

implications for treatment and surveillance in these patients.

04. POST-MASTECTOMY RADIOTHERAPY IN PATIENTS WITH IMMEDIATE BREAST RECONSTRUCTION – RESULTS FROM THE IBRA-2 (IMMEDIATE BREAST RECONSTRUCTION AND ADJUVANT THERAPY) PROSPECTIVE COHORT STUDY

Tim Rattay¹, Rachel O'Connell², Rajiv Dave³, Matthew Gardiner⁴, Adam Trickey⁵, Chris Holcombe⁶, Shelley Potter⁵, On behalf of the Breast Reconstruction Research Collaborative. ¹University of Leicester, Leicester, United Kingdom; ²Royal Marsden NHS Foundation Trust, London, United Kingdom; ³Manchester University NHS Foundation Trust, Manchester, United Kingdom; ⁴University of Oxford, Oxford, United Kingdom; ⁵University of Bristol, Bristol, United Kingdom; ⁶Royal Liverpool and Broadgreen Hospitals NHS Trust, Liverpool, United Kingdom

Introduction: Long-term data now indicates that post-mastectomy radiotherapy (PMRT) may positively impact on overall survival. As a result, the indications for PMRT are widening. Rates of immediate breast reconstruction (IBR) are increasing, but IBR remains controversial in the context of planned PMRT. The aim of this study was to examine current practice of PMRT in patients undergoing mastectomy with and without IBR in the iBRA-2 prospective cohort study.

Methods: The cohort included 2,540 patients undergoing mastectomy +/- IBR at 76 centres across the United Kingdom and Ireland between 1st July and 31st December 2016. Patients were recruited consecutively using the trainee collaborative model. Patient demographics, operative, oncological and adjuvant treatment data were collected and analysed comparing rates of PMRT in patients undergoing mastectomy +/- IBR.

Results: Of all patients in the cohort, 35.6% (n=909) were recommended for PMRT at the post-operative MDT meeting. In 4.9% (n=125) discussion of PMRT was advised. PMRT was significantly less likely to be recommended in patients undergoing IBR (32.1% of implant-only, 34.3% of pedicled flap, and 35.5% of free flap reconstructions) than in patients undergoing mastectomy alone (45.7%) (p<0.001).

On multivariate analysis, only implant-based reconstruction was inversely associated with PMRT (Odds ratio=0.66, confidence interval 0.44-0.99). Patients in Scotland (OR 0.35, 0.17-0.73) and Ireland (OR 0.36, 0.17-0.74) were statistically less likely to receive PMRT.

Conclusions: Approximately one third of patients undergoing IBR were recommended for PMRT with only implant-based reconstructions less likely to receive PMRT. This study also highlighted regional variation in PMRT practice which merits further investigation.

05. BRIDGING THE AGE GAP IN BREAST CANCER - ANALYSIS OF THE IMPACT OF COMORBIDITY, DEMENTIA AND FRAILTY ON THE RATES OF SURGERY IN OLDER WOMEN

Jenna Morgan¹, Jayan George¹, Sue Ward², Geoff Holmes², Maria Burton³, Tim Chater⁴, Mike Bradburn⁴, Charlene Martin¹, Anne Shrestha¹, Kwok-Leung Cheung⁵, Riccardo Audisio⁶, Malcolm Reed⁷, Lynda Wyld¹. ¹Department of Oncology and Metabolism, Sheffield Medical School, University of Sheffield, Sheffield, United Kingdom; ²Department of Health Economics and Decision Science, SCHARR, University of Sheffield, Sheffield, United Kingdom; ³Department of Health and Social Care, Sheffield Hallam University, Sheffield, United Kingdom; ⁴Clinical Trials Research Unit, SCHARR, University of Sheffield, Sheffield, United Kingdom; ⁵Faculty of Medicine & Health Sciences, University of Nottingham, Nottingham, United Kingdom; ⁶Sahlgrenska University Hospital, Gothenburg, Gothenburg, Sweden; ⁷Brighton and Sussex Medical School, University of Sussex, Brighton, United Kingdom

Background: Up to 40% of UK women >70 years with primary operable breast cancer are treated with Primary Endocrine Therapy (PET) rather than surgery, often due to co-existing co-morbidity or frailty. Factors predicting non-surgical treatment were assessed in a large prospective UK cohort study.

Methods: Prospective data from the multi-centre UK cohort study "Bridging the Age Gap" on treatment received (Surgery vs. PET) were analysed according to comorbidity (modified Charlson), dementia (MMSE) and frailty (ADL and IADL) using Chi Squared test in SPSS. National and

local ethics committee approval was obtained for all UK participating sites. **Results:** A total of 3460 women aged >70 years with operable breast cancer were recruited; 2784 were treated surgically and 493 received PET. Older age was associated with increased PET; with 4.0% of 70-74 year olds treated this way, compared to 49% of those 85+ (p<0.001). Increasing comorbidity was associated with greater PET usage; with 4.0% of patients with no comorbidity being treated with PET, rising to 31.9% for patients with 3+ comorbidities (p<0.001). A MMSE score of <27 was associated with an increased PET rate (24.2% vs 9.8% in those who scored 27+, p<0.001). Dependency in one or more ADL or IADL was associated with increased use of PET (8.7% vs 27.2% for ADL (p<0.001) and 7.1% vs 31.9% for IADL (p<0.001).

Conclusions: This analysis clearly demonstrates that extreme old age, comorbidity, dementia and frailty are important factors in determining treatment for older women diagnosed with operable breast cancer in the UK.

06. IMPACT OF PROGESTERONE RECEPTOR STATUS ON RESPONSE TO NEOADJUVANT CHEMOTHERAPY IN OESTROGEN RECEPTOR POSITIVE BREAST CANCER PATIENTS

Michael R. Boland¹, Darina Gilroy¹, Timothy Nugent¹, John Kennedy², Dhaffir Alazawi¹, Terence J. Boyle¹, Elizabeth M. Connolly¹. ¹Department of Breast Surgery, St James Hospital, Dublin, Ireland; ²Department of Breast Oncology, St James Hospital, Dublin, Ireland

Introduction: Breast cancer patients respond differently to neoadjuvant chemotherapy (NAC) based on hormone receptor subtype. Oestrogen receptor positive/HER-2 receptor negative (ER+HER-) patients respond poorest but effects of progesterone receptor (PR) status on response within this group has not been elucidated. The aim was to assess the impact of PR status on response to NAC in ER+HER- patients.

Methods: Patients receiving NAC over a seven-year period (2011-2017) were identified from a prospective database within a specialised breast unit. Clinicopathological details were collated for all patients. Primary outcomes including breast complete pathological response (PCR) rate and axillary PCR rate were compared between patients found to be progesterone receptor positive and negative. Secondary outcomes including grade and presence of lymphovascular invasion were also assessed.

Results: 206 patients were identified (151 in the ER+PR+HER- group and 55 in the ER+PR-HER- group). When compared with the PR+ group, patients found to be PR negative were more likely to achieve a breast PCR (3.3% vs 25.4%; Chi Square test; p=0.001). In patients who were initially node positive, PR negativity was associated with a higher rate of axillary nodal PCR compared to those found to be PR positive (12.2% vs 25.5%; Chi Square test; p=0.04). ER+PR-HER- patients were more likely to have higher grade tumours but not LVI.

Conclusion: Over a quarter of ER+HER- patients who are PR negative will have a complete pathological response to NAC in the breast and axilla and should be considered for NAC at diagnosis.

07. A SYSTEMATIC REVIEW AND META-ANALYSIS OF CLINICAL, PATIENT-REPORTED OUTCOMES AND COST OF DIEP FLAP VERSUS IMPLANT-BASED BREAST RECONSTRUCTION

Ankur Khajuria^{1,2}, Max Prokopenko³, Oliver Smith³, Max Greenfield³, Andrea Pusic⁴, Afshin Mosahebi³. ¹Kellogg College, University of Oxford, Oxford, United Kingdom; ²Department of Surgery and Cancer, Imperial College London, London, United Kingdom; ³Division of Surgery and Interventional Science, University College London, London, United Kingdom; ⁴Patient-Reported Value and Experience (PROVE) Centre, Harvard Medical School, Boston, USA

Introduction: Comparative data on clinical outcomes and cost of DIEP and implant-based reconstruction (IBR) is limited. We conducted a systematic review to compare cost, clinical and patient-reported outcomes (PROs).

Methods: The protocol was registered on PROSPERO (CRD42017072557) a priori. EMBASE, MEDLINE, Google Scholar, CENTRAL, SCI and Clinicaltrials.gov were searched from January 1994–August 2018. Two reviewers independently screened and extracted outcomes on complications, cost

and PROs. Study quality and risk of bias (RoB) were assessed using GRADE and Cochrane's ROBINS-I tool respectively.

Results: Out of 6381 articles screened, 18 were included (unilateral 919 DIEPs, 452 implants; mean age 49 years, follow-up (months): DIEP 28.9; IBR 42.9. There were 7 prospective/9 retrospective cohort studies, 2 case series and no RCTs. Mean flap loss and fat necrosis rates were 3.90% (SD 3.86) and 9.67% (SD 17.0) respectively. There was no difference in mean length of stay [DIEP 8.42 days (SD 2.23) vs IBR 7.90 days (SD 5.34), $p=0.82$]. Mean number of revision procedures was lower in DIEP (0.80; SD 1.07) vs IBR (1.53; SD 1.52), $p<0.01$. Study quality was low with serious RoB. One study ($n=275$) reported \$11,941/QALY ICER for DIEP, with higher breast QALY (DIEP 19.5; IBR 17.7) using BREAST-Q; two studies ($n=275$) showed no overall cost differences, favouring DIEP. Two studies ($n=339$) evaluating PROs favoured DIEP.

Conclusion: DIEP reconstruction may be more cost-effective and yield superior PROs. However, poor quality, bias-ridden studies limit the findings. Level-I evidence evaluating core outcome sets and cost-effectiveness will facilitate national-level policy and shared decision-making.

08. CAN WE TRUST OUR DATA? A COMPARATIVE ANALYSIS OF IBRA AND HES DATA

Carla Chamberlain¹, Rachna Goburdhun¹, Nicole Dover¹, Regina Sabaratnam², Neill Patani³, Nicola Roche¹. ¹Royal Marsden Hospital NHS Foundation Trust, London, United Kingdom; ²Sheffield Medical School, Sheffield, United Kingdom; ³UCLH NHS Foundation Trust, London, United Kingdom

Introduction: Implant-based breast reconstruction is the most commonly performed reconstructive procedure in the UK. Data from the iBRA study demonstrated implant loss at 3 months as high as 30%. Data acquired by GIRFT found an implant loss rate of 7.5% at 12 months nationally. GIRFT relies on HES data, whereas the iBRA study was a National Trainee Research Collaborative. We have used HES data to validate our iBRA cohort.

Method: Searching HES data using the following codes: B30.1, B30.2, B30.3, B30.4, S48.20, B29.8, Y02.2, we developed a dataset of patients who had mastectomy and immediate breast reconstruction with implants during the iBRA study period.

Results: Implant loss at 3 and 12 months is shown in the table. Causes for variation between the datasets will be explored and presented. Different codes were used to describe the same surgical procedure, the complexity of the different codes will be also be presented.

| Royal Marsden outcomes | iBRA data n = 102 (%) | HES n = 235 (%) |
|---------------------------|-----------------------|-----------------|
| Implant loss at 3 months | 7 (6.9) | 11 (4.7) |
| Implant loss at 12 months | | 19 (8.1) |

Conclusions: Unit level and possibly surgeon level data will be published in the public domain in the near future. There are limitations to iBRA due to the nature of voluntary data entry and to HES due to a variation in the utilisation of the large number of existing codes. Collaboration between clinicians and informatics teams is essential to improve data quality. Without this we cannot adequately provide informed consent to our patients.

09. IS NEOADJUVANT RADIOTHERAPY PRIOR TO MASTECTOMY AND AUTOLOGOUS RECONSTRUCTION SAFE? COMPARISONS BETWEEN PRADA TRIAL PATIENTS AND HISTORICAL CONTROLS

Daniel Leff^{1,2}, Paul Thiruchelvam¹, Neill Patani³, James Paget³, Stuart James³, Simon Wood⁴, Susan Cleator⁵, Anna Kirby⁶, Jenny Rusby⁷, Fiona MacNeill⁷, Dimitri Hadjiminas². ¹Imperial College London, London, United Kingdom; ²Breast Unit, Charing Cross Hospital, London, United Kingdom; ³Royal Marsden Foundation NHS Trust, London, United Kingdom; ⁴Department of Plastics and Reconstructive Surgery, Charing Cross Hospital, London, United Kingdom; ⁵Department of Radiation Oncology, Charing Cross Hospital, London, United Kingdom; ⁶Department of Radiation Oncology, Royal Marsden Hospital, London, United Kingdom;

⁷The Breast Unit, Royal Marsden Foundation NHS Trust, London, United Kingdom

Introduction: For patients with locally advanced node-positive disease requiring post-mastectomy radiotherapy (PMRT), integrating breast reconstruction poses challenges. Irradiating autologous tissue may cause fibrosis, fat necrosis, shrinkage and longitudinal degradation of symmetry. Many patients are denied immediate breast reconstruction (IMBR). An approach to avoid flap irradiation is neoadjuvant radiotherapy (NRT) to the tumour-bearing breast prior to mastectomy and IMBR. The aim of this study was to evaluate the safety of this approach.

Methods: Following ethical approval (IRAS:15/LO/1071; amendment AM/1806/86), a retrospective case-control study was undertaken to compare the complication profiles of patients recruited to receive NRT prior to IMBR within or outwith the PRADA trial (NCT02771938)($n=42$), and unmatched historical controls receiving PMRT, either following immediate free-flap reconstruction ($n=41$) or simple mastectomy ($n=44$).

Results: There was no significant difference between cohorts in tumour grade ($p=.470$), histological subtype ($p=.108$), ER ($p=.200$), PR ($p=.239$), HER2 ($p=.559$) or nodal status ($p=.153$). Simple mastectomy patients were significantly older [mean age years \pm Std:NRT=48.5 \pm 8.6, PMRT=49.4 \pm 9.3, flat chest=58.0 \pm 9.2; $p<0.001$]. There was no significant difference between groups in unplanned return to theatre at twelve weeks. There were no free-flap failures in any group. Critically, there was no statistically significant difference in skin necrosis rates. A greater proportion of patients undergoing simple mastectomy required post-operative antibiotics ($p=.013$). A greater proportion of open wounds were observed in patients undergoing PMRT to free-flaps ($p=.051$).

Conclusions: NRT prior to autologous IMBR was not associated with significantly greater complication profiles when compared to unmatched historical controls, supporting the safety of radiotherapy sequence-reversal.

10. LOSS RATES IN SLING-ASSISTED IMPLANT-BASED BREAST RECONSTRUCTION OVER TIME SEEM TO RELATE TO PROPORTION OF PATIENTS WITH KNOWN RISK FACTORS RATHER THAN ANY LEARNING CURVE

Matthew Barber, Edinburgh Breast Unit, Edinburgh, United Kingdom

Introduction: Ongoing audit of sling-assisted, implant-based breast reconstruction (SAIBBR) in Edinburgh has identified factors contributing to implant loss. It was hoped that as a result of this, loss rates would have dropped over time. The present study aimed to assess if there was a reduction in reconstructive loss rate.

Methods: SAIBBR has been performed on 766 occasions in the Edinburgh Breast Unit between July 2008 and June 2018 with median follow up of 795 days. Smoking and radiotherapy have previously been identified as significant risk factors for reconstruction loss and outcome data has been fed back to breast team members on an annual basis. Data on rate of loss of implant was analysed across the unit in 6 monthly increments and on 8 individual surgeons with an experience of over 60 cases.

Results: There was no statistically significant change in loss rate over time and no obvious trend towards improvement. Instead there seemed to be an association between loss rate and the proportion of patients with known risk factors.

Conclusions: SAIBBR has a relatively high loss rate which persists in our unit despite good understanding of risk factors. Surgeons and patients are continuing to choose this option despite risks, presumably because it is relatively quick and simple, may sometimes be the only realistic reconstructive option and can still produce a respectable result in the majority of cases. These factors must be taken into consideration when assessing unit or surgeon level loss rates in implant-based breast reconstruction.

11. THERAPEUTIC MAMMAPLASTY IS A SAFE AND EFFECTIVE ALTERNATIVE TO MASTECTOMY WITH OR WITHOUT IMMEDIATE BREAST RECONSTRUCTION, PARTICULARLY IN HIGH-RISK PATIENTS: COMBINED ANALYSIS OF 2,916 PATIENTS IN THE IBRA-2 AND TEAM MULTICENTRE PROSPECTIVE COHORT STUDIES

The TeaM Steering Group, The iBRA-2 Steering Group, The Mammary Fold Academic and Research Collaborative United Kingdom