eligible. 36 had unilateral and 3 had bilateral BC. The mean age was 47.2 years. The median tumor size was 75 mm. 17 (43.6%) patients received NACT but no complete clinical response was achieved. The adjuvant chemotherapy was administered in 28 (71.8%) patients. 33(84.6%) patients received RT to the breast with a median dose of 50Gy in 28 fractions and a boost dose of 10Gy in 5 fractions to the tumor bed. There were no major complications or local recurrences. After 12 months of follow-up, excellent Breast-Q scores were observed in patients undergoing EO.
Conclusions: In selected patients, EO followed by RT could provide a safe alternative to mastectomy. EO results in high patient satisfaction, low complication rates and acceptable local-regional control alongside improving the aesthetic outcome of the reconstructed breast.
Conflict of Interest: No significant relationships.

P271
Sentinel lymph node biopsy in breast cancer post-neoadjuvant treatment in single center

S. Fontana[1,2]*, J. Biasuz[2], A.R. Vento[3], M. Intra[3], P. Naninato[3], P. Caldarella[3], M.A. Colleoni[4], G. Viale[5], C.M. Grana[6], V. Galimberti[3]. [1]*IEO Milan, Milan, Italy,* [2]*Gynecology/Mastology, Universidade Federal do Rio Grande do Sul, Porto Alegre, Brazil,* [3]*Senology, IEO Milan, Milan, Italy,* [4]*Division of Medical Senology, IEO Milan, Milan, Italy,* [5]*Department of Pathology, IEO Milan, Milan, Italy,* [6]*Division of Nuclear Medicine, IEO Milan, Milan, Italy*

Goals: It is controversial whether sentinel node biopsy (SNB) without axillary dissection (AD) should be performed in patients with breast cancer and clinical axillary involvement degrees 1 and 2 prior to neoadjuvant treatment (NAT) (cN1/2) which evolve to clinically negative axilla (cN0) after NAT, since the false negative rate (FNR) may be elevated. The purpose of this study is to verify the feasibility of the BLS, as well as to evaluate the results related to overall survival, disease free survival at distance and mainly axillary recurrence. According to preliminary study the findings suggest that SNB is acceptable in cN1/2 patients who become cN0 after neoadjuvant therapy.
Methods: In the initial analysis, through the database of the European Institute of Oncology,
Milan, we identified breast cancer patients presenting between 2000 and 2010 candidates for neoadjuvant chemotherapy and and consequent surgical therapy. We selected for study the 396 cT1-4 patients, with either cN0 or cN1/2 disease, who became or remained cN0 at the end of neoadjuvant treatment and underwent SNB with at least one SN found. SNB was performed using our standard technique: 99Tclabeled colloid was injected subdermally close to the tumor. Follow-up was updated in December 2013, unless patients were seen within the six previous months.
Results: After a median follow-up of 61 months (interquartile range 38e82), five-year overall survival was 90.7% (95%CI, 87.7e93.7) in the whole cohort, 93.3% (95%CI, 90.0e96.6) in those initially cN0, and 86.3% (95%CI, 80.6e92.1) in those initially cN1/2 (P ¼ 0.12). Axillary failure occurred in only 1 (0.7%) initially cN1/2 patient who became cN0. In initially cN0 patients, and also initially cN1/2 patients who responded well to neoadjuvant treatment (ypT0/ypTx), SN-

negativity was a significant predictor of good outcome, consistent with the known prognostic significance of axillary status, and suggesting that SN status accurately reflected axillary status. We believe that the 10-year follow-up confirmed the efficacy of BLS in cN1/2 breast cancer patients who become cN0 after neoadjuvant treatment.
Conclusions: The preliminary results suggest that SNB is acceptable in cN1/2 patients who become cN0 after neoadjuvant therapy. We will extend the observation period including patients with up to 10 years of follow-up and review the proposed variables.
We believe that this follow-up confirmed the efficacy of BLS in cN1/2 breast cancer patients who become cN0 after neoadjuvant treatment.
Conflict of Interest: No significant relationships.

P272
Nipple sparing mastectomy with different different approaches: results at a single center

S. Fontana[1,2]*, G. Corso[3], F. De Lorenzi[4], E. Vicini[3], G. Pagani[3], S. Manoela[3], F. Magnoni[3], P. Naninato[3], V. Paolo[3], G. Viviana[3]. *[1]IEO, Milan, Italy, [2]Gynecology/Mastology, Universidade Federal do Rio Grande do Sul, Porto Alegre, Brazil, [3]Division of Breast Cancer Surgery, IEO Milan, Milan, Italy, [4]Division of Plastic and Reconstructive Surgery, IEO Milan, Milan, Italy*

Goals: The classic nipple-sparing mastectomy (NSM) is a conservative surgical approach for breast cancer (BC) care. This approach presents better aesthetic results and increased patient satisfaction compared to non-conservative mastectomy. It is also a direct result of development of oncoplastic surgery without compromising local disease control. To date, several NSM with different approaches are described in literature.
The aim of our study was to demonstrate the feasibility of non-conventional surgical approaches for NSMs, after a preoperative evaluation of risk factors and the degree of breast ptosis. Complication rates, re-intervention rates, esthetic outcomes, and plastic surgeon evaluations were recorded and documented.
Methods: We analyzed 100 patients with BC eligible at our institute for NSMs with different approaches, from January 2009 to May 2015. Clinical and pathological data such as body mass index, smoking status, breast ptosis, complications, and aesthetic satisfaction (Breast-Q test) were collected. According to different types of breast ptosis, surgical procedures were classified as (a) hemi-periareolar, (b) round block, (c) vertical pattern, and (d) wise pattern skin incisions. We performed statistical analysis to assess the correlation with complications, degree of ptosis, and breast-Q scores. Moreover, data on degree of breast ptosis, type of skin incision, and weight of the mastectomy specimen were also considered.
Results: Among the 117 surgical procedures (34 bilaterals) performed in 100 patients with BC, no significant associations have been verified considering clinical and pathological data, complications, pre- and post-surgery satisfactions, and other parameters. The majority of NSMs were performed with the hemi-periareolar incision (42.7%), followed by the round block (39.3%), wise pattern (10.3%), and vertical pattern (7.7%) approaches. In accord with these four subgroups, no significant association was present considering different clinicopathologic features such as age at onset, smoking status, BMI, histology, tumor grade and size.
Conclusions: The management of BC has witnessed an evolution of surgical techniques. These procedures are safe and also indicated in cases conventionally considered as not eligible for nipple-areola preservation. The current study is in progress; this population of patients is prospectively followed-up to record overall disease-free survival, breast-specific survival, and prognosis in the long term.
Conflict of Interest: No significant relationships.

P273
Sentinel lymph node biopsy for early breast cancer – a 10-year single-institution experience in Cebu, Philippines

R.V. Yap*, F.M. De La Serna. *Department of Surgery, Cebu Doctors' University Hospital, Cebu, Philippines*

Goals: To report our experience in sentinel lymph node biopsy (SLNB) in early breast cancer.
Methods: This is a retrospective study conducted at Cebu Doctors' University Hospital, Cebu City, Philippines between January 2008 and December 2017. One-hundred twenty-nine (129) patients diagnosed with invasive breast cancer with a T1 or T2 tumor and a clinically node-negative axilla preoperatively who underwent SLNB with intraoperative frozen section were included. Only blue dye method was used. Data collected included the characteristics of patients, SLNB and histopathologic results, and SLNB morbidity.
Results: The mean age was 54.3 years. One-hundred fourteen patients (88.4%) had total mastectomy and 15 (11.6%) had breast conservation surgery (BCS). Sentinel lymph node biopsy was successful in 126 out of 129 patients (98% success rate) using blue-dye only method. Two to four sentinel lymph nodes were identified and harvested in 81% of the patients while 1 and ≥5 sentinel nodes in 10.3% and 8.7% of the patients. Thirty-four patients had immediate axillary lymph node dissection. Final biopsy of the specimen showed 65.1% were invasive ductal, 27.1% lobular, 4.7% mammary, 2.3% mucinous, and 0.8% cribriform carcinoma. Sixty-eight (52.7%) were T2 and 61 (47.3%) were T1 tumors. Sixty-four (49.6%) Grade 1, 53 (41.1%) Grade 2, and 12 (9.3%) were Grade 3 tumors. Fourteen patients (10.9%) had lymphovascular invasion. Biomarker status were estrogen and progesterone positive in 69% and 61.2% respectively, while only 10.9% were HER2 receptor positive. At a median follow-up of 25 months, 75 out of 95 patients who were SLNB-negative were followed-up. No patient developed lymphedema, shoulder dysfunction, hematoma, or wound infection. Seroma formation was lower (10%) in patients who had BCS (vs 69.2% total mastectomy). There were 2 axillary (2.7%) and 2 breast/chest wall (2.7%) recurrences after a negative SLNB.
Conclusions: The results from our local experience were comparable with that seen in published similar literature. Breast conservation surgery rate is still low compared in western countries. Blue dye method alone is acceptable and can be used in institutions with limited resources. SLNB resulted in minimal morbidity.
Conflict of Interest: No significant relationships.

P274
Routine cavity shave during breast conservation surgery is a good alternative to frozen sections

R. Singh[1]*, S. Bhoriwal[1], A. Gogia[2], D. Sharma[3], S. Deo[1]. *[1]Surgical Oncology, All India Institute of Medical Sciences, New Delhi, India, [2]Medical Oncology, All India Institute of Medical Sciences, New Delhi, India, [3]Radiation Oncolgy, All India Institute of Medical Sciences, New Delhi, India*

Goals: To achieve excellent surgical and oncologic outcomes by routine cavity shave following breast conservation surgery.
Methods: A prospective single arm study was planned with a quality controlled and standardized surgical protocol for Breast Conservation Surgery, along with routine cavity shaves. All patients received adjuvant treatment as per standard guidelines. After palpation guided wide excision, cavity shave was performed by excising 2 to 3 mm slice of tissue from medial, lateral, superior, inferior and deep surfaces and specimens sent separately for histopathological assessment. Final margin status was determined on the basis of cavity shave margins. Patients with positive cavity shave margin were taken up for re excision. Results were analysed for margin positivity rates, re excision rates and local recurrence patterns.

Results: From January 2005 to December 2015, a total of 532 early breast cancer patients underwent BCS with routine cavity shave. Overall margin positivity rate was 2.65%. Invasive tumor was identified in cavity shave margin in ten (1.9%) and DCIS in four patients (0.75%). Re excision was performed in 10 patients (1.9%) and the remaining four with focal microscopic margin were managed with additional radiation boost. At a median follow up of 46 months local recurrence in breast conservation surgery group was seen in only 20 patients (3.8%).
Conclusions: Results of the study indicate that it is possible to achieve excellent surgical and oncologic outcomes by routine cavity shave rather than going for frozen section following breast conservation surgery. The overall margin positivity, re-excision and local recurrence rates were on the lower side of global figures being quoted in literature for breast conservation surgery without cavity shave.
Conflict of Interest: No significant relationships.

P275
Argon scalpel in the surgical treatment of breast cancer

R. Giordano[1]*, G. Facina[2], S. Bromberg[2], A. Nazario[2]. *[1]UNIFESP, Campinas, Brazil, [2]UNIFESP, Sao Paulo, Brazil*

Goals: To compare the electric scalpel with the scalpel by coagulation with argon plasma about aspects surgical and pathological.
Methods: This is a prospective cohort study in which 60 patients with breast cancer were selected at the Discipline of Breast Diseases of the Department of Gynecology of the Federal University of São Paulo (UNIFESP) at any clinical stage where the surgical treatment was indicated, from March 2014 to August 2014. The patients were consecutively selected and randomized into two groups: electric scalpel surgery (ES) and argon plasma coagulation surgery (APC). Inclusion criteria were: 18 to 90 years old patients with breast cancer at any clinical stage where surgical (conservative or radical) treatment was indicated. Intraoperative bleeding was assessed by measuring the weights of the compresses. The patients who underwent surgery were evaluated at 7, 14 and 30 postoperative days. In these returns, the appearance of the surgical wound, the presence and amount of seroma (in mL), hematoma or infection were analyzed. Surgical site infection was considered when there was erythema, increased local or systemic temperature, pain, suture dehiscence or presence of purulent exudate. The surgical specimen was studied in the Department of Pathological Anatomy of UNIFESP. The pathological analysis as recommended by the WHO and particular evaluations were carried out in order to observe the extent and degree of the thermal effect produced in surgical specimens by the two hemostatic techniques (ES and APC).
Results: The mean age of the patients was 56.0 years for the ES group and 54.9 for the APC. There was no significant difference between the groups regarding intraoperative bleeding. However, a statistically significant difference was observed when the days with drain were compared in the postoperative period, with a mean of 10.1 days for the SE group and 7.1 days for the APC group. The study demonstrated that the APC group had a significant greater thermal effect on the margins of the surgical specimen.
Conclusions: The use of argon scalpel, when compared to the electric scalpel, allowed hemostasis to be performed adequately without altering the rates of bleeding, surgical time and postoperative complications, and reduced the number of days with the drain. The thermal effect on the surgical specimen was significant greater with the argon scalpel.
Conflict of Interest: No significant relationships.

P276
Subcoutaneous mastectomy versus submuscular mastectomy

A. Bafile*, M. Mascio. *Breast Unit, San Salvatore Hospital, Laquila, Italy*

Goals: The mastectomy with reconstruction in a single time represents, to date, the most widely used surgical technique for patients operated for breast cancer. We have conducted a retrospective observational study comparing the reconstruction with a sub-muscular implant and that with a subcutaneous implant. The first involves placing the prosthesis in the sub-muscular pocket of the pectoralis major muscle, then covered in the inferior-lateral portion by a titanized polypropylene mesh. The second, instead, consists in positioning the prosthesis in the subcutaneous pocket, packaged inside a titanized polypropylene "bag".
Methods: In our study, we included 244 patients in total, who underwent surgery between June 2013 and June 2017, respectively 149 operated with submuscular technique and 95 with subcutaneous technique. Patient data were collected prospectively and those with BMI > 30, smokers, with significant co-morbidities, with bulky breasts and high-grade ptosis and already undergoing local radiotherapy were excluded from the study. All pre-and post-operative registry and oncological variables were evaluated and the complications analyzed. packaged inside a titanized polypropylene "bag".
Results: The mastectomies with submuscular technique are 149, of these 12 were bilateral for a total of 137 patients while those with subcutaneous technique are 95, 9 bilateral, for a total of 86 patients. The average follow-up was 6 months. No statistically significant differences were found with respect to the pre-operative variables. The post-operative complications, on the other hand, have influenced the recurrence of the disease, prolonging the healing time and therefore the onset of cancer treatment. > packaged inside a titanized polypropylene "bag".
Conclusions: The outcome of surgical treatment and disease is influenced by the operator's ability. The CCI predicts the recurrence of the disease so the solution is to aim for a perfectionist surgery, guaranteed by experienced and qualified surgeons, thus allowing patients to receive the best standards of care and to minimize waiting times for drug therapy.
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Conflict of Interest: No significant relationships.

P277
The new approach for surgery using magnetic marker system and magnetic probe for localization of non-palpable lesions of breast in Japan

K. Taruno[1]*, S. Nakamura[1], R. Shigenaga[1], Y. Ide[1], T. Kuwayama[1], S. Akashi[1], T. Kurita[2], H. Takei[2], M. Sekino[3], M. Kusakabe[3]. *[1]Breast Surgery, Showa University, Tokyo, Japan, [2]Nippon medical school university, Tokyo, Japan, [3]Tokyo University, Tokyo, Japan*

Goals: Clinically-occult breast cancer lesions are increasing due to the spread of screening programs and development of neoadjuvant chemotherapy. A correct approach to non-palpable breast lesions requires an accurate intra-operative localization to achieve a complete surgical resection.
We conducted a clinical study which aimed to demonstrate non-inferiority of sentinel lymph node (SLN) detection rates by using a SPIO/magnetic probe system to a conventional RI technique in patients with breast cancer. This study was supported by AMED (Japan Agency for Medical Research and Development) research funds. The novel magnetic probe is equipped with a permanent magnet and a magnetic sensor (Sci Rep 8, 1195, 2018).
Through these clinical trials, we thought that the application to the non-palpating lesion of the magnetic probe was possible. We can use magnetic marker (guiding-marker system®) which tip is stainless steel and leads to nylon suture in Japan. We seed this marker in non-palpable lesion and search it by this probe, it is possible to search the lesion during surgery more accurate.
Methods: In addition to usual mapping, we mark non-palpating lesion using guiding-marker system® and magnetic probe. We

confirm that we can resect the lesion by radiography of the specimen and magnetic probe.
Results: Localization of this method was performed 20 patients with non-palpable lesion of breast, from September to December 2018 at Showa University. 2 case are excisional biopsy, 18cases are partial mastectomy. We confirmed magnetic marker by a specimen radiography and magnetic probe all cases (20/20 cases, 100%). In a postoperative pathology evaluation, the margin was negative in all cases. There is no adverse event.
Conclusions: This combined technique using magnetic marker and magnetic probe for non-palpable lesions are accurate and safe way to achieve a complete surgical resection.
Conflict of Interest: No significant relationships.

P278
Comparing conventional breast conserving surgery with the minimally invasive approach technique to treat early breast cancer – a retrospective case control study

S. Bromberg*, P. Figueiredo, F. Ades. *Hospital Israelita Albert Einstein, Sao Paulo, Brazil*

Goals: The objective of the study was to compare the oncological safety and aesthetical results between the minimally invasive technique and the conventional breast conserving surgery. Breast conserving surgery was developed to avoid mastectomy and has become the standard of care in early stage breast cancer. Patient concerns with aesthetics have led to the development of oncoplastic surgical approaches. It has been demonstrated that the aesthetic success in breast cancer treatment leads to improved sexual and social recovery. In patients that have no desire or no need for associated mammoplasty, minimally invasive treatments allow the maintenance of the breast pre- surgical appearance. The minimally invasive technique is an oncoplastic surgery aimed to remove both the breast tumor and the sentinel lymph node through one incision, thus providing better aesthetic results than the conventional breast conservative two incision technique.
Methods: We retrospectively evaluated 2 cohorts of 60 consecutive early breast cancer patients (invasive breast cancer measuring no more than 25mm and clinically axillary negative lymph nodes) operated by either conventional breast conserving surgery (N = 26) or one incision surgery (N = 34). We selected patients that have no desire or no need for associated mammoplasty. We compared the mammary volume tissue removed; surgical time; number of dissected lymph nodes; surgical complications such as serum, infection, and dehiscence of the surgical wound; and deformities, retractions, and subsequent aesthetic sequelae.

Table.
Demographics and surgical results.

	Minimally Invasive Surgery (N = 34)	Conventional Surgery(N = 25)	P value
Age			0.241
Medium	53.9(11.4)	57.4(11.3)	
Range	33–76	34–85	
Disease Stage			0.482
I	30(88.2)	21(80.8)	
II	4(11.8)	5(19.2)	
Incision			>0.99
Axilla	1(3.1)	0(0.0)	
Periareolar	21(65.6)	17(65.4)	
Sulcus	10(31.3)	9(34.6)	
Breast dissected volume (cm3)			<0.001
Medium	16.3(8.5;26.7)	42.4(14.4;112.2)	
Range	2–90	5–270	
Dissected lymph nodes			<0.001
Medium (IIQ)	2(1–5)	4(1–13)	
Range	1–18	1–31	
Surgical time (min)			0.010
Medium	130(105;170)	180(110;240)	
Range	30–220	50–275	

Results: In the minimally invasive technique group the breast volume removed was significantly lower than in conventional surgery technique group as well as was the surgical time and the number of dissected lymph nodes. (Table)
Conclusions: The minimally invasive approach to treat early breast cancer was shown to be similar to the conventional breast conserving surgery in terms of oncologic outcomes but providing better cosmetic result.
Conflict of Interest: No significant relationships.

P279
Is the future magnetic? Magseed localisation of non palpable breast cancer – a multicentre comparative cohort study

K. Zacharioudakis[1]*, S. Down[2], Z. Bholah[1], S. Lee[1], T. Khan[1], M. Howe[1], A. Maxwell[1], J. Harvey[1]. *[1]Breast unit, Manchester University Foundation Trust, Manchester, United Kingdom, [2]Breast unit, James Paget University Hospital., Great Yarmouth, United Kingdom*

Goals: The aim of this study was to compare outcomes in patients undergoing wide local excision for non palpable lesions between Magseed and wire guided localisation.
Methods: We prospectively collected data on all patients undergoing image guided wide local excision for non palpable invasive breast cancer or ductal carcinoma in situ in this multicentre case control cohort study in two academic breast units between October 2017 and September 2018 with a planned accrual of 100 consecutive patients undergoing Magseed localisation. Data was also collected on a cohort of 100 consecutive patients undergoing wire guided localisation in the same time period. The primary outcome of our study was successful localisation of the lesion using the preoperatively planned technique for patients undergoing Magseed localisation. Secondary outcomes were successful identification and excision of the lesion, re-excision rate, specimen weight, specimen size, and lesion to specimen size ratio.
Results: Demographic and disease characteristics were well balanced between the Magseed and wire guided group. Successful localisation of the index lesion using the pre-operatively planned technique for patients undergoing Magseed localisation was 96%. Intraoperative identification and excision of the localised lesion was successful in 100% of patients in both groups as confirmed with specimen radiography. Complete excision after the initial procedure with at least 1 mm disease free margins was achieved in 84% of patients in the Magseed cohort and 86% of patients in the wire localisation cohort ($p = 0.692$). The mean weight was 39.6 gr in the Magseed cohort and 44.5 gr in the wire localisation cohort ($p = 0.206$). The mean specimen volume for the Magseed group was 90.1 cm^3 whereas the mean specimen volume for the wire guided localisation group was 95.6 cm^3 ($p = 0.579$). Tumour to specimen volume ratio for the Magseed group was 0.598 whereas the ratio for the wire guided localisation group was 0.519 ($p = 0.769$).
Conclusions: In our series Magseed localisation proved to be as reliable and effective as wire guided localisation in terms of lesion identification, excision with tumour free margins, re-operation rate and specimen weight and size. Compared to wire guided localisation surgical approach and incision placement is independent of the localisation access. Moreover, Magseed can be placed in advance allowing disassociation of radiology and surgical schedule.
Conflict of Interest: Endomag sponsored a separate feasibility study for which James Harvey was the Chief Investigator.

P280
Pedicled perforator flap – a district general hospital's experience

G. Bromley*, R. Milligan, M. Pervaz. *Queen Elizabeth Hospital, Gateshead, Gateshead, United Kingdom*

Goals: Local flap volume replacement techniques may be used in patients undergoing breast conservation surgery, in whom volume displacement techniques and therapeutic mammoplasty are

inappropriate. In these cases, defects of up to 150g can be adequately filled by mobilising pedicled intercostal artery perforator flaps. Here, we review our results since introducing a local flap service in a high-volume breast screening unit 22 months ago.
Methods: Hospital coding records for "perforator flap" were searched and cross-referenced with patient notes. Data recorded included age, BMI, smoking status, tumour size, type of flap, complications and any further surgery or delays to adjuvant treatment.
Results: A total of 19 patients were included in the study. The median age was 56, the average BMI was 27.5. 16% were smokers. 89% (n = 17) of flaps were performed in the immediate setting. The average tumour size was 38mm (range 17–100 mm) and 68% had SLNB. The most common flaps were LICAP (n = 9, 47%) and MICAP (n = 7, 37%). 52% of procedures were performed as a day case. 74% (n = 14) of patients had no complications or further procedures. One patient developed wound breakdown requiring re-operation. Two patients had positive margins requiring completion mastectomy. There were no delays to adjuvant treatment.
Conclusions: The introduction of a local flap volume replacement service, using perforator flaps, has allowed breast conservation surgery, with few complications, in patients where tissue displacement techniques or therapeutic mammoplasty were not be appropriate.
Conflict of Interest: No significant relationships.

P281
Experience of sentinel lymph node biopsy (SLNB) with Tc99 & gamma probe in early breast cancer – its cost, accuracy, complications in Kailash Cancer Hospital & Research Centre in rural India

R. Shah[1]*, A. Gandhi[2], Y. Mistry[3]. *[1]Surgical Oncology, Kailash Cancer Hospital and Research Centre, Vadodara, India, [2]Nuclear Physician, Kailash Cancer Hospital and Research Centre, Vadodara, India, [3]Surgical Pathologist, Kailash Cancer Hospital and Research Centre, Vadodara, India*

Goals: To assess the accuracy, cost & complicatipons of Sentinel node biopsy using Tc99 & gamma probe.
Methods: Total 69 patients of early breast cancer, clinicoradiologically T1N0/T2N0 were included in study. Patients were offered Simple mastectomy/ Breast conserving surgery with SLNB. Tc99 was injected 4 hours before surgery in peri areolar region. Post operative histopathology report was assessed for accuracy of procedure. The cost, average length of stay and all complications were noted.
Results: The average number of sentinel nodes identified per patient was 2.4. The accuracy of the procedure was 100%. The average length of stay was 1.5 days. Two patients had serous discharge from wound which was in peri areolar region. No other complication. The cost of the whole surgery including stay and medicines was $ 570.
Conclusions: SLNB in early breast cancer using gamma probe is standard of care.
Most of the rural areas in INDIA do not have the set up or expertise for doing SLNB.
In experienced hand its very accurate and safe procedure which is overall very cost effective.
More and more centers with the help of Government in rural areas should make this procedure as standard protocol to avoid unnecessary axillary lymph node dissection.
Conflict of Interest: No significant relationships.

P282
Z0011 Trial criteria application: experience of clinical and surgical impact on a single institution practice

C. Morigi[1]*, N. Peradze[1], G.I. Santomauro[2], V. Bagnardi[3], E. Firpo[1], P. Veronesi[1], M. Intra[1], V. Galimberti[1]. *[1]Division of Breast Surgery, IRCCS European Institute of Oncology, Milan, Italy, [2]Division of Data Management, IRCCS European Institute of Oncology, Milan, Italy, [3]Department of Statistics and Quantitative Methods, University of Milan-Bicocca, Milan, Italy*

Goals: The purpose of our study is evaluation of the clinical and surgical impact of the Z0011 on the management of breast cancer patients undergoing breast conservative surgery at the European Institute of Oncology (IEO).
Methods: In this study we studied 1387 patients who underwent breast conservative surgery (BCS) and sentinel lymph node biopsy (SLNB) from July 2016 to July 2018. Clinical, radiological and cyto/histological examination were performed for all patients at the time of diagnosis. For none of the patients frozen section of the sentinel lymph node (SLN) was performed. Patients who underwent neoadjuvant therapy were excluded. To evaluate the results before and after the application of Z0011, a group of 1425 patients with the same characteristics who underwent BCS and SLNB from July 2013 to July 2015 were analyzed.
Results: We studied the characteristics of the patients by nodal status and, as expected, we observed statistically significant results in particular regarding T stage, grade of the tumor and perivascular invasion. The results are shown in Table 1.

Table 1.
Clinicopathological features of patients, by nodal status.

Variable		Node negative	Node positive	p-value
All patients, N		1157	230	–
Pathological T stage, N (%)	T1	1007 (87.0)	164 (71.3)	<0.001
	T2	150 (13.0)	66 (28.7)	
Perivascular invasion, N (%)	No	983 (85.0)	117 (50.9)	<0.001
	Yes	145 (12.5)	110 (47.8)	
	Unknown	29 (2.5)	3 (1.3)	
Grade, N (%)	G1	310(26.8)	25 (10.9)	<0.001
	G2	522 (45.1)	125 (54.3)	
	G3	311 (26.8)	80 (34.8)	
	Unknown	14 (1.2)	0	
Tumor subtype, N (%)	Luminal A	643 (55.6)	105 (45.7)	0.02
	Luminal B	385 (33.3)	101 (43.9)	
	Her2-positive	24 (2.1)	8 (3.5)	
	Triple negative	89 (7.7)	14 (6.1)	
	Unknown	16 (1.4)	2 (0.9)	
Tumor histology, N (%)	Ductal	936 (80.9)	200 (87.0)	0.03
	Lobular	128 (11.1)	18 (7.8)	
	Mixed	20 (1.7)	6 (2.6)	
	Other	73 (6.3)	6 (2.6)	

Of 1387 patients who underwent surgery after the application of the Z011, 1157 patients (83.4%) had negative SLN, 230 patients (16.6%) had positive SLN and, of these, subsequent axillary lymph node dissection (ALND) was performed in only 7 cases (3.0%). Of 1425 patients operated before Z0011 criteria application in 216 patients subsequent ALND (15%) was performed. We analyzed the 7 patients who underwent ALND for number of lymph nodes removed and number of positive lymph nodes at the SLNB and subsequent ALND. The results are indicated in Table 2.

Table 2.
SLN positive/SLN removed.

Patient	SLN pos/SLN removed	LN pos/LN tot at ALND
1	2/2	4/16
2	4/4	6/28
3	2/3	0/21
4	4/4	2/25
5	1/2	0/23
6	6/7	5/22
7	3/4	0/20

In 2 patients ALND was performed because of the conversion of the surgery into mastectomy due to the positive margins of lumpectomy

on the final histology. In 1 patient massive perivascular invasion was observed in 2 of 3 SLN, therefore we decided to perform subsequent ALND. In our study there were no differences observed in the median number of SLN removed.
Conclusions: This study highlights how the surgeons of our institute are becoming more and more comfortable with the application of the Z0011, in fact the frozen section of the SLN has been completely abandoned for the patients who satisfy the Z0011 criteria. The comparison with the ALNDs performed after the introduction of Z0011 is statistically significant: 7/1387 (0.5%) versus 216/1425 (15%) with p value <0.0001. This has a significant positive impact on the comorbidities and quality of life of our patients.
Conflict of Interest: No significant relationships.

P283
Results of ABLATE phase II multicenter trial: radiofrequency ablation after breast lumpectomy added to treat breast cancer without radiation

V.S. Klimberg[1]*, K. Gallagher[2], S. Feldman[3], J. Baron[4], J. Mammem[5], D. Ochoa[6], T. Frazier[7], J. Lee[8], S. Johnson[6], S. Korourian[8]. *[1]Surgery, University of Texas Medical Branch, Galveston, United States, [2]Surgery, University of North Carolina, Chapel Hill, United States, [3]Surgery, Albert Einstein College of Medicine, New York, United States, [4]Surgery, Exempla, Denver, United States, [5]Surgery, University of Kansas, Kansas City, United States, [6]Surgery, University of Arkansas, Little Rock, United States, [7]Surgery, Bryn Mawr Hospital, Bryn Mawr, United States, [8]University of Arkansas, Little Rock, United States*

Goals: The purpose of this study was to determine the recurrence rate of those patients treated with excision followed by radiofrequency ablation (eRFA) as their sole local therapy.
Methods: From September 2010 to October 2018, we conducted an IRB-approved risk-adjusted Phase II trial with DCIS or invasive cancer who had tumor less than or equal to 3cm with clinically negative nodes. Based on preclinical and clinical data, patients undergoing standard lumpectomy had an RFA probe deployed to 1 cm circumferentially into the walls of the open lumpectomy cavity and heat maintained at 100 degrees for 15 minutes. Doppler sonography was used to determine the final ablation size. Standard H&E of lumpectomy margins were performed. Cosmesis was assessed with RTOG scales.
Results: 242 patients were accrued to the study with a median followup of 44 median months(1–8 years). 60% were DCIS and 33% were DCIS. Average size was 1.1 = /–0.6 cm. Re-excision for positive margins was <5%. The in breast recurrence rate was 2.9%. 20% of the cohort received XRT for positive nodes. Cosmesis was good or excellent in 89% of patients. Chronic pain was 5 fold less in eRFA vs those who receive XRT.
Conclusions: Long-term follow-up demonstrated that recurrence rates with eRFA alone are acceptably low without XRT. Cosmesis is favorable. Chronic pain after eRFA is much lower in those receiving XRT for high risk disease.
Conflict of Interest: This study was in part funded by AngioDynamics, Inc.

P284
Bilateral bi-pedicle skin reducing nipple sparing mastectomy in a BRCA-1 mutation carrier with gigantomastia

P. Liakou*, A. Pazaiti. *Breast Clinic of Oncologic and Recontructive Surgery, Metropolitan General Hospital, Athens, Greece*

Goals: Nipple sparing mastectomy in the setting of Risk Reducing Surgery for gene mutation carriers has been validated as a safe oncologic option while aesthetic indications restrict the method to small and medium sized, non- ptotic breasts. However, increasingly more patients ask for nipple preserving mastectomy, as they consider the loss of the nipple not an acceptable option.
Methods: A 43 year old woman, diagnosed with a BRCA -1 gene mutation, presented for bilateral Risk Reducing Mastectomy and asked for preservation of her nipples and immediate reconstruction. Her breast imaging was negative of suspicious findings. She had no co- morbid conditions and was a smoker. She had hypertrophic ptotic breasts and opted for smaller sized reconstructed breasts.
After informed consent of the patient and abstention from smoking for 4 weeks, a bilateral mastectomy with the following components was conducted:

- Wise pattern skin reduction of the breast envelope
- Bi- pedicle vertical, superior and inferior, dermal flap for preservation of Nipple – Areola complex
- Subcutaneous mastectomy
- Tissue Expanders placement at the 1st stage of immediate reconstruction
- Replacement of Tissue Expanders with Silicone Implants and scar revisions at the 2nd stage of reconstruction.

Results: Almost 2 kg of each breast were removed. At the immediate postoperative period of the first stage there were some areas of delayed wound healing that resolved in about 4–6 weeks. Both Nipple- Areola complexes were well vascularized with no discolouration. No nipple sensation was evident but some erectile function could be elicited. Tissue expansion was completed in 4 months. Replacement of expanders with implants and skin revisions were conducted in 8 months. At 4 months after the final operation, the patient was very satisfied with the aesthetic result of her breasts along with the improvement of her body posture due to downsizing of the new breasts.
Conclusions: The preservation of nipple areola complex in the setting of subcutaneous mastectomy for a patient with very large and ptotic breasts is usually deemed not feasible. In this case, the complex was spared by utilizing superior and inferior dermal vascularization of the nipple, along with skin reduction and 2 stage tissue expander reconstruction. Risk factors optimization, meticulous development of dermal flaps and gradual tissue expansion that compensated for borderline vascularization of the nipple, were key components for the success of the operation.
Conflict of Interest: No significant relationships.

P285
Institutional experience of post mastectomy single stage implant based reconstruction with modified dual plane technique in carcinoma breast patients

A. Vartak*, A. Tyagi, R. Talwar, J. Pradeep, D. Mukherjee. *Surgical Oncology, INHS ASVINI, Mumbai, India*

Goals: Pre pectoral implant placement with acellular dermal matrix (ADM) envelope is the preferred technique for immediate implant based breast reconstruction post-mastectomy in carcinoma breast patients. However, cost of acellular dermal matrix(ADM) is a financial constraint in developing countries like India. This study analyses our institutional experience of using modified dual plane technique for immediate implant based reconstruction in patients with carcinoma breast post -Total mastectomy and surgical axillary staging. With our modification of the Dual Plane technique, we were able to lower the risk of complications including implant loss while providing patients with a safe and aesthetically satisfactory result without using ADM.
Methods: All patients who underwent single-staged dual plane cohesive silicone gel filled implant-based breast reconstruction post -Total mastectomy and surgical axillary staging were included. Demographics, clinical data, operative details and postoperative complications were analysed.
Results: Fifteen patients (19 breasts) underwent single-staged dual plane implant based reconstruction over the period of 3.92 yrs. The average age of the patients was 36.88 years at the time of the operation. Mean follow-up time was 13.33 months (1–47 months). Postoperative complications in the form of surgical site infection

occurred in 2 patients and seroma in 1 patient which resolved with conservative management. No incidence of animation deformity, capsular contracture post radiation or implant loss in the duration of follow up. Most patients were early breast cancers except 2 locally advanced breast cancer patients out of which one was a local recurrence post breast conservative surgery. Both received neo-adjuvant systemic treatment followed by adjuvant chemotherapy and radiotherapy. Four patients had bilateral carcinoma breast out of which one had hereditary breast ovarian cancer syndrome (BRCA positive)

Conclusions: The results of this study show that an immediate single-stage dual plane breast reconstruction with a cohesive silicone gel filled implant can be performed with excellent aesthetic outcomes and minimal complications.

Conflict of Interest: No significant relationships.

P286

Does oncoplastic breast surgery cause a delay in the onset of adjuvant treatment?

R. Brondi*, F. Bagnoli, F. Coelho, J. Rinaldi, V. Oliveira. *Breast Surgery, Faculdade de Ciências Médicas Santa Casa de São Paulo, São Paulo, Brazil*

Goals: The aim of this study is to compare complications between both techniques and if the oncoplastic approach could cause any delay in the onset of adjuvant treatment.

Methods: A retrospective study was carried out with 267 patients who had been submitted to sBCS and oBCS, with the diagnostic of primary unilateral breast cancer, operated on from 2007 to 2012.

Results: of the 267 patients, 63.3% underwent sBCS and 36.7% oBCS; the most common oncoplastic technique was inferior pedicle in 64.3% of the cases; the tumor size variated between 1 and 3 cm in 63.5% of the cases; invasive ductal carcinoma of no special type was present in 77.4% and ductal carcinoma in situ in 10.9% of the cases; the most common subtype was luminal B like (39,8%), and followed by luminal A like (25.4%). The patients who underwent sBCS were older (average age of 58.54 yrs.) than the oBCS patients (average age of 51.86 yrs.); patients with comorbidity (hypertension, diabetes) and smokers did not influence the rate of complication. The most common complications that affected the beginning of adjuvant treatment were hematomas, dehiscence and necrosis, which occurred in only 6.9% of all patients, with no statistical difference between the groups, except for dehiscence sBCS: 3.5% and oBCS: 15.5% ($p < 0.001$). The delay rate in adjuvant treatment was low, in a total of 267 patients, of which nine (5.3%) and seven (7.3%), sBCS and oBCS, respectively, were without statistical significance.

Conclusions: Even though the complications were higher with the oncoplastic approach, there was no difference in the onset of adjuvant treatment.

Conflict of Interest: No significant relationships.

P287

Identification of sentinel lymph nodes using the near infrared light camera system LIGHTVISION

M. Iwamoto*, A. Matsutani, M. Nishida, A. Hirata, T. Tominaga, H. Fujioka, K. Kimura. *Department of Breast Surgery, Osaka Medical College, Osaka, Japan*

Goals: Based on the results of the ACOSOG Z0011 trial, etc., it can be said that the clinical significance of axillary lymph node dissection is decreasing worldwide. However, because the number of patients who do not undergo dissection is increasing, and it can be said that the importance of accurately identifying sentinel lymph nodes is increasing. Due to lack of radiation control areas and the fact that RI cannot be used, many institutions in Japan identify sentinel lymph nodes by the dyeing method alone, and the precision of sentinel lymph node biopsy is always a problem. Other problems remain, such as the fact that because the widely used indigo carmine and ICG have a small molecular weight, they often flow into the next lymph node without being replenished by the sentinel lymph node or the fact that it is impossible to identify which of the multiple blue lymph nodes is the true sentinel lymph node.

Methods: We report an examination of identification of sentinel lymph nodes using the near infrared light camera system LIGHTVISION, which was introduced in our department and irradiates ICG with excitation light, creating weak near infrared light full-high vision (1920 × 1080 pixels) color images in real time. Since September 2017, the same method was performed in 30 patients.

Results: In all patients, it was possible to observe lymph vessels from the body surface in real time, and it was possible to identify sentinel lymph nodes in a short time after skin incision. As we could also confirm the network of lymphatic vessels within the wound, we confirmed that the identified lymph node is a sentinel lymph node by tracking the lymphatic duct flowing into the lymph node that emits light to the breast side and confirming that there was no lymph node emitting at that site. Moreover, it was possible to reliably identify inflow lymphatic vessels for which confirmation under direct vision in the conventional method was difficult, thereby making it easy to reliably treat lymphatic vessels. In 7 patient, the lymph nodes were completely unstained by indigo carmine.

Conclusions: In the future, we plan to further accumulate and examine cases. It is expected that this system may contribute to improvement of accuracy of sentinel lymph node biopsy and safety of omission of dissection.

Conflict of Interest: No significant relationships.

P288

Intraoperative frozen section evaluation of sentinel lymph nodes in breast carcinoma: a retrospective review of 249 cases

V. Sakellariou[1]*, I. Giagtzidis[2], E. Athanasiou[3], M. Bobos[3], E. Pazarli[4], L. Pervana[4], D. Hatzimpougias[3]. *[1]Breast Unit, North Manchester General Hospital, Manchester, United Kingdom, [2]General Surgery, Ippokrateio General Hospital, Thessaloniki, Greece, [3]Pathology, Microdiagnostics Ltd, Thessaloniki, Greece, [4]Pathology, Papageorgiou General Hospital, Thessaloniki, Greece*

Goals: Sentinel lymph node (SLN) biopsy is an established way of predicting axillary nodal metastases in breast cancer (BC). Intraoperative frozen section (FS) of SLNs can be used to detect metastatic disease, allowing immediate axillary node clearance (ANC). The purpose of this study was to evaluate the accuracy of intraoperative FS in evaluation of SLNs in BC surgery.

Methods: Between 2013 and 2017, a total of 249 patients and a mean age of 60,5 years, with clinically node-negative operable breast cancer or after neoadjuvant chemotherapy were subjected to SLN biopsy of axillary lymph nodes using preoperative subareolar injection of radioactive colloid and methylene blue. Intraoperative identification of SLN was done using a handheld gamma and identification of blue-stained nodes. The nodes were sent for FS examination The results of FS were compared with the final histology. Patient demographics, tumor characteristics, number of SLNs and outcomes were analyzed.

Results: Out of the 249 cases, metastases were detected in SLNs by FS in 74 cases. There were 8 false-negative cases (5 showing micro-metastases and 3 macrometastases on final histology). Isolated Tumour Cells (ITCs) were detected in 2 patients in final histology. FS was able to detect micrometastases in 4 cases and in 3 of them, micro from macrometastatic disease had been differentiated. FS had sensitivity of 90,2%, specificity of 100% and overall accuracy of 96,7%. The positive predictive value (PPV) was 100%, and the negative predictive value (NPV) was 95,4%. Mastectomy was performed in 93 patients, Breast Conserving Surgery in 156 and immediate ANC in 67. The mean number of SLN excised was 3,2.

Conclusions: Intraoperative FS analysis is a safe and reliable method for assessment of SLN. The majority of missed metastases are ITCs or micrometastases. Patients with positive SLNs by the FS diagnosis can avoid reoperation for ANC. However, the need for ANC in patients

with low volume axillary metastases has been recently called into question, meaning that FS of SLNs may be unnecessary in many cases.
Conflict of Interest: No significant relationships.

P289

Surgical short-term outcome in patients undergoing mastectomy followed by immediate implant reconstruction surgery for BC or prophylactic surgery

D. Ulrich[1], E. Kirchhoff[1], C. Leidl[1], E. Trapp[1]*, K. Tamussino[1], V. Bjelic-Radisic[2]. [1]*Department of Obstetrics and Gynecology, Medical University Graz, Graz, Austria,* [2]*Helios University Hospital, Wuppertal, Germany*

Goals: Skin-sparing mastectomy (SSM) and nipple-sparing mastectomy (NSM) followed by immediate reconstruction with implants have become populated methods in the field of surgery for breast cancer (BC). A great portion of studies present SSM and NSM as oncologically safe for patients with ductal carcinoma in situ (DCIS) and early BC. Nowadays there is still reservation in regard of SSM and NSM because of concerns of higher complication rates. The aim of this study was to analyze complication rates in patients undergoing mastectomy followed by immediate implant reconstruction surgery for BC or prophylactic surgery in case of family predisposition with implants and acellular dermal matrices.
Methods: This is a consecutive cohort study of women undergoing SSM or NSM for DICS, BC or prophylactic surgery in case of family predisposition. We assessed indication, peri-and postoperative results in a consecutive cohort of women undergoing breast reconstruction with implants and matrices.
Results: 104 patients with a total number of 135 breast reconstructions were included in this study. In 71.9% (n = 97) of cases the operation was performed for breast cancer, in 28.1% (n = 38) prophylactic breast reconstruction was performed for positive family breast cancer history. In 65% (n = 80) of cases NSM was performed, in 35% (n = 53) SSM, respectively. The NAC could be preserved in 80.0% (n = 108) of cases while it had to be removed in 20.0% (n = 27) of cases. The most common complications were haematoma (12%), necrosis (7%), and wound infection (13%). Reoperations occurred for various reasons; 16% (n = 22) of cases reoperation had to be performed for wound healing issues (necrectomy), 12% were reoperated for haematoma. In 1.7% (n = 2) of cases reoperation had to be performed for residual cancer, in 5.8% (n = 7) of cases nipples were tattooed after NAC removal. Out of the total study population only 5% (n = 7) had a complete loss of implant.
Conclusions: Our results are consistent with previously published data. The most common complications are haematoma, necrosis, and wound infection. Patients considering NSM/SSM and immediate reconstruction should be informed about the moderate risks for complications.
Conflict of Interest: No significant relationships.

P290

Evaluation of specimen mammogram and frozen section in intraoperative margin assessment of breast conservation surgery

R. Kumar*, G. Daga, R. Paul. *Surgical Oncology, Rajiv Gandhi Cancer Institute & Research Centre Delhi India, Delhi, India*

Goals: About 1/4th women with breast cancer need a second surgery in an attempt to obtain a clear margin. Various methods for intraoperative assessment of margins have been developed. Frozen section analysis (FSA) is most commonly used method
Methods: Total 61 patients with palpable early breast carcinoma (cT1-2, N0-1, M0), subjected to BCS over a period of 2 years. For each patient, intra-operative digital specimen radiography was performed with a two-dimensional X-ray device settled in the radiology department. For that, the specimen before sending to pathology department was radiographed in two orthogonal planes. Then each specimen was sent for frozen section analysis for margin assessment as institutional protocol. Each margin was selectively assessed by our expert pathologists and the margin status of each specimen was communicated to surgeons in OT. The margins regarded as close or positive by pathologists by FSA were re-excised from the lumpectomy cavity and the re-excised margins were further assessed by frozen section. Then the specimen was sent for final histopathological examination.
The quantitative margin status of each margin reported in histology of original specimen (i.e., excluding the re-excised margins if any) was correlated with specimen mammography. The closest margin width reported in histology was also correlated with specimen mammography. The qualitative margin status of each margin as well as overall qualitative margin status of the original specimen reported in histology was correlated with same in specimen mammography and FSA. The accuracy, sensitivity, specificity, PPV and NPV of SM and FSA were measured considering the histology of the original specimen as gold standard.
Results: SM was found to be highly accurate in assessing the margins of lumpectomy specimen comparable to FSA (93.4% vs. 100%). At radiological cut-off of 2 mm, the SM was less sensitive than FSA in identifying positive margins intra-operatively as it had missed 2 out of 61 patients. Increasing the radiological cut-off to 5mm would have made SM as sensitive as FSA.SM has
significantly correlated with histology in quantitative analysis of margins.
Conclusions: SM was found to be highly accurate in assessing the margins of lumpectomy specimen comparable to FSA. Further studies are required with large sample size to validate a radiological cut-off so that SM can be used in as alternate to FSA in centers not equipped with frozen section technology.
Conflict of Interest: No significant relationships.

P291

Breast reconstruction following Neoadjuvant Chemotherapy (NAC)

M. Rho[1]*, M. Materazzo[1], A. Antonelli[1], S. Ingallinella[1], I. Portarena[2], A. De Majo[1], P. Orsaria[1], G. Vanni[1], G. Petrella[1], O.C. Buonomo[1]. [1]*Department of Surgery, Università degli Studi di Roma: Tor Vergata, Roma, Italy,* [2]*Department of Oncology, Università degli Studi di Roma: Tor Vergata, Rome, Italy*

Goals: Neoadjuvant Chemotherapy (NAC) represents standard treatment for Locally Advanced Breast Cancer (LABC). In this Study we compared oncological safety, surgical complication and aesthetic result between «One Time» Breast Reconstruction (OTP), Double Time Reconstruction (DTR) LABC who received NAC before surgical treatment and OTP and DTR patients who did not receive primary medical treatment.
Methods: In this perspective observational study, we enrolled 87 patients treated in Tor Vergata from 2013 to 2017, divided between OTP NAC Group (G1 = 14), DTR NAC Group (G2 = 33), OTP and DTR Control Group who did not receive NAC (G3 = 20, G4 = 20 respectively). All Group were homogeneous for age, BMI and median follow-up (2.78 years). We chose surgical protocol according to patient's expectation and multidisciplinary team advice. We evaluated local recurrences, aesthetic appearance (shape, symmetry and volume), surgical complications (wound dehiscence, hematomas, seromas, infections, severe capsular contractions, Red blood cell Trasfusions (RBCT), days of hospitalization (DH) and lymphedema).
Results: The incidence of surgical complications, oncological safety and aesthetic results in the Study Groups (G1 and G2) have no statistical significative difference with the Control Groups (G3 and G4) ($p > 0.05$). During follow up we found two local recurrence in the Study group only in patients classified as «stable disease» according RECIST criteria during NAC. Regarding other complications a slight increase of wound dehiscence, DH, RBCT and the drainage amount was found.

Conclusions: Our data suggests the importance of breast patient's tailored surgery, otherwise the two NAC Groups did not show any detrimental effect on surgical decision.
Conflict of Interest: No significant relationships.

P292
Prediction of locoregional breast cancer recurrence through the analysis of clinical, pathological and biological features

M. Materazzo[1]*, M. Rho[1], A. Antonelli[1], S. Ingallinella[1], L. Anemona[2], A.V. Granai[1], P. Orsaria[1], G. Vanni[1], G. Petrella[1], O.C. Buonomo[1].
[1]Department of Surgery, Università degli Studi di Roma: Tor Vergata, Rome, Italy, [2]Department of Pathological Anatomy, Università degli Studi di Roma: Tor Vergata, Rome, Italy

Goals: According Literature from 10% to 30% of Breast Cancer (BC) patients could experience a locoregional recurrence (LR) after therapy. In this Study we evaluated how clinical, pathological and biological factors can predict locoregional breast cancer recurrence.
Methods: In this Monocentric Case-control retrospective study we enrolled 785 consecutive BC patients treated in Tor Vergata from 2003 to 2016. We evaluated Age (y), execution of Axillary lymph node Dissection (ALND), tumor distance from closer surgical margins (SM) in millimetres (mm), Oestrogen receptor expression (ER), Ki67 index and Her2 score. The mean follow up was 5 years and the total cumulative incidence result 6.6% with 34 local, 7 regional and 9 contralateral recurrence respectively.
Results: In our study patients under 54 y (p-value (p)< 0.01), with LABC who underwent ALND (p:0.016), BC with closer SM < 2.5 mm (p:0.001) showed an association with LR. Her2 score and Ki67 index appeared related with local relapse (OR: 2,3; IC:1,07–4,96; Ki67>30% P:0.001 respectively), otherwise ER expression demonstrated a protective effect on this event (ER < 64%, p: 0,01).
Conclusions: LR has a detrimental effect on patients' health, surgical aesthetic result and quality of life in general. Our data suggest that predicting LR with this well-established factor could allow to design in the future a tailored multidisciplinary follow up and treatment.
Conflict of Interest: No significant relationships.

P293
A rare case of invasive apocrine breast cancer with unusual receptor profiles

A. Girardi[1]*, A. Gurrado[1], M. Moschetta[2], G. Serio[3], A. Marzullo[3], M. Telegrafo[2], C. Giardina[4]. *[1]Department of Biomedical Sciences and Human Oncology, University Medical School "Aldo Moro" of Bari, Bari, Italy, [2]Interdisciplinary Department of Medicine, Section of Diagnostic Imaging, University of Medical School "Aldo Moro" of Bari, Bari, Italy, [3]Department of Emergency and Organ Transplantation, Pathology Division, University Medical School "Aldo Moro" of Bari, Bari, Italy, [4]Department of Emergency and Organ Transplantation, Pathology Division, Breast Unit Policlinic, University Medical School "Aldo Moro" of Bari, Bari, Italy*

Goals: Invasive Apocrine Carcinoma (IAC) of the breast is a rare subtype of invasive breast cancer, and it is associated with a high-risk of recurrence and a poor prognosis than invasive ductal cancer. The presence of more than 80–90% of apocrine cells and a characteristic hormone receptor profile (oestrogen receptor (ER) and progesterone receptor (PR) double-negative, and androgen receptor (AR) positive) define this cancer.
We report a case of an old woman affected by intra-cystic apocrine carcinoma with an unusual receptors profile.
Methods: An 88-years-old female presented to our Academic Department of General Surgery with palpable lesion of the left breast. Mammography showed opacity with regular edges (diameter 5.5 cm) and microcalcifications on site of clinical sign. US image confirmed the cystic lesion, with irregular and hyper vascular wall thickening and a solid intra-cystic floating lesion. Core needle biopsy of solid intra-cystic mass was performed and pathological examination demonstrated invasive cancer. Left mastectomy and sentinel lymph node biopsy were performed, also stating that the patient refused post-mastectomy breast reconstruction.
Results: Histology demonstrated a cystic apocrine infiltrative carcinoma; immuno-phenotype showed ER (90%), PR (80%), AR (80%) and GCDFP-15 positivity, furthermore HER 2 negativity; Ki 67 labelling index was 15%; Tumour Node Metastasis (TNM) stage was T3N0M0. Patient refuses all oncological treatments; she is in good general status, diseases-free 1 year after surgery.
Conclusions: This case shows an apocrine differentiation with an unusual immunophenotype (ER+PR+AR+HER2-) that delineates a breast cancer NST with prevalent apocrine differentiation (more than 90% of cells). Nowadays, the reasons for this discrepancy in receptor differentiation are unclear. According to the literature, another immunohistochemical marker of IAC was a glycoprotein originally isolated from breast cyst fluid (GCDFP-15), that is expressed from 76% to 100% of IAC cases.
The treatment for patients with special histologic types of breast cancer has rarely been studied, and current guidelines had few specific recommendations for patients with apocrine cancer in octogenarian, with an unusual immunoistochemical profile. Understanding the underlying molecular features of special types of breast cancer, like in this case, will provide new approach and new study areas for the treatment modalities.
Conflict of Interest: No significant relationships.

P294
Adenoid cystic carcinoma of the breast: a triple negative breast cancer with a special guideline

A.-S. Rotsaert[1], K. Watty[1]*, C. Inge[1], K. Schotte[2], W. Tjalma[3].
[1]Gynaecology-Obstetrics, AZ Delta, Roeselare, Belgium, [2]Oncology, AZ Delta, Roeselare, Belgium, [3]Gynaecologic Oncology, University Hospital of Antwerp, Antwerp, Belgium

Goals: Adenoid cystic carcinoma (ACC) of the breast is a rare basal-like tumour and represents approximately 0,1% of all breast cancers. This article is a review regarding the treatment of ACC and proposition for a therapeutic algorithm based on a case.
Methods: Relevant studies were identified through a systematic research of PubMed using the terms "adenoid cystic carcinoma" and "breast". Papers prior to 2018 were included.
Results: *Presentation of case*: A 50-year-old woman, presented with a self-palpated nodule in the upper-outer quadrant of the right breast. Core biopsy of the nodule revealed triple negative adenoid cystic carcinoma. The patient underwent a tumorectomy with sentinel node biopsy. The sentinel node was negative. At the multidisciplinary oncology meeting was decided to give only adjuvant radiotherapy. At present 48 months after treatment the patient is well with no signs of recurrence.
Discussion: ACC of the breast are a subgroup of myoepithelial tumours. They have salivary gland-like morphologic features and are mostly triple negative. Interestingly these triple negative breast carcinomas have an indolent clinical behaviour and are mostly (92%) diagnosed in tumour stage 1 and 2. ACC have an excellent prognosis with a 10-year survival rate exceeding 90%. In contrast to their high-grade counterparts, ACC are low-grade lesions with specific genetic alterations and molecular features that require an adapted therapy. The optimal treatment of ACC remains subject of discussion due to its low incidence, but there is consensus that the cornerstone is surgery with a sentinel node biopsy. Axillary lymph node dissection is rarely required because the proportion of metastasis in axillary lymph node is low. According to our review there is only lymph node involvement in 6% of the cases. There appears to be no value for chemotherapy in the treatment of ACC.
Conclusions: ACC is a rare triple negative malignancy with an indolent clinical behaviour and an excellent prognosis. In daily practice there is a wide variation in treatment. Present article proposes a treatment algorithm for this type of tumour. Future

research should focus on next-generation sequencing in order to find a targeted treatment.
Conflict of Interest: No significant relationships.

P295
A randomised controlled trial to validate the efficacy of a cianoacrylate based sealing glue to reduce axillary seroma: GLUBREAST Trial

E. Esposito[1,2]*, C. Siani[1], F. Avino[1], I. Donzelli[1], A. Fucito[1], M.T. Melucci[1], R. Saponara[1], R. Tortoriello[1], M. Rinaldo[1], R. D. Giacomo[1]. *[1]Thoracic and Breast Oncology, Istituto Nazionale Tumori Napoli, IRCCS, Fondazione G. Pascale, Napoli, Italy, [2]Department of Clinical Medicine and Surgery, Università di Napoli Federico II, Napoli, Italy*

Goals: The most frequent complication after axillary dissection is seroma. Prolonged drainage is troublesome as it increases the risk for infection and can significantly delay adjuvant therapies. The opportunity of reducing seroma formation may decrease the numbeGlubran®2 is a synthetic sealant (N-Butyl-2-CyanoAcrylate +Metacryloxisulfolane) biocompatible, CE approved for internal human uses and surgical procedures. The assumed mechanism of action is that the adhesive/sealant would create a sealing coating in the operative field to occlude lymphatic leaks and limits seroma formation. We have launched a prospective randomized trial: the GLUBREAST Trial. The aim of the trial is to verify the effectiveness of a cianoacrylate based sealing glue to prevent or reduce seroma formation after axillary dissection for breast cancer in patients after either breast conserving surgery (BCS) or mastectomy.
Methods: There are 2 arms. The experimental arm includes mastectomy or BCS plus complete axillary dissection along with the intraoperative application of 1 ml glue. The control arm includes mastectomy or BCS plus complete axillary dissection alone, without the application of the glue. Inclusion criteria are women of any age with breast cancer scheduled for complete axillary dissection. Exclusion criteria are neoadjuvant therapies and breast reconstruction. 29 patients have been randomised. 5 out 14 underwent radical mastectomy, whereas 9 out 14 to BCS and axillary dissection in the control arm. 6 out 15 patients underwent radical mastectomy, whereas 9 out 15 to BCS and axillary dissection in the experimental arm.
Statistics: Assuming an allocation ratio of N1:N2 and alpha set at 0.05, the sample size will be of 190 patients, with 95 subjects in each arm with a power of 85%.
Results: As the trial is still recruiting patients, we have few data available. On a preliminary analysis, it has been shown patients in the experimental arm have their drain removed earlier than patients within the control arm, although the number of patient is small and the difference in days is 4 days (22 vs 18 days).
Conclusions: This is the first randomised trial to test the efficacy of a sealing glue to prevent post-operative seroma in breast surgery. The vast majority of data in the literature come from case series, and surgeons need higher level of evidence to drive surgical decision-making and choose proper devices to increase patient quality of life.
Conflict of Interest: No significant relationships.

P296
Long term outcomes of single breast incision for breast and axillary surgery on the axillary pain and range of movement

I. Sallam[1]*, G. Amira[1], A. Sherif[2], S. Jalal[3], M. Sherif[2], K. Diab[2]. *[1]Surgical Oncology, Breast Unit, NCI Cairo University/ MISR Cancer Center, Giza, Egypt, [2]Plastic and Reconstructive Surgery, MISR International Hospital, Al Jizah, Egypt, [3]Breast Unit, Erbil Teaching Hospital. Howler Medical Center, Erbil, Iraq*

Goals: Axillary surgery still maintains a therapeutic role in treatment for breast cancer patients as well as a staging tool for the axilla and has traditionally performed using a separate axillary incision. Single incision in the breast away from the axilla to do the SLNB or to clear the axilla is a better option to minimize post-operative pain and improve range of movement.
Methods: Between June 2015 and August 2017, 240 patients with Stage I breast cancer were enrolled in our study, and were assigned to 1 of the 2 groups – single incision is done in the breast to perform lumpectomy and to approach the axilla or 2 separate incisions. Operative time and surgical complications were compared between the 2 groups.
Results: There were 168 patients who underwent single incision, and 72 patients who underwent axillary separate incision. There was no significant difference in the average operative time ($p > 0.05$). There was a significantly greater difference in pain score between both groups with higher incidence of pain and limited range of movement in the separate incision group ($p < 0.05$) compared to the single incision group.
Conclusions: The axillary surgery through the single breast incision is feasible and offers a post-operative axillary pain-free life and comfortable range of arm movement.
Conflict of Interest: No significant relationships.

P297
Minimally invasive axillary mapping using superparamagnetic iron oxide (SPIO) nanoparticles: an update of the MAGUS ("Mag"netic-assisted "U"ltra'S'ound-guided (MagUS) Sentinel Lymph-Node Biopsy) trial

A. Karakatsanis[1]*, S. Abdsaleh[2], L. Asp[1], H. Lundgren[1], H. Ahlström[2], F. Wärnberg[1]. *[1]Department for Surgical Sciences, Uppsala University, Uppsala, Sweden, [2]Department for Surgical Sciences, Radiology, Uppsala University, Uppsala, Sweden*

Goals: Standard axillary ultrasound (AUS) is known to have low sensitivity in diagnosing axillary metastases, especially in low-volume nodal tumour burden. More accurate preoperative staging could potentially lead to improved patient selection, identifying subgroups with either low volume disease that could be treated accordingly and avoid surgery or no evidence of axillary disease that could avoid sentinel lymph node dissection (SLND). SPIO is a tracer that may be injected up to six weeks preoperatively for detection of sentinel lymph nodes (SLN), with comparable performance to the isotope. The SLN might be also be identified with axillary MRI lymphography, providing the grounds for enhanced preoperative staging. The MagUS trial aims to investigate this possibility.
Methods: Patients with breast cancer planned for SLNB undergo axillary MRI lymphography before and after injection of SPIO in the breast. After MRI review, the radiologist performs a focused axillary ultrasound. The area examined is then checked for transcutaneous signal with the magnetic probe and a "targeted" magnetic guided axillary US (MagUS) with transcutaneous magnetic probe localisation and core biopsy are performed. The biopsy specimen was controlled for magnetic signal and at surgery, it was documented whether the SLN had been biopsied. Preliminary results from the first 28 cases are presented.
Results: Median (range) age was 61 years (38–80) and tumour size 16 mm (5–120), whereas 83% of patients had ductal, ER+ tumours. Lymph node metastases were present in six patients, five with macro- and one with micrometastases. There was complete concordance (100%) between MRI and MagUS on SLN localisation and correlation to the number of SLN identified to those retrieved by the surgeon (median 2 for both, $p = 0.655$). The MagUS technique diagnosed all macrometastases and "missed" a 1-mm micrometastasis, resulting in 83.3% sensitivity, 100% specificity, 100% positive prognostic value and 96.4% accuracy. The "MagUS" enhanced the sensitivity of preoperative axillary mapping by 66% (16.7 vs 83.3%) and the overall accuracy by 12% (84.3 vs 94.6%, $p = 0.0625$).
Conclusions: The "MagUS" technique yields promising results for more accurate preoperative axillary staging. This may allow for the identification of low-volume axillary positive patients that might not benefit from further surgery and provides the rationale to avoid SLND

in patients with no evidence for axillary nodal disease. Completion of the trial may allow for more robust conclusions.
Conflict of Interest: No significant relationships.

P298
Intraoperative ICG-fluorescence imaging for surgical margins evaluation in breast cancer

C.F. Pop[1]*, D. Noterman[1], F. De Neubourg[1], R. Barbieux[2], M. Chintinne[3], G. Liberale[1], J.-M. Nogaret[1], D. Larsimont[3], P. Bourgeois[2], I. Veys[1], Group R&D for the Clinical Applications of Fluorescence Imagings of the Jules Bordet's Institute. *[1]Surgery, Institut Jules Bordet, Brussels, Belgium, [2]Service of Nuclear Medicine and Clinic-Unit of Lymphology, Institut Jules Bordet, Brussels, Belgium, [3]Department of Pathology, Institut Jules Bordet, Brussels, Belgium*

Goals: In more than 20% of breast conserving surgery (BCS) procedures, positive margins are detected at final pathological assessment and second surgical procedures are required to achieve complete excision. Currently, gross pathological evaluation, frozen section, imprint cytology, intraoperative ultrasound, and two-view specimen mammography are used for intraoperative margins evaluation of breast cancer (BC). These techniques are time consuming, with additional cost or are insufficient in accuracy. There is a obvious need for novel peri-operative strategies to assess the margins of breast surgical specimens. Indocyanine green fluorescence-imaging (ICG-FI) has emerged as a new imaging modality for improving the accuracy of tumor detection and to guide surgical resection in different oncological disease.
The aim of our study was to investigate the role of intraoperative ICG-FI for the assessment of surgical margins during BCS.
Methods: Patients with nonpalpable BC admitted for BCS were selected for participation in this study. Free ICG (0.25 mg/kg) was intravenous injected intraoperatively. ICG-FI were correlated with the final pathological reports. Tumor-to-background ratio (TBR) was calculated for all breast surgical cavity.
Results: Thirty-four breast surgical specimens from 34 patients were included and evaluated by in-vivo ICG-FI. There were 32 (91.4%) invasive ductal carcinomas, and 3 (8.6%) invasive lobular carcinomas. The mean histopathological tumor size was 10 mm. The final pathological assessment identified 5 (14.7%) breast surgical specimens with positive margins. The mean TBR was 1.3 (SD 0.6). At ICG-FI evaluation of breast surgical cavity, 15 of them were classified as hyperfluorescent and 20 as non-fluorescent. The sensitivity, specificity, positive predictive value and the negative predictive value of perioperative visual ICG-FI on breast surgical cavity were, 100% (5/5), 66.6% (20/30), 33.3% (5/15) and 100% (20/20), respectively.
Conclusions: These first observations indicate that intraoperative ICG-FI of breast surgical cavity after BCS had a good sensitivity (100%) but is not specific enough (67%) to discriminate between benign and malignant breast residual tissue. Nevertheless, its high negative predictive value (100%) could make it an appropriate complementary tool for intraoperative assessment of breast surgical margins of patients treated by BCS, reducing the risk for unnecessary additional resections and/or operations.
Conflict of Interest: No significant relationships.

P299
Density of resected breast tissue in skin sparing total mastectomy

C.W. Jeon[1], J.H. Choi[1], S.U. Jung[1]*, A.L. Kim[1], S.A. Lee[2], S.U. Woo[3], Y.J. Suh[4]. *[1]Department of Surgery, Kosin University Gospel Hospital, Busan, Korea, Republic of, [2]Department of Surgery, CHA Bundang Medical Center, CHA University, Seoul, Korea, Republic of, [3]Department of Surgery, Korea University Guro Hospital, Seoul, Korea, Republic of, [4]Department of Surgery, The Catholic University of Korea St. Vincent's Hospital, Seoul, Korea, Republic of*

Goals: The weight of resected tissue after skin sparing total mastectomy provides helpful information in choosing the size of implant in immediate breast reconstruction. Silicone breast implants are denser than water. However, there is no information of density of resected breast tissue. The purpose of this study was to analyze the difference in the density of resected breast tissue according to various factors of the patients, and to report the relationship between the weight of resected breast tissue and used implant.
Methods: 42 patients who had undergone immediate breast reconstruction using silicone implant after total mastectomy were included. The volume of resected breast tissue was measured using Archimedeś principle. Differences in density were compared according to patient's age, body mass index(BMI, kg/m^2) and preoperative chemotherapy. We also compared the difference between weight of resected breast tissue and weight of used implant.
Results: The means of density of resected breast tissue was 0.997. No significant differences were found between age, BMI, and preoperative chemotherapy. As the weight of resected tissue increases, the difference between the weight of resected breast tissue and the weight of implants used increases statistically significantly ($p = 0.012$).
Conclusions: We have demonstrated that the density of resected breast tissue is lower than water and silicone implants. It should be kept in mind that there is a difference in density in choosing an implant size by all breast surgeon.
Conflict of Interest: No significant relationships.

P300
The potential role of frozen sections of tumors in decision making of axillary procedure in breast conserving surgery for DCIS at preoperative diagnosis

K. Lee[1]*, K. Yoon[2], J. Lee[2], H. Lee[2], J. Kim[2], S.I. Kim[2], Y.U. Cho[2], B.-W. Park[2], H.S. Park[3], M.A. Alshahrani[2]. *[1]General Surgery, Yonsei University College of Medicine, Seoul, Korea, Republic of, [2]Yonsei University College of Medicine, Seoul, Korea, Republic of, [3]General Surgery, Yonsei University Medical Center, Seoul, Korea, Republic of*

Goals: It is unnecessary to perform axillary staging in pure Ductal Carcinoma in Situ. But in real world, axillary evaluation is often performed because of upstaging risk. We analyzed the role of Intra-Operative Frozen section(IOF) of tumor to identify the upstaging to invasive cancer in patients with preoperative DCIS
Methods: We reviewed patients with DCIS in preoperative percutaneous biopsy. All patients were candidates for breast conserving surgery (BCS) from January 2013 to March 2018. Positive IOF result was defined as presence of invasive or micro invasive cancer. Results of IOF and permanent pathology were analyzed. Pathologic and radiologic features are also analyzed.
Results: Seventy eight cases with preoperative DCIS underwent BCS with IOF. Six cases had positive results on IOF. Sensitivity of IOF was 27.7% (95% confidence interval(CI): 9.69%–53.4%) and specificity was 98.33% (95% CI: 91.06%–99.9%) with accuracy of 82.05% (95% CI: 71.72%–89.83%). Any other factors had no statistically significant relationship with permanent pathology in this study, except the result of frozen section.
Conclusions: IOF showed high specificity and accuracy for detecting invasiveness in cases with preoperative DCIS. However, low sensitivity is a limitation of IOF. IOF can be an diagnostic adjunctive tool for identifying invasiveness in patients with preoperative DCIS.
Conflict of Interest: No significant relationships.

P301
Total breast reconstruction with fat graft after expander deflation or breast implant remove

A. Mondino[1]*, A. Surace[2], M.G. Baù[1], A. Mangia[2], S. Bruschi[2], N. Nicolò[2], M.P. Mano[2], G. Datta[2]. *[1]S. Anna, Cittadellasalute, Torino, Italy, [2]Cittadellasalute, Torino, Italy*

Goals: Fat grafting popularity increased finding wide pattern of application in oncologicalreconstruction, wound therapy and

cosmetic surgery. Recently, fat graft has been used for breastvolume replacement after skin modelling by conventional tissue expanders positioned duringmastectomy or after forced removal for prosthesis complication. Our purpose is to assess fat grafting feasibility and safety, pointing out its low rate of complications.
Methods: We retrospectively analysed 12 patients treated with autologous fat grafting immediately, after oncological surgery, and not delayed, for breast cancer, including patients not eligible for implant reconstruction and patients refusingimplant replacement after implant removal for complications. We analysed: age, BMI, expansion rate, grafting data (sessions number, injected volume in each session and complications rate).
Clinical examination was carried out every six months for 1 year after complete reconstruction to evaluate adipose tissue reabsorption and, eventually, further required fat grafting session.
Results: Aesthetic outcomes are excellent in all the patients of our series. According to patient surveys, satisfaction rate was very high. Filled expanders final volumes varied from 270 to 630 mL (average: 413 mL). Fat grafting sessions number ranged between 1 and 3 (average 2.25), and injected grafting volume during each session varied from 35 to 300 mL (average 57 mL). Mean expander deflation during each surgery session varied from 50 to 220 mL (average, 92 mL). No case of complication was found.
Conclusions: Our technique is useful and innovative and leads to good aesthetic results with shorter hospital recovery and low complication rate compared to major reconstructive surgery. Oncological safety is not compromised.
Conflict of Interest: No significant relationships.

P302
Experience and results in sentinel lymph node (SLN) biopsy in a peruvian clinic

R. Alarco*, J. Ponce, J. Pinto, F. Doimi, R. Dyer, R. Ledesma, C. Vigil.
Oncosalud, Lima, Peru

Goals: To describe our experience and results in SLN biopsy in female patients with breast cancer treated at Oncosalud-AUNA.
Methods: We present the retrospective review of breast cancer patients undergoing sentinel lymph node biopsy in the period 2015–2017.
Results: In the study period, 508 patients underwent SLN biopsy. The median age was 55 years old (SD±13.6). The median tumor size was 17 mm (SD±16.4) while the histological grade was low in 7.3% of patients, intermediate in 68.7% and high in 24%. Ductal histology was present in 75.4% of patients, lobulillar in 8.1% and mixed/others in 16.6%. Lymphovascular involvement was present in 26.2% of patients. In regard to the clinical N stage, 90% of patients were N0; 9.6% N1; 0.2% N2 and 0.2% N3. In total, 60.8% of patients were diagnosed at clinical stage I, 36.2% at clinical stage II and 3% at clinical stage III. In relation to the breast cancer subtypes, 22% were luminal A; 59.7%, luminal B; 9%, HER2 and 9.2%, triple negative. Only 5,1% had neoadjuvant systemic treatment. 58.2% of patients underwent lumpectomy and 41.8% mastectomy. Overall, 26.6% of patients had tumor involvement in at least one sentinel lymph node. The median number of resected SLN was 2 (SD±1.1). Involvement was present in only one SLN in 66.7%; in two SLN in 25.9% and in 3 or more SLN in 7.4%. In patients without neoadjuvant treatment, risk factors for SNL infiltration were age (medians of 57 vs 53 for negative vs positive SNL; $P = 0.028$); tumor size (>2cm vs ≤2cm; OR = 2.2; 95%CI:1.4–3.4; $P < 0.001$); histological type (lobulillar vs ductal; OR = 2.9; 95%CI:1.5–5.8; $P = 0.001$); histological grade (intermediate/high vs low, OR = 6.2; 95%CI = 1.5–26.5; $P = 0.01$), clinical N stage (N1–3 vs N0; OR = 7.5; 95% CI:3.6–15.3; $P < 0.001$); clinical stage (CSII vs CSI; OR = 2.8; 95%CI:1.7–4.4; $P < 0.001$) and lymphovascular involvement (Yes vs No; OR = 11.4; 95%CI:6.9–19.0;$P < 0.001$).
Conclusions: In our experience with more than 500 patients, we identify classic risk factors for SLN involvement. The follow-up data will provide valuable information to identify long-term prognostic factors.
Conflict of Interest: No significant relationships.

P303
Prepectoral versus retropectoral implant-based breast reconstruction – considerations regarding the implant pocket

C. Deutschmann*, C.F. Singer, C. Leser, D. Gschwantler-Kaulich.
Department of Obstetrics and Gynecology, Medical University of Vienna, Vienna, Austria

Goals: The main objective of the study is to evaluate the implant pocket following prepectoral versus retropectoral implant-based breast reconstruction (IBBR). The main outcome measure is the thickness of the implant pocket including skin and muscle in the retropectoral cohort and skin and ADM/mesh in the prepectoral cohort, respectively. A subgroup analysis regarding the variable "post-mastectomy radiotherapy" (PMRT) will be conducted to evaluate the influence of PMRT on the implant pocket in the two patient cohorts.
Secondary objectives of the study are to evaluate the presence of residual breast tissue, the procedure-related complication rates and the demand of lipofilling for reconstruction completion following pre- versus retropectoral IBBR.
Methods: Women who received an IBBR within the years 1.1.2013 to 31.12.2017 at the Department of Obstetrics and Gynecology of the University Clinic of Vienna, Austria and had received an MRI before and one year after the reconstructive procedure will be included in the study. Data will be collected by performing a retrospective chart review as well as by reevaluating the MRI studies.
Results: The following variables regarding the implant pocket will be analysed:

- thickness of the tissue above the implant in the upper pole of the breast (skin, muscle (retropectoral cohort), ADM/mesh (prepectoral cohort))
- percentage of implant surface covered by the pectoralis major muscle (retropectoral cohort)

Secondary outcome measures are: residual breast tissue, procedure-related complications including dehiscence, necrosis, rippling and capsular contracture and performance of lipofilling for reconstruction completion.
Final results of the study are still pending and will be presented at the meeting.
Conclusions: As prepectoral breast reconstruction is becoming increasingly popular studies reviewing the impact of the implant position on the selected implant pocket thickness as well as on the presence of residual breast tissue and consequently on the associated oncological safety of the operative procedure are inevitable. This is – to our knowledge – the first study addressing this highly-topical research question.
Conflict of Interest: No significant relationships.

P304
Factors analysis for choosing mastectomy in patients eligible for breast conserving surgery

R. Chen, J. Wang*, Z. Yin, F. Xie, Q. Zhu, S. You, C. Jiang, Y. Li, S. Li, X. Zha.
Breast Disease Department, the First Affiliated Hospital of Nanjing Medical University, Nanjing, China

Goals: The rate of breast conserving surgical (BCS) was low in China. The majority of breast cancer patients in China prefer mastectomy, although they were informed it was no difference in overall survival rate when compared with BCS plus radiotherapy. This study planned to investigate factors influencing patients' surgical choice for who were eligible for BCS.

Methods: Female breast carcinoma patients between March 2016 and January 2017 were identified from a prospectively collected data base. Preoperative clinical evaluation were used to determine patients who were suitable to undergo BCS. Patients made their own decision after been fully informed no difference in overall survival rate for the two surgical methods from the same medical group. Univariated analysis was selected to determine the factors that associated with the breast surgical methods. Significant factors (defined as $P < 0.05$) were then incorporated into multivariate logistic regression models to determine factors that independently influenced patients' choice.
Results: A total of 271 patients were included in the study and 149 patients were evaluated to be eligible for BCS. Among them, 65 patients choosed BCS and the other 84 patients choosed mastectomy. On the basis of univariate analysis, patients with young age, lived in urban, with high income and education, had medicare insurance, preoperatively unknown of breast cancer and with short admission-surgery interval or confirmed diagnosis-surgery interval were more likely to choose BCS ($P < 0.05$). The multivariate model revealed three independent influence factors: age at diagnosis ($P = 0.009$), insurance status ($P = 0.035$), and confirmed diagnosis-surgery interval ($P = 0.037$). In addition, patients received neoadjuvant chemotherapy (NCT) before surgery were more likely to choose mastectomy ($P = 0.0077$).
Conclusions: Age at diagnosis, confirmed diagnosis-surgery interval and insurance status were independent influence factors associated with surgical choice for patients eligible for BCS. Patients received NCT did not improve the rate of real BCS.
Conflict of Interest: No significant relationships.

P305
Experience with Axillary Lymphonodal Sentinel Procedure for breast cancer patients in our center

H. Nina*, G. Xhepa, R. Hasa, V. Titka, E. Peci, T.M. Al-Lawati, G. Petrella, O. Buonomo, D. Varvaras. *Department of Surgery, Service of Oncology, University Hospital Center'Nene Tereza' Tirana, Albania, Tirana, Albania*

Goals: Axillary Lymphonodal Sentinel Biopsy for so many times is important and gold standard in the treatment of breast cancer patients. It is performed in diversity technique, but the use of radioactive isotope is the most secure and used. In Albania the first case using this procedure is performed in October 2014 in Hygeia Hospital Tirana at patient diagnosed for breast cancer and underwent to surgery: Nipple Sparing Mastectomy with Immediate Breast Reconstruction using prosthesis and biological mesh.
Methods: In this abstract is study the cases operated with breast cancer in Hygeia Hospital Tirana with the use of Axillary Lymphonodal Sentinel Biopsy with radioactive isotope, during period October 2014-October 2018.
Results: In this period there are operated 51 patients with breast cancer with different type of surgery (mastectomy, wide glandular resection, quadrantectomy, nipple sparing mastectomy and immediate breast reconstruction) using axillary lymphonodal sentinel biopsy with radioactive isotope. Only one of the patients was male. 9.8% of patients were operated after neoadjuvant chemotherapy treatment, in 2 patients we had positive result for metastases in axillary lymponod. In patient not underwent neoadjuvant chemotherapy, 22% of patients had positive result for metastases in axillary lymphonod. In all these procedure, number of lymphonodes removed was 1–3 lymphonodes, most of cases 60% were 2 lymphonodes. In the follow up of all patients, was not confirmed any cases of recurrence. Only one patients demonstrate minor lymphedema of the arm and all patients show o good physical condition of the arm.
Conclusions: The Lymphonodal Sentinel Procedure is the best procedure for the patient treated for breast cancer, avoiding the unnecessary axillary dissection and lymphedema of the arm in patients with negative clinical exam of axillary region.
Conflict of Interest: No significant relationships.

P306
Complications and patient satisfaction following unilateral immediate expander breast reconstruction after nipple sparing subcutaneous mastectomy

P. Zubor[1]*, I. Homola[2], T. Kulkovska[1], D. Vlcakova[1], K. Biringer[1], Z. Laucekova[1], D. Simova[1], E. Kozubik[1], I. Stastny[1], E. Kudela[1]. *[1]Obstetrics and Gynecology, Jessenius Faculty of Medicine in Martin, Comenius University in Bratislava, Martin, Slovakia, [2]Plastic Surgery, University Hospital Martin, Martin, Slovakia*

Goals: To analyze complications and patient satisfaction in breast cancer patients treated with nipple-sparing subcutaneous mastectomy (NSSM) and immediate subpectoral expander reconstruction.
Methods: The study evaluating breast cancer patients undergoing unilateral NSSM with immediate expander/implant (E/I) reconstruction. Patients were evaluated for early and late complications, general satisfaction with reconstruction, and esthetic satisfaction 12 months after surgery. A subset of patients received postoperative radiotherapy (RT). A surgical control evaluating complications was performed at 1 week and 1 month, and a survey (Breast Cancer Module (QLQ-BR23) and Breast Reconstruction module (BRECON23, from EORTC) was send to patients focusing on satisfaction with reconstruction and esthetic outcome 1 year postoperatively.
Results: 37 patients underwent NSSM and E/I reconstruction. Three patients required acellular dermal matrix and 2 synthetic mesh supports for adaptation of subpectoral implants. The mean age of patients was 49.1 yrs (22–74). Young patients required reconstruction more often ($p < 0.0001$). The early postoperative complications up to 1 month occurred in 5 patients (13.5%). One required reoperation (wound closing and debridement with implant change due to necrosis), 2 patients get surgical site infection with subsequent capsular retraction (Baker grade III/IV) and 2 were presented with hematoma resorbing >5 weeks. Eleven patients received RT after reconstruction. The median dose including boost was 60.7 Gy in 1.8- to 2.0-Gy fractions. Four patients (10.8%) had a breast reconstruction failure and it was more frequent in patients receiving RT 27% (3/11) compared to NSSM patients with E/I without RT 3.8% (1/26), respectively ($p < 0.001$). There were no leaks from E/I or radiation-associated angiosarcoma of breast in studied population. 31 patients completed satisfaction survey (83.8%). The data showed that 18.9% patients with E/I placement, including all 4 reconstruction failures expressed a lower general satisfaction ($p = 0.026$), compared to 81.1% of satisfied patients who completed E/I reconstruction with or without RT.
Conclusions: The rate of complication in patients with immediate breast reconstruction after NSSM is in low. Irradiated patients had a higher rate of E/I reconstruction failure and complications than nonirradiated patients. The satisfaction level 12 months after reconstruction is positive in more than 80%. Study was supported by grants VEGA 1/0124/17 and APVV-16-0021.
Conflict of Interest: No significant relationships.

P307
Dual tracing modality of indocyanine green and methylene blue is an alternative option for sentinel lymph node biopsy

Q. Zhu[1], J. Wang[2]*, Z. Yin[2], F. Xie[2], R. Chen[2], S. You[2], C. Jiang[2], S. Li[2], Y. Li[2], X. Zha[2]. *[1]Breast Surgery, The First Affiliated Hospital of Nanjing Medical University, Nanjing, China, [2]The First Affiliated Hospital of Nanjing Medical University, Nanjing, China*

Goals: Current standard method for sentinel lymph node biopsy (SLNB) is the dye combined with isotope (ISO) method. Isotope method is difficult to implement in many developing countries, and the radioactivity of thetracer(Tc99m) can have impacts on the health of patients and medical staff. The study was designed to assess the value of the combination of ICG and methylene blue (MB) dye in SLNB.

Methods: 140 breastcancer patients eligible for SLNB were enrolled and performed by injection of ICG and MB and Tc99m. SLNs were explored and removed under the guidance of fluorescence and/or blue dye and/or ISO. The detection rate of SLNs and positive SLNs, and the numbers of SLNs of ICG, MB, ISO, ICG + MB, ICG + ISO and ICG + MB+ISO were record and compared with standard method (MB + ISO). Calculate and record the false negative rate of each method.
Results: The detection rate of standard method(MB + ISO) was 85.71% (120/140). The detection rate of MB method was 72.14% (101/140), and was lower than that of the standard method ($P < 0.05$). The detection rate of ISO method was 74.29% (104/140), and was lower than that of the standard method ($P < 0.05$). The detection rate of the ICG method was 72.86% (102/140), and was lower than that of the standard method ($P < 0.05$). The detection rate of dye method combined with fluorescence method was 82.86% (116/140). Although the detection rate of this method was slightly lower than the standard method, there was no statistical difference ($P > 0.05$). The detection rate of the ISO method combined with fluorescence method was 85.71% (120/140), and was equivalent to the standard method. The detection rate of the three methods combined use was 88.57% (124/140), which was higher than the standard method's with no statistical difference ($P > 0.05$). The false negative rates of standard method, triple combinded method, dye method combined with fluorescence method, and ISO method combined with fluorescence method were all 0% (0/42). The false negative rate of the dye method was 11.90% (5/42). The false negative rate of the ISO method was 9.52% (4/42). The false negative rate of the fluorescence method was 9.52% (4/42).
Conclusions: Even withoutradioactive isotopes, MB+ICG method can ensure the detection rate of SLNB, which is equivalent to the detection rate of the standard method (MB+ISO). In addition, MB +ICG methodis simple and requires short learning curve only. Dual tracing modality of indocyanine green and methylene blue is an alternative option for SLNB, especially in developing countries.
Conflict of Interest: No significant relationships.

P308

Metaplastic breast carcinoma: a single-institution experience and literature review

N. Salemis[1]*, G. Papadopoulou[2]. *[1]Breast Surgery Unit, 401 Army General Hospital, Athens, Greece, [2]Department of Pathology, 401 Army General Hospital, Athens, Greece*

Goals: Metaplastic breast carcinoma (MBC) is a rare but aggressive malignancy that accounts for 0.25–1% of all breast cancers. It was first described in 1973 by Huvos et al and recognized by WHO as a distinct pathological entity in 2000. MBC is histologically characterized by the presence of both epithelial and mesenchymatous components. Because of the rarity of the disease no randomized trials have yet been conducted to address the optimal treatment.
Methods: We retrospectively reviewed the medical records of patients who were diagnosed with metaplastic breast carcinoma at the Breast Cancer Surgery Unit of 401 Army General Hospital, Athens, Greece over a 7-year period. Clinical, mammographic, sonographic and pathological findings were analyzed.
Results: From January 2010 to December 2017, seven pathologically proven cases of metaplastic carcinoma of the breast were identified. All patients were female, with an average age of 59.8 years (range 28 to 86 years). The median tumor size was 5.5 cm (range 1.9 to 17 cm). Three (42.8%) patients presented with locally advanced disease, one patient presented with signs of breast abscess and one patient presented with a large, rapidly growing, ulcerated, and bleeding mass and signs of impending sepsis.
Five (83%) patients underwent mastectomy, and one (17%) patient underwent wide local excision. One patient with locally advanced disease died due to unrelated reasons during neoadjuvant radiation therapy. Axillary lymph node metastases were detected in 3 (42.8%) patients. All cases were negative for Estrogen receptors whereas Her 2/ neu overexpression was detected in only one (14%) case. Six (86%) patients received adjuvant chemotherapy and 5(71%) patients received adjuvant radiotherapy. Four (66%) patients developed metastatic disease 12–72 months after surgery (mean 29.8 months). Median follow-up was 86.3 months (range 37–116 months). Five-year disease-free survival was 50%.
Conclusions: Metaplastic breast cancer is a rare heterogeneous group of breast malignancies characterized by larger tumors at presentation, lower rates of axillary nodal involvement, higher proportion of triple negative cases, increased rates of both local and distant recurrence and poorer prognosis compared to matched invasive ductal carcinoma of no special type (IDC-NST) or triple negative ductal carcinoma. The optimal treatment strategy for MBC remains unknown and larger-scale clinical studies are required to further investigate treatment modalities.
Conflict of Interest: No significant relationships.

P309

Feasibilty of sentinel lymph node biopsy in patients with node-positive inflammatory breast cancer who responded to neoadjuvant systemic treatment

A.-L. Oprea[1], N. Ak[2], P. Saip[2], S. Önder[3], S. Bademler[2], B.M. Gulluoglu[4], H. Karanlık[5]*. *[1]Targu Mures University of Medicine, Pharmacy, Science and Technology, Targu Mures, Romania, [2]Istanbul University, Institute of Oncology, Istanbul, Turkey, [3]Istanbul University, Istanbul Faculty of Medicine, Istanbul, Turkey, [4]Marmara University School of Medicine, Istanbul, Turkey, [5]Surgical Oncology, Istanbul University, Institute of Oncology, Istanbul, Turkey*

Goals: Aim is to assess the feasibility of sentinel lymph node biopsy (SLNB) in patients with non-distant metastatic, pathologically node-positive inflammatory breast cancer (IBC) who had clinical complete response in axilla after neoadjuvant systemic treatment (NAC).
Methods: This is a retrospective registry trial. Patients who were diagnosed as IBC were screened. Those without distant metastasis and with FNAB-proven node-positive were included. Patients who did not receive NAC were excluded. Only those whose axilla were found to be downstaged to clinically (with physical exam and axillary ultrasound) N0 were analysed. All underwent SLNB and consecutive level I-II axillary dissection. Identification rate and false negativity of SLNB were calculated as overall and according to the number of retrieved SLN, presence of breast pCR and molecular subgroup.
Results: Twenty-five patients were included. Median age was 47 (26–74) years. Luminal HER2 cancer was most common type (n = 10; 40%). Overall, 9 (36%) patients had pCR in breast and 7 (28%) in axilla. All patients with axillary pCR were also found to have pCR in breast. Rate of pCR in breast was 100%, 40%, 25%, 20% and 0% in non-luminal HER2, luminal HER2, triple negative (TN), luminal B and luminal A cancers, respectively. Overall, in 17 (Identification rate [IR]: 68%) patients at least one SLN was removed. In most patients (n = 14; 82%) only one SLN was retrieved. IR was 100% in patients who had pCR in breast. False negativity rate (FNR) was 20% overall in the cohort. Those in whom only one SLN was retrieved had a FNR of 25%. No false negative case was found if two or more SLNs were excised. FNR was 100% and 20% in patients with luminal HER2 and luminal B cancers, respectively. No false negativity was found in luminal A, non-luminal HER2 and TN cancer cases. Again no false negative case was found in those who had cPR in breast.
Conclusions: Although the validity of the current study is low due to its sample size, it provides encouraging data for the feasibility of SLNB in a limited group of patients with IBC. As a subgroup, both IR and FNR of SLNB were found to be satisfactory in those patients with non-luminal HER2 cancer if they achieve pCR in breast after NAC. The low FNR rate in this subgroup most probably is a result of high axillary pCR rate in concordance with the breast pCR. Therefore, although with very limited and inadequate evidence, effective systemic

treatment which leads to pCR seems to decrease the FNR in SLNB even in IBC patients.
Conflict of Interest: No significant relationships.

P310
Vacuum intraoperative specimen mammography: a new technique

A. Mondino[1]*, M.G. Baù[1], G. Gregori[1], C. De Sanctis[1], V. Marra[1], D. Tota[1], M. Bortolini[2], A. Surace[1], M.P. Mano[1]. *[1]Cittadellasalute, Torino, Italy, [2]Ospedale Martini, Torino, Italy*

Goals: Standard specimen mammography (SSM) is routinely used to confirm the presence of target breast lesion within the excised specimen and to evaluate margin adequacy. It requests specimen transport to radiology department, radiologist evaluation and results communication to operating room. If radiologist reports inadequate margins or partial excision of the lump, surgeon can excise additional tissue in the same surgery session. Specimen images can also be transmitted to radiology PACS (Picture Archiving and Communication System) for reducing surgical steps. Sometimes radiological image is distorted by tissue overlap and this might alter correct evaluation of tumor borders with more extended lumpectomy. Our innovative technique purpose is to reduce this effect obtaining an easier and more accurate image for margins assessment, avoiding unnecessary resection.
Methods: We consecutively scanned 18 specimens obtained after lumpectomy at St Anna Hospital in Turin from March 1st, 2018 to April 31st, 2018. Intra-operative specimen mammography was performed by digital specimen mammography system (Faxitron Bioptics) in the operating room. We compared standard ISM (sISM) and vacuum ISM (vISM) images and final histopathology reports.
Results: 72% lesions were seen in mammography as mass (13/18), 5% as microcalcifications (1/18), 23% as parenchymal distortion (4/18). Average MX/US diameter was 12 mm. 50% lumps were palpable. 61% specimens (11/18) were invasive ductal cancer, 11% (2/18) invasive lobular cancer, 11% (2/18) in situ lesions, 5% invasive papillary cancer. Average diameter was 11,8 mm at histopathologic analysis (the smaller cancer was 1 mm; the bigger one was 23 mm). Surgical margins were radiological involved in 55% specimens (10/18) analyzed with standard ISM e in 11% specimens analyzed with vacuum ISM and actually histopathological involved in 16% specimens.
Results are reported in Table 1. sISM specificity was 43% (CI 95% 26–73) and sensitivity was 75% (CI 95% 77–100) with PPV 20% (CI 95% 11–56) e NPV 80% (CI 77–100). vISM specificity was 100% (CI 95% 67,99) and sensitivity was 67% (CI 95% 26–73) with PPV 100% (CI 95% 40–86) e NPV 65% (CI 95% 59–96).

Table 1.
Results

	sISM	vISM
Sensitivity	0,75	0,67
Specificity	0,43	1,00
PPV	0,20	1,00
NPV	0,80	0,65

sISM = standard Intraoperative Specimen Mammography; vISM = vacuum Intraoperative Specimen Mammography; PPV = positive predictive value; NPV = negative predictive value.

Conclusions: Compared with ISM, the vacuum effect on specimen seems to increase margin detection technique precision. vISM has a higher specificity and sensibility compared to sISM. Our study is a pilot study, so analyzed population is very small. Our intention is to continue using vacuum technique before acquiring ISM images.
Conflict of Interest: No significant relationships.

P311
Intraoperative ultrasonography in Breast conserving surgery (BCS): better re-excision rate or cosmetic outcome

K. Dev[1,2]*, N. Shivran[3]. *[1]Surgical Oncology, Shalby Multispecialty Hospital, Jaipur, India, [2]Shalby Multispecialty Hospital, Jaipur, India, [3]Radiology, Shalby Multispecialty Hospital, Jaipur, India*

Goals: The need of a wide excision of the tumour with adjacent breast tissue to avoid the risk of re-excision contributes a detrimental effect on cosmetic outcome. The importance of margin negative excision is as important as the impact of body image on sexuality and quality of life. The equilibrium between both the aims is requisite an accurate excision with a smaller and precised volume of surrounding breast tissue removal. Addition to traditional way to excision based on palpation and pre-operative imaging, incorporation of ultrasound to guide to continuous visualization of the lesion during the procedure and to assess the margin status ex-vivo has significance.
Methods: A prospective, randomized study was conducted with or without intraoperative ultrasonography guided BCS including 148 patients of breast cancer at two centres in our country from Jan 2015 to Dec 2016. Patient demographics, tumor features, pre-operative chemotherapy, intraoperative findings, pathologic and cosmetic results, and re-excision were recorded. The intraoperative-measured margins on palpation and ultrasound were compared with pathology margins. The cosmetic outcomes were evaluated by a four-member panel using computerized software Breast Cancer Conservative Treatment cosmetic results (BCCT.core) and by patient self-evaluation. Time points for follow-up were 3, 6, 9, and 12 months after surgery. The patient satisfaction scored on a 3-point Likert scale (excellent, fair, or poor).
Results: A total of 142 patients were analysed with complete data dividing 124 patients with IOUG-BCS and 118 with palpation method only. Eighteen out of 118 patients (15.2%) underwent re-excision in palpation guided excision and 4.8% (6/124) in IOUG-BCS group ($p = 0.018$). The concordance between the closest margins recorded by USG and pathology margins was 82% ($r = 0.76$, $p = 0.01$). Palpation guided group had larger volume of breast excision concomitantly with poor cosmetic outcomes. Patient's satisfaction was better in IOUG-BCS group.
Conclusions: The BCS with Intraoperative ultrasound guidance is a practicable approach to achieve the satisfactory results in terms of re-excision rate and cosmetic outcome. This study sustenance the advantage of USG guided BCS and confirm as the gold standard in the practice.
Conflict of Interest: No significant relationships.

P312
Efficacy of combination of indigocarmine dye and radioisotope dye injection for sentinel lymph node biopsy: positive node rate, axillary recurrence rate and disease free survival for over 5 years follow up results

J. Jung*, Y. Joo, K.-E. Kim, H. Kim, Y. Kim, E. Lee, H.-B. Lee, H.-G. Moon, W. Han. *General Surgery, Seoul National University Hospital, Seoul, Korea, Republic of*

Goals: Although introduction of radioisotope mapping has reduced the morbidity of breast cancer patients, the universal consensus on the use of dye guided, radioisotope guided, or dual in sentinel lymph node biopsy (SLNB) remains elusive. The purpose of this clinical study is to determine the relative contribution of radioisotope mapping by applying indigocarmine dye with or without radioisotope mapping in SLNB.
Methods: This study enrolled eligible patient data from Seoul National University Hospital Web database and CDW SUPREME. We identified a total of 10,389 women with breast cancer who underwent surgery between January 1, 2005 and December 31, 2013. Finally, A total of 5,030 female breast cancer patients who underwent breast conserving surgery or all forms of mastectomy

with indigocarmine guided or dual method of indigocarmine and radioisotope guided SLNB were included and analyzed retrospectively. This study excluded all patients who received neoadjuvant chemotherapy and in terminal stage who received SLNB as a palliative surgery.
Results: Among 5,030 women who received SLNB, 1,959 patients were treated with dye guided SNLB and 3,071 patients were treated with dye guided and radioisotope guided SLNB. The median follow-up period was 4.9 years in this study. There was no significant difference in positive lymph node rate with indigocarmine dye guided (17.5%) or dual method of dye and radioisotope (18.2%) (p = 0.551). The median number of harvested SLNB were 3.15 in dye guided group and 3.1 in dual method group (p = 0.286). Axillary recurrence rate was 0.7% in dye guided group and 0.3% in dual method group and there was no statistical significance (p = 0.083). Median disease free survival was 4.3 years in dye guided group and 4.7 years in dual method group but the Kaplan-Meier curve showed no significant difference in disease free survival between two groups (P = 0.53).
Conclusions: Among women who received BCS or mastectomy due to non-stage 4 breast cancer, the use of indigocarmine dye alone is non inferior to dual method of dye guided and radioisotope. The added value of radioisotope is marginal considering burdens of handling isotopes. This study does not support the routine use of radioisotope in SLNB as there are no added benefits to using radioisotope in this patient population based on a 9-year research.
Conflict of Interest: No significant relationships.

P313
Immediate implant-based prepectoral breast reconstruction using acellular dermal matrix

D. Varvaras[1]*, H. Nina[2], V. De Felice[3], T. Al-Lawati[4], M. Angeletti[1], S. Tardioli[5], G. Papadopoulos[6], G. Petrella[7]. *[1]Centro di Senologia, Nuova Villa Claudia, Rome, Italy, [2]Service of Oncology, University Hospital Center "Nene Tereza", Tirana, Albania, [3]Centro di Senologia, Nuova Villa Claudia, Rome, Italy, [4]Breast Cancer Unit, Royal Hospital, Muscat, Oman, [5]Centro Senologia, Nuove Villa Claudia, Rome, Italy, [6]Euromedica Geniki Kliniki, Thessaloniki, Greece, [7]Department of Experimental Medicine and Surgery, University Hospital "Tor Vergata", Rome, Italy*

Goals: The most common breast reconstruction (BR) performed post-mastectomy is implant based (IB); currently, following conservative mastectomies (CM), the surgeons place the implant below the pectoralis muscle without or with acellular dermal matrix (ADM) (subpectoral approach or partially coverage with ADM, doualpane approach). More recently, surgeons have begun to place the implant in front of the pectoralis muscle (prepectoral approach) with total anterior coverage using ADM.
Methods: Prepectoral IB-BR with total ADM coverage was performed in 16 selected patients (25 breasts, 9 bilateral and 7 unilateral) who required CM and immediate IB-BR and respected the reconstructive and oncological inclusion criteria, from March 2016 to March 2018.
Reconstructive inclusion criteria were: *small* and *medium size non-ptotic breasts* with a pinch test performed at three para-areolarsites>1,5 cm. Oncological inclusion criteria were: early stage *breast cancer*and prophylactic mastectomy. Exclusion criteria were: post-operative radiotherapy, diabetes and heavy smoking. All reconstructions were performed with silicone gel anatomic implants (MENTOR® Silicone Gel-Filled Breast, CPG™, Cohesive III™) and bovine derived ADM (SurgiMend® PRS Meshed, Integra LifeSciences) 15 × 15 cm Fenestrated Semi-Oval of size1 mm of thickness. A written informed consent was signed by each patients.
Results: Skin reduction breast reconstruction with pre-pectoral implant was performed on 25 breasts in 16 women (9 bilateral and 7 unilateral), with *small* and *medium size non-ptotic breasts*. At mean follow-up of 390 days, patients satisfaction and cosmetic outcomes have been good, with no animation deformity or significant capsular contractures. Major complications including necrosis and implant loss occurred in 1 breast (1 patient), with a total explantation rate of 4%.
Minor complications including delayed healing, seroma, or red breast, occurred in 3 breasts (12%). No patients required more than an overnight stay in hospital, and there were no delays to adjuvant treatment in therapeutic cases.
Conclusions: This preliminary report, on a selected group of patients, has shown good results in terms of esthetic, effectiveness, manageability, and hospitalization. Long term and comparative studies, with a larger number of patients, are needed to better define the accuracy of the indications and the limits of this new surgical technique.
Conflict of Interest: No significant relationships.

P314
Comparison of treatment outcomes between surgery and primary endocrine therapy for elderly patients with breast cancer

E. Sakata[1]*, Y. Endo[1], H. Hashidate[2], H. Sibuya[2], H. Mkino[3]. *[1]Department of Breast Surgery, Niigata City General Hospital, Niigata, Japan, [2]Department of Pathology, Niigata City General Hospital, Niigata, Japan, [3]Mkino Breast Clinic, Niigata, Japan*

Goals: In recent years, opportunity to choose primary systemic endocrine therapy (PET) as initial breast cancer treatment for elderly patients or patients with coexistence disease such as dementia. But we often have difficulty in local control because of long lifetime compared with life expectancy at the start time. This study aimed to compare surgical outcome with PET for elderly patients with breast cancer.
Methods: From April 2007 through May 2016, of 1349 consecutive patients with breast cancer who treated our institution, 180 (13.3%) over 75 years of age were enrolled. Male patients and 2nd cancer of metachronous bilateral disease were excepted. We investigated clinicopathological features and treatment result retrospectively.
Results: Of 180 patients with over 75 years old, 144 patients underwent resection and 36 patients treated with PET as initial treatment. Patients treated with PET were older than patient underwent surgery (median age: 84 vs 79 yeas). Patients with comorbidities were more frequent in patients treated with PET than those with surgery. Hormone receptor were positive in all patients with PET. In patients underwent surgery, 97 cases were Luminal type, 10 were HER2 type, 37 were triple negative type. Both treatments were chosen regardless of clinical stage. Six patients underwent resection after PET for local control. Both 5-years disease specific and overall survival were worse in patients treated with PET than those with surgery (89.8% vs 91.7%, 71.6% vs 83.9%, respectively).
Conclusions: Patients treated with PET often died of other illness. On the other hand, breast cancer outcome of the patients treated with PET inferior to the patients underwent operation. We should choose the initial treatment after having fully considered in regard to life expectancy by comorbidities in elderly breast cancer patients.
Conflict of Interest: No significant relationships.

P315
A comparative study of palpation guided lumpectomy, ultrasound guided lumpectomy and cavity shaving technique for attaining negative margins in breast conservation surgery

V. Kurpad*, L. Krishna. *Surgical Oncology, Sri Shankara Cancer Hospital and Research Centre, Bangalore, India*

Goals: Primary Objective is to compare the rate of negative margins obtained among the three groups. Secondary Objective is to estimate the amount of excess volume of normal breast tissue and the time taken for lumpectomy in each group.
Methods: Patients undergoing breast conservation surgery were randomized into three groups (i.e) Palpation-guided, Ultrasound-guided and Cavity shaving. Surgeon is aware of study group assignments. A total of 75 patients were randomly assigned into each group, 25 patients each.

Results: The final results are being tabulated and will be reported at the time of presentation
Conclusions: Aim for breast conversation surgery (BCS) is to achieve local control of the disease and decrease local recurrence through tumour excision with negative resection margin as well as improve cosmetic outcome by preserving healthy breast tissue. As long as no ink on tumour, thereis no evidence suggesting that wider margin can nullify intra breast tumour recurrence.
Conflict of Interest: No significant relationships.

Other

P316
Effect of direct PEC I & PEC II block in patients undergoing mastectomy: a prospective, double blind, randomized, placebo, controlled study

S. Kakkar[1,2]*, R. Aggarwal[2], A. Kumar Goel[3]. *[1]Anesthesia and Critical Care, ESI Hospital, Noida, India, [2]Anesthesia and Critical Care, Max Super Specialty Hospital Vaishali, Ghaziabad, India, [3]Oncosurgery, Max Super Specialty Hospital Vaishali, Ghaziabad, India*

Goals: To study the efficacy of combined PEC I & PEC II blocks for post - operative pain control in mastectomy patients using

- Visual analog scale at specified intervals postoperatively
- Time of requirement of first dose of rescue analgesic in 12 hours period postoperatively
- Total dose of rescue analgesic needed in 12 hours period postoperatively

Methods: After obtaining the approval of hospital ethical and scientific committee 60 patients undergoing mastectomy (MRM) were chosen and randomly divided into 2 groups(P AND S). The patient were unaware whether they have received the block with bupivacaine or normal saline.
Both Groups received systemic analgesics (Inj Fentanyl 2 mcg/kg up to 100 mcg, Inj Paracetamol 15 mg/kg up to 1 gm, Inj Diclofenac 0.15 mg/kg up to 75 mg) intraoperatively.
Group P received PEC I block with 10 ml 0.25% bupivacaine and PEC II block with 20 ml 0.25% bupivacaine before skin closure by the surgeon slowly under direct vision using a 23 G Quincke needle and a 10ml syringe at the level of 3rd rib.
Group S received PEC I block with 10 ml normal saline and PEC II block with 20 ml normal saline before skin closure by the surgeon who were blinded.
Both Groups received repeated doses of Inj Tramadol 2 mg/kg up to 100 mg as *rescue analgesics.*
Results: The VAS scores of group P was observed to be **significantly** lower as compared to VAS scores of group S at 0, 2, 4, 6, 9 and 12 hours after surgery with p value <0.001.
The Time to first postoperative rescue analgesics of Group P patients was 370 ± 95.63 minutes with median value of 340 minutes and of Group S was 10.50 ± 10.20 minutes with median value of 10 minutes. This was significantly longer in group P.
The mean Total tramadol consumption postoperatively of group P patients was 56.67 ± 28.57 mg with median value of 50 mg and group S the mean Total tramadol consumption postoperatively was 220.67 ± 50.17 mg with median value of 200 mg. This was significantly less in group P.
Conclusions:

1. PEC I and PEC II block under direct vision is an effective technique for providing postoperative pain relief in patients undergoing mastectomy.
2. Intraoperative PEC I AND PEC II block reduces total tramadol requirement postoperatively.
3. The time of requiring first rescue analgesic is increased in patients receiving PEC block
4. Direct PECS block is a safe technique with no observed side effects.
5. PECS block can be a more cost effective measure of providing postoperative analgesia but needs to be proved by cost analysis studies

Conflict of Interest: No significant relationships.

P317
Predictive factors of recurrence following surgical treatment of phyllodes tumors in Ramathibodi Hospital

S. Pornchai*, P. Chirappapha, P. Lertsithichai, Y. Kongdan, T. Sukarayothin, M. Leesombatpaiboon, J. Teerapradith, S. Phosuwan, T. Chatmongkonwat, S. Pongratanakul. *Surgery, Faculty of Medicine Ramathibodi Hospital, Mahidol University, Bangkok, Thailand*

Goals: To determine parameters that influence recurrence in this uncommon neoplasm
Methods: Data from Ramathibodi Hospital since 1 January 2000 to 31 December 2016 were reviewed retrospectively. 168 patients were newly diagnosed with phyllodes tumors at the Ramathibodi Hospital. We reviewed and analyzed factors for recurrence of phyllode tumors after surgery.
Results: The median age of the patients was 43.65 years, ranging from 16 to 66 years. The mean of the tumor size was 4.92 cm, ranging from 0.5 to 32 cm. Based on the criteria proposed by WHO, 107 cases were benign tumors (63.69%), 39 borderline tumors (23.21%), and 21 malignant tumors (12.5%). The median duration of follow-up was 11.92 months that ranged from 3.07 to 62.30 months. Of the 168 cases, 8 (4.76%) patients had recurrence. The mean age of these patients was 46.37 years, and the mean follow-up was 40.02 months. The mean time to recurrence was 17.47 months, with a median of 11.92 months, and ranged of 0.3.07 to 62.30 months. Incidence rate of recurrence tumors was 2.43% and the median follow-up time to recurrence was 34.07 months (95% CI = 21.83 to 30.10). The event free probability of all patient was 5.72% and 50% median time to recurrence was 10.77 month (95% CI = 18.5 to 28.73). Factors of recurrence in the present study were histology ($p < 0.001$) and tumor size ($p < 0.001$).
Conclusions: The tumor size and histology of phyllodes were the principal determinants of the recurrence. Complete surgical excision by either wide local excision or mastectomy if necessary is important in the primary surgical treatment of phyllodes tumors.
Conflict of Interest: No significant relationships.

P318
Combination of Olanzapine and Aprepitant in the prevention of chemotherapy induced nausea and vomiting (CINV) in breast cancer patients

This abstract has been withdrawn.

P319
A borderline phyllodes breast tumor clinicaly presented as giant exulcerated suspicious malignant tumor

M. Spasic[1,2]*, S. Ninkovic[1], J. Nedovic[3], S. Mitrovic[4], I. Markovic[5], B. Milosevic[1], Z. Inic[6], M. Goran[6], M. Kocic[6], D. Radovanovic[1]. *[1]University of Kragujevac, Faculty of Medical Sciences, Department of Surgery, Kragujevac, Serbia, [2]Clinic for General and Thoracic Surgery, Clinical Center "Kragujevac", Kragujevac, Serbia, [3]Clinical Center "Kragujevac", Kragujevac, Serbia, [4]University of Kragujevac, Faculty of Medical Sciences, Department of Pathology, Kragujevac, Serbia, [5]Surgery Department, University of Belgrade, Belgrade, Serbia, [6]Institute for Oncology and Radiology in Serbia, Belgrade, Serbia*

Goals: Aim of this paper is to present a case of a female patient treated for an exulcerated breast tumor – a giant borderline phyllodes tumor of the breast.

Methods: This is case report. We used patient medical history, and images made on operation that we performed, also hystopatologycal findings.
Results: A 59-year-old female patient G.S. presented to the department in our hospital with a giant exulcerated tumor of the right breast in July 2017. She reported that she had had an injury of the right breast in 2004 and a few months after the injury she noticed a firm palpable breast mass. The mass grew quickly and quite large every year, and a year before the surgery, the patient noticed wound-like skin changes in the breast. A clinical breast examination showed a giant mass occupying the whole right breast with ulceration. The palpable breast mass was firm, with ill-defined borders, occupying the entire right breast. There were no palpable axillary lymph nodes. The ultrasound revealed a large heterogeneous mass with some cysts in the right breast. Axillary lymph nodes up to 6mm were present. Freehand core biopsy was performed and specimens were sent for pathological examination. The histopathological findings indicated a benign phyllodes tumor. A radical surgery was to be done based on the decision of the consilium of oncologists. The patient underwent a right simple mastectomy, and the patient was discharged on the fourth postoperative day. Histopathological findings showed that tumor tissue was of moderate cellularity, with dual epithelial – mesenchymal differentiation, necrotic zone, with myxoid degenerative changes, a mild inflammatory infiltrate and light bleeding. The immunohistochemical analysis showed that tumorous cells were partly positive for vimentin, diffuse positive for SMA, and negative for p63 and p53. We concluded that it was a borderline phyllodes breast tumor. The patient attends follow – up appointments and so far disease progression has not occurred.
Conclusions: Diagnosis and treatment of giant phyllodes tumors remain a great challenge for the surgeon. Establishing the preoperative diagnosis based on histopathological findings is imperative to disease management. Mastectomy has been the traditional procedure in treatment of giant phyllodes tumors; in cases where suspicious findings in the axilla are revealed, radical dissection should be performed. The prognosis for benign and borderline phyllodes tumors is very good.
Conflict of Interest: No significant relationships.

P320
Idiopathic granulomatous mastitis: a comparative outcomes between 44 patients with different treatment modalities

P. Chirappapha, P. Thaweepworadej, C. Supsamutchai, N. Biadul, P. Lertsithichai, T. Chatmongkonwat*, S. Pongratanakul, S. Pondeenana, S. Phosuwan, J. Teerapradith. *Surgery, Ramathibodi Hospital, Mahidol University, Bangkok, Thailand*

Goals: The aim of this study was to report the clinical and radiological findings, management, and clinical outcome after treatment.
Methods: We retrospectively reviewed medical records from March 1990 to October 2016. Total 44 patients were diagnosed with IGM. Patient characteristics, clinical presentation, radiological findings, microbiological work-up, tissue pathology, treatment modalities, outcomes, and follow-up data were reviewed.
Results: Forty-four female and one male were diagnosed as idiopathic granulomatous mastitis. Median follow-up time of the patients was 20.73 months. The mean age was 38 years. Thirty patients were treated by surgery, 6 patients with steroid, and another 3 patients with other treatment in the first setting. Only 25 from 39 patients (64.10%) were cure from disease by the first modality. The median time-to-healing was 84 days in our study. In surgical group had the shortest time-to-healing but not statistically significant ($p = 0.23$). In 25 patients performing an excision, 13 of them (52%) had wound complications. Five from thirty-nine patients (12.82%) had recurrence.
Conclusions: IGM is an uncommon benign disease which is hardly distinguishable from malignancy. No difference between each treatment modalities in term of time-to-healing and recurrence of disease. Surgery has the shortest healing time, but careful patient selection should be done due to high rate of wound complications. Multimodality treatment is required in one-third of our patient.
Conflict of Interest: No significant relationships.

P321
Comparison of complication in extended Lastissimus dorsi flap versus Lastissimus dorsi flap with implant in total breast reconstruction

P. Chirappapha, P. Thaweepworadej, K. Chitmetha, C. Rattadilok, T. Wattanakul, S. Pondeenana*, S. Pongratanakul, T. Chatmongkonwat, S. Phosuwan, J. Teerapradith. *Mahidol University, Bangkok, Thailand*

Goals: Latissimus Dorsi (LD) myocutaneous flap is one of the most popular and feasible technique for breast reconstruction after mastectomy. Breast prosthesis can be used to decreased volume of the harvested myocutaneous flap and might be reduced functional deficit after reconstruction. We conducted the study to evaluated functional deficit and shoulder movement after extended LD flap compared with LD flap and prosthesis.
Methods: Between December 2015 and May 2018, 31 patients performing LD flap in our institute were enrolled in the study. Patient demographics, operative details, post-operative morbidities and shoulder movement were collected. Shoulder movement were evaluated pre- and post-operatively with range of motion (ROM) limitation and American Shoulder and Elbow Surgeons Shoulder Score (ASES). Outcomes were compared between Extended LD flap and LD flap with prosthesis.
Results: Twenty-one women were performed an immediate breast reconstruction with LD flap and prosthesis, and the rest of them were performed an extended LD flap. Seventy-four percent of the patients were performed an operation on the dominant side. Seroma (90.5% in LD flap with prosthesis group, and 90% in extended LD group). Four patients in LD flap with prothesis group and 1 patient in extended LD group had decreasing of shoulder ROM after 6 months of operation. Flexion was the most common direction that impaired after operation followed by extension and external rotation. But when evaluated with ASES score, only one patient in LD flap with prosthesis group had decreasing in only 1 point. The results were not statistically significant different between groups. When comparing by each question in ASES score, extended LD flap group had significant more time-to-recovery in the question of "wash your back/do up bra" and "throw a ball overhand".
Conclusions: Latissimus dorsi myocutaneous flap can be performed with a very low impact on shoulder function. In our study, slightly decreased in range of motion was observed on both LD flap techniques, but there was no impact on functional outcome in ASES score. LD flap with prosthesis had shown faster functional recovery when compared with extended LD flap technique.
Conflict of Interest: No significant relationships.

P322
Accept what is, let go of what was? Sociodemographic factors associated with acceptance ability of breast cancer survivors during the journey from cancer patient to survivor in India

A. Datta[1]*, P. Guha (Chaudhuri)[2]. [1]*Netaji Subhas Chandra Bose Cancer Research Institute, Kolkata, India,* [2]*Institute of Psychiatry, Kolkata, India*

Goals: The incidence of breast cancer in Eastern Country is unexpectedly increasing more than any other types of cancer in women. The purpose of this study was to explore and describe how sociodemographic factors affect in developing a patient's acceptance ability of present disease or not.
Methods: The present observational study consisted of 201 breast cancer patients those who were diagnosed and were willing to undergo the psychological assessment, with no history of past psychiatric illness. Participants were selected using purposive sampling technique from a tertiary cancer hospital, Kolkata. Acceptance level and wellbeing status were **defined** by using

Acceptance and Action Questionnaire (AAQ-II) and Warwick-Edinburgh Mental Wellbeing Scale (WEMWBS) respectively. **Multivariate** logistic regression analysis **was used to evaluate the association between acceptance ability and variables of socio-demography.**

Results: The mean age of the participants was 47.24 ± 12.19 years. 56% cases (n = 112) were primarily educated and 84.08% of the participants were (n = 169) living with their spouse. The income status of patients ranges from <500 per family member to >3000 per family member. Highest percentage (38%) was seen in <500 income group while lowest percentages (6%) were seen among 2000–3000 income groups and >3000 income group patients.51.9% (n = 41) of the patients were accepted the present situation and 35.7% (N = 72) were not and the difference was statistically significant ($p < 0.01$) with sociodemographic variables including age, marital status, residence. Family income and spouse's support was significantly helped in increasing acceptance ability. Education reduced denial attitude only among participants who were relatively flexible that leads to develop acceptance ability. Factors were associated with poor acceptance ability that affects poor psychological wellbeing.

Conclusions: This study gave the overview of the sociodemographic factors have a significance effect on acceptance level and psychological well-being. We will plan for future study to signify the utility and potentiality of Acceptance and commitment therapy (ACT) among breast cancer patients through reducing psychosocial issues and to alter stigmatizing attitudes and to make relatively useful for psychologically inflexible participants.

Conflict of Interest: No significant relationships.

P323

Targeting different subtypes of breast cancer: a prospective for multi target drug design for breast cancer

V. Jaiswal*. *CSE, Shoolini University Solan, India, Solan, India*

Goals: Breast cancer (BC) is the most diagnosed cancer in woman. BC is complex disease and can be divided into hormone positive (Luminal A, Luminal B and Normal-like), Triple negative/basal like and HER2-enriched sutypes. HP sub-type contribute about 70% of all BC cases. HER2 positive BC type is more aggressive and covers ∼20 of total BC cases and triple negative/basal like (TN) BC is difficult to treat which contribute around 15% cases of BC. According to type of BC different drugs are used for the treatment. Although, conventional methods which is targeting one drug target have limited success in cancer treatment. Development of drug for multiple target same time is challenging task and limited studies have been done so far. Current work is an attempt to design inhibitors for three drug target important in HP, TN, and HER2-enriched BC simultaneously.

Methods: Three targets Estrogen Receptor (ER), Poly(ADP-ribose) Polymerase (PARP) and human epidermal growth factor receptor 2 (HER2) were selected to target HP, TN, and HER2 positive BC respectively, Crystal structure of these three important drug targets in BC were taken from protein data bank (1GWQ, 4UND and 3RCD). NCI diversity set 3 which comprises of more than 1500 diverse set of molecules were taken from ZINC database. Co-crystal ligands were removed from the structures from drug targets and binding site defined with the help of surrounding residues. AutoDock 4.2 was used for molecular docking studies against the molecules from NCI diversity set 3. Finally ranking of molecules according to free binding energy (FBE) with selected drug targets was prepared and common inhibitors were identified with the help of self-developed PERL scripts. chimera and ligplot plus were used to study protein ligand complexes.

Results: Best FBE were −13.55, −11.83 and −10.45 in PARP, ER, and HER2 respectively. Ten molecules were found to be common in top 100 molecules in all three selected drug targets (Table 1). Further interactions of these ligands in docking complexes were studied and common interaction pattern were observed.

Table 1.
Selected molecules as potential multi target drug with FBE with Selected drug targets.

ZINC ID	Estrogen Receptor (ER)	Human Epidermal growth factor Receptor 2 (HER2)	Poly(ADP-ribose) Polymerase (PARP)
ZINC01573829	−10.22	−9.56	−11.43
ZINC01577889	−10.66	−8.96	−11.63
ZINC01635676	−9.94	−8.89	−12.13
ZINC01871223	−10.47	−8.72	−10.86
ZINC03860856	−10.11	−9.44	−10.87
ZINC05493736	−11.49	−9.34	−10.88
ZINC12671904	−11.86	−8.48	−11.13
ZINC17375651	−11.02	−8.49	−10.86
ZINC17375653	−10.27	−8.38	−10.94
ZINC29590275	−9.92	−8.54	−13.55

Conclusions: Virtual screening of diverse set of molecule were carried out successfully on three important drug targets reported in BC. Ten compounds were identified which had high FBE in all selected targets which justify them as potential multi-target drug for BC. These compounds can be verified in further experimentation and may provide new starting point for the treatment of BC.

Conflict of Interest: No significant relationships.

P324

The impact of chemotherapy on the cognitive functions of women with breast cancer

A. Szafryna-Kliwicka*. *Chemotherapy, Wielkopolskie Centrum Onkologii, Poznań, Poland*

Goals: The goal of this study was to evaluate the effects of the chemotherapy on the cognitive functions of women undergoing adjuvant chemotherapy.

Methods: 54 patients with clinical stage I – III breast cancer were evaluated at three time points: before start of the chemotherapy, immediately after completion and at 6 month followup after completion. Two separate sets of tests were used to evaluate both objective and subjective effects. Other parameters (fatigue, depression, insomnia, patient's age, menopause status, education level, tumor stage, additional comorbidities and chemotherapy regimen) were also evaluated. The influence of the level of cognitive dysfunction on overall quality of life was investigated.

Results: Our study has shown that while adjuvant chemotherapy affected subjectively reported changes to cognitive functions, the results of objective tests were not affected. The frequency of cognitive function defects is variable, and affects estimated 1/3 of the patients in the cohort. Intensity is relatively low and appears self-limited, with return to normal at 6 months post treatment. Additional risk factors for subjective effects are insomnia, fatigue (both physical and metal), and depression. Objective test results were affected by patient's age, menopause status and education level. The specifics of chemotherapy regimen, tumor stage and additional comorbidities had no effect on the results. Subjective (but not objective) cognitive dysfunction had negative influence on overall quality of life.

Conclusions: Our results are concordant with the findings reported in current literature and confirm the need for further investigation of cognitive dysfunction linked to neoplastic disease and associated therapy, and the need for additional education targeted to patients and healthcare personnel.

Conflict of Interest: No significant relationships.

P325

Neoadjuvant chemotherapy for young (</ = 35 years) locally advanced breast cancer patients: association of pathological complete response with survival. An Institutional analysis from developing country

A. Gogia[1]*, V. Raina[2], S. Deo[3], N. Shukla[3], B. Mohanti[4], D. Sharma[3], S. Mathur[3]. *[1]Medical Oncology, AIIMS (All India Institute of Medical Sciences), New Delhi, India, [2]FMRI, Gurgaon, India, [3]AIIMS (All India Institute of Medical Sciences), New Delhi, India, [4]FMRI, Gurgoan, India*

Goals: Neoadjuvant chemotherapy (NACT) is now well accepted approach for women with locally advanced breast cancer (LABC), yet data on efficacy of NACT and significance of pathologic complete response (pCR) are limited in young breast cancer patients aged less than 35 years from developing countries. In this study we aimed to assess the response rates (clinical and pathological) with NACT and determine associated clinical and biological factors for outcome.
Methods: We screened 4050 case files (January 2008 to December 2017) of invasive carcinoma of female breast at All India Institute Of Medical Sciences, New Delhi, India. Young women constituted 410 cases (10.1%) of all. We used concurrent or sequential anthracycline and taxane based NACT followed by modified radical mastectomy (MRM), radiotherapy and hormone therapy whenever indicated. pCR was defined as lack of invasive cancer in the breast and axilla.
Results: We carried out analysis of 220 patients who received NACT. The median age was 31 years (range 19–35). Seventy percent of patients had T4 disease and 75% were clinically lymph node positive at diagnosis. The median size of the breast tumour at presentation was 5.9 cm. High grade tumour was found in 60% of cases. Estrogen and progesterone receptor positivity was seen in 45% and HER2/neu positivity, in 28% of cases. Triple negativity was found in 39% of cases. The overall clinical response rate (complete and partial) was 85% and pCR were apparent in 19%. Triple negative status, HER2/neu positivity and high grade tumour were predicted for pCR. The median time to relapse was 18 months and most common site for systemic relapse were lung followed by bone. The three year relapse free (RFS) and overall survival (OS) rates were 40% and 50% respectively with median follow up period of 36 months. RFS and OS rates were significantly higher when pCR was achieved compared to lack of pCR (HR = 1.46, 95% CI 1.03–2.10, p = 0.02 and HR 2.64, CI 1.10–4.30, p = 0.001).
Conclusions: LABC constituted 53.6% of all young breast cancer cases and triple negativity was found in 39% of cases, this proportion is much higher than the published Western literature. pCR was seen in 19% of cases and associated with better RFS and OS in young patients (≤35) with breast cancer irrespective of hormonal profile.
Conflict of Interest: No significant relationships.

P326

Multi-omics profiling reveals metabolic heterogeneity of triple-negative breast cancer

Y. Gong*, P. Ji, T.-J. Yu, X. Hu, Y.-Z. Jiang, Z.-M. Shao. *Department of Breast Surgery, Fudan University Shanghai Cancer Center, Shanghai, China*

Goals: Cancer cells can reshape the regulatory and functional properties of their metabolic networks to support their biosynthetic needs. Triple-negative breast cancer (TNBC) is an aggressive and genomically heterogeneous subset of breast cancer. Our study aimed to focus on the identification of metabolic pathway dependencies in TNBC with the multi-omics profile.
Methods: A list of 1,657 metabolic genes assigned to 83 metabolic pathways from the Kyoto Encyclopedia of Genes and Genomes (KEGG) database were considered. We used the breast cancer database from The Cancer Genome Atlas (TCGA) to compare the expression patterns of metabolic genes across different molecular subtypes of breast cancer and normal tissues. With multi-omics data for the largest single-center TNBC cohort (n = 386), we then calculated the relative pathway enrichment in each sample with single sample gene set enrichment analysis. K-means clustering method was performed to classify the TNBC metabolic enrichment levels into heterogeneous clusters. Different TNBC metabolic clusters were systematically analyzed.
Results: Overall, the metabolic gene expression program in TNBC was similar to that in the corresponding normal tissues. Some metabolic pathways (e.g., fatty acid metabolism and histidine metabolism) were significantly upregulated or downregulated in TNBC compare with other molecular subtype of breast cancer. We classified the TNBC into three heterogeneous metabolic clusters. Metabolic cluster 1 was enriched with amino acid metabolism, whereas the other two clusters (Metabolic cluster 2 and metabolic cluster 3) showed distinct metabolic gene expression levels associated with glutathione metabolism and fatty acid metabolism. On the level of individual biochemical reactions, many hundreds of metabolic isoenzymes show significant expression differences between three clusters. Analysis of mutations and somatic copy number variations indicated that PI3K-AKT pathway members may play a role in the dysregulation of metabolism between these clusters.
Conclusions: Utilizing the largest single-center TNBC cohort, we revealed the heterogeneity of the TNBC metabolic pathway dependencies. We identified three metabolic clusters and each cluster has its specific-expressed isoenzymes which are potential targets for anticancer therapy. Our study represents a step toward personalized treatment for TNBC patients.
Conflict of Interest: No significant relationships.

P327

BESTEST®: a new diagnostic opportunity for bone structure evaluation in oncology

S. Saracchini[1]*, A. Del Conte[1], L. Foltran[1], S. Corsetti[1], F. Cosmi[2]. *[1]Oncologia, IRCCS CRO Aviano and Pordenone, Aviano, Italy, [2]Department of Engineering and Architecture, University of Trieste, TRIESTE, Italy*

Goals: The incidence of fractures in patients undergoing hormone treatment for breast cancer is highly increased [1]. Most fractures occur in patients whose T-score falls outside the osteoporosis ranges [2].
An innovative diagnostic method, BESTEST®, simulates by engineering methods the structure elastic response to loads of a virtual biopsy of the patient obtained from radiograms in the proximal epiphysis of the hand. The results are summarized in the Bone Structure Index (BSI), BSI_T-score and BSI_Z-score, analogous in meaning, but not related to densitometry [3].
We assessed the bone alterations induced by oncological treatment by BESTEST® and DXA.
Methods: Oncological Population (*OP*): 100 Caucasian women, BESTEST® as follow-up during oncological treatment.
Control Population (*CP*): 200 women, BESTEST® in screening.
Femoral neck DXA T-score availability (*DXA*) and self-reported osteoporotic fractures (*Fr*) as in Table 1.

Table 1.
Statistics: mean (min, max).

	N	Age	BSI_T-score	BSI_Z-score	DXA_T-score
OP	100	62 (35, 88)	−1.7 (−3.4, −0.0)	−1.3 (−2.6, 0.6)	NA
OP-Fr subgroup	10	67 (56, 82)	−2.4 (−2.9, −1.3)	−1.8 (−2.6–0.1)	NA
OP (BSI+DXA) subgroup	60	62 (35, 88)	−1.8 (−3.4, −0.1)	−1.3 (−2.6, 0.6)	−1.6 (−3.2, 0.5)
CO (BSI+ DXA)	200	68 (60, 82)	−1.1 (−3.6, 2.9)	−0.6 (−3.0, 2.9)	−1.9 (−3.7, 1)
OP-Fr (BSI+DXA) subgroup	8	63 (32, 89)	−2.4 (−2.9, −1.3)	−1.8 (−2.6, −0.1)	−1.5 (−2.9, 0.1)

Results: The BSI T-score in *OP-Fr* is lower than in *OP* (p < 0.0100).
After correction for age, BSI Z-score in *OP-Fr* is lower than in *OP* (p = 0.0300).
The BESTEST® and DXA results are independent in *OP(BSI+DXA)* (R^2 = 0.0917)and in *CO(BSI+DXA)* (R^2 = 0.0294).

OP-Fr (BSI+DXA): BSI T-score is indicative of a compromised trabecular structure and lower than in *OP(BSI+DXA)* (p = 0.038). DXA T-score results span all possible outcomes and not statistically different from *OP(BSI+DXA)* (p = 0.674).
Conclusions: Statistical analyses show that BESTEST® can help assessing bone alterations due to oncological treatment, especially when associated with fractures.
Notwithstanding its limitations, this pilot study provides a background for further studies into the use of a new, rapid and safe technique for monitoring the effects of breast cancers therapies.
Conflict of Interest: FC is co-founder of M2TEST srl, the company that commercializes BESTEST®.

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P328
Assessment of cancer health literacy among breast cancer patients in Hong Kong

W. Yeo*, K. Ng, K. Cheung, I. Lee, J. Suen, M. Tong, F. Mo. *Chinese University of Hong Kong, Hong Kong, China*

Goals: Cancer therapy involved complex therapeutics decisions. When deciding treatment options, it is widely recognized that there is a need to involve patients, especially when a patient presents with severe illness such as cancer. Cancer health literacy (CHL) situation in Hong Kong is not known. This study aims to determine the CHL status and the associated demographic factors among Chinese breast cancer patients Hong Kong.
Methods: Newly diagnosed breast cancer patients who were referred to the Department of Clinical Oncology at Prince of Wales Hospital were consented for the study. Eligibility criteria included: Chinese female >/ = 18 of age; predicted life expectancy of >/ = 4 months; Karnofsky score >/ = 80; able to read and understand Chinese; agreed to participate in the study by giving written informed consent. Patients could have undergone primary surgery but should not have been started on systemic therapy. CHL was assessed by a questionnaire that was translated into Chinese based on a previously reported English questionnaire. The questionnaire was CHLT-30 that consisted of 30 questions (maximum score = 30); higher scores indicated higher CHL. Patient background demographics and information of breast cancer characteristics were collected.
Results: 150 newly diagnosed breast cancer patients were enrolled into the study. The mean CHLT-30 score was 23.8. CHLT-30 score was significantly associated with education level and age. The mean scores of those having tertiary/higher education vs those with primary/secondary school education were 26.03 vs 23.22 respectively (p < 0.001). The mean scores of patients aged under 50 vs those 50 and above were 24.91 vs 23.29 respectively (p = 0.016).
Conclusions: Cancer health literacy among Chinese breast cancer patients in Hong Kong is comparable to that of reported in the West. Patients with higher educational background and who were younger had higher level of CHL.
Acknowledgement: This study was supported by Madam Diana Hon Fun Kong Donation for Cancer Research.
Conflict of Interest: No significant relationships.

P329
Is there any difference of breast density using a fully automated software VolparaDensity™ between breast cancer patients and non-cancer patients?

H. Maeda*, S. Terai, Y. Iwamura, M. Yamamoto, N. Tomioka, K. Watanabe, M. Takahashi. *Breast Surgery, National Hospital Organization (NHO) Hokkaido Cancer Center, Sapporo, Hokkaido, Japan*

Goals: Mammographic high breast density (dense breast) has been shown to be a strong independent predictor of breast cancer and a causative factor in reducing the sensitivity of mammography (MMG).
The proportion of dense breast in Japanese women is much higher than that in western women.
VolparaDensity™ (Volpara) is a fully automated software which can analyze MMG data three-dimensionally.
Therefore, unlike human subjective judgment, it is possible to objectively judge the breast density.
There are few reports on breast cancer risk of breast density based on such objective index in Japanese women.
The purpose of this study is to investigate whether breast density of Japanese women who measured objectively is related to breast cancer risk.
Methods: We examined the breast density of 104 patients with breast cancer which MMG was taken at our hospital between April to October 2017 and 526 matched cases where there were no abnormal findings at breast cancer screening.
Volumetric percentage of density and dense volume were assessed automatically with Volpara, and Volpara density grade (VDG) was calculated.
Two breast-imaging experts performed category classification and the judgment of mammographic breast density.
Results: No significant difference was observed between the age of the breast cancer group and that of the screening assessment group (58.0 vs. 57.3).
The rate of dense breast (VDG ≥ 3) was 94.2% (98/104) in the breast cancer patients and that was 86.1% (453/526) in the screening assessment group.
The proportion of dense in the breast cancer patients was significantly higher than that in the screening assessment women (P = 0.02).
In consideration of the diagnostic accuracy, 12.5% of breast cancer cases could not be found in MMG, but those cases were VDG 4 in Volpara analysis.
Conclusions: The proportion of dense breast in breast cancer patients was higher than that for screening women with non- breast cancer.
Visual assessments of mammographic breast density have an aspect that lacks objectivity.
Automatic determination using Volpara to quantify breast density may be useful.
Some of the breast cancer cases of dense breast did not have abnormal findings in MMG.
Therefore, Japanese women with dense breasts detected VolparaDensity are expected to undergo additional test as necessary, such as ultrasonic examination etc.
Conflict of Interest: No significant relationships.

P330
Chemotherapy induced ovarian failure in breast cancer: retrospective study of 100 cases

L. Amaadour*, L. Atreche, Z. Benbrahim, N. Mellas. *Department of Medical Oncology, Hassan II University Hospital, Fez, Morocco*

Goals: Breast cancers affect about a quarter of women of reproductive age worldwide. Chemotherapy is frequently indicated due to the aggressive biomolecular cancer subtypes usually observed in the localized forms, which may compromise the fertility of these young patients.
The aim of our study is to report the incidence of chemotherapy induced ovarian failure in premenopausal breast cancer patients after chemotherapy, and to identify related risk factors.
Methods: It is a retrospective cross-sectional cohort study which included all premenopausal patients with early breast cancer treated at the department of medical oncology, Hassan II University Hospital of Fez, during a period of one year. Detailed menstrual history prior to and after (neo) adjuvant treatment was taken at study entry. Patients' background demographics, tumor characteristics and anti-cancer treatments were collected. Chemotherapy induced

amenorrhea (CIA) and associated risk factors were studied. In our study, CIA was defined as amenorrhea for at least 12 months after the completion of adjuvant chemotherapy.
Results: The study included 100 patients. The mean age of the patients was 36 years [21–45]. Patient had localized and locally advanced non metastatic disease in 78% and 24% respectively. 64% had luminal, 20% HER2 positive, and 16% triple-negative breast cancer. The incidence of CIA was 82%. Of those who developed amenorrhea, 66,7% regained menstruation, on average after 12 (range 6–36) months post-chemotherapy. CIA and reversible amenorrhea were: 53% and 85% at <35 years, 75% and 61% at 35–40 years, and 97.9% and 32% at >40 years, respectively. Risk factors associated with CIA were analyzed, only the patient age at diagnosis, was found to be statistically significantly associated with CIA. Chemotherapy agents did not impact the rate of CIOF ($p = 0.083$).
Conclusions: Our study found a high incidence of CIOF with a relatively low incidence of reversible amenorrhea. Only the patient age has been shown to be an independent factor, statistically significantly associated with ovarian failure after chemotherapy. Methods of fertility preservation should be considered in those patients to reduce the impact of chemotherapy on ovarian reserves.
Conflict of Interest: No significant relationships.

P331
Effect of goserelin on the preservation of ovarian reserve function during (neo)adjuvant chemotherapy for young breast cancer patients: a prospective, non-randomized, open-label, cohort study (Interim analysis of proof study) (NCT02430103)

S.Y. Wang[1]*, S. Wang[1], L. Pei[2]. [1]*Breast Surgery, Peking University People's Hospital, Beijing, China,* [2]*Clinical Laboratory, Peking University People's Hospital, Beijing, China*

Goals: To evaluate the effect of goserelin on preventing ovarian reserve function during (neo)adjuvant chemotherapy for young breast cancer patients by dynamic changes of biochemical and biophysical markers in 2 years after chemotherapy.
Methods: Between December 2015 and December 2018, 240 breast cancer patients of age ≤45 years with stage I to III had been enrolled. Patients were assigned without interference to receive either (neo) adjuvant chemotherapy with Goserelin (Goserelin group) or no Goserelin (Chemotherapy group) as their own selection. Anti-Müllerian Hormone (AMH), follicle stimulating hormone(FSH), and estradiol(E2) were used as biochemical markers and antral follicle count(AFC) was used as biophysical marker. The markers and menstrual status were evaluated before, during, and 0.5-year, 1-year, 2-year after chemotherapy. Primary end point was the rate of low AMH value(<0.4 ng/ml) at 2 years. Secondary end points included rates of the other markers that maintained in the postmenopausal range (E2<40 pg/ml, FSH > 40 U/L, AFC < 4) and disease-free survival.
Results: 101 patients(51 pts in chemotherapy group, 50 pts in goserelin group) could be evaluated in 1 years after chemotherapy up to November 2018. More unmarried or childless patients of hormone receptors negative with early stage selected goserelin before chemotherapy. The rate of low AMH value was higher in chemotherapy group than in goserelin group(74.5% vs.38.0%). The other markers were consistent with AMH(Amenorrhea:56.9% vs.24.0%; Low value of E2:58.8% vs.28.0%; High value of FSH:45.1% vs.8.0%; Low value of AFC:86.3% vs.42.0%). All markers seemingly recovered more in goserelin group independent of age(≤40 years or not), chemotherapy regimen(AC, AC-T(H)) and use of tamoxifen in sub-group analysis. In addition, 41 patients(20 pts in chemotherapy group, 21 pts in goserelin group) could be evaluated dynamic changes of biochemical markers during chemotherapy. Mean level of AMH declined to low level more dramatically in both group. Mean level of E2 appeared non-linear descent with obvious rebound in chemotherapy group and declined rapidly to low level in goserelin group. Mean level of FSH appeared nearly linear rise to high level in chemotherapy group and rise slowly within low level in goserelin group.
Conclusions: Goserelin with chemotherapy seems to protect against ovarian reserve failure for young breast cancer patients. AMH may be a more sensitive marker to evaluate ovarian reserve function pre-, during and post- chemotherapy.
Conflict of Interest: No significant relationships.

P332
Evaluation of the patients' experience after stereotactic vacuum assisted breast biopsy utilizing radiofrequency

M. Matiatou[1]*, P. Giannios[2], V. Kalles[1], G. Georgiou[1], I. Papapanagiotou[1], W. Al-Harethee[1], E. Menenakos[1], G. Zografos[1]. [1]*Breast Unit, Hippokration Hospital of Athens, Athens, Greece,* [2]*Barcelona Institute of Science and Technology, Institute for Research in Biomedicine, IRB Barcelona, Barcelona, Spain*

Goals: The stereotactic vacuum assisted breast biopsy utilizing radiofrequency (Breast Lesion Excison System), is nowadays a well-established, safe and accurate biopsy method for suspicious non-palpable mammographic lesions. However, the impact of this biopsy method on the well-being of patients, remains to be assessed. In this study, we evaluate the short and long-term impact of BLES assisted biopsy on the Health-related Quality of Life (HRQoL).
Methods: Our study included 207 patients with non-palpable mammographic lesions, classified as BI-RADS ≥4 , who underwent stereotactic breast biopsy using the BLES. For the assessment of HRQoL, all patients completed the EQ-5D questionnaire which encompasses five dimensions concerning physical and mental health, each one divided into 3 levels and a Visual Analogue Scale (EQ-VAS) for patients to rate their own health from 0 to 100. EQ-5D was used in three distinct time-points relative to the biopsy procedure: a) before [baseline] b) four days after and c) six months later.
Results: The analysis of the patients' responses, revealed that prior to the biopsy procedure, women show psychological distress that seems to ameliorate till the subsequent measurements. At the short-term measurement, womens' usual activities impede, a fact that leads to deterioration of the physical health indicators. However, at the long-term measurement, the physical health assessment seems to improve, reaching the pre-biopsy levels. Furthermore, despite the temporary deterioration of physical health indicators at the short-term measurement, women evaluate their own health, using the EQ-VAS, with higher scores for the short-term measurement compared to the baseline.
Conclusions: Stereotactic vacuum assisted breast biopsy utilizing radiofrequency is a safe and accurate method for biopsy of suspicious non-palpable mammographic lesions which seems to transiently influence in a negative way the mental and physical health indicators, before and four days after the procedure respectively. However, despite these observations, the overall HRQoL, as indicated by the EQ-VAS scale, is positively influenced both at the short and long-term post-biopsy evaluation.
Conflict of Interest: No significant relationships.

P333
Difficulties in providing palliative care in rural India (West Bengal) – experience of an NGO

A. Manna*. *Palliative Care, Narikeldaha Prayas, Moyna, India*

Goals: As in any developing countries state of West Bengal in India has a huge burden of cancer patients in advanced stage coming from rural area where awareness regarding the usefulness of palliative care in rather poor.
Our goal is to give a pain free good quality of life in these advanced stage cancer patients. Objective of this study is to identify the main difficulties in achieving the above goal in a rural village setting in India.
Methods: Advanced cancer patients in need of palliative care in various villages in of rural India were selected for this study. Their

symptoms and managements in that rural surroundings were evaluated by an NGO (under the guidance of a senior palliative care specialist) working in that area. An attempt was made to identify the main obstacles in getting proper palliative care in a rural setting.
Results: Pain, fatigue are the main symptoms effecting these patients. In most patients pain and other symptoms control were grossly inadequate due to lack of properly trained manpower in the rural India. However regular homecare visits by a group of social workers were of immense help in the last few months of life. NGO team was well guided by a palliative care specialist.
Conclusions: There is a wide gap of trained manpower in this filled in rural areas of India. Dedicated groups from rural area itself need encouragement and proper training, so that difficult symptoms can be managed locally along with necessary social and psychological support to these patients.
Conflict of Interest: No significant relationships.

P334
Better palliative care for terminal cancer patients in rural India – an NGO based approach

This abstract has been withdrawn.

P335
The role of volunteers in quality palliative care delivery

This abstract has been withdrawn.

P336
Correlation of tissue optical characteristics to breast pathology

M. Matiatou[1]*, P. Giannios[2,3], K. Moutzouris[2], N. Michalopoulos[1], S. Koutsoumpos[2], K. Toutouzas[1], G. Zografos[1]. *[1]Breast Unit, Hippokration Hospital of Athens, Athens, Greece, [2]Electrical and Electronic Engineering, University of West Attica, Athens, Greece, [3]Barcelona Institute of Science and Technology, Institute for Research in Biomedicine, IRB Barcelona, Barcelona, Spain*

Goals: In this study we report the application of prism – coupling refractometry for the determination of breast tissue Refractive Index (RI). By extending our analyses already performed in human liver and colon specimens, which revealed promising results for the use of tissue RI as a marker of tissue pathology, herein we report initial data that suggest measurable differences in the real part of the RI between normal and pathological breast tissue samples.
Methods: Two patients preoperatively diagnosed with benign fibroadenomas, underwent surgical excision of their lesions. From each patient, 2 tissue specimens of 8 mm^3 were collected; one originating from the lesion and another one from healthy fibrous surrounding tissue. A total of 16 reflectance profiles (4/sample) were obtained with the aid of a prism-coupling refractometer (Metricon 2010/M), using a diode laser emitting within the optical window of biological tissues, at 964nm. The analysis of the reflectance profiles allowed us to determine the real part of the RI per case and the measured values were compared to the final histopathological diagnosis.
Results: From the analysis of the data obtained, a real index contrast (Δn) [defined as $\Delta n = n_h - n_f$ and $\Delta n_{SD} = \sqrt{n_{hSD}\text{^}2 + n_{fSD}\text{^}2}$] was calculated and found to be equal to 0.03 ± 0.003 and 0.02 ± 0.005 per patient. For both patients, the real index estimated for fibroadenomas was lower than the healthy tissue.
Conclusions: The appropriation of optical constants in tissue diagnostics, may pave the way for novel methods that could provide accuracy and speed in the evaluation of tissue's pathology. Amongst these constants, Refractive Index (RI) seems to hold as a promising marker for the evaluation of breast tissue pathological status, while at the same time is an essential parameter for numerous other applications in the field of bio optics, such as photodynamic therapy, photoablation and super resolution imaging.
Conflict of Interest: No significant relationships.

P337
Comparison of diagnostic accuracy of malignancy of unenhanced abbreviated MRI with diffusion-weighted images and post-contrast abbreviated breast MRI

Y.J. Kim*, J.Y. Seo, K. Kim. *Radiology, Konyang University Hospital, Daejeon, Korea, Republic of*

Goals: To compare the diagnostic accuracy of unenhanced abbreviated magnetic resonance imaging (MRI) with diffusion- weighted imaging (DWI) and abbreviated post-contrast MRI for breast cancer.
Methods: A total of 62 patients underwent breast MRI between January 2014 and July 2014 for screening, problem solving, or preoperative staging. All breast MRIs were performed using a 3T MRI scanner with a 16-channel breast radiofrequency coil. Post-contrast abbreviated MRI consisted of turbo-spin-echo (TSE) T2-weighted image (T2WI) with fat suppression, TSE-T1WI, and a single intermediate (3 minutes after contrast injection) post-contrast T1 sequence. Unenhanced abbreviated MRI with DWI included TSE T2WI with fat suppression, TSE-T1WI, and DWI. DWI was examined using spin-echo-type single-shot echo planar imaging technique in transverse. BI-RADS final assessment categories 1, 2, or 3 were considered MRI negativity, and categories 4 or 5 were considered MRI positivity, using the histological findings and the 6-month follow-up control as the reference standard. The Sensitivity and specificity were calculated. Receiver operating characteristic analysis was performed and the areas under the curves (AUCs) were compared between two protocols.
Results: The study included 62 patients with 41 breast malignancy. The sensitivity/specificity for abbreviated MRI with DWI and post-contrast abbreviated MRI was 88.9/92.6% and 93.6/90.6%, respectively. The AUCs for abbreviated MRI with DWI and post-contrast abbreviated MRI were 0.896 and 0.924 ($p = 0.95$), respectively.
Conclusions: The diagnostic accuracy of the unenhanced abbreviated MR with DWI could be comparable to that of abbreviated post-contrast MRI for breast cancer.
Conflict of Interest: No significant relationships.

P338
The global care of young women with breast cancer: take care from cure to care. A multidisciplinary educational initiative

M.E. Cazzaniga[1]*, A. Lania[2], M. Destro[3], M. Bandera[4], G. Biasi[5], M. Giordano[6], O. Pagani[7]. *[1]Phase 1 Research Unit, ASST Monza, Monza, Italy, [2]Head of the U.O. Endocrinology and Medical Andrology, Humanitas Clinical Institute, Milan, Italy, [3]Medical Science Department and Chief of Internal Medicine Unit, Treviglio Hospital, Treviglio, Italy, [4]P.T. IIN Health Coach, Milan, Italy, [5]UOC Sports Medicine and Physical Exercise, Marca Trevigiana, Treviso, Italy, [6]Oncology Unit, ASST Lariana, Como, Italy, [7]Istituto Oncologico della Svizzera Italiana, Lugano, Switzerland*

Goals: Medical treatment of early breast cancer (BC) in pre-menopausal patients (pts) is deeply changed in the last years. In particular, the results of SOFT & TEXT trial clearly showed the advantage of adding ovarian suppression (OS) to endocrine therapy. However, the side effects of early pharmacological menopause confronts us with relational, social and emotional problems of our young pts. The aim of TAKE CARE project is to raise awareness among doctors about the side effects of iatrogenic menopause in young pts with BC with the aim of offering them the tools for a global management of these side effects (SEs).
Methods: A survey was preliminary distributed among the physicians attending the 2 planned training meetings and to their young pts, in order to to collect their perception of SEs. Meetings were structured in modules, covering 4 main topics; cardio-vascular symptoms, including hot-flushes; bone health; cognitive impairment and lifestyle. Each topic was developed by two specialists (one physician and one non-physician).

Results: In 2017–2018, two meetings took place in Italy involving 39 oncologists. Cardio-vascular (CV) symptoms, including hot flushes, and trouble regarding bone health have resulted as the main hot topics for both oncologists and pts. The surveys clearly showed that these SEs are differently perceived by doctors and pts. Hot flushes highly impacted on sleep quality (64% pts) and 63% of the pts were worried about the potential development of osteoporosis, or CV diseases (41%). For CV symptoms, cardiologist suggested that the right treatment of menopause-related hypertension is the main intervention without any evidence that BC pts have be treated differently by men (preferential indication in diuretic use in pre-menopausal pts with osteoporosis, due to the reduced risk of hip fractures with diuretic use), whereas health coacher reported that lifestyle can modify the frequency of Hot Flushes. For bone health, endocrinologist suggested a supplement of calcium (1000–1200 mg daily + 25(OH)-vitamin D), whereas physiotherapist recommended at least 30–60 minutes – 3 times/week of aerobic, resistance and flexibility exercise (moderate intensity).
Conclusions: Providing different and multidisciplinary instruments to manage menopause-related symptoms to both oncologists and patients can support adherence to therapy and help the alliance between them. The TAKE CARE initiative should be a model to reach this goal.
Conflict of Interest: No significant relationships.

P339
Granulomatous mastitis, erythema nodosum and polyarthritis in pregnancy – a case report

E. Kudela[1]*, Z. Laucekova[1], K. Staskova[2], T. Kulkovska[1], D. Vlcakova[1], J. Pec[3], K. Kajo[4], J. Danko[1], P. Zubor[1]. *[1]Clinic of Obstetrics and Gynecology, Jessenius Faculty of Medicine in Martin, Comenius University in Bratislava, Martin, Slovakia, [2]2nd Clinic of Internal Medicine, Jessenius Faculty of Medicine in Martin, Comenius University in Bratislava, Martin, Slovakia, [3]Clinic of Dermatovenerology, Jessenius Faculty of Medicine in Martin, Comenius University in Bratislava, Martin, Slovakia, [4]Institute of Pathological Anatomy, Elizabeth Cancer Institute Hospital, Bratislava, Slovakia*

Goals: Granulomatous mastitis (GM) is a rare chronic inflammatory disease of the breast with unclear etiology. Rarely, GM is associated with systemic manifestations like erythema nodosum (EN) and polyarthritis. EN relates to multiple etiologic factors as infection, sarcoidosis, malignancy, autoimmune diseases, medications and pregnancy itself that presents the optimal conditions for the development of EN and adjoined pathologies.
Methods: We present an extremely rare autoimmune disease in pregnancy with the acute manifestation of granulomatous mastitis and systemic affection of the skin.
Results: A 31-year old secundigravida in 24th week of gestation was admitted to our department for a painful induration of her left breast. The ultrasound and laboratory findings confirmed the inflammation of the breast. She was treated with clindamycin and amoxicillin clavulanate without improvement. She underwent the incision and drainage of the left breast lesion, but the breast cultures remained negative. Biopsy showed acute and chronic inflammation with necrosis consistent with abscess. The patient presented with worsening breast symptoms, pain and multiple erythematous nodules on lower extremities. There was no serologic evidence of lupus, vasculitis or sarcoidosis. The skin biopsy showed superficial perivascular dermatitis with suspected panniculitis. Treatment with prednisone was initiated with a dose 30 mg daily, hydroxychloroquine 200 mg daily, azathioprine 50 mg daily and three initial doses of methylprednisone 250 mg i.v. The patient had a good response with the decrease of CRP and reduction of symptoms. She had an uncomplicated delivery in 38th week of gestation. During puerperium a segmentectomy of the left breast was performed due to the multiple fistulations on the skin with the result of idiopathic granulomatous mastitis. The patient is now showing signs of hidradenitis suppurativa in axilla and breast treated with adalimumab 80 mg.
Conclusions: Granulomatous mastitis with erythema nodosum and polyarthritis is very challenging as far as the right diagnosis is concerned. It is also important do differentiate idiopathic GM from carcinoma of the breast. Tissue biopsy remains the gold standard for the diagnosis. There is still no generally accepted treatment in pregnancy, but surgical excision with the combination of steroid, colchicine, methotrexate and biologic therapy with adalimumab are recommended. Study was supported by the grants VEGA 1/0124/17 and 1/0018/16 and APVV-16–0021.
Conflict of Interest: No significant relationships.

P340
Living with breast cancer: depression and hwa-byung of patients

S.Y. Min[1]*, O.H. Lee[2], A. Jeong[3]. *[1]Kyung Hee University, Seoul, Korea, Republic of, [2]Kyung Hee University Hospital, Seoul, Korea, Republic of, [3]University of Utah Asa Compus, Incheon, Korea, Republic of*

Goals: Breast cancer patients report lower quality of life. Among others, a culture-bound syndrome, Hwabyung, is noteworthy in the psycho-social experience of breast cancer patients in Korea. We aimed to investigate the relations among neuroticism, loneliness, depression, and Hwabyung, above and beyond the effects both of medical status and of sociodemographic status of breast cancer patients in Korea.
Methods: Female aults, 19 years old or above, who were diagnosed with and treated for breast cancer were participated. Each patient completed the survey in private space by herself. From the participants, we collected such demographical data as age,
education, income, living arrangement, number of people in the household, and religion. Also, it was measured whether they experienced career change due to cancer or not, by comparing their pre- and post- cancer occupation. Neuroticism, Loneliness, Depression and Hwabyung scales were used. Also, clinical data were collected and correlation between scales and clinical aspects were analysed.
Results: In the current study, a quarter of the participants was clinically depressed and three quarters were experiencing Hwabyung at a clinical level. For depression, neuroticism and loneliness were significant factors, while age only approached significance ($\beta = 0.161$; $p = 0.054$). For Hwabyung state, neuroticism and Hwabyung trait were significant, and the number of people living together approached significance ($\beta = -1.234$; $p = 0.060$).
Conclusions: If we could detect the patient's psycho-social vulnerabilities, such as neuroticism and Hwabyung trait, proper interventions can be made as preventative measures.
Conflict of Interest: No significant relationships.

P341
Pregnancy-associated breast cancer: clinicopathologic and immunohistochemical features

T. Fujita*, M. Sakuragi, C. Miyazaki, S. Shiba, Y. Sasaki, S. Nishida, M. Matsumiya. *Breast Oncology, Jichi Medical University, Tochigi, Japan*

Goals: Pregnancy-associated breast cancer (PABC) is defined as breast cancer diagnosed during pregnancy, in the first postpartum year or any time during lactation. PABC is a relatively rare, but it is increasing because of the trend toward delayed childbearing. There is a paucity of randomized data in this field. The majority of the information comes from retrospective single institution series and case reports.
The purpose of this study was to identify the histopathologic and immunohistochemical features of breast carcinoma in these patients.
Methods: A single institutional retrospective analysis was performed. 21 patients were diagnosed as PABC and underwent surgical resection between 2008 and 2018 (13 coincident with pregnancy and 8 during lactation).
Neoadjuvant chemotherapy was performed in ten patients (47.6%).

The ER and PgR status were assessed using Allreds scoring system by IHC. These statuses were categorized as positive when the total score was more than two.
HER2 expression status was tested by IHC and FISH. HER2 3+ by IHC, or 2+ and FISH positive were judged as HER2 positive.
In this study, the Ki67 cut-off level for positivity was defined at 20%.
Results: The mean age was 35 years (range, 28–43 years). 15 patients (71.4%) represented axillar lymph node positive. ER positivity was found in 11 patients (52.4%), and PR positivity was found in 12 patients (57.1%). The positive rate of ER and PgR was low as reported in the past. HER2 positivity was found in 8 patients (38.0%) and the rate of HER2 incidence in PABC showed a higher tendency than usual. Of the 17 patients tested, Ki67 positivity was found in 15 patients (88.2%). In intrinsic subtypes, triple negative type was 6 patients (28.6%) and triple positive type was 4 patients (19.0%).
Median follow-up time was 33 months. (range, 1–120 months). Distant metastasis occurred in five patients (23.8%). 3 have died and 16 were alive with no evidence of disease.
Conclusions: In Pregnancy-associated breast cancer, there were few reports that examined the value of ki67 until now, and the rate was higher in this study.
Conflict of Interest: No significant relationships.

P342
ADAPTcycle – adjuvant dynamic marker-adjusted personalized therapy comparing endocrine therapy plus ribociclib versus chemotherapy in intermediate risk HR+/HER2- early breast cancer

N. Harbeck[1]*, O. Gluz[2], M. Christgen[3], M. Graeser[2], F. Hilpert[4], H.H. Kreipe[3], U. Nitz[2], R. Kates[5], T. Schinkoethe[6], S. Kuemmel[7], West German Study Group. *[1]University Hospital Munich (LMU), Clinics of Gynecology, Breast Center, Munich, Germany, [2]West German Study Group, Moenchengladbach, Germany, [3]Insitute of Pathology, MHH Hannover, Hannover, Germany, [4]Mammacentrum Hamburg, Hamburg, Germany, [5]West German Study Group, Munich, Germany, [6]CANKADO Service GmbH, Kirchheim, Germany, [7]Breast Center, Clinics Essen Mitte, Essen, Germany*

Goals: WSG-ADAPTcycle is a prospective, multi-center, interventional, two-arm, open-label, controlled (neo)adjuvant, non-blinded, randomized phase III trial (EudraCT 2018-003749-40). It investigates whether HR+/HER2- intermediate-risk pts (about 20% of HR+/HER2- EBC) identified during screening (OncotypeDX and 3-weeks endocrine therapy (ET)) derive additional benefit from 2-years of the CDK4/6 inhibitor ribociclib combined with ET compared to chemotherapy (CT) (followed by adjuvant ET). Co-primary endpoints are DFS and DDFS.
Methods: Starting Q1 2019 (enrollment 36 months, 80 sites), 5600 pts will be screened and 1670 randomized in a ratio 3:2 (1002 to ribociclib + ET; 668 to standard CT followed by ET). Pre-/postmenopausal pts with histologically confirmed invasive HR+/HER2- EBC with clinically enhanced risk (cT2-4 or Ki67 ≥ 20% or G3 or cN+) are eligible if they fulfill the ADAPT intermediate risk group criteria: Recurrence Score (RS) ≤25 and poor endocrine response or RS >25 and good endocrine response in p/cN0-1 pts or RS ≤25 with good endocrine response in c/pN2-3 pts. Endocrine responsiveness is determined by Ki67 response (drop to ≤10%) after 3-weeks ET. Treatment duration is 2 years for the ribociclib + ET (premenopausal: AI + GnRH) arm and 16–24 weeks for the CT arm; Treatment can be given in neoadjuvant or adjuvant setting. 5-year follow-up phase consists of standard adjuvant ET. PROs are collected using CANKADO; ECG monitoring is performed using a novel CANKADO-based methodology.
Results: Translational analyses: Tumor tissue will be collected at baseline (prior to ET), after 3-weeks ET (±1w). Additional samples are required if residual tumor is diagnosed in case of neoadjuvant treatment and at time of recurrence to identify potential resistance markers. Exploratory tissue biomarker research will be conducted to assess alterations of molecular markers (e. g., ESR1, PIK3CA, CCND1, CDKN2A, RB1). In addition, ctDNA/ctRNA from optional blood samples will be used to assess mutations and gene expression relevant for HR +/HER2- BC using the most appropriate technology at time of testing.
Conclusions: ADAPTcycle seeks to evaluate whether enhancing endocrine therapy by a CDK 4/6i inhibitor is superior to CT in patients who may be undertreated by ET alone based on either lack of endocrine responsiveness or high tumor burden. Translational research aims at assessing potential mechanisms of resistance to endocrine and/or CDK4/6 targeted therapy or CT.
Conflict of Interest: Receipt of honoraria or consultation fees: Agendia, Amgen, Astra Zeneca, Celgene, Daiichi-Sankyo, Genomic Health, Lilly, MSD, Nanostring, Novartis, Odonate, Pfizer, Roche, Sandoz/Hexal, Seattle Genetics.
Conflict of Interest: No significant relationships.

P343
The application of intraoperative specimen mammography in breast conserving surgery

L. Andriani*, L. Zhu, J. Wu, S. Ding, C. Lin, C. Goh. *Comprehensive Breast Health Center, Ruijin Hospital Affiliated to Shanghai Jiaotong Univerisity School of Medicine, Shanghai, China*

Goals: Intra-operative specimen mammography (ISM) is used for rapid X-ray imaging in surgical removal samples. The aim of this study is to analyze the value of ISM in evaluating the positive margin of incision and reducing the secondary surgical rate compared with traditional breast conserving surgery.
Methods: This study involved 593 breast cancer patients who undergone breast-conserving surgery in Comprehensive Breast Health Center of Ruijin Hospital Affiliated to Shanghai Jiaotong University School of Medicine from May 2015 to October 2017. The enrolled participants were divided into two groups, ISM group (after August 2016) and non-ISM group (before August 2016). A retrospective analysis was made to compare the positive rate of the surgical margin and secondary surgical rate between these two groups.
Results: Among 593 patients enrolled, there were 269 (45.4%) cases in ISM group and 324 (54.6%) cases in non-ISM group. The positive excision margin rate was 7.1% in ISM group and 8.0% in non-ISM group. The rate of re-excision after positive margin during initial operation was 5.9% in ISM group and 6.5% in non-ISM group, while the re-excision during secondary operation was 1.1% in ISM group and 1.5% in non-ISM group. However, the percentage of patients who had negative pathological margins and performed additional excision margins were higher in the ISM group than the non-ISM group (14.5% vs 8.3%).

Table.
Resection margin status for all patients.

Results	Results BCS with ISM (N = 269(%))	BCS without ISM (N = 324(%))
Positive Margin status	19 (7.1)	26 (8.0)
Re-excision status		
• initial operation	16 (5.9)	21 (6.5)
• secondary operation	3 (1.1)	5 (1.5)
Additional excision	39 (14.5)	27 (8.3)

Conclusions: Our study indicate that there is no significant difference in the positive margin rate and rate of secondary surgery between ISM and non-ISM group.
Conflict of Interest: No significant relationships.

P344
Clinicopathological features of elderly patients (≥70 years old) with invasive breast cancer

T. Utsumi*, N. Kobayashi, M. Hikichi, K. Ushimado. *Fujita Health University, Toyoake, Aichi, Japan*

Goals: This study aimed to investigate clinicopathological features of elderly patients (≥70 years old) with breast cancer.

Methods: A retrospective study was conducted. In this study, we have included all women with breast cancer treated at our hospital from 2003 to 2014. Patients with noninvasive cancer, stage IV, and bilateral disease were excluded from this study. The clinicopathological characteristics were compared with patients aged over 70 years and patients aged less than 70 years. Estrogen receptor (ER), progesterone receptor (PR), and Ki67 were assessed by immunohistochemistry (IHC). Positive ER or PR status was defined as the presence of ≥1% positive cancer cells. Human epidermal growth factor receptor 2 (HER2) positivity was based on an IHC score of 3+ and/or a FISH-positive result. The Ki67 labeling index was categorized as low (<14%) or high (≥14%).
Results: A total of 1130 women with breast cancer were included. Of them, 208 (18.4%) were diagnosed at ≥70 (range 70–90, median 76) years of age and 922 (81.6%) were at <70 (range 22–69, median 52) years. There was no significant difference in T stage between the two age groups. A lower proportion of patients over 70 years compared with patients less than 70 years had node involvement (node positive, 26.9 vs. 37.7%; P < 0.001). There was no significant difference in ER status between the two groups, but a higher percentage of breast cancers in patients over 70 years had negative PR status (P = 0.03). There were no significant differences in HER2 status, Ki67 expression, subtype distribution, and histological grade between the two groups. The proportion of mastectomy or breast conserving surgery was equally distributed between the two groups. A higher proportion of patients over 70 years compared with patients aged less than 70 years did not undergo axillary surgery (no surgery 11.1 vs. 0.7%, sentinel node biopsy 30.3 vs. 40.9%, axillary node dissection 58.7 vs. 58.5%, P < 0.001). Patients over 70 years received chemotherapy less often than patients aged less than 70 years (19.2 vs. 52.4%; P < 0.001).
Conclusions: Breast cancers in the patients over 70 years were more likely to be PR negative. Patients over 70 years were less likely to undergo axillary surgery and were less likely to receive chemotherapy. Our study was a retrospective study with a small number. Further studies in a larger population might be need.
Conflict of Interest: No significant relationships.

P345
Utilizing business intelligence and lean system applications to improve efficiency in breast surgery by reducing case delays

M. Hannah[1,2]*, V. Prasath[1], M. Habibi[3]. [1]*Johns Hopkins, Baltimore, United States,* [2]*Michigan State University College of Human Medicine, Lansing, United States,* [3]*Surgery, Johns Hopkins, Baltimore, United States*

Goals:

1. Successfully decouple the needle localization exam from the day of surgery.
2. Reduce the overall number of cases delayed,
3. Reduce subsequent case delays in the operating rooms.

Methods: We used the "Perioperative Dashboard" created by business intelligence group at our institution. This dashboard utilizes the Qlikview platform and analyzes all the events perioperatively for each case. We also employed patient tracking data, available in Epic, in order to track patient movements with timestamps on the day of their proposed surgeries. We measured the time spent at each step of the patient movement during the day of their surgery. We then preformed simple statistics to calculate the average amount of time that each patient spends on the day of the surgery, before they are ready to proceed to the Operating room.
After identifying significant delays in operating room start times associated with ultrasound-guided needle localization we proposed a method to "un-couple" the process of tagging breast masses on the day of operation by using wire localization with tags which can be placed up to four weeks before the surgery.
Results: If the first case of the day was breast resections with needle localizations, late starts were observed in 91.5% of the cases. This "first case delay", extends the delay for the entire operating room for the rest of the cases of that day in about 73% of the time. This leaves the total minute delay at over 18,000 minutes in one year if this current trend was to continue.
In our pilot intervention implementation, we identified eighteen patients whom were undergoing breast mass lumpectomy with mass localization. In this cohort of women, their breast masses were localization on a day prior to her surgery. All other interventions remained the same. In this cohort, the time from patient check-in until they were brought back to the operating room was 2:38 at one of our medical sites and 2:03 at the main hospital.
Conclusions: By decoupling the process from the same-day surgery, the time from patient check-in until they were brought back to the operating room decreased from an average of 3:27 at one medical site to 2:38, and at the main hospital from 2:58 to 2:03.
Most importantly, across all cases in which decouplization of the needle localization process was employed, we observed an average operating room delay time of 3 minutes- regardless of site of surgery. The study is still on-going. However, the results of this study are thus far quite promising.
Conflict of Interest: No significant relationships.

P346
Isolated colonic metastasis from breast cancer: the first case report from Thailand

T. Tarapongpun*, D. Sa-nguanraksa, P. O-charoenrat. *Head Neck and Breast Surgery Division, Department of Surgery, Faculty of Medicine Siriraj Hospital, Mahidol University, Bangkok, Thailand*

Goals: To report the unusual presentation of breast cancer patient with isolated colonic metastasis and treatment recommendation.
Methods: A 62-year-old Thai female presented with abdominal pain for 4 months and significant weight loss since December 2017. Computerized tomography (CT) of whole abdomen revealed segmental wall thickening at transverse colon with two areas of hyperenhancing mucosa. Colonoscopic examination demonstrated two lesions of short segment indurated submucosal infiltration at transverse colon. The biopsy was performed and revealed poorly differentiated adenocarcinoma. Further immunohistochemical study was consistent with lobular breast carcinoma in origin (CK7+/CK20-, CDX2-, GCDFP15-, TTF-1-, Napsin A-, mammaglobulin+, GATA3+, ER+, PR-, HER-2-). Mammogram and breast ultrasonography showed 7.5 × 5.2 mm irregular indistinct hypoechoic mass at right upper quadrant. Excisional biopsy of right breast mass revealed invasive lobular carcinoma, moderately differentiated carcinoma (ER>90%, Negative for PR and HER-2, Ki-67 6%). Additional metastatic work up including CT chest and bone scan showed no metastasis.
Results: Final diagnosis was made as invasive lobular carcinoma with isolated colonic metastasis (cT1N0M1). She received treatment with letrozole 2.5 mg once daily since March 2018. At 6-month follow-up, her abdominal symptom and imaging were improved. Follow-up serum tumor markers were gradually decreased (CEA: 4.75→3.62→2.67; CA 15–3: 61.25→47.69→40.66).
Conclusions: We reported the first case in Thailand of isolated colonic metastasis of non-palpable breast cancer. Colonic involvement by metastatic invasive lobular breast carcinoma suggests an advanced disease. Systemic hormonal or chemotherapy produces a favorable response. Awareness of this condition may lead to proper investigations including colonic biopsy, thus avoiding unnecessary surgery.
Conflict of Interest: No significant relationships.

P347

Physiotherapy for breast cancer patients: a critical review

G. Perazzini[1]*, C. Trosini[1], M. Materazzo[2], A. Antonelli[2], L. Esposito[1], A. Servadio[1], O.C. Buonomo[2]. *[1]Department of Clinical Science and Translational Medicine, Università degli Studi di Roma: Tor Vergata, Rome, Italy, [2]Department of Surgery, Università degli Studi di Roma: Tor Vergata, Rome, Italy*

Goals: The aim of this Study is to establish which is the most effective intervention in addressing the different complications that may arise as a result of the treatment of breast cancer (BC) through a critical and systematic review of the different rehabilitation approaches published in literature.
Methods: The research was carried out through two main biomedical databases: MEDLINE and PEDro. Inclusion criteria were Randomized controlled trials, enrolled study population with an exclusive diagnosis of BC from I to III stage, comparison of different intervention alone or in combination aimed in reducing or preventing complications.
Results: 15 studies were included in the review, for a total of 1159 patients. The studies that have been analysed compared the efficacy of Transcutaneous Electrical Nerve Stimulation (TENS), Transcutaneous Spinal Electroanalgesia (TSE), Low Level Laser Therapy (LLLT), passive mobilization (PM), endurance exercises (EE), stretching, Manual Lymphatic Drainage (MLD), Myofascial Release (MFR), Kinesio Taping (KT), Proprioceptive Neuromuscular Facilitation (PNF). Result analysed through the study were pain, upper limb functional restriction, lymphedema and Axillary Web Syndrome (AWS). All the considered studies have shown how the instrumental methods (TENS, TSE, LLLT) are inferior to the manual ones (PM, EE, Stretching, MLD, MFR, KT, PNF). Moreover, in all the studies the combination of the two procedures analysed showed a superiority when compared with the same methods singularly.
Conclusions: Due to heterogeneity of the studies in methods, parameters considered, and the evaluation scales used, it is not possible to determine which intervention was the most effective. In several studies the improvements obtained did not reach the statistical significance, in these cases the data showed anyway a positive trend towards the different interventions given also by the psychological support of the treatment itself because early intervention of BC patients avoids the onset of phenomena related to the chronicization of pain and the non-use of the operated limb.
Conflict of Interest: No significant relationships.

P348

Development of an evaluation scale for patients after breast cancer surgery

C. Trosini[1]*, G. Perazzini[2], M. Materazzo[3], S. Ingallinella[3], L. Esposito[2], A. Servadio[2], O.C. Buonomo[3]. *[1]Department of Clinical Science and Traslational Medicine, Università degli Studi di Roma: Tor Vergata, Rome, Italy, [2]Department of Clinical Science and Translational Medicine, Università degli Studi di Roma: Tor Vergata, Rome, Italy, [3]Department of Surgery, Università degli Studi di Roma: Tor Vergata, Rome, Italy*

Goals: Breast cancer surgery (BCS) can cause physical and psychological complications that can affect negatively patients' quality of life, which can be avoided by physiotherapeutic treatment. According literature there aren't any specific evaluation scale for this kind of patients that can help physiotherapists to tailor the right treatment for each patient. The aim of this Study is to create and validate a scale which makes a global evaluation of patients after BC surgery with the purpose of setting up an early rehabilitation program for the single patient's needs.
Methods: In this single-centre prospective study we enrolled 46 patients treated in Tor Vergata from July 2018 to November 2018. The creation of the scale was based according literature. We assessed as marker of impairment as Oedema (Y/N and localization), Pain according Numeric Rating Scale (NRS), homolateral arm sensibility (Paraesthesia Y/N, impaired general sensibility Y/N), homolateral arm function (modified DASH Score) and psychological impact. The parameters were collected three times to all the patients included in the study (first day after surgery T0, test/retest intra operator evaluated one week after T0 (T1) and responsiveness's test after 21 days from T0 (T2)). Internal consistency was tested using Cronbach's α coefficient. We assessed the correlation between marker of impairment between each value and with the total score at the same time (T0, T1, T2) by the Pearson and the Spearman Rho correlation coefficients. Responsiveness was calculated with the Wilcoxon signed ranks test (T0 vs T2).
Results: Internal consistency due to the small number of the sample was not statistically significant ($\alpha = 0.616$). The intraclass correlation coefficient was 0.907 (95% CI: 0.837–0.947) for test/retest reliability. All the marker evaluated in T0, T1 and T2 with the scale and the total score showed a statically significant correlation ($p > 0.05$). Responsiveness was statistically significant ($p < 0.05$) for pain ($z = -3,384$), homolateral arm function ($z = -3,429$), psychological impact ($z = -4,051$) and total score ($z = -5,576$).
Conclusions: This study showed that the scale is a valid and a reliable instrument to evaluate patients' acute disability after BCS and to individualize the rehabilitation intervention according patients' need. Further studies with larger population need to validate these preliminary results.
Conflict of Interest: No significant relationships.

P349

Atypical femoral fracture in breast cancer patients with bone metastasis receiving denosumab therapy: multi-center retrospective analysis

Y. Ozaki[1]*, M. Takahashi[1], Y. Tanabe[1], Y. Miura[1], N. Tamura[2], T. Shigekawa[3], H. Kawabata[2], N. Baba[3], H. Iguchi[4], T. Takano[1]. *[1]Medical Oncology, Toranomon Hospital, Tokyo, Japan, [2]Breast and Endocrine Surgery, Toranomon Hospital, Tokyo, Japan, [3]Breast Oncology, Tokyo Kyosai Hospital, Tokyo, Japan, [4]Medical Oncology, Sasebo Kyosai Hospital, Nagasaki, Japan*

Goals: To evaluate the incidence rate and the risk factor of atypical femoral fracture in breast cancer patients with bone metastasis receiving denosumab therapy at 120 mg monthly.
Methods: We reviewed the medical records and pharmacy database of breast cancer patients who received denosumab at 120mg monthly for management of bone metastasis from May 2012 to March 2017 at three institutions, and analyzed the incidence rate and the risk factor of AFF. To characterize the clinical courses of the patients who diagnosed AFF, we reviewed the clinical features and skeletal images of the patients.
Results: We analyzed 159 patients receiving a median of 18 doses (range; 1–79) of denosumab, and 28 (18%) patients received denosumab for more than three years. Among the 28 patients, 12 (44%) patients had received prior zoledronic acid therapy. Four patients (2.5%, 95% confidence interval: 0.98–6.29) were diagnosed as AFF and performed intramedullary nail fixation. Median age of the four patients was 61 (range; 45–67). Among the four patients, three patients had ER-positive HER2-negative breast cancer and the other patient had ER-positive HER2-negative breast cancer. All of the four patients had received prior zoledronic acid therapy. They received 45, 45, 46 and 47 doses of denosumab, respectively. The Cox regression analysis showed denosumab treatment for more than 3.5 years was an independent risk factor.
Conclusions: We found the AFF event in 4 patients (2.5%) among 159 breast cancer patients receiving denosumab 120mg monthly. The long-term denosumab treatment more than 3.5 years is an independent risk factor for AFF. More data are needed about the occurrence of AFF in these patients.
Conflict of Interest: No significant relationships.

P350

Time for validation of high quality noninvasive test for ESR1-mutation analysis in hormone-sensitive breast cancer

O. Najim[1,2]*. [1]*University Hospital of Antwerp, Brussel, Belgium,* [2]*Breast Clinic, University Hospital of Antwerp, Antwerpen, Belgium*

Goals: The current systemic review designed to show the clinical implications of the available ESR1 analysis techniques.
Methods: A systematic review of qualitative studies published between January 1st, 2007 and October 1st, 2018 was conducted regarding the techniques used for ESR1 mutation analysis. The search was carried out using the databases PubMed and Thomas Reuters Web of Science to find studies, which consider the following inclusion criteria; women diagnosed with hormone positive metastasized breast cancer who underwent ESR1 analysis using next generation sequencing (NGS) and/or droplet digital polymerase chain reaction (ddPCR). A literature search fulfils the formerly explained search criteria and taking in consideration of time interval, had resulted in collection of 201 articles in PubMed and 252 articles in Web of Science.
Results: After stepwise methodological search, 14 articles, 4 multicenter double-blinded RCTs and 10 cohorts, were obtained for analysis in this systematic review. In the current review, ESR1 mutations were analysed in 2356 tissue/plasma samples using NGS and/or ddPCR techniques. Both archived and recent samples were used for ESR1 analysis. There was no significant difference between tissue and plasma samples (P = 0.50) or between NGS and ddPCR techniques (P = 0.48), Table 1. There was a very large variability between the studies that ensured a broad confidence interval on the global percentages and a high p-value. The results were displayed on basis of forest plot.

Table 1.
Comparison methods.

	Number of studies	Global percentage (95% CI) (Random effects model)	P value
Method (NGS-ddPCR)	(9–7)	0.23 (0.15–0.35)/0.28 (0.21–0.36)	0.48
Type sample (Tissue-Plasma)	(10–7)	0.23 (0.15–0.33)/0.27 (0.20–0.36)	0.50

Conclusions:

- Validation of non-invasive test for ESR-mutation analysis in hormone-sensitive breast cancer could improve the therapeutic strategies in controlling estrogen-receptor signalling before the occurrence of wide spread disease. In future, cost-effectiveness analysis of different ESR1 mutation tests should be performed.

Conflict of Interest: No significant relationships.

P351

Establishing the mammary tissue microbiome

N. Narayanen[1,2]*, G. Hogan[3,4], D. O'hanlon[1,2], M. Tangney[3,4]. [1]*General Surgery, South Infirmary Victoria University Hospital, Cork, Ireland,* [2]*General Surgery, Cork University Hospital, Cork, Ireland,* [3]*SynBioCentre, University College Cork, Cork, Ireland,* [4]*Cancer Research@UCC, University College Cork, Cork, Ireland*

Goals: The mammary microbiome is not well established. Studies of breast tissue describe a diversity of bacteria and bacterial profiles which differ between women with and without cancer. Escherichia, Shigella, Bacillus, Pseudomonas, Propionibacterium, Staphylococcus and Listeria comprise the majority of organisms found in women with breast cancer. In this study, we describe a new sterile technique which was used to obtain specimens of breast tissue and normal tissue in women undergoing surgery for palpable breast cancers to optimize a strategy for collection of fresh sterile samples from human breast tissue for bacterial cultivation and data sequencing analysis in order to establish the mammary microbiome.
The aim of this study was to establish the presence of and to describe and analyse the mammary microbiome in patients with breast carcinoma with optimisation of a strategy for collection of fresh "sterile" patients breast tissue
Methods: Data from 21 women undergoing breast surgery were analysed. We describe a technique to optimise a strategy for collection of fresh sterile breast tissue for bacterial cultivation and data sequencing analysis, from within the malignant tissue and from the surrounding normal tissue. With agreement of the pathology team, core biopsies were used to obtain a sample of tumour tissue from palpable breast lesions. Adjacent normal breast tissue was also excised with scissors or scalpel. The specimens were then placed in containers containing 1ml clostridium broth and then taken by UCC laboratory staff within one hour and were examined for the presence of bacteria. Characterisation of bacteria involved culturing of viable bacteria and DNA isolation and sequencing.
Results: Data from 21 women undergoing breast surgery were analysed and found that 8 specimens had bacterial tumour growth and 5 of those were associated with necrotic tissue. The main bacteria isolated were P. avidum, S. capitis, S. epidermidis, S. succinus, C. jeikeium, and C. aurimucosum.
Conclusions: We have established a viable microbiome in breast cancer patients in tumour specimens using a sterile technique for breast tissue sampling. The main bacteria isolated were P. avidum, S. capitis, S. epidermidis, S. succinus, C. jeikeium, C. aurimucosum. Most of the bacteria can also be isolated from skin flora. We have established a viable mammary microbiome in breast tumour samples.
Conflict of Interest: No significant relationships.

P352

Living microbes within tumours

N. Narayanen[1,2]*, G. Hogan[3,4], E. Rettedal[3,4], C. Murphy[3,4], D. O'hanlon[1,2], M. Corrigan[1], M. Tangney[3,4]. [1]*General Surgery, Cork University Hospital, Cork, Ireland,* [2]*General Surgery, South Infirmary Victoria University Hospital, Cork, Ireland,* [3]*SynBioCentre, University College Cork, Cork, Ireland,* [4]*Cancer Research@UCC, University College Cork, Cork, Ireland*

Goals: The recent discovery by our group of a bacterial presence within healthy and malignant human breast tissue has pointed towards the existence of a tumour microbiome. The tumour microbiome has been described via deep sequencing techniques. However, while high-throughput sequencing can help to define the composition of a bacterial community, it is disadvantageous in that it cannot confirm the viability of the microbes it detects. Further work is therefore required to create a more comprehensive portrait of the breast microbiome. Our aim in this study was to develop a culture-based assay, capable of capturing as wide an array of bacteria as possible from murine and human tissues.
Methods: A procedure was developed and optimised using murine tumour models, before applying to fresh patient samples. Preclinically, mice ± subcutaneous RENCA and 4T1 tumours were culled and their organs harvested, including kidney and liver. Tissues were homogenised and plated on several types of media and incubated at 37°C under different atmospheric conditions. 38 female and 2 male breast cancer patients undergoing surgery were consented into the clinical study. Patients were queried regarding their antibiotic and probiotic history and, where appropriate, if they ever breastfed their children. Specimens were homogenised and plated on four different types of agar and incubated at 37°C in 5% CO_2. Primers targeting the V3-V6 regions of the 16S rRNA gene were used to amplify the DNA of cultured bacteria, enabling identification at strain level.
Results: Multiple bacterial genera and species were cultured from patient breast tissue, unlike control samples for skin or environmental "background". There was also significant divergence in the profiles of murine and human tissues in terms of their bacterial make-up.

Several bacterial species identified in human breast tissue using next generation sequencing techniques (e.g. *Lactobacillus* spp.) were not detected using our culture-based assay, despite using media on which these microbes routinely grow (e.g. MRS).
Conclusions: Our data suggest that the true profile of the breast microbiota may be considerably less diverse than what high-throughput data indicate. To our knowledge, this is the first study in which viable bacteria have been recovered from human breast tumour tissue.
Conflict of Interest: No significant relationships.

P353
To determine the frequency of depressive disorder and its socioeconomic factors in diagnosed cases of breast cancer visiting a tertiary care hospital of developing country

B. Mir Kan[1]*, W. Ali[2,3]. [1]*Oncology, Aga Khan University, Karachi, Pakistan,* [2]*Psychiatry & Behavioral Sciences, Jinnah Post Graduate Medical Center, Karachi, Pakistan,* [3]*Psychiatry, Aga Khan University, Karachi, Pakistan*

Goals: Breast cancer is a leading cancer diagnosis among women worldwide, with more than 210,000 new cases and 40,000 deaths per year in the United States. Since surgical treatment of breast cancer may lead to reduced or uneven breast size and complete removal of one or both breasts can cause disfigurement, scarring, chronic pain decreased range of motion, and lymph edema(swelling typically in one or more extremities) hence Psychological distress can occur. The prevalence of psychological distress among breast cancer patients is high, and they are at higher risk of developing severe anxiety, depression and potential mood disorders. The goal of this study to determine the socio- economic factors associated with anxiety and depression among breast cancer patients and to access the changes of psychological distress after the completion of treatment at 1 year of follow-up.
Methods: The totals of 93 women who fulfill the inclusion and exclusion criteria like histopathology proven breast cancer patient who do not have previous history of depressive disorder were included in this study. The purpose procedure, risk and benefits of the study were explained, confidentiality was ensured and informed consent was taken from the eligible patients. Brief history of breast cancer was taken and then assess for depression on the basis of Hamilton rating scale for depression and score ≥7 was marked as women with positive depressive disorder.
Results: Mean±SD of age was 58.64 ± 11.26 with C.I (56.32–60.95) years. Out of 93 women frequency of depressive disorder was found in 32 (34%) patients. Mean±SD of duration of breast cancer was 15.86 ± 5.26 with C.I (14.77–16.94) weeks. Mean±SD of duration of HAM-D score was 8.23 ± 7.55 with C.I (6.67–9.78). on further stratification, the education level of women, 30 out of 93 (32%) were > more then 10th class literate while in other hand 16 (17%) were illiterate. Most of the women 58 (62%) were belong to lower class and 6 (6.45%) belong to upper middle class. In marital status of the patients 8 (9%) were unmarried and 35 (38%) were married. In distribution of number of kids 48.13% had 2–6 kids while 51.61% had 7–10 kids with Mean±SD 6.32 ± 2.24.
Conclusions: Study clearly shows that younger age group, low monthly income, having less financial support, low education level and being single were associated with anxiety and depression. For managing breast cancer patients, more care or support should be given to this type of patients as they are at high risk of anxiety and depression.
Conflict of Interest: No significant relationships.

P354
The breast cancer genetic risk model based on eight single nucleotide polymorphisms

Z. Dankova[1]*, P. Zubor[2], M. Grendar[3], M. Kalman[4], K. Zelinova[1], M. Jagelkova[1], A. Kapinova[1], D. Simova[2], D. Vlcakova[2], Z. Lasabova[1]. [1]*Department of Oncology, Jessenius Faculty of Medicine, Biomedical center Martin, Martin, Slovakia,* [2]*Clinic of Gynaecology and Obstetrics, Martin University Hospital, Martin, Slovakia,* [3]*Bioinformatic Unit, Jessenius Faculty of Medicine, Biomedical Center Martin, Martin, Slovakia,* [4]*Department of Pathology, Martin University Hospital, Martin, Slovakia*

Goals: Beside the well-known mutations in *BRCA1* and *BRCA2* genes, 90 other susceptible genetic variants with different penetration have been identified to play important role in inherited breast cancer risk. We analyzed eight low penetrant, common single nucleotide polymorphisms and calculated predictive accuracy of the genetic risk model.
Methods: This prospective case-control study consist of 171 women with developed breast cancer (57.06 ± 11.60 years) and 146 healthy controls (50.24 ± 10.69 years) without previous history of any malignancy. The genotypes of eight genetic variants (rs4415084 *FGF10*, rs2981582 *FGFR2*, rs889312 *MAP3K1*, rs3817198 *LSP1*, rs3803662 *TOX3/TNRC9*, rs2293554 *CASP8*, rs13387042 and rs13281615 *CASC21)* were analysed by High Resolution Melting method (*LightCycler*® 480 Instrument) and validated by Sanger sequencing (Applied Biosystems™ *3500* Series Genetic Analysers). The Random Forest algorithm was used to get genetic risk model accuracy explained by ROC with AUC values.
Results: Two genetic variants (rs2981582 *FGFR2* and rs889312 *MAP3K1)* significantly associated with breast cancer with higher odds ratios of homozygotes with two risk alleles than the heterozygotes with one mutant allele: *FGFR2* TT: 1.953 (95%CI 1.014–3.834, p = 0.049), CT 1.771 (95%CI 1.088–2.899, p = 0.026) and *MAP3K1* CC 2.894 (95%CI 1.028–9.566, p = 0.048), AC 1.760 (95%CI 1.108–2.813, p = 0.019). These variants showed also the best single discriminative ability, followed by *CASP8* variant. The Random Forest classification algorithm identified as the most important predictor to be age, followed by *FGFR2*, *LSP1* and *MAP3K1*. Discriminative accuracy of the genetic risk model distinguishing controls and breast cancer patients, based on 8 SNPs and age, had value of AUC 0.728 with sensitivity 70.6% and specificity 65.1%. It was significantly higher than in other genetic risk model studies based on more SNPs.
Conclusions: Various statistical analyses of this research identified four (*FGFR2*, *MAP3K1, LSP1* and *CASP8* genetic variants) out of eight studied single nucleotide polymorphisms to play substantial role in breast carcinogenesis. We assume that inclusion of other gynaecological, family and life style risk factors, into the risk model could increase both, AUC value and also sensitivity and specificity, that the model will have sufficient predictive performance. Study was supported by the grants VEGA 1/0124/17, 1/0199/17 and 1/0018/16 and APVV-16-0021.
Conflict of Interest: No significant relationships.

P355
Melanocyte colonisation of invasive ductal carcinoma: a case report

D. Vlčáková[1]*, T. Kulkovska[1], P. Žúbor[1], J. Danko[1], T. Bielik[1], E. Kudela[1], D. Šimová[1], E. Kozubík[1], M. Boboroská[2], K. Kajo[3]. [1]*Department of Gynecology and Obstetrics, Jessenius Faculty of Medicine, Comenius University in Bratislava, Martin, Slovakia,* [2]*Department of Pathology, Jessenius Faculty of Medicine, Comenius University in Bratislava, Martin, Slovakia,* [3]*Department of Gynecology and Obstetrics, St. Elizabeth Cancer Insitute Hospital, Bratislava, Slovakia*

Goals: We aimed to present a unique melanocytic transformation in invasive breast cancer as a very rare case. There were reported only 4 cases and published in Medline. We describe the detailed profile of

the tumour allowing differentiation from other potential melanocyte-based malignancies.
Methods: A 64 year old woman, chronic smoker, noticed fluid leaking out of her nipple for 3 months with the rising tendency. She proceeded the biopsy of tumour with the excision of the breast infiltrating skin surface. Histology confirmed breast carcinoma with exulcerations and fragments of melanocyte colonisation. Patient was in few days afterwards admitted at our department with the signs of dyspnoea, where chest X-ray showed the right-sided fluidothorax, which was immediately drained (the volume: 600ml of straw coloured fluid).
Results: Histology proved breast adenocarcinoma (pT(4b)pN(x)pM(x)) with invasion to the exulcerated surface of the skin. Immunohistological examination confirmed the melanocytic elements due to positivity of Melan A proteins in extra- and intracellular space of the tumorous tissue which is very interesting finding. This examination also demonstrated the expression of CHC7, CK18, CK19, S100+, Vimentin+, E cadherin+, GATA3 (that refers to a primary ductal invasive carcinoma) and ER+ (90%), PR+ (50%), HER2-negative hormonal status. This case thus reports the melanocyte colonisation and pigmentation of breast cancer. Patient underwent clinical staging including skeletal scintigraphy – showing diffuse skeletal and parenchymal organs metastases (clinical sage IV). Afterwards she was referred for chemotherapy-paclitaxel weekly, followed by Letrozole. Two months later her general health condition worsened with the severe dyspnoea due to bilateral fluidotorax despite of pleurodesis previously done on both pleural cavities. Patient showed infaust prognosis with severe cardiovascular impairment and was referred to department for palliative care.
Conclusions: Hereby, we present an extremely rare case of melanocyte colonisation and pigmentation of the breast cancer with the aim to point on its profile and biologic aggressivity where the malignant melanoma should be considered always in differential diagnosis. Study was supported by the grants VEGA 1/0124/17 and 1/0018/16 and APVV-16-0021.
Conflict of Interest: No significant relationships.

P356
Bilateral radiation-associated angiosarcoma of the breast – case report

E. Gabonova[1]*, M. Smolar[1], J. Lucan[1], E. Kudela[2], L. Plank[3], L. Laca[1].
[1]Clinic of Surgery and Transplant Center, Jessenius Faculty of Medicine in Martin, Comenius University in Bratislava, Martin, Slovakia, [2]Clinic of Obstetrics and Gynecology, Jessenius Faculty of Medicine in Martin, Comenius University in Bratislava, Martin, Slovakia, [3]Clinic of Pathological Anatomy, Jessenius Faculty of Medicine in Martin, Comenius University in Bratislava, Martin, Slovakia

Goals: Breast sarcoma, excluding phyllodes tumor, accounts for less than 1% of all breast malignancies, and less than 5% all soft tissue sarcomas. Breast sarcomas represent heterogeneous group of neoplasms, but angiosarcoma is the main histologic type. It is a very rare, aggressive tumor arising from vascular endothelium with metastatic potential and poor prognosis. Main characteristics of the angiosarcoma include rapid proliferation and infiltrating growth.
Methods: We describe an extremely rare case of bilateral secondary angiosarcoma of the breast with the overall survival of 8 years after the diagnosis.
Results: A 47-year-old female was treated for tubular carcinoma on the left breast with BCS (breast conserving surgery) and ALND (axillary lymph node dissection). Adjuvant radiation therapy with 70 Gy was completed 2 months after primary surgery. Tamoxifen was prescribed during five years after surgery.
The patient started to report the pain in the nipple region after the completion of hormonal therapy. Incisional biopsy was performed and because of the signs suspicious from AS (angiosarcoma) the mastectomy was indicated. The definite histology results in low-grade angiosarcoma. Five years after the left mastectomy the patient had an injury on the right breast and the pain in the affected breast did not disappear. The recurrence appeared in the place of scar tissue after left mastectomy and a new focus was diagnosed on the right breast. The right mastectomy with ALND altogether with re-excision of scar tissue were performed. The histological results confirmed the recurrence of the low-grade angiosarcoma and the newly diagnosed right-sided high-grade AS. The patient underwent various regimes of CHT (chemotherapy) with the last line of docetaxel. The disease was spreading on the chest wall despite of adjuvant CHT. The overall state of the patient continued worsening with general spread of the AS and intolerance to any kind of treatment. The patient died 8 years after the left-sided AS and 2 years after the right-sided AS was diagnosed.
Conclusions: This case represents a rare entity of bilateral radiation-associated breast angiosarcoma. Its management is challenging due to its poor survival rate and aggressive behaviour. Therefore, the treatment is empirical due to its low incidence.
Conflict of Interest: No significant relationships.

P357
Invasive ductal breast carcinoma metastasis to the vulva: a rare case report

V. Kurpad*. *Surgical Oncology, Sri Shankara Cancer Hospital and Research Centre, Bangalore, India*

Goals: Breast cancer mostly metastasizes to regional lymph nodes, bones, lung, liver, brain etc. An unusual site of metastasis particularly to gynecological sites is rare and mostly involves ovaries or uterus. Vulval metastasis is a rare occurrence.
Methods: A single case report of a patient with carcinoma breast presenting with vulval metastasis.
Results: The patient originally underwent a right breast conservation surgery in January 2014 at the age of 36. HPE revealed invasive ductal carcinoma with perineural tumour invasion and 4 of 23 axillary lymph nodes positive for disease. Estrogen and progesterone-receptor positive, Her 2 neu negative. She received adjuvant chemotherapy and radiation therapy. This was followed by Tamoxifen therapy till the diagnosis of vulval metastases. She had no evidence of disease for nearly 4 years. In December 2017 the patient presented with complaints of irregular bleeding per vagina and on clinical examination revealed a approximately 1cm nodule over right labia majora which was kept under observation. Further follow-up physical examination revealed multiple nodules over labia majora and labia minora. The patient underwent incisional biopsy of the right labial nodules which was suggestive of metastasis. IHC markers Pan CK, GCDFP 15 and CK 7 were positive in tumour cells, Mammogloblin and CK 20 negative. Patient then underwent right hemivulvectomy with wide excision of left labia majora and minora nodules. Final surgical pathology was consistent with metastasis from known breast primary. Estrogen and progesterone-receptor strongly positive, Her 2 neu negative. Postoperatively, the patient was initiated on chemotherapy with vinorelbine and cisplantin.
Conclusions: Patients (particularly elderly) with this unusual and clinically isolated pattern of metastasis might remain misdiagnosed for a long period of time and this case report aims to increase the awareness of clinicians toward the same. Gynecological surveillance remains of paramount importance in the follow up of breast cancer. Pelvic/gynecological examination is recommended in the follow up of patients with breast cancers. This assumes importance not only in patients on adjuvant hormone therapy (tamoxifen) where iatrogenic endometrial carcinoma is not rare but also otherwise and this is mandated by the recent ASCO (American Society of Clinical Oncology) guidelines [10].
Conflict of Interest: No significant relationships.

P358

Breast metastasis of primary colorectal cancer: a case report & review of literature

J. Gurawalia[1]*, V. Kabra[2], P. Gulia[1], A. Sahani[1], P. Kirtani[3]. [1]*Surgicla Oncology, Manipal Hospital, New Delhi, India,* [2]*Surgical Oncology, Manipal Hospital, New Delhi, India,* [3]*Pathology, Manipal Hospital, New Delhi, India*

Goals: Breast metastasis may present confusing diagnostic problems as they imitate primary breast cancer. The occurrence of breast metastases from extramammary sites is rare.
Methods: In the present report, we discuss a 30-year-old female who delivered a baby 2 months ago presented with carcinoma rectum. On PET-CT, disease was locally advanced with pelvic & para-aortic lymphadenopathy. B/L breast showed diffuse FDG uptake which was considered normal for lactating breast. On completion of neoadjuvant chemo-radiotherapy for adenocarcinoma rectum, patient complaint of left breast mass. MRI breast demonstrated BIRADS IV lesion which was initially thought of as second primary. Later, breast biopsy revealed signet ring cell carcinoma which was confirmed to be metastatic from the rectum on IHC. Isolated metastasis to the breast from the colorectal carcinoma is very rare.
Results: On searching literature, we could find reports of only 32 such cases. Most of the breast metastasis was reported after the diagnosis of colorectal cancer and left breast upper outer quadrant being the most common site. Colorectal carcinoma metastatic to the breast is indicative of widely disseminated disease and a poor prognosis.
Conclusions: Distinction between primary breast cancer & a metastatic process is important to avoid unnecessary surgery and to provide appropriate treatment.
Conflict of Interest: No significant relationships.

P359

Phase III randomized, placebo-controlled clinical trial evaluating the use of adjuvant endocrine therapy±everolimusin patients with high-risk, hormone receptor (HR) positive, HER2-negative breast cancer (BC): SWOG/NRG/Alliance S1207 (NCT01674140)

M. Chavez-Macgregor[1]*, W. Barlow[2], L. Pusztai[3], P. Rastogi[4], P. Ganz[5], E. Mamounas[6], H. Bandos[7], J. Miao[2], J. Gralow[8], G. Hortobagyi[1], S1207 investigators. [1]*The University of Texas, MD Anderson Cancer Center, Houston, United States,* [2]*SWOG Statistical Center, Seattle, United States,* [3]*Yale University Cancer Center, New Haven, United States,* [4]*University of Pittsburgh, Pittsburgh, United States,* [5]*UCLA Jonsson Comprehensive Cancer Center, Los Angeles, United States,* [6]*Orlando Health UF Health Cancer Center, Orlando, United States,* [7]*NRG Oncology and The University of Pittsburg, Pittsburg, United States,* [8]*Seattle Cancer Care Alliance, The University of Washington, Seattle, United States*

Goals:
Background: Abnormalities of the PI3kinase/AKT/mTOR signaling network are common in BC and are associated with endocrine therapy resistance. Everolimus, an mTOR-inhibitor, increases the biological activity of endocrine therapy. S1207 evaluates the role of everolimus in combination with endocrine therapy in the adjuvant setting.
Methods: Specific Aims/Trial Design: Randomized phase III double-blinded, placebo-controlled trial. Primary objective is to assess whether the addition of everolimus to standard adjuvant endocrine therapy improves invasive disease-free survival (iDFS) among patients with high risk, HR+ BC. Secondary objectives include overall survival, distant recurrence-free survival, safety and QoL. Patients are randomized to receive standard adjuvant endocrine therapy in combination with one year of everolimus (10 mg PO daily) or placebo. Submission of tissue specimens/blood samples is required for translational studies.
Results: Eligibility Criteria: Patients with histologically confirmed HR+ and HER2-negative invasive BC treated with surgery, adjuvant chemotherapy and radiation therapy (if indicated) are eligible if they have: (1) node-negative disease and tumors ≥2 cm, and either an Oncotype DX®Recurrence Score (RS) >25 or MammaPrint® high-risk category; (2) 1–3 positive nodes and either RS >25, MammaPrint® high-risk category or a pathological grade 3 tumor; (3) ≥4 positive lymph nodes. In addition, (4) patients with lymph node involvement (≥1) after completing neoadjuvant chemotherapy are eligible.
Conclusions: Statistical Methods/Target Accrual: Parallel randomization design with equal allocation to the two treatment groups. The study will randomize 1,900 patients. The study has 80% power (with 2-sided $\alpha = 0.05$) to detect an effective hazard ratio of 0.75 for everolimus versus placebo, corresponding to a gain in iDFS of approximately 5.1%. All patients will be followed for 10 years.
To date, 1790 patients have been enrolled, completion of accrual is estimated in April 2019. The first interim analysis will be performed when 40% of the events have occurred.
Support: NIH/NCI NCTN Grants CA180888, CA180819, CA180868 and CA180821, CA180822, and in part by Novartis
Conflict of Interest: Novartis provided partial support for this trial.

P360

Single center outcome analysis of dual anti-Her2 blockade using trastuzumab and pertuzumab in early and advanced Her2-overexpressing breast cancer

L.-R. Ionce[1]*, A. Christ[1], B. Aretin[2], V. Sagaster[1], M. Marhold[1], G. Steger[1]. [1]*Chair for Medical Breast Cancer Research, Department for Internal Medicine I, Medical University of Vienna, Vienna, Austria,* [2]*Pharmacy Department, Medical University of Vienna, Vienna, Austria*

Goals: Her2-overexpressing (Her2pos) mammary malignancies are the second most lethal subtype of breast cancer (BCa). In recent clinical trials, the combination of trastuzumab (T) and pertuzumab (P) led to the approval of their dual use in the neoadjuvant and palliative setting as well as, even more recently, the adjuvant setting. Aside from outcomes reported in clinical trials, real-world single center data of BCa patients treated with this drug combination is sparse. In this retrospective analysis, we seek to compare outcome data from our institution in neoadjuvant (NEO) and palliative (PALL) stages with those reported in clinical trials.
Methods: We obtained data on combined pertuzumab and trastuzumab orders made available through our in-house drug order software program (CATO®, Cato Research, Durham, NC, USA) from Mai 2013 to March 2018. Using fully available electronic patient records we descriptively characterized the NEO and PALL treatment cohorts after assessing body weight, size, BMI, initial stage, histology including immunohistochemistry (IHC), prior and concomitant oncological therapies, ejection fraction (EF) drops>10%, deaths and most importantly the outcomes measures pathological complete response (pCR, NEO cohort) rate and progression free survival (PFS, PALL cohort).
Results: A total of 120 breast cancer patients receiving dual therapy with T + P were identified. The neoadjuvant cohort consisted of 63 patients, the PALL cohort included 57 patients. All of the patients identified were female. Mean age was 53,95 years in the NEO and 56,15 years in the PALL cohort. Full histology reports including IHC data was available for 47 of 63 patients in the NEO cohort and 30 of 57 patients in the PALL cohort. Average BMI was 25,58 and 23,29, respectively. Within these cohorts, 73,58% (39/53) and 65,91% (29/44) of tumors were ER positive as determined by IHC. Palliative patients received a mean of 17,33 cycles of T+P therapy, while neoadjuvant patients received an average of 6,48 cycles. 0 and 17 deaths were observed in each cohort. Full data on the previously defined outcome measures pCR and PFS was available for 95,24% and 91,23% of patients, respectively. pCR rates within the NEO cohort were 46,67% (28/60), and mean investigator-assessed PFS within the PALL cohort was 306 days.
Conclusions: We report single center outcome data in line with clinical trial data for the combined use of trastuzumab and pertuzmab in both early and metastatic Her2pos breast cancer.

Lea-Roxana Ionce & Alexandra Christ contribute equally as presenting authors.
Conflict of Interest: No significant relationships.

P361
Androgen receptor expression in primary breast cancer

This abstract has been withdrawn.

P362
Cardiovascular complications of elderly breast cancer patients. The experience of a single Oncology Institute

N. Alevizopoulos*, T. Tegos, A. Gioti, M. Pavlakis, M. Vaslamatzis.
Evaggelismos General Hospital, Athens, Greece

Goals: Cancer incidence is increasing in elderly due to prolonged survival.
It is nowadays challenging to record cardiovascular diseases (CVD) in breast cancer patients (pts) undergoing treatments with cardiotoxicity.
The elderly pts are prone either to develop CVD or deteriorate pre-existed CVD, when treated with therapies of high cardiotoxicity (radiotherapy, monoclonal antibodies, cytotoxic medications).
Aim: To record the risk of cardiotoxic events in our department in Breast elderly cancer pts.
Methods: Retrospectively, we studied 60 medical reports from elderly breast cancer pts(>75 years old), treated in our department, from 2005 to date.
Results: Cancer can cause various cardiovascular conditions locally (pressure in mediastinum, effusions) or systemically (increased risk of pulmonary embolism, arrhythmias, coronary heart disease). The cytotoxic drugs and monoclonal antibodies can lead to congestive heart failure (CHF), predominately the group of anthracyclines, and all antiHER2 molecules implying higher risk of cardiac toxicity. The most common recorded cardiac events were accelerated arterial hypertension, heart failure deterioration and arrhythmias or thromboembolic events. The history of prior thoracic irradiation, dyslipidemia and prolonged hormonal treatment predispose elderly pts to severe endothelial dysfunction deteriorated by cytotoxic agents.
In a subgroup of 35 long time cancer survivors monitored for great risk of developing CVD; we recorded decrease of EF in 15, arterial imbalance in 20, and arrhythmias in 8 patients with 4 ischemic events in the chemotherapy treatment of any form.
They were all well controlled post cardiac events with discontinuation of treatment. Only a patient had a crucial heart failure and died.
Conclusions: Pts elderly should be thoroughly screened for risk factors, and precise attempts of modification should be made. Continuous cardiac monitoring, baseline and regular electrocardiographic and echocardiographic studies, radionuclide tests, measurement of serum electrolytes and cardiac enzymes may be incorporated in patients of risk factors/history of cardiotoxicity monitoring. Prompt measures; discontinuation or modification of chemotherapy or use of appropriate drug therapy should be initiated earlier in risk pts who exhibit signs and symptoms of cardiotoxicity.
Conflict of Interest: No significant relationships.

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Patient satisfaction with scalp cooling for prevention of chemotherapy-induced alopecia in breast cancer patients: results from EVAScalp

J. Koch[1]*, F.-F. Bitto[1], A. Koenig[1], T. Phan-Brehm[1], T. Vallbracht[1], T. Schinkoethe[1], M. Wolfgarten[2], S. Mahner[1], N. Harbeck[1], R. Wuerstlein[1]. *[1]Breast Center, Department of Gynecology and Obstetrics, University Hospital Munich (LMU) and CCC Munich, Munich, Germany, [2]Gynaekologische Praxis Dr. Wolfgarten, Beta Klinik Bonn, Bonn, Germany*

Goals: Scalp cooling (SC) offers a chance to reduce chemotherapy-induced hair loss (HL) but patient satisfaction, the effect on well-being as well as patient selection criteria have not yet been sufficiently assessed.
Methods: In the EvaSCALP study, SC was offered to 70 breast cancer patients receivinged chemotherapy between 11/15 and 09/18. For SC, the Paxman Orbis II System was used. Satisfaction was measured by answering a questionnaire evaluating the level of depression with the WHO-5 Well-Being Index (WHO-5) plus questions addressing the patient's experiences and side effects using the SC device. To evaluate efficacy, results were documented by photo, by a physician, and by a HL-diary.
Results: Regarding efficacy, a significant difference between chemotherapy regimens was seen. Anthracycline-based combination therapies led to discontinuation of SC in 70% of the patients whereas taxane-based and monotherapies without anthracyclines had a high acceptance; 82% of patients with Paclitaxel monotherapy continued SC throughout their chemotherapy. Only 7.7% of SC discontinuations were due to side effects. The average WHO-5 Well-Being score as indicator for quality of life (QoL) of patients with successful SC was 67.8% at the end of therapy whereas in patients who stopped SC because of HL or side effects, it was only 51.4%. Most of the patients (82.2%) with successful SC would recommend SC to other patients.
Conclusions: Patients tolerated the system as long as HL was successfully prevented. Well-being of patients with successful SC was significantly higher than that of patients who discontinued SC. SC is a promising approach and increases patient well-being but there are still limitations to its utility in some chemotherapy regimens. Our findings are concordant with the results of the SCALP-trial (Nangia J et al., JAMA 2017) and add data on QoL.
Conflict of Interest: No significant relationships.

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Investigation of the clinicopathological and prognostic risk factors for the recurrence of breast cancer in elderly patients over 75 years of age

Y. Okumura*, T. Osako, M. Nakano, M. Fujisue, N. Arima, R. Nishimura.
Kumamoto Shinto General Hospital, Kumamoto, Japan

Goals: Recently, the number of elderly breast cancer patients is increasing with the aging population phenomenon. It is also difficult to select appropriate breast cancer treatment to increase life expectancy, to maintain the performance status, and to reduce comorbidity. Moreover, it is common to experience many deviations from the standard treatment. In this study, we examined clinicopathological and prognostic factors for elderly breast cancer patients.
Methods: Breast cancer patients with Stage I–III (342 patients ≥75 years old and 2435 patients ≦74 years old) who underwent initial surgery between January 2008 and December 2017 were enrolled in this retrospective study.
Results: The median age of the elderly patients(EP) was 80 years and the median age of the younger patients(YP) was 56 years. The median observation period was 5.7 years. The distribution of patients according to subtypes was as follows: LA (38%), LB (37%), LH (4%), H (5%) and TN (14%) in the EP and LA (36%), LB (36%), LH (7%), H (8%) and TN (11%) in the YP.
Endocrine therapy was used in 67% of LA, 79% of LB, and 93% of LH EP. There was a significant difference between the EP and YP. On the other hand, 6% and 55% of the EP and 78% and 88% of the YP received chemotherapy (±target therapy) for TN and H, respectively. There was a significant difference between EP and YP.
The 5-year DFS rate for the EP and YP were as follows; LA (98%, 97%), LB (91%, 91%), LH (76%, 89%), H (76%, 92%) and TN (78%, 88%), respectively. The 5-year OS in the EP and YP with H was 86% and 97%, respectively. These data suggest that the EP had a significantly poorer prognosis than the YP only in the H.
Univariate analysis revealed that the significant factors related to recurrence in EP were tumor size (≥2cm), positive nodes, Grade3, ER negative, HER2 positive, Ki-67 (≥20%), and p53 overexpression.

Multivariate analysis revealed that Grade3 and Ki-67 (≥20%) were also significant factors for recurrence. Moreover, a significant prognostic factor for OS was the Ki-67 index value for EP.
Conclusions: EP had a lower HER2 positive rate and a lower amount of adjuvant therapy than the YP.
Also, they had a more unfavorable DFS in the H than the YP
Moreover, a higher Ki-67 index value in the EP was a significant prognostic factor for recurrence and OS. These findings suggest that a more appropriate treatment strategy is needed to improve the survival of elderly HER2 positive patients.
Conflict of Interest: No significant relationships.

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An integrated Chinese society of clinical oncology of breast cancer (CSCO BC) database from 45809 Chinese breast cancer patients

Z. Jiang[1]*, H. Wang[2], Z. Fan[3], Z. Liu[4], Y. Liu[5], J. Zhang[6], P. Fu[7], C. Geng[8], F. Jin[9], Y. Yin[10], Chinese Society of Clinical Oncology Breast Cancer Committee Database Collaboration Group. *[1]Fifth Medical Center of PLA General Hospital, Beijing, China, [2]Affiliated Hospital, Qingdao University, Qingdao, China, [3]The first hospital of Jilin University, Jilin, China, [4]Henan Cancer Hospital, Zhengzhou, China, [5]First Hospital of Peking University, Beijing, China, [6]Second Affiliated Hospital of Harbin Medical University, Haerbin, China, [7]First Affiliated Hospital of Zhejiang University, Hangzhou, China, [8]Hebei Cancer Hospital, Shijiazhuang, China, [9]First Affiliated Hospital of China Medical University, Shenyang, China, [10]Jiangsu People's Hospital, Nanjing, China*

Background: At present, real world study is an important supplement to randomized controlled trials. The integrated big database of real world study and RCT would make it more precise to standardize clinical practice and develop accurate diagnosis and treatment guidelines. However, the existing large database has some defects, such as single center data, small sample size, and lack of therapeutic data. Therefore, we have been setting up a large-scale, multi-center database covering epidemiological, diagnostic and therapeutic data.
Methods: Since November 2015, we have established the largest disease database of breast cancer in China on the platform of CSCO BC. More than 40,000 cases of breast cancer were collected from 15 breast cancer centers with more than 1000 patients annually. The demographic characteristics, diagnosis, molecular classification and treatment of each patient were collected in detail. Therefore, we intend to use these data to analyze the basic diagnosis and treatment of breast cancer in order to provide data for real world study.
Results: As of January 4, 2019, 45809 cases were collected. The diagnostic time of these patients had spanned from 1986 to the present. Among them, 26.4%(8194/31082), 50.6%(15741/31082), 17.0%(5289/31082) and 6.2% (5289/31082) of the patients were initial diagnosed as stage I–IV breast cancer respectively. Hormonal receptor (HR) positive patients accounted for 72.8%(22263/45809), among which low estrogen receptor(ER) expression (1–9%) accounted for 2.7%. 37.2% of these low ER expression patients received adjuvant endocrine therapy. However, three-year disease free survival data showed no improvement in endocrine therapy subgroup (84.1% vs. 90.0%, P = 0.22). For molecular classification, HR positive/HER2 negative accounted for 54.4%, HR positive/HER2 positive accounted for 18.3%, HR negative/HER2 positive accounted for 13.0%, and triple negative breast cancer accounted for 14.4% of all patients. For these patients, 9.7% (4461/45809) received neoadjuvant therapy. Among them, 92.7% received neoadjuvant therapy because of tumors lesions bigger than 5 centimeter, lymph node positive, HER2 positive or triple negative breast cancer. 85.7% (39260/45809) of the patients received surgery. Of patients diagnosed as clinical T1-2N0, 55.6% (7053/12682) underwent sentinel lymph node biopsy. The positive rate of sentinel biopsy was 1.6% (1240/7053). In this database, 23% (10543/45809) of patients underwent recurrence and metastasis. Of 1860 patients with HR positive/HER2 negative received first-line treatment and complete follow-up, 47.5% (884/1860) received combined-drug chemotherapy, 20.7% (385/1860) received single-drug chemotherapy, 31.8% (591/1860) received single-drug endocrine therapy, and only 0.8% (15/1860) received endocrine plus targeted therapy.
Conclusion: This is the first integrated database with detailed information about diagnosis and therapy of breast cancer from China. Under the platform of CSCO BC database, there would be more randomized study data and real world data included. At present, more than ten real world studies are being carried out using these data at different therapeutic stages and different molecular subtyping. We believe these studies will have positive impacts on guideline development and clinical practice.
Conflict of Interest: Nothing to disclose.