European Journal of Surgical Oncology xxx (xxxx)

Contents lists available at ScienceDirect

European Journal of Surgical Oncology

journal homepage: www.ejso.com

Abstracts for oral presentation at the Association of Breast Surgery Conference, 16th - 18th May 2021

01. RADIOLOGICAL PREDICTION OF NODAL RESPONSE TO NEOADJUVANT CHEMOTHERAPY: A RE-AUDIT OF LOCAL SURGERY PROTOCOL CHANGE

Valentine Mberu [1], Sabreen El-Bakri [2], Andrew Evans [2], E. Jane Macaskill [1]. [1] *University of Dundee, Undergraduate Medical School, Dundee, United Kingdom;* [2] *Department of Breast Surgery, Ninewells Hospital, Dundee, United Kingdom*

Background: We have previously published our findings from patients undergoing axillary surgery after neoadjuvant chemotherapy (NAC) with pretreatment diagnosis of nodal metastases concluding that breast MRI complete response (CR) or minimal residual disease (MRD) was predictive of response in axillary nodes. We present the findings of re-audit.
Method: A retrospective analysis was performed on data from patients who received NAC from 2016-2018. Patients with biopsy-proven axillary metastasis with at least 2 MRI scans and underwent surgery were included. Patients with CR or MRD on breast MRI and normal axillary ultrasound (AUS) were offered SNB >3 nodes. Caldicott approval was granted for use of patient data.
Results: 61 patients had available data for analysis. Of these, 41(67%) underwent axillary clearance: 5 (12.2%) had no residual axillary disease), 14 (34.1%) had 1-2 metastatic nodes and 22 (53.7%) had >2 metastatic nodes. 20 (33%) patients had SNB: 9 (45%) had no residual axillary disease, 10 (50%) had 1-2 metastatic nodes and 1(5%) had >2 metastatic nodes. The median number of nodes taken at SNB was 4.5. Response of tumour on breast MRI, axillary MRI and AUS each had low sensitivity and specificity for nodal burden. The combination of Breast MRI CR/MRD, normal axilla MRI and AUS had a sensitivity of 63.6% for complete nodal response and 100% for 1-2 nodes.
Conclusion: The combination of response of breast and axilla on MRI and AUS can predict for patients who have a complete axillary nodal response or low volume disease after NAC. This can aid decision making regarding axillary surgery.

02. A HYPERCOAGULANT TUMOUR MICROENVIRONMENT PROMOTES BREAST CANCER PROGRESSION, WITH EFFECTS INHIBITED BY ANTICOAGULANTS

Emma Blower, John Castle, Angelica Santiago-Gomez, Robert Clarke, Cliona Kirwan. *Manchester Cancer Research Centre, The Oglesby Cancer Research Building, University of Manchester, Manchester, United Kingdom*

Introduction: Tissue Factor (TF) is expressed by breast cancer-associated fibroblasts as well as breast cancer epithelial cells. TF signalling contributes to promotion of cancer growth and metastasis. Targeting this procoagulant microenvironment, with anticoagulants, is a potential therapeutic strategy.
Methods: Lentivirally transduced TF over-expressing fibroblasts (TFF) and their control (CF) or conditioned media (TFFCM and CFCM), were cultured with oestrogen receptor positive (ER+) breast cancer cells (MCF-7), in the presence or absence of Rivaroxaban or anti-TF antibody 10H10. Migration (scratch/transwell assay), proliferation (sulforhodamine-B assay) and stem cell activity (mammosphere forming efficiency (MFE) assay) were assessed. Downstream signalling was analysed via western blotting and quantitative PCR.
Results: 3D co-culture of MCF-7s with TFF as compared to CF promoted cancer cell migration ($p=0.04$) and stem cell activity (MFE:$p<0.0001$), with these effects abrogated by 10H10 (migration:$p=0.01$, MFE:$p=0.0028$) and Rivaroxaban (migration:$p= 0.0341$, MFE:$p=0.0003$). TFFCM promoted proliferation, migration and stem cell activity in MCF-7 cells ($p<0.05$) as compared to CFCM, with these effects abrogated by 10H10 (proliferation, migration, MFE:$p<0.05$) and Rivaroxaban (migration, MFE:$p<0.05$). The cancer-promoting effects of TFFCM were associated with a decrease in CXCL8 ($p<0.0001$) and an increase in VEGFA ($p<0.05$) when compared to CFCM; changes which were reversed by 10H10 (CXCL8, VEGFA:$p<0.05$) and Rivaroxaban (VEGFA:$p<0.03$). ELISA analysis of TFFCM vs CFCM shows increased levels of IL-10 ($p<0.006$), GRO-α ($p=<0.0001$) and IL1-α ($p<0.02$).
Conclusion: A procoagulant microenvironment promotes proliferation, migration and stem cell activity in ER+ breast cancer in vitro, with these effects abrogated by anticoagulants, including Rivaroxaban. Targeting the procoagulant tumour microenvironment is a promising future cancer treatment.

03. IMPACT OF LACTATIONAL TRAINING AND NIPPLE EVALUATION DURING PREGNANCY IN REDUCING LACTATIONAL MASTITIS AND BREAST ABSCESS

Agnimita Giri Sarkar [1], D. Jana [2], Trinetra Sarkar [3]. [1] *ICH and Disha for Cancer, Kolkata, India;* [2] *Department of Science and Technology, The Institute of Post-Graduate Medical Education and Research, Kolkata, India;* [3] *KPC Medical College, Kolkata, India*

Introduction: The incidence of lactational mastitis ranges between 2 to 33% with an average incidence of 10%. It is highest in first few weeks and decreases gradually. Breast abscess occurs in 3-11% of cases of mastitis. The cause can be mainly attributed to maternal factors (nipple abnormalities, faulty feeding technique).
Aims: Evaluation of nipple abnormality and counselling of pregnant women during pregnancy is likely to increase establishment of breast-feeding rate and reduction of lactational mastitis and abscess.
Methodology: Intervention arm (group A,n=100): The pregnant ladies were counselled about correct technique of lactation. The nipple was examined to check if it can cause any hindrance to breastfeeding (Inverted, Flat, Very large, Very small). Control Arm (group B, n=92): The pregnant ladies (equally matched) with group A were included. The result was analysed using chi square test using SPSS software version24
Result Analysis: In Gr A 90 out of 100 mothers could establish breast feeding. Out of 10, 2 developed mastitis. In Gr B 60 out of 92 established breastfeeding. Of the 32 remaining mothers, 18 developed mastitis. There was significant improvement in establishment of breast feeding amongst mothers who were counselled/examined during pregnancy (The chi-square statistic is 17.2204. The p-value is .000033). The incidence of lactational mastitis was significantly lower in GrA (The chi-square statistic is 4.0139. The p-value is .045128)

https://doi.org/10.1016/j.ejso.2021.03.199

Discussion: Predelivery counselling and evaluation of nipple abnormalities (and appropriate measures) improves establishment of lactation and reduction of lactational mastitis/ breast abscess.

04. MAMMA (MASTITIS AND MAMMARY ABSCESS MANAGEMENT AUDIT): PHASE 1 INTERIM RESULTS

Alona Courtney [1], Ruth Parks [2], Nur Nurmahomed [3], Ruth Brown [4], Rachel O'Connell [5], Rajiv Dave [6], Marianne Dillon [7], Hiba Fatayer [8], Rachel Gallmore [4], Ashu Gandhi [6], Matthew Gardiner [9], Victoria Harmer [4], Lyndsey Hookway [10], Gareth Irwin [11], Charlotte Ives [12], Helen Mathers [13], Juliette Murray [14], Peter O'Leary [15], Neill Patani [16], Sophie Paterson [4], Shelley Potter [17], Ruth Prichard [18], Giovanni Satta [4], T.G. Teoh [4], Paul Ziprin [1], Alexander Wilkins [19], Daniel R. Leff [1], MAMMA Research Collaborative [20]. [1] *Imperial College London, London, United Kingdom;* [2] *King's Mill Hospitals, Sutton-in-Ashfield, United Kingdom;* [3] *Chelsea and Westminster Hospital, London, United Kingdom;* [4] *Imperial College Healthcare NHS Trust, London, United Kingdom;* [5] *The Royal Marsden NHS Foundation Trust and The Institute of Cancer Research, London, United Kingdom;* [6] *Manchester University NHS Foundation Trust, Manchester, United Kingdom;* [7] *Singleton Hospital, Swansea, United Kingdom;* [8] *Wythenshawe Hospital, Manchester, United Kingdom;* [9] *The Kennedy Institute of Rheumatology Oxford University, Oxford, United Kingdom;* [10] *feedsleepbond.com;* [11] *Belfast Health and Social Care Trust, Belfast, United Kingdom;* [12] *The Royal Devon and Exeter NHS Foundation Trust, Exeter, United Kingdom;* [13] *Southern Health & Social Care Trust, Portadown, United Kingdom;* [14] *NHS Lanarkshire, Glasgow, United Kingdom;* [15] *Cork University Hospital, Cork, Ireland;* [16] *University College London Hospitals, London, United Kingdom;* [17] *University of Bristol, Bristol, United Kingdom;* [18] *St. Vincent's University Hospital, Dublin, Ireland;* [19] *Yorkshire Deanery, Hull, United Kingdom;* [20] *Multiple*

Introduction: Mastitis is a common benign breast condition. The aim of Phase 1 MAMMA study is to understand the current care pathway in the management of mastitis and breast abscess in the UK and Ireland.
Methods: Phase 1 questionnaire was completed by local trainee leads and supervising consultants; it was hosted on REDCap. All acute trusts were invited to participate. Data was collected between 31st December 2019 and 10th December 2020. Duplicate entries were excluded.
Results: Sixty-three centres participated in this study. The median number of patients with mastitis or breast abscesses seen per month is 8 (range: 0-50). The majority of patients are treated by the breast team (88.9% of centres) in outpatient setting (79.4% of centres). Breastfeeding support is available in 54% of centres. General surgeons provide out of hours cover in 88.9% of centres. Only a third of centres have a dedicated breast clinic slot on a daily basis and a dedicated interventional radiology clinic. US-guided aspiration is the treatment of choice (96.8% of centres). Skin changes and necrosis is the predominant cause for surgical incision and drainage (93.7%). Flucloxacillin is the antibiotic of choice (87.3%).
Conclusions: The findings of the Phase 1 survey demonstrate uniform approach to the treatment of mastitis and breast abscesses across the UK and Ireland. Certain centres appear to have better access to dedicated clinics for these patients. The results of Phase 2 (prospective audit) will determine whether these Phase 1 findings are a true reflection of daily practice and provisions.

05. TRENDS IN THE NOTTINGHAM PROGNOSTIC INDEX BETWEEN 1983 AND 2014 DERIVED FROM THE SEER 9 CANCER REGISTER

Louise Merker. *Weston General Hospital, Weston-Super-Mare, United Kingdom*

The SEER 9 database was interrogated to determine the trend in the Nottingham Prognostic Index (NPI), and the incidence and death rate of node negative and node positive tumours > or < 20 mm, following the introduction of breast screening in the late 1980s. The NPI was calculated for patients with invasive breast cancer presenting between 1988 and 2014, and for whom the relevant data was available. Over the 27 years of the study, the NPI fell from 4.23 to 3.78 (10%) but insufficient to move from Moderate Prognostic Group 1 to a more favourable grouping. The smallest fall in NPI, 1.3% (4.75 to 4.69), was seen in the 30-34 years group, in whom regular screening would not have taken place. Whilst the largest fall (17%, 4.25- to 3.54) was seen in the 75-79 years group, who may have benefited from the earlier detection of both pre-invasive and invasive cancers. For tumours less than 20 mm in diameter the average fall in NPI was 11%, whilst for tumours >20 mm the fall was just 6%. The incidence per 100 000 of tumours greater than or equal to 20 mm remained relatively constant across the study period whilst at the same time death rates for these tumours improved. This study suggests that the introduction of population screening has had relatively little effect on the incidence of those tumours with the poorest prognosis and that the decline in death rates is more attributable to advances in therapeutics.

06. BREAST CANCER MANAGEMENT IN THE OVER 80s: SURGERY OFFERS A SURVIVAL BENEFIT FOR THE MANY, NOT THE FEW

Louise Merker [1], Alice Chambers [1], Louise Gurowich [2], Hugo Cohen [1], Michelle Mullan [1], Amanda Thorne [2]. [1] *North Bristol NHS Trust, Bristol, United Kingdom;* [2] *Musgrove Park Hospital, Taunton, United Kingdom*

Introduction: 24% of all new breast cancers are diagnosed in patients aged over 75. The NABCOP 2020 report highlighted a large variation in the treatment offered. It recommended surgery should be offered where possible given its survival benefit over primary endocrine therapy (PET). The individual survival benefits can be calculated using the Age Gap Decision Tool.
Method: Data was collected from 2 Breast Units in the south west of England between January 2018 and December 2019, inclusive. The aim was to review the management of primary breast cancer in patients aged 80 and above and in particular how many ER positive patients were offered surgery versus PET.
Results: 287 patients were diagnosed in the 2-year period with 13 having metastatic disease at diagnosis. 19 had ER negative tumours, 73% of whom were treated with surgery. 267 patients had ER positive tumours, 48.3% of whom underwent surgery. 44 deaths occurred with median time from diagnosis to death being 6.5 months. 4 of these deaths had undergone surgery; none within 90 days of procedure.
Conclusion: Less than 50% of ER positive patients over the age of 80 were treated with surgery in both units. This needs to be improved and could be with the use of a Clinical Fragility Score which we recommend calculating for every patient and using to guide MDT discussion. Patients in whom decision making is unclear should be referred to a local geriatrician for consideration of pre-operative optimisation.

07. THE IBRANET LOCALISATION STUDY; A NATIONAL COHORT STUDY OF WIRE-GUIDED AND MAGSEED-GUIDED LOCALISATION FOR IMPALPABLE BREAST LESIONS

Rajiv Dave [1], Suzanne Elgammal [2], Emma Barrett [3], Nicola Barnes [1], Amtul Sami [4], Tahir Masudi [5], Sue Down [6], Chris Holcombe [7], Shelley Potter [8], Santosh K. Somasundaram [9], Matthew D. Gardiner [10], Anthony J. Maxwell [1], Senthurun Mylvaganam [11], James Harvey [1]. [1] *The Nightingale Centre, Manchester University NHS Foundation Trust, Manchester, United Kingdom;* [2] *University Hospital Crosshouse, Kilmarnock, United Kingdom;* [3] *Manchester University NHS Foundation Trust, Manchester, United Kingdom;* [4] *Lincoln County Hospital, Lincoln, United Kingdom;* [5] *Rotherham NHS Foundation Trust, Rotherham, United Kingdom;* [6] *James Paget University Hospital, Great Yarmouth, United Kingdom;* [7] *Royal Liverpool Hospital, Liverpool, United Kingdom;* [8] *North Bristol NHS Trust, Bristol, United Kingdom;* [9] *University Hospitals of Morecambe Bay NHS Foundation Trust, Kendal, United Kingdom;* [10] *Frimley Health NHS Foundation Trust, Frimley, United Kingdom;* [11] *The Royal Wolverhampton NHS Trust, Wolverhampton, United Kingdom*

Introduction: Wire-localisation is historically the commonest technique guiding excision of impalpable breast lesions. Magseed technology has addressed some procedural and logistic challenges associated with wires. We compared surgical outcome of the two techniques.

Methods: This national (UK) case-control audit compared the localisation accuracy between the historical-standard wire-localisation versus Magseed-localisation between Aug-2018 to August-2020. The technique used was at the discretion of the operating-surgeon. Secondary endpoints included reoperation rate for margins, specimen weight and complications. Anonymised patient data was collected prospectively on a secure REDcap database following local audit approval.
Results: Data was accrued from 2300 patients in 35 units. 33 (1.4%) patients had bilateral lesion localisation. Where a second ipsilateral lesion required localisation, Magseed was used infrequently compared to wire: 22.5% vs 77.5%. For comparison of localisation modalities, we considered patients having unifocal, unilateral breast lesions (Magseed=946, wire=1170). Identification of the index lesion in Magseed-guided and wire-guided excisions was 99.8% vs 99.1% (p=0.048). There was no difference in overall complication rate. For patients having a single lumpectomy/ WLE for lesions <50mm, there was no difference in median closest margin (2mm vs 2mm, p=0.34), median number of radial margin shaves (0 vs 0, p=0.24), re-excision rate (12% vs 13%, p=0.62) and specimen weight in relation to lesion size (0.198 g/mm^2 vs 0.173 g/mm^2, p=0.68).
Conclusion Magseed compared favourably against wire, demonstrating the efficacy and safety of this innovative localisation technique. Furthermore, this study has generated standards against which new localisation devices may be measured.

08. INCIDENCE AND OUTCOME OF BREAST SARCOMAS IN NHS ENGLAND (2013-2018): AN ANALYSIS FROM PUBLIC HEALTH ENGLAND (PHE) NATIONAL CANCER REGISTRATION AND ANALYSIS SERVICE (NCRAS)

Mahbubl Ahmed [1], Shane Collins [2], Andrew Bacon [3], Joanna Franks [1], Cheryl Lobo [1], Lizz Paley [3], Sandra Strauss [1]. [1] *University College London Hospitals, London, United Kingdom;* [2] *University College London and Public Health England, London, United Kingdom;* [3] *Public Health England and National Disease Registration Service, London, United Kingdom*

Background: Breast sarcomas (BS) are rare cancers originating from mesenchymal breast tissue with a paucity of national population level data detailing their incidence and outcomes.
Methods: We performed an analysis of data collected by NCRAS for patients diagnosed with BS 2013-2018. Chi-square test was used to compare groups. Overall survival was calculated by Kaplan-Meier. Specialist sarcoma centres (SSC) were defined as centres with a sarcoma MDT.
Results: There were 688 patients with BS (357 malignant phyllodes (MP), 238 vascular tumours, 93 other morphology) with a median age of 64 (range 14-96); 187(27%) had received breast radiotherapy for a prior malignancy; 633 (92%) had resection of the tumour within 12 months of diagnosis. When a biopsy was not performed prior to surgery, patients were more likely to undergo multiple operations (58%v29%, P<0.05). Biopsies were more frequently performed at SSC than non-specialist sarcoma centres (NSSC) (83%v72%, P<0.05) with 26% of patients undergoing multiple operations in SSC compared to 41% of patients undergoing first surgery at NSSC. Five-year overall survival was 81%, 50% and 45% in patients with MP, vascular tumours and other sarcomas, respectively and 60% for those with radiation-induced BS.
Conclusion: This is the first population series evaluating incidence and outcomes for BS. Patients treated at NSSC are less likely to have a biopsy prior to surgery and more likely to require multiple operations. Based on this observational data we would recommend all BS are discussed at a sarcoma MDT early in their pathway and surgery to be performed at SSC where possible.

09. LITIGATION REGARDING SURGERY TO THE BREAST IN ENGLAND 2012-2018

Rachel O'Connell [1], Neill Patani [2], John Machin [3], Timothy Briggs [4], Tracey Irvine [5], Fiona MacNeill [1]. [1] *Royal Marsden NHS Foundation Trust, London, United Kingdom;* [2] *University College Hospital London, London, United Kingdom;* [3] *Department of Trauma and Orthopaedics, Nottingham University Hospitals, Nottingham, United Kingdom;* [4] *Sarcoma Unit, Royal National Orthopaedic Hospital, Stanmore, United Kingdom;* [5] *Department of Breast Surgery, Royal Surrey County Hospital, Guildford, United Kingdom*

Introduction: The aim of this study was to review litigation claims in breast surgery in England as part of the Getting It Right First Time initiative, with the objective of identifying opportunities to improve clinical practice and patient safety.
Methods: All general and plastic surgical claims notified to NHS Resolution between April 2012 and April 2020 were reviewed. Claims specifically related to breast surgery were manually retrieved and case summaries independently analysed. All claims relating to Ian Paterson were excluded.
Results: Over eight years, 565 claims relating to breast surgery were identified. 323 (57.2%) cases originated from general surgery who perform approximately 87,000 breast operations per year, 158 (28%) from plastic surgery who perform approximately 10-15,000 breast operations per year, and 84 (14.9%) from 'surgery-other'. Median number of cases per year was 73. Average claimant age was 47 years (±11SD). The most frequent causes of litigation were patient reported delays in diagnosis (n=155, 27.4%) and dissatisfaction with cosmetic outcome (n=147, 26%). A large proportion of claims related to breast implant surgery (n=89, 15.8%). Two cases related to post-operative complications resulting in death. Intra-operative injuries such as diathermy burns (14, 2.5%), neuropathy due to inadequate positioning (12, 2.1%) and retained foreign bodies (18, 3.2%) were uncommon but potentially avoidable.
Conclusions: Patient reported delays in diagnosis and dissatisfaction with cosmetic outcome are the most common causes of litigation related to breast surgery. These key themes should be the focus for workforce learning with the aim of improving patient care and experience.

10. PATTERNS OF CONTRALATERAL SYMMETRISATION, COMPLETION AND REVISION FOLLOWING IMMEDIATE BREAST RECONSTRUCTION: EARLY RESULTS FROM THE BRIGHTER LONG-TERM BREAST RECONSTRUCTION OUTCOME STUDY

Shelley Potter [1], Leigh Johnson [1], Ranjeet Jeevan [2], John Browne [3], Syed Mohiuddin [1], William Hollingworth [1], Chris Holcombe [4]. [1] *Bristol Medical School, Bristol, United Kingdom;* [2] *Manchester University NHS Foundation Trust, Manchester, United Kingdom;* [3] *University College Cork, Cork, Ireland;* [4] *Liverpool University Hospitals NHS Foundation Trust, Liverpool, United Kingdom*

Introduction: Patients considering breast reconstruction (BR) require high-quality information about long-term clinical outcomes, including the need for additional surgery, to help them make informed decisions. Such information is currently lacking. We aimed to use routinely-collected data to explore patterns of care in women undergoing different reconstructive techniques.
Methods: Women undergoing unilateral mastectomy and immediate BR for breast cancer or DCIS between 1/4/09 and 31/3/2015 were identified from NHS Hospital Episode Statistics. The numbers and timing of additional procedures performed for contralateral symmetrisation; to revise or complete the reconstruction were summarised and compared by reconstruction type.
Results: 86,181 women underwent mastectomy during the study period, of whom, 18,367 (21.3%) had an immediate BR. This included 9,293 (50.6%) expander/implant-based procedures; 2,373 (12.9%) autologous latissimus dorsi (LD) flaps; 3,110 (16.9%) implant-assisted LDs and 3,393 (18.5%) abdominal free-flaps. All women had a minimum of 3 years follow-up (median 5-6yrs). The proportions of patients undergoing contralateral symmetrisation varied across procedure types ranging from 22.3%-37.4%. One-in-four patients in the expander/implant group underwent a nipple reconstruction compared with almost 60% following free-flap procedures. Revisional surgery occurred more frequently in the expander/implant group with 15.6% of patients initially receiving an expander/implant proceeding to a flap-based reconstruction. Symmetrisation/completion/revisional procedures occurred most frequently between 1-2 years following surgery.
Conclusions: Rates of contralateral symmetrisation, completion and revision of BR vary considerably according to the initial procedure performed. Work is ongoing to explore variation in revision rates by

procedure type; long-term patient-reported outcomes and to evaluate the long-term cost-effectiveness of different techniques.

11. LONG TERM FOLLOW UP OF MORBIDITY FOLLOWING EXCISION OF PRIMARY BREAST TUMOUR IN PATIENTS OVER 70

Risha Lane [1], A. Asha [2], H. Tuffaha [2], C. Mortimer [2]. [1] *On behalf of the East Anglia SSC Breast Network, United Kingdom;* [2] *East Suffolk and North Essex Foundation Trust, Colchester, United Kingdom*

Introduction: Patients over 70 with breast cancer are a cohort that have variable health and associated frailty. Primary endocrine therapy (PET) is used in hormone sensitive patients deemed too frail for surgery. The Netherlands Cancer registry maintained that surgical outcomes are better in higher volume centres, but did not explore the long term impact of surgery on patients survival in relation to their co-morbidities, breast or all-cause mortality.
Aims: To assess the long term 5 and 10 year all cause and breast related mortality associated with primary breast surgery for patients over 70.
Methods: A single unit retrospective database of the outcomes of patients treated who were over 70. The following data was collected; age, method of diagnosis, stage and co-morbidity (as determined by their ASA and ACE -27 score). Patients were offered surgery (LA or GA) and axillary management as per MDT. Histology was available from surgically excised specimens.
Results: 92 consecutive patients, with a median age of 79, were entered into the local breast database between 2010 and 2011. 13 were identified by NHSBSP with rest referred as symptomatic. (See Table 1)

Table 1

	Primary Endocrine Therapy (PET)	Surgery (S)	p Value
N	24	68	
Median age in years (IQR)	82.5 (79-90)	78 (74-82)	Kruskall-Wallis p =0.0014
ASA	3	2	Chi-squared p <0.001
ACE	3	1	Chi-squared p <0.001
2yr Mortality Rate n (%)	10/24 (41.7)	9/68 (13.2)	
5yr Mortality rate n (%)	20/24 (83)	18/68 (26)	
10yr Mortality rate n (%)	23/24 (96)	34/68 (50)	
Breast Ca 10yr Mortality Rate n (%)	9/24 (37.5)	7/68 (10.2)	

Conclusion: PET was associated with a higher mortality rate; those fit enough to undergo surgery, had a better breast cancer related long term survival benefit.

12. STAGED UNILATERAL VERSUS IMMEDIATE BILATERAL SYMMETRISATION IN THERAPEUTIC MAMMOPLASTY: A SENSITIVITY ANALYSIS OF PATIENT LEVEL COSTS

Yasmin Grant [1], Paul Thiruchelvam [2], Ragheed Al-Mufti [2], Katy Hogben [2], Dimitri Hadjiminas [2], Daniel Leff [1]. [1] *Imperial College London, London, United Kingdom;* [2] *Imperial College Healthcare NHS Trust, London, United Kingdom*

Introduction: For patients requiring level II breast conserving surgery, immediate contralateral symmetrisation seeks to reduce the psychological impact of asymmetry and improve quality of life. In a SARS-CoV-2 era of value-based care, the aim of this study was to investigate the patient level cost impact of unilateral (+/- staged) single operator versus bilateral immediate symmetrisation dual operator mammoplasty.
Methods: The study was conducted at a large Teaching Hospital (service evaluation number 309). Data was collected using Patient-Level Information and Costing Systems (PLICs) from women who had received either unilateral alone (UM) (n=814), unilateral staged mammoplasty (USM) by single consultant surgeon (n=26) or bilateral immediate mammoplasty (BIM) by dual consultant surgeon (n=93) between April 2015 and March 2020. Procedural inclusions were oncoplastic application of breast reduction or mastopexy to treat invasive or non-invasive breast cancer.
Results: Sensitivity modelling of the 2019/2020 financial year with a 50% transition to bilateral activity identified a potential annual improvement in reimbursement of £259,333, with a contribution loss of £875 per UM. Moreover, a move to 50% or lower bilateral activity can be achieved cost neutrally with equivocal surgeon resource without a need for re-alignment of consultant surgeon remuneration. The additional median cost of unilateral staged mammoplasty versus bilateral immediate mammoplasty was £3,754 per patient (p<0.001).
Conclusion: The authors demonstrate that the facilitation of single-stage immediate symmetrisation mammoplasty is of significant financial benefit to our healthcare systems, creating the possibility of additional theatre capacity for breast surgery service delivery with equivocal surgeon resource.

13. PREDICTORS OF INACCURATE PRE-OPERATIVE SIZE ASSESSMENT OF SCREEN DETECTED DCIS

Cliona Kirwan [1], Bridget Hilton [2], Karen Clements [2], Hilary Stobart [3], Senthurun Mylvaganam [4], Matthew Wallis [5], Elena Provenzano [6], Alastair Thompson [7]. [1] *University of Manchester, Manchester, United Kingdom;* [2] *Public Health England, London, United Kingdom;* [3] *Independent Cancer Patients Voice, London, United Kingdom;* [4] *Royal Wolverhampton Hospitals NHS Trust, Wolverhampton, United Kingdom;* [5] *Cambridge University Hospitals NHS Foundation Trust, Cambridge, United Kingdom;* [6] *Addenbrookes Hospital, Cambridge, United Kingdom;* [7] *Baylor College of Medicine, Houston, USA*

Background: Disparity between mammographic and pathological sizing of DCIS can lead to surgical overtreatment, with poor cosmetic outcomes of breast conservation surgery (BCS) or inappropriate mastectomy versus undertreatment, with subsequent need for re-excision.
Methods: The Sloane Project is a prospective cohort study of UK screen detected DCIS (2003-2012). We assessed factors associated with mammographic/pathology disparity, leading to 'upsizing' or 'downsizing' of surgically resected size. We defined 'upsizing' as pathological size >10mm larger than mammographic size and 'downsizing' as pathological size < 10mm smaller than mammographic size.
Results: Among 10829 patients, DCIS was upsized in 19%, downsized in 26% and similar in 54%. For each 1mm increase in mammographic size, the relative risk (RR) of downsizing increased by 1.07 times (p<0.0001, 95% CI 1.073,1.080). Presence of microcalcification was associated with mammographic/pathology disparity, yielding a 1.29 RR of downsizing (p=0.0034, 95% C.I. 1.09,1.54) and 1.53 RR of upsizing (p<0.0001, 95% C.I. 1.25,1.88). Casting or linear calcification (compared to granular or punctate) was associated with a 2-fold RR of downsizing. A 1.01 RR of downsizing for every 1 year younger (p=0.0002, 95% CI 1.0057,1.0187)), contrasted with a 1.44 RR of upsizing with high mammographic density. Mastectomy was

associated with marked mammographic/pathology disparity, with a 3.90RR of downsizing (p<0.0001, 95% C.I 3.52,4.31) and a 4.72RR of upsizing (p<0.0001, 95% C.I 4.23, 5.27).
Conclusion: Large mammographic size, microcalcification casting features and young age (size overestimation) versus microcalcification and high density (size underestimation) should be considered in selecting surgery for DCIS.

14. FACTORS LEADING TO THE LATE DIAGNOSIS AND POOR OUTCOMES OF BREAST CANCER IN MATABELELAND SOUTH AND THE BULAWAYO METROPOLITAN PROVINCES IN ZIMBABWE

Munyaradzi Magara [1], Simbarashe Mungazi [1], Peeps Gonde [2], Alex Madzikova [3], Leena Chagla [4], Jerome Pereira [5,9], Michael McKirdy [6,9], Sankaran Narayanan [7,9], Lis Grimsey [8,9], Janet Hicks [9], Richard Rainsbury [10,9]. [1] *National University of Science and Technology Medical School, Bulawayo, Zimbabwe;* [2] *Department of Polymer Materials Engineering, National University of Science and Technology, Bulawayo, Zimbabwe;* [3] *Graduate School of Business, National University of Science and Technology, Bulawayo, Zimbabwe;* [4] *St Helens and Knowsley Teaching Hospitals NHS Trust, Prescot, United Kingdom and ABS International Forum, United Kingdom;* [5] *James Paget University Hospitals Foundation NHS Trust, Great Yarmouth, United Kingdom;* [6] *The Royal Alexandra Hospital, Paisley, United Kingdom;* [7] *University Hospitals of North Midlands, Stoke, United Kingdom;* [8] *East Sussex Healthcare NHS Trust, United Kingdom;* [9] *ABS International Forum;* [10] *Winchester Breast Unit, Hampshire Hospitals Foundation NHS Trust, Basingstoke, United Kingdom*

Introduction: Breast cancer (BC) is the leading cause of female cancer deaths in Africa, and in Zimbabwe, >80% present with advanced disease. A grant-funded Needs Analysis (NA) was carried out to determine the causes for delayed diagnosis and poor BC outcomes in Bulawayo and Matabeleland South, and to investigate possible solutions.
Methods: Data was collected in 2 phases. Phase 1 explored the key factors leading to poor BC outcomes with >50 professional stakeholders. Phase 2 explored the views and needs of users and providers in Matabeleland South and Bulawayo Metropolitan Province. Validated qualitative and quantitative questionnaires exploring factors highlighted in Phase 1 were developed. Trained volunteers interviewed women and their relatives, health professionals, medical specialist and interested lay groups. The Cochran Sample Size Formulae Technique determined the quantitative sample size (for patients and relatives [1100/1.3 million], for health professional groups [400/3500]). Purposive sampling for the qualitative study selected participants with an understanding of BC and the NA. Qualitative and quantitative data was analysed by NVivoT and SPSS 23.0T, respectively.
Results: Delayed diagnosis and poor BC outcomes were related to 4 linked factors (i) poor understanding, fear and cultural beliefs of women and their families. (ii) high treatment costs (iii) lack of basic equipment, knowledge, training and skills of health professionals (iv) shortage of specialist staff, over-centralization and poor communication.
Conclusions: This study confirms that the reasons for poor BC outcomes in Zimbabwe are complex and multifactorial. All stakeholders support much better public education, targeted funding, specialist training, and service reorganization.

15. SINGLE CENTRE EXPERIENCE OF THE HOLOGIC LOCALIZER SYSTEM

R. Lane, Abdelqader Asha, Galia Jadkarim, Judita Laurinkiene, Ilyena Froud, Evangelos Mallidis, Inge Peerlinck, Caroline Mortimer, Hussein Tuffaha. *East Suffolk and North Essex Foundation Trust, Colchester, United Kingdom*

Introduction: Our unit changed its practice from Wire Guided localisations to the use of seeds. We adopted the HOLOGIC LOCalizer system, which uses a radiofrequency tagged seed. There is a paucity of published experience using the LOCalizer seed. We present our units experience of the new technology.
Method: A retrospective audit of USS guided marker insertions performed by our radiology department for the preceding year (Nov 2019 to end of Oct 2020). The list was searched to determine whether a seed or marker clip had been sited. The period between insertion and retrieval, success of procedure and margin re-excision were reviewed.
Results: In 12 months, 66/84 USS guided markers inserted were LOCalizer Seeds. All patients were female, median age was 63 years old (Range 34-83). The median lesion size was 15mm (Range 2-56mm), 49 were for invasive cancer, 5 for DCIS alone and 12 had neo-adjuvant chemotherapy with a complete pathological response. 100% of seeds were successfully placed near the tumour in Imaging, with 8/66 (12%) on the day and 58/66 (82%) inserted > 1day before surgery. 100% were retrieved successfully intra operatively, surgeons reported a learning curve of two cases, 4/66 (6%) seeds fell out after specimen was retrieved. The first 11 patients were surveyed and reported high satisfaction with the seed placement in a post insertion questionnaire. 7/66 (10.6%) had a positive margin.
Conclusion We found the HOLOGIC seeds to be well tolerated, easy to place and retrieve, and had lower margin re-excision rate.

16. EFFICIENT MANAGEMENT OF NEW PATIENT REFERRALS: THE SAFE INTRODUCTION OF AN ADVANCED NURSE PRACTITIONER (ANP) LED TELEPHONE BREAST PAIN SERVICE

Claire Robinson, Katy Ellis, Hiba Fatayer, Nader Touqan, Ashu Gandhi. *Manchester University Foundation Trust, Manchester, United Kingdom*

Introduction: With reduced patient footfall due to Covid-19, adapting the way we maintained prompt service delivery became an instant priority. Breast pain (BP) accounts for up to 21% of all referrals into our service. An ANP led telephone BP clinic was created to allow safe assessment and management of these women outside of one-stop clinics.
Methods: With strict triaging processes and robust SOP criteria, twice weekly telephone clinics were implemented (15 minute appointments/patient, 16 patients/clinic). Patients with symptoms other than BP were redirected for clinical assessment. Deferred mammograms were requested for women >40y. Anomalies on these mammograms were identified by protocol-based review and prompted clinical assessment.
Results: Over 6 months 543 patients were triaged for BP telephone consultation. Of these, 72 (13%) did not engage with their appointment. Of the remaining 471 patients undergoing telephone consultation, 111 (24%) were redirected to one-stop clinics and 360 (76%) avoided a one-stop clinic appointment. No diagnostic investigations were required in 140 (39%) of these 360. 220 patients proceeded to mammography and 6 (3%) had indeterminate results requiring further investigation. Three had benign breast biopsies, 2 had benign cysts aspirated, 1 had a cancer diagnosis. This represents a malignancy rate of 0.3% of patients assessed by telephone consultation.
Conclusion: ANP delivered telephone BP clinics can successfully streamline patients out of one-stop clinics creating capacity for patients with more clinically worrying symptoms. Our strict triage and SOP criteria ensure clinical safety and the clinics are popular with patients.

17. A QUALITY IMPROVEMENT PROJECT EVALUATING THE APPLICATION OF A PRIMARY CARE REFERRAL SCREENING TOOL FOR PATIENTS PRESENTING TO THEIR GP WITH BREAST PAIN

Suzanne Halliday, C. Zammit, K. Preston, U. Tse, L. Sewers, S. Bell, Z. Heyre, N. Groves, S. O'Brien, H. Green, D. Bloomfield, A. Mancey-Barratt. *Brighton and Sussex University Hospitals, Brighton, United Kingdom*

Introduction: More people are being diagnosed with breast cancer than ever before and services are required to enhance their assessment processes to offer optimal care and management accordingly (NHS Long Term Plan,2019). A local audit evaluating patients referred from primary to secondary care identified that 32.5% of new referral appointments in June 2019 were for breast pain alone, and none of these referrals were diagnosed with a malignancy (Tse and Preston 2019). Sawers identified similar findings in 2018 (Sawers.L). Breast pain referrals were therefore targeted as a specific area for quality improvement.
Aim: To assess an adapted local breast symptom referral tool by measuring the following two outcomes (April-September 2020): 1, Breast pain (only) secondary care referrals following service implementation 2, Breast cancers diagnosed following service implementation.
Methods: A referral tool adapted from the Nottingham Breast Institute (Sawers.L), and aligned with NICE Guidance (NG 12,2015), was introduced.
Results:

Patients seen

	April	May	June	July	August	Sept
2020 Tot Pts 'seen'	296	322	373	437	414	489
2019 Tot Pts 'seen'	474	489	401	437	374	248

Cancers diagnosed

	April	May	June	July	August	Sept
% cancers (of pts seen) 2020	8.81%	5.50%	5.50%	6.90%	5.60%	5.50%
% cancers (of pts seen) 2019	6.00%	4.00%	5.00%	5.00%	5.00%	5.00%

Referrals for patients with breast pain

	April	May	June	July	August	Sept
% Breast Pain only 2020	10.10%	14.80%	11.80%	8.70%	9.40%	16.60%
% Breast Pain only 2019			28.40%			

Discussion:
- A significant reduction in referrals for breast pain alone was seen.
- No adverse impact on rates of breast cancer diagnosis were seen.
- Additional improvements: Enhanced triage processes, co-production (shared project control) advantages, development of a Cancer Alliance Resource Suite to increase resource availability across the Surrey and Sussex Cancer Alliance footprint, NICE engagement, and development of a gender Inclusive referral tool (reducing inequality).

Conclusions: These findings demonstrate that a referral screening tool for patients presenting with breast pain can contribute to improved breast cancer service provision and outcomes. Additional outcomes have realised further benefits including wider application to breast diagnostic services across the NHS and reduced inequality.

18. POST-MASTECTOMY RADIOTHERAPY IN OLDER WOMEN WITH EARLY INVASIVE BREAST CANCER – DATA FROM THE NATIONAL AUDIT OF BREAST CANCER IN OLDER PATIENTS (NABCOP)

Katie Miller [1], Melissa Gannon [1], Jibby Medina [2], Karen Clements [3], Kieran Horgan [4], David Dodwell [5], David Cromwell [1]. [1] *Clinical Effectiveness Unit, Royal College of Surgeons of England; Department of Health Services Research & Policy, London School of Hygiene & Tropical Medicine, London, United Kingdom;* [2] *Clinical Effectiveness Unit, Royal College of Surgeons of England, London, United Kingdom;* [3] *National Cancer Registration and Analysis Service, Public Health England, London, United Kingdom;* [4] *St James's University Hospital, Leeds, United Kingdom;* [5] *Nuffield Department of Population Health, University of Oxford, Oxford, United Kingdom*

Introduction: Rates of post-mastectomy radiotherapy (PMRT) vary across England and Wales among women with early invasive breast cancer (EIBC). This NABCOP study examined what patient and tumour characteristics were associated with receipt of PMRT, and whether rates varied between regions.
Methods: This study included women aged >=50yrs, diagnosed with high-risk (N+/T3N0) EIBC between 2014-2018 who received a mastectomy, identified from linked datasets of BC patients from national cancer registration datasets, routine hospital episodes and radiotherapy data. Descriptive statistics explored rates of PMRT. Multivariable logistic regression models investigated factors associated with receipt of PMRT.
Results: Among 16,550 women having a mastectomy, 66% (n=10,870) received PMRT. 56% of PMRT was to primary site only; 43% was to primary site and regional lymph nodes (LN). There was substantial variation across the Cancer Alliance/Welsh regions in rates of PMRT among women with T1N1 (1-3 positive LN) (range: 12% to 64%) and T2N1 (range: 33% to 74%), the two largest subgroups of disease stage (2,159 and 5,212 patients, respectively). In contrast, there were more consistently high rates of PMRT across the regions among women with T3 tumours (range for T3N1: 69% to 95%). Use of PMRT declined steadily with age (69% in 50-69yrs; 65% in 70-79yrs; 53% in 80+yrs). Age remained associated with PMRT receipt after adjustment for: tumour stage, number of positive lymph nodes, tumour grade, frailty, and chemotherapy receipt.
Conclusions: Two-thirds of a recently diagnosed cohort of women with high-risk EIBC received PMRT. Regional variation in practice was observed for some patient groups.

19. VARIATION IN THE USE OF ADJUVANT RADIOTHERAPY AND ENDOCRINE THERAPY AFTER SURGERY FOR DUCTAL CARCINOMA IN SITU IN THE UK

Karen Clements [1], Bridget Hilton [1], Hilary Stobart [2], Joanne Dulson-Cox [1], Elinor Sawyer [3], David Dodwell [4], Alastair Thompson [5]. [1] *Public Health England, London, United Kingdom;* [2] *Independent Cancer Patients' Voice, London, United Kingdom;* [3] *King's College London, London, United Kingdom;* [4] *University of Oxford, Oxford, United Kingdom;* [5] *Baylor College of Medicine, Texas, USA*

Introduction: Over a decade ago we described patterns of adjuvant radiotherapy (RT) practice in screen detected ductal carcinoma in situ (DCIS) from the initial years of the Sloane Project and identified marked institutional variation in practice. An updated patterns of care analysis for adjuvant radiotherapy and endocrine therapy in 11,163 patients diagnosed with DCIS between 2003 and 2012 was conducted in November 2020.
Methods: The SQL database was interrogated for use of adjuvant RT and endocrine therapy (ET) over time compared with Trust/Health Board of surgery and factors associated with recurrence: patient age, nuclear grade, tumour size, comedo necrosis and resection margins.
Results: Among 7,840 (70%) patients who received breast conserving surgery (BCS) (3,323 (30%) patients had mastectomy), RT use after BCS increased over time. RT use was associated with higher nuclear grade ($p<0.001;\chi^2967;(3)=908.74$), larger tumours ($p<0.001;\chi^2967;(4)=554.07$), the presence of comedo necrosis ($p<0.001;\chi^2967;=42.1$), but not with excision margin (<1mm, 1-2mm, >2mm). However, RT prescribing varied significantly ($p<0.001;\chi^2967;(1)=1346.39$) by Trust/Health Board (range 5% to 93%, median 66%), this variation persisted over time. ET was prescribed more often following BCS than mastectomy ($p<0.001;\chi^2967(3)=67.56$), with significant variation by Trust/Health Board ($p<0.001;\chi^2967;(1)=971.11$), but a decline in the use of ET over time.
Conclusion: Marked geographic variation in the use of RT and ET after surgery for DCIS persists, suggesting the need for more authoritative guidelines to support clinical decision-making. Consistent national practice could provide auditable performance standards for adjuvant therapy of screen detected DCIS and contribute to improvement in patient.

20. DETERMINING THE CLINICAL VALUE OF ONCOTYPE DX RECURRENCE SCORE ON DIAGNOSTIC CORE BIOPSY TO PREDICT RESPONSE TO NEOADJUVANT CHEMOTHERAPY IN PATIENTS WITH BREAST CANCER: SYSTEMATIC REVIEW/META-ANALYSIS

Michael Boland, Ahmed Al Maksoud, Éanna J. Ryan, Ishwarya Balasubramanian, James Geraghty, Denis Evoy, Damian McCartan, Ruth S. Prichard, Enda W. McDermott. *St. Vincent's Hospital, Dublin, Ireland*

Introduction: The Oncotype DX recurrence score (RS) predicts the benefits of adjuvant chemotherapy in oestrogen receptor (ER) positive, HER2-negative breast cancer. Performing an Oncotype DX RS on core biopsy to predict response to neoadjuvant chemotherapy has not been well established. This systematic review aimed to determine if Oncotype DX RS performed on core biopsy at diagnosis predicted pathological complete response (pCR) to neoadjuvant chemotherapy.
Methods: This study was performed according to PRISMA guidelines. Relevant databases were searched to identify studies evaluating the value of Oncotype DX RS in predicting response to neoadjuvant chemotherapy in breast cancer patients.
Results: Seven studies involving 1744 patients reported the correlation between pre-treatment Oncotype DX RS and pCR. Three studies used a score of 30 as the cut-off for a 'high' Oncotype DX RS with four studies using a score of 25. 777 patients (44.5%) had a 'high' Oncotype DX RS and 967(55.5%) patients had a 'low/intermediate' Oncotype DX RS. pCR was achieved in 94 (5.38%) patients. The rate of pCR was significantly increased in the 'high' Oncotype DX RS group (10.9%) compared to the 'low/intermediate group' (1.14%) [RR 4.47; 95% CI 2.76 – 7.21; p<0.001]. A significant risk difference (RD) was observed between the two groups [RD 0.10; 95% CI 0.04 – 0.15; p=0.001].
Conclusion: A 'high' Oncotype DX RS is associated with higher pCR rates. A 'low' Oncotype DX RS may indicate chemoresistance. Consideration should be given to routine assessment of Oncotype DX RS on core biopsy when considering neoadjuvant chemotherapy in those with ER+HER- breast cancer.

21. PREPECTORAL VERSUS SUBPECTORAL IMPLANT-BASED IMMEDIATE BREAST RECONSTRUCTION: MEDIUM-TERM OUTCOME COMPARISON FROM 1022 CASES

Chris Munson, Rebecca Wilson, Richard Johnson, James Harvey, John Murphy. *The Nightingale Centre, Wythenshawe Hospital, Manchester, United Kingdom*

Background: Acellular dermal matrices have offered considerable progression in implant-based breast reconstruction following mastectomy. It has allowed direct-to-implant reconstruction in the subpectoral plane and, more recently, has been used in the prepectoral plane to provide total anterior implant coverage. We provide comparative results from our subpectoral and prepectoral implant-based reconstructions.
Methods: Prospective data from 1022 implant-based reconstructions from 2009 - 2019 were analyzed. Data from two cohorts were extracted; those undergoing subpectoral (n=553) and prepectoral implant-based reconstructions (n=469). Patient demographics, surgical complications, and medium-term outcomes were analyzed.
Results: Median follow-up of 63 and 21 months respectively revealed considerably more early complications in the subpectoral group (36.9 % vs 17.1%; RR 2.21 [1.70-2.91] P=<0.0001). Prepectoral 3-month implant loss was lower (3.3% vs 8.5%; 2.65 [1.46-5.12] P=0.0006). Revision surgery was higher in the subpectoral group (46.7% vs 22.5%, 1.86 [1.46-2.37], P=<0.0001). Lipofilling was the predominant indication in the prepectoral cohort, comprising 69% of revisional procedures (versus 33.6% in the subpectoral, 0.20 [0.15-0.27], P=<0.0001), however more subpectoral reconstructions required more than one revision procedure (18.6% Vs 3.6%, RR 4.77 [2.78-8.70], P=<0.0001). Capsular contracture requiring surgical intervention was lower in the prepectoral group (1.1% Vs 5.3, RR 3.56 [1.31-12.09], P=0.0064).
Conclusions: This large cohort study demonstrates that prepectoral implant-based reconstruction offers a promising alternative to subpectoral, with lower complications and implant loss, and fewer revisional procedures including capsular contracture, with the advantage of avoiding compromise to pectoral muscle function and associated problems. We acknowledge that long term follow-up is next required for complete comparison.

22. RECOVERY OF ACTIVITIES OF DAILY LIVING POST BREAST CANCER SURGERY: AN OBSERVATIONAL PROSPECTIVE QUESTIONNAIRE-BASED STUDY OF PATIENTS UNDERGOING MASTECTOMY WITH OR WITHOUT IMMEDIATE RECONSTRUCTION

Laura Ballance [1], Rebecca Wilson [2], George Boundouki [3], Ben Baker [2], Victoria Rusius [2], Matthew Rowland [4], Julia Henderson [4], Nikos Marikakis [5], Joe Mcaleer [2], Cliona Kirwan [2], James Harvey [2]. On behalf of the North West Breast Research Collaborative [1] *Royal Lancaster Infirmary, Lancaster, United Kingdon;* [2] *Manchester University NHS Foundation Trust, Manchester, United Kingdom;* [3] *Sheffield Teaching Hospitals NHS Trust, Sheffield, United Kingdom;* [4] *University of Liverpool, Liverpool, United Kingdom;* [5] *Queen Alexandra Hospital, Portsmouth, United Kingdom*

Background: There is a lack of data on time taken to return to activities of daily living (ADLs) after breast surgery. We aimed to determine the time taken to return to ADLs after mastectomy (+/- reconstruction) and identify factors that may affect this.
Method: A multi-centre prospective, self-reported questionnaire-based study of women who had undergone mastectomy +/- reconstruction, between Jan 2017- Dec 2019 was conducted. The questionnaire contained 15 ADLs with 5 option time scale for 'return to activity'.
Results: The questionnaire was returned by 42 patients (median [range] age 64 [31 – 84]). Of these, 21 had simple mastectomy, 7 implant-based reconstruction, 7 myocutaneous flap-based reconstruction and 7 did not specify. Overall, over 90% could manage stairs and brush hair by 2 weeks, over 50% could drive by 4 weeks but <50% had returned to work by 2 months. Compared to simple mastectomy, patients undergoing reconstruction took a longer time to return to getting in/ out of the bath, (<2 vs 2-4 weeks, p<0.04), vacuuming (2 – 4 weeks vs 1-2 months, p=0.05) and fitness (1-2 vs 3-4 months, p=0.09). There was a trend to slower return to shopping (2 – 4 weeks vs 1-2 months, p=0.01), driving and work (both 1-2 vs 3-4 months, p=0.1) and sport (1-2 vs 3-4 months, p=0.2) in autologous compared to implant reconstruction.
Conclusion: This study highlights slower return to specific activities (particularly strength-based) in reconstruction patients, exacerbated in flap-based reconstruction. Informed discussion of impact on return to ADLs may influence patient choice.

23. COMPARATIVE STUDY OF SHORT-TERM OUTCOMES OF CHEST WALL PERFORATOR FLAP VERSUS THERAPEUTIC MAMMOPLASTY

Samreen Khan, John Mathew. *North West Anglia NHS Foundation Trust, Peterborough, United Kingdom*

Introduction: Level 2 oncoplastic procedures like chest wall perforator flap (CPF) and therapeutic mammoplasty (TM) are often offered to patients with predicted poor cosmetic outcome with level 1 breast conservation surgery (BCS). Aim of this study was to assess the short-term outcomes between CPF and TM.
Methods: Review of a prospectively collected data of BCS between Sep 2016 and Dec 2020 by a single surgeon. Specific outcomes included complications needing intervention, re-excision and mastectomy rate.

Patients were followed up at 3 months and then every 12 months by surveillance mammogram and or clinical examination. Any significant difference between groups were analysed using Chi-squared test and independent t test, and a P value of < 0.05 was considered significant.
Results: One hundred and eighty-five patients had BCS during this period as shown in table 1.

Table 1

Characteristics & treatment	Chest wall perforator flaps (28) LICAP 12 LTAP 2 LICAP+LTAP 12 AICAP 2 Median FU 23 M (1-49)	Therapeutic mammoplasty (43) Wise 23 Vertical 20 Median FU-25 m (2-50)	CPF Vs TM P value	Level 1 Breast conservation surgery (114) Median FU- 24 (1-50)
Symptomatic Vs Screening	26 Vs 2	34 Vs 9	0.116	60 Vs 54
Median age (years)	56(31-78)	55(38-86)	0.385	59(35-88)
Median BMI	25(16-35)	31(20-44)	0.001	
Bra cup A, B & C Vs D and above	23 Vs 5	11 Vs 32	0.001	
DCIS Vs Invasive	2 Vs 26	5 Vs 38	0.535	19 Vs 95
Median size on radiology	24mm (11-46)	25mm (6-76)	0.102	14 mm (3-50)
Neoadjuvant chemotherapy	11	13	0.430	14
Short term outcome				
Complications needing intervention	fat grafting 1	Haematoma 1	0.756	Haematomas 2
Re-excision Vs Mastectomy	5 Vs 0	1 Vs 3	0.154	11 Vs 1
Locoregional recurrence	0	0		1
Distant metastasis	3	4	0.845	2

Conclusion: There is no significant difference in short-term outcomes between CPF and TM. More high-quality evidence is required to support their oncological safety.

24. PARTIAL BREAST RECONSTRUCTION WITH CHEST WALL PERFORATOR FLAPS - INITIAL DATA FROM 'PARTBRERECON' COLLABORATIVE

Amit Agrawal [1], Laszlo Romics [2], Dinesh Thekkinkattil [3], Monika Kaushik [4], Caroline Mortimer [5], Carol-Ann Courtney [6], Amit Goyal [6], Emanuele Garreffa [6], Amtul Carmichael [7], Ahmed Hamad [6], Risha Lane [5], Vivienne Blackhall [2], Claire Rutherford [2], Vasileios Pitsinis [8], Steven Goh [9], Biswajit Ray [10], Kartikae Grover [11], James Mansell [12], Raghavan Vidya [13], John Murphy [14]. [1] *Cambridge University Hospitals, Cambridge, United Kingdom;* [2] *Gartnavel General Hospital, Glasgow, United Kingdom;* [3] *United Lincolnshire Hospitals, Lincoln, United Kingdom;* [4] *University Hospitals of Leicester, Leicester, United Kingdom;* [5] *Ipswich Hospital, Ipswich, United Kingdom;* [6] *Royal Derby Hospital, Derby, United Kingdom;* [7] *University Hospital of Derby and Burton, Derby, United Kingdom;* [8] *Ninewells Hospitals, Dundee, United Kingdom;* [9] *North West Anglia NHS Foundation Trust, Peterborough, United Kingdom;* [10] *Harrogate and District NHS Foundation Trust, Harrogate, United Kingdom;* [11] *Hull and East Yorkshire Hospitals NHS Trust, Hull, United Kingdom;* [12] *University Hospital, Wishaw, United Kingdom;* [13] *Royal Wolverhampton NHS Trust, Wolverhampton, United Kingdom;* [14] *University Hospital of South Manchester, Manchester, United Kingdom*

Introduction: Partial breast reconstruction with pedicled chest wall perforator flap is increasingly performed following breast conserving surgery either in higher tumour: breast ratio or for maintenance of breast aesthetics.
Methods: Perforator flaps were based on various chest wall vessels such as lateral intercostal, medial intercostal, lateral thoracic artery, thoracodorsal perforator performed by oncoplastic breast surgeons +/- plastic surgeons. Multi-centric data between February 2011 and October 2020 was analysed for baseline demographics, tumour characteristics, surgical and oncological outcomes.
Results: 302 patients underwent partial reconstruction. A large majority were LiCAP flap followed by MiCAP/AiCAP flaps, commonly combined LiCAP with LTAP flap and a small number of TDAP flaps. Mean BMI was 26.2, mean tumour size was 28.2mm and mean specimen weight was 69.5 gms. A sixth needed axillary clearance at some stage. Mean length of hospital stay was 1.5 days, drain duration was 2.3 days. Majority (>90%) did not need symmetrising procedure. Infection, haematoma and unplanned return to theatre rates were less than 5%, seroma less than 10%, partial or total flap necrosis less than 2%, re-excision rate less than 15% and recurrence rate less than 5% in the dataset so far.
Conclusion: Outcomes appear no worse than any alternative oncoplastic breast conserving procedure such as therapeutic mammaplasty or mastectomy with added advantage of negligible need for symmetrisation. It appears to be safe alternative to mastectomy in higher tumour: breast setting. An updated larger data-set will be presented.

25. FACTORS INFLUENCING THE DECISION FOR ONE VERSUS TWO STAGE PERFORATOR FLAP RECONSTRUCTION – A HYPOTHESIS GENERATING LOOK AT A SINGLE UNIT CASE SERIES

Jen Isherwood [1], Brendan Smith [2]. [1] *Oxford University Hospitals NHS Foundation Trust, Oxford, United Kingdom;* [2] *Royal Berkshire Hospital, Reading, United Kingdom*

Introduction: Local perforator flaps have extended the indications for breast conserving surgery with larger tumour to breast ratios being successfully excised without comprising the aesthetic outcome. This can be done as a one or two-stage procedure. The latter ensuring clear margins prior to reconstruction. This four-year case series reports the outcomes of all planned 2 stage perforator flaps and the potential and risks for moving to single stage.
Method: All planned 2 stage partial-breast perforator flap reconstructions (PBR) from January 2015 to April 2020 were identified from theatre diaries. Patient demographics, tumour size, histology and adjuvant treatments were collected. Primary outcome was number of successful two-stage PBR

performed. Secondary outcomes included potential factors predictive of suitability for one-stage reconstruction and complications.
Results: 31 of 39 planned PBR were completed, the remaining 8 required completion mastectomy. Mean age was 53 years. Mean weight of tissue resected greater in those requiring completion mastectomies (88.5g versus 78g). Of the 8 who required mastectomy a greater proportion had multifocal disease (38% v 23%) and DCIS (25% v 6%) as the underlying pathology. Power was insufficient for significance testing. 6 of the successful PBR had a further re-excision of margins. 8 patients had minor complications, no flap loss but 1 return to theatre with delayed haemorrhage. See Table 1.

Table 1

	Completed LiCAP	Completion mastectomy
Number of cases, n	31	8
Mean tumour size, mm (range)	32	58.5
Median specimen weight, g (range)	78 (23-134)	88.5 (20-191)
Proportion of multifocal cases, % (n)	23 (7)	38 (3)
Tumour type, % (n)		
Ductal	58 (18)	50 (4)
Lobular	29 (9)	13 (1)
DCIS	6 (2)	25 (2)
Other	6 (2)	13 (1)

Conclusion: One-stage reconstruction is feasible. It is hypothesised that tumour characteristics i.e. presence of DCIS, tumour size and multi-focality could aid patient selection for one versus two stage reconstruction.

26. EARLY RESULTS FROM THE PRE-BRA IDEAL 2A/2B PROSPECTIVE MULTICENTRE COHORT STUDY TO EVALUATE THE SAFETY AND EFFECTIVENESS OF PREPECTORAL BREAST RECONSTRUCTION

Kate Harvey [1], Parisa Sinai [1], Nicola Mills [1], Christopher Holcombe [2], Shelley Potter [1]. [1] *Bristol Centre for Surgical Research, University of Bristol, Bristol, United Kingdom;* [2] *Royal Liverpool and Broadgreen University Hospital, Liverpool, United Kingdom*

Introduction: Prepectoral breast reconstruction may improve outcomes for patients, but there is limited high-quality data regarding the safety and effectiveness of the technique. Robust evaluation in a randomised clinical trial is needed, but before a trial can be considered, preliminary work is required to establish the safety of the technique. We report preliminary findings from the Pre-BRA prospective multicentre cohort study.*
Methods: Patients undergoing prepectoral reconstruction using any technique were prospectively recruited at participating UK centres. Demographic, operative and oncological data were collected and short-term safety, including the primary outcome, implant loss, evaluated at 3-months. Patient-reported outcomes using the validated BREAST-Q were assessed at baseline, 3 and 18-months.
Results: Since July 2019, 325/341 women have been recruited from 39 centres. Median age was 49 (range 23-74) with BMIs ranging from 17.7-36.4 (median 25.0). 401 prepectoral reconstructions have been performed of which 284 (71%) used biological mesh, mostly BRAXON (163/284, 57%) and SurgiMend (113/284, 40%). Only 28 (7%) reconstructions were performed with synthetic mesh. At 3-months, complications have been reported in 100/222 (45%) patients with completed follow-up. 19% (43/222) patients have required readmission and 18% (41/222) have required reoperation for complications within 3-months of surgery. Approximately 9% of patients have experienced total implant loss.
Conclusion: Complication rates of prepectoral reconstruction appear consistent with those reported for subpectoral mesh-based reconstruction in the iBRA study. Definitive evaluation in an RCT is now needed. Best-BRA (opening Spring 2021) will evaluate the feasibility of undertaking a trial comparing pre and subpectoral implant-based techniques. (*REC Reference:19/SC/0129)

27. ASSESSING BODY COMPOSITION IN BREAST CANCER PATIENTS: CONCORDANCE BETWEEN CT ANALYSIS AND BIA ESTIMATES

Alex Daly [1], Alex Thomas [1], Lydia Newman [1], Adam Heetun [1], Cameron Spence [2], Joe Long [2], Kesta Durkin [1], Stephen Wootton [1], Ellen Copson [1], Ramsey Cutress [1]. [1] *University of Southampton, Southampton, United Kingdom;* [2] *University Hospitals Southampton, Southampton, United Kingdom*

Introduction: Body composition metrics measured from L3 axial Computed Tomography (CT) images are prognostic for clinical cancer outcomes. However, this method is limited by necessity for lumbar (L3) CT scanning. The aim of this study was to evaluate CT analysis at T4 and bioelectrical impedance analysis (BIA) as feasible alternative measures of body composition in breast cancer.
Methods: CT and BIA measurements were analysed from 29 women diagnosed with breast cancer in the BeGIN cohort at University Hospital Southampton, as approved by the research ethics committee (reference number: 10/H0308/48). BIA was measured using seca™ medical body composition analyser 515. Spearman's rank correlation coefficient analysis was used to determine concordance between body composition estimates using CT analysis at L3 and T4, and BIA.
Results: Estimates for total adipose tissue were highly concordant between all three methods (L3 and T4: Rs=0.908 p<0.001, L3 and BIA: Rs=0.838 p<0.001, T4 and BIA: Rs=0.903 p<0.001). Estimates for skeletal muscle mass were less concordant between CT regions L3 and T4 (Rs=0.547 p=0.006), and poorly concordant between CT regions and BIA (L3 and BIA Rs=0.295 p=0.135, T4 and BIA Rs=0.164 p=0.172).
Conclusions: CT analysis at L3 and T4, and BIA are highly comparable methods for body fat estimation. However, regional CT analysis estimates may not represent whole body skeletal muscle mass. Future work will establish whether subcutaneous and visceral fat differ between L3 and T4 estimates, and aim to determine the value of T4 metrics and BIA as predictive tools for clinical outcomes in breast cancer.

28. NOMOGRAMS TO DEPICT POST-MRI PROBABILITY OF PATHOLOGICAL COMPLETE RESPONSE (PCR) IN BREAST CANCER PATIENTS UNDERGOING NEO-ADJUVANT SYSTEMIC TREATMENT (NAST)

Manoj Gowda S, Sadaf Jafferbhoy, Kirti Kabeer, James Collis, Sekhar Marla, Sankaran Narayanan, Soni Soumian. *University Hospitals of North Midlands, Stoke-on-Trent, United Kingdom*

Introduction: Sensitivity and specificity are the parameters commonly used in reporting MRI response to Neo-adjuvant systemic therapy (NAST). There is limited information regarding pre and post-MRI probability of residual disease. The objective of our study was to establish a nomogram depicting these parameters.
Methods: A retrospective study of all patients who underwent post-NAST MRI between June-2014 and December-2019 was conducted. Pre-MRI probability was calculated using prevalence of residual disease in post-operative histology. Post-MRI probability is the proportion who truly have residual disease on MRI and was calculated based on Likelihood ratio (LR). Pre-MRI probability, negative and positive LR and post-MRI probability of residual disease was depicted on a Fagan's nomogram. The nomograms were plotted for the whole cohort and each subgroup based on Hormone receptor (HR) and HER-2 status.
Results: The study included 205 patients. The pre-MRI probability of having residual disease was 55% (OR :1.2). The positive and negative LR for MRI was 2.94 (95%CI 2.10-4.12) and 0.25 (95%CI 0.16-0.38) respectively. The post-MRI probability was 78% (95%CI 72-83%; OR:3.5) if MRI showed residual disease and 23% (95%CI 16-31%, OR:0.3) if imaging showed complete

response. The pre-MRI probability in various sub-groups (HR+HER2+, HR-HER2+, Triple negative breast cancer (TNBC), HR+HER2-) ranged from 37.1 to 85.7% and post-MRI probability in radiological complete response ranged from 7% to 57%.
Conclusion: Fagan's nomogram is a user-friendly interface for clinicians to interpret and communicate the likelihood of residual disease to their patients. The clinician can use this information to discuss further management options.

29. SYSTEMATIC REVIEW AND METANALYSES OF PROGNOSTIC VALUE OF CIRCULATING TUMOUR CELLS IN EARLY BREAST CANCER

Nisar Mahmood. *Shrewsbury and Telford Hospital NHS Trust, Shrewsbury, United Kingdom*

Background: Prognostic value of circulating tumour cells (CTC) in breast cancer is currently under investigation. This systematic review with Meta-analysis measures the evidence on prognostic relevance of CTC in early breast cancer presented in recent published studies.
Method: A detailed search was made for published primary studies, those assessed prognostic value of CTC in early breast cancer. Review and quality assessment of 22 included studies were performed and data on CTC status and disease recurrence and death were extracted. Primary outcomes analysed were hazard ratios for disease-free survival (DFS) and overall survival (OS) between the patient groups with positive and negative detection of CTC. Meta-analysis calculated the pooled hazard ratio (HR) with 95% confidence intervals (CIs) as the overall effect measure on DFS and OS using the fixed and random effects models.
Results: 22 studies enrolling total of 5724 patients were eligible for the systematic review and meta-analysis. Pooled HR for DFS: 2.81 (CI: 2.20-3, 61) and for OS: 2.74 (CI: 2.20-3.41) was found with CTC positive status.
Conclusion: This systematic review and meta-analysis finds that positive detection of CTC in early breast cancer is a poor prognostic index for disease recurrence and mortality by nearly 3 times.

30. SHORT TERM OUTCOME OF PRE-PECTORAL IMPLANT-BASED RECONSTRUCTION VERSUS SUB-PECTORAL IMPLANT-BASED RECONSTRUCTION USING ACELLULAR DERMAL MATRIX

Daisy Okonofua, John Mathew. *North West Anglia NHS Foundation Trust, Peterborough, United Kingdom*

Introduction: Sub-pectoral implant reconstruction is associated with animation deformity and there is a recent interest in pre-pectoral implant reconstruction. The aim of our study was to compare the short-term outcome of pre-pectoral and sub-pectoral immediate implant-based reconstruction with ADM.
Methods: Review of a prospectively collected data of pre-pectoral and sub-pectoral immediate implant-based reconstruction using biological mesh by a single surgeon between Nov 2016 and Nov 2020. Data collected included presentation (screening or symptomatic), smoking history, BMI, Bra size, neoadjuvant treatment, pathology, delay in adjuvant treatment, local recurrence, regional recurrence, distant metastasis, survival and complications. Chi-squared test was done to analyse statistical difference between the groups and a P value of < 0.05 was considered significant.
Results: Eighty-two patients had 109 implant reconstructions. Median age was 48 years (27-73) and median follow-up was 23 months (1-48). There was no significant difference between the two groups with regard to complications as shown in table 1 (P= 0.785). One patient in the pre-pectoral group who refused adjuvant chemotherapy and radiotherapy developed regional recurrence. table 1

Table 1

Complications	Pre pectoral- 85 (Nipple sparing mastectomy-42 Nipple sacrificing mastectomy- 43)	Sub pectoral- 24 (Nipple sparing mastectomy -4 Nipple sacrificing mastectomy-20)
Haematoma evacuation	0	2
Wound infection	1	1
Red reaction	8	1
Seroma needing aspiration	1	0
Wound necrosis/threatened wound	7	1
Overall Implant loss	2	1
Delay in adjuvant treatment	1	1
Oncological outcome		
Local recurrence	0	0
Regional recurrence	1	0
Distant metastasis	0	3

Conclusion: There is no significant difference in complications between pre-pectoral and sub-pectoral reconstruction. No local recurrence has been reported in both the groups after a relatively short follow-up. Pre-pectoral reconstruction should be a reliable option in patients undergoing immediate implant reconstruction.