Available online at www.sciencedirect.com

ScienceDirect

EJSO xx (2014) 1–10

EJSO the Journal of Cancer Surgery

www.ejso.com

Abstracts for oral presentation at the Association of Breast Surgery Conference & AGM, 19th & 20th May 2014, ACC Liverpool

Session 1 – BJS Prize Papers, Monday 19th May 2014, 09:00 to 10:30

1. A case controlled study of the oncological outcome of fat grafting

Katherine Gale, Stephen McCulley, Douglas Macmillan
Nottingham City Hospital, Nottingham, UK

Background: Currently there is no evidence of oncological risk associated with fat grafting although its safety has been questioned. This study was designed to investigate if fat grafting is associated with an increased risk of breast cancer relapse.

Methods: Since 2007, the Nottingham Breast Institute has performed fat grafting (FG) for 396 patients. Data for 211 patients (DCIS = 27, Inv = 184) who underwent FG after a primary oncological event was collected retrospectively. Control subjects were matched 2:1 for; date of primary cancer operation (within 2 yrs), age (within 5 yrs), type of surgery, histology, ER status and disease free interval by time of fat grafting. The outcomes were recurrent oncological events and death. Log Rank Kaplan-Meyer curves were used to calculate disease free survival.

Results: No significant excess oncological events were observed in patients who had FG compared to controls with regards to local (0.95% v 1.90%, p=0.33), regional (1.9% v 0%, p=0.16) and distant recurrences (3.32% v 2.61%, p=0.65).

Conclusions: This study has found no evidence of oncological risk associated with fat grafting in women previously treated for breast cancer.

http://dx.doi.org/10.1016/j.ejso.2014.02.191

2. The impact of axillary lymph node dissection on muscle lymph flow in breast cancer patients

Salena Bains[1], Anthony Stanton[2], Viviana Cintolesi[2], Jim Ballinger[3], Sarah Allen[3], Charles Zammit[4], Rodney Levick[2], Peter Mortimer[2], Adrien Peters[4], Arnie Purushotham[1]
[1] King's College London, London, UK
[2] St. George's, University of London, UK
[3] Guy's and St. Thomas' NHS Foundation Trust, London, UK
[4] Brighton and Sussex University Hospitals, Brighton, UK

Introduction: Breast cancer-related lymphoedema (BCRL) is a chronic swelling of the upper limb following axillary lymph node surgery. Underlying mechanisms predisposing to BCRL are unclear. This prospective study aims to correlate lymph flow in the upper limb of breast cancer patients pre- and post-axillary lymph node surgery with subsequent development of BCRL.

Methods: Following Research Ethics Committee approval, ^{99m}Tc-nanocoll was injected intramuscularly into both forearms. Lymphatic clearance rate constant, k (lymph flow/tissue volume), was measured as the disappearance rate of radioactivity from the depot site by gamma camera imaging before and after surgery. Axillary lymph node activity was calculated as percentage injected activity. Upper limb volume was measured by perometry. Patients underwent follow-up clinically for the development of BCRL.

Results: Thirty-eight women attended pre-operatively, 33 patients attended 8 ± 6weeks post-surgery, and 31 patients attended for follow-up (58 ± 9weeks). Seven patients (18%) developed BCRL. Pre-operative ipsilateral k in the BCRL and non-BCRL groups were 0.090 6±0.021 and 0.0857±0.022%/min respectively, and 0.0772±0.023 and 0.0849±0.018%/min post-operatively (p=0.58). Surgery had no significant effect on k or volume in either upper limb. There was no correlation between change in k and number of nodes removed. Axillary activity showed no significant difference between the ipsilateral or contralateral upper limb before or after surgery.

Conclusion: Axillary lymph node surgery has no significant early effect on forearm muscle lymph flow, arm volume or axillary lymph node activity (represented as a percentage of depot injection), despite major surgical disruption to lymph drainage routes. Neither pre-operative nor post-operative lymph flow predicted the development of BCRL.

http://dx.doi.org/10.1016/j.ejso.2014.02.192

3. Should all patients with a pre-operative diagnosis of metastatic axillary lymphadenopathy undergo axillary node clearance?

James Mansell[1], Claire Rutherford[1], Sheila Stallard[1], Julie Doughty[1], Laszlo Romics[2]
[1] Western Infirmary, Glasgow, UK
[2] Victoria Infirmary, Glasgow, UK

Background: Recent studies have suggested that women with early breast cancer and low volume axillary node involvement identified after sentinel lymph node biopsy require no additional surgical treatment, especially in those women receiving breast radiotherapy and systemic treatment. In addition axillary node clearance can be associated with significant morbidity. We aim to identify factors associated with low volume axillary node involvement in women with early breast cancer and a pre-operative diagnosis of metastatic axillary disease.

Methods: Consecutive women diagnosed with early breast cancer between 2009-2011 with a pre-operative diagnosis of axillary node metastasis based on axillary USS and biopsy were identified from a prospectively collected database. Women who received neoadjuvant treatment were excluded. Axillary USS reports were reviewed. Chi squared test analysis was performed to identify any clinicopathological variables associated with lower volume of axillary node involvement.

Results: From 196 women diagnosed with node positive breast cancer 36 (18.3%) were diagnosed pre-operatively by axillary USS and biopsy. 6

0748-7983/$ - see front matter

Table 1

Skin preparation	*Chlorhexidine* 44% (n=69)	*Povo-iodine* 56% (n=88)			
Skin barriers	*Incise drape*	*Adhesive dressing*	*Nipple shield*	*Dressing & shield*	
	2% (n=3)	12% (n=19)	22% (n=35)	9% (n=14)	
Laminar air flow	*Yes*	*No*	*Sometimes*	*Unsure*	
	39% (n=61)	52% (n=83)	3% (n=4)	6% (n=10)	
Antibiotic Prophylaxis	*Co-amoxiclav*	*Fluclox/gent*	*Other*		
	58% (n=92)	16% (n=26)	19% (n=30)		
Antibiotic duration	*Single dose*	*3 doses*	*2 days*	*5 days*	*Drain*
	52% (n=82)	7% (n=11)	16% (n=25)	22% (n=34)	4% (n=6)
Sizer Use	*None*	*Single use*	*Multiple*		
	25% (n=39)	41% (n=65)	34% (n=54)		
Implant Soak	*Betadine*	*Chlorhexidine*	*Saline*	*Antibiotics*	*None*
	68% (n=107)	4% (n=7)	8% (n=13)	8% (n=12)	10% (n=16)
Pocket irrigation	*Betadine*	*Saline*	*Local anaes.*	*Other*	*None*
	42% (n=66)	27% (n=42)	4% (n=7)	18% (n=29)	9% (n=14)
Surgical drains	*None*	*Used*			
	38% (n=60)	62% (n=98)			
Care of drains	*Tunnelled*	*Covered*	*Tunnelled/covered*		
	22% (n=22)	20% (n=20)	43% (n=42)		

(16.7%) women had only 1 node involved, 9 (25%) women had only 2 nodes involved, 4 (11.1%) women had only 3 nodes involved and 17 (47.2%) women had more than 3 nodes involved. No pathological variables were significantly associated with increasing nodal involvement. Screen detection was significantly associated with a reduced node involvement (1-3 nodes = 12 (80%) vs. 7(33.3%), p = 0.008). Visualisation of more than one abnormal node on axillary USS was not associated with increased node involvement (p = 1.000).

Conclusion: 15 (41.7%) women with a pre-operative diagnosis of axillary node metastasis had only 1-2 nodes positive on final pathology. In light of recent evidence this could represent overtreatment and cause unnecessary morbidity. Additional assessment of the axilla in patients with evidence of axillary node metastasis may improve patient selection for more extensive axillary surgery.

http://dx.doi.org/10.1016/j.ejso.2014.02.193

4. Sentinel lymph node metastasis burden in breast cancer patients predicts risk of further axillary metastases following analysis using one-step nucleic acid amplification: A prospective cohort study

Thomas Milner[1], Simon de Lusignan[2], Simon Jones[2], Peter Jackson[1], Graham Layer[1], Mark Kissin[1], Tracey Irvine[1]
[1] Royal Surrey County Hospital NHS Foundation Trust, Guildford, UK
[2] University of Surrey, Guildford, UK

Introduction: In breast cancer patients undergoing sentinel lymph node biopsy (SLNB) analysis using one-step nucleic acid amplification (OSNA), clarity is required as to the determinants of further metastasis risk upon completion axillary lymph node dissection (ALND). This study aims to identify whether the proportion of sentinel nodes containing metastases predicts risk of further axillary disease.

Methods: In a cohort study performed on prospectively collected data, 845 patients with cT_{1-3} clinically node-negative invasive breast cancer underwent SLNB analysis using OSNA. Completion ALND was subsequently performed in 290 cases following a positive SLNB. Extent of sentinel node positivity was analysed by categorising positive SLNB samples into: solitary positive lymph node (solitary), multiple lymph nodes of which only some are positive (multiple incomplete positive), and multiple lymph nodes all of which are positive (multiple all positive).

Results: Further NSLN metastases were identified in 74 (25.5%) completion ALNDs. The factors that predict greater risk of NSLN involvement on multivariate analysis were: SLNB macrometastases (cytokeratin-19 mRNA count >5000copies/μl) (OR=3.11; 95% CI, 1.66-5.82; p<0.005), multiple all positive SLNB (OR=2.83; 95% CI, 1.34-5.97; p=0.006), and undergoing mastectomy (OR=1.97; 95% CI, 1.05-3.69; p=0.034). Risk of NSLN involvement amongst multiple all positive, solitary and multiple incomplete positive SLNBs was 51.1%, 29.8% and 17.7% respectively. Amongst multiple incomplete positive SLNBs, an 8.8% NSLN risk was identified when only micrometastases were present.

Conclusions: The extent of sentinel lymph node positivity measured using OSNA predicts risk of NSLN metastases, and would assist in decisions surrounding extent of further axillary lymphadenectomy.

http://dx.doi.org/10.1016/j.ejso.2014.02.194

5. Current practice in the operative phase of breast implants

Alexander Whittam, Jane Ooi
Royal Bolton Hospital, Bolton, UK

Introduction: This study aims to explore current practice in the operative phase of breast implants.

Methods: An online questionnaire was distributed to all ABS and BAPRAS members. 158 responses were received. Data collected included: skin preparation and barriers, antibiotic use, laminar air flow, sizer use, implant and pocket preparation, and the use of surgical drains.

Results: See Table 1.

Discussion: Current practice amongst surgeons is diverse. Widespread uptake of the ABS/BAPRAS Oncoplastic Breast Reconstruction Guidelines is not evident. There is little level I evidence for the current guidelines. Surgeons have maintained local custom and practice. There is data to suggest the use of certain skin preparations and antibiotic use. However, practice such as soaking implants in betadine (68% of respondents), is controversial and advise against this is based on manufacturers' guidance only. Randomised controlled trials are needed to quantify the benefits of various methods of implant preparation, skin barriers, etc. An implant registry would also allow for analysis of the effect of differing practice on complication rates.

http://dx.doi.org/10.1016/j.ejso.2014.02.195

6. National audit of management of breast lobular carcinoma in situ (LCIS)

Rosemary Chester[1], Ibrahim Ahmed[1], Abdul Kasem[2]
[1] Medway NHS Foundation Trust, Medway, Kent, UK
[2] University of London, London, UK

Introduction: There is no national standard treatment for patients with breast lobular carcinoma in situ (LCIS). Association of Breast Surgery (ABS) guidelines for the management of breast cancer suggest that lesions containing LCIS be excised for definitive diagnosis and recommend close surveillance after excision biopsy. The aim of this audit was to collate the current managements of LCIS by UK breast surgeons.

Methods: In collaboration with ABS, a questionnaire about the management of LCIS was sent to 490 UK breast surgeons.

Results: 173/490 questionnaires were returned (35%). When LCIS is present in a core biopsy, 61% of breast surgeons perform surgical excision. 22% would not excise but continue follow-up whilst the remainder performed neither or set no clear management plan. 54% follow-up with five years of annual mammography. If classic LCIS were found at the margins of wide local excision (WLE), 92% would not re-excise, whereas if pleomorphic LCIS (PLCIS) were found, 71% would achieve clear margins. Surgeons were evenly split regarding management of classic LCIS with family history, as 54% would not alter management whereas 43% would treat more aggressively.

Conclusion: This audit has shown that in cases where LCIS is found at core biopsy most surgeons follow ABS guidance, obtaining further histological samples to exclude PLCIS, ductal carcinoma in-situ (DCIS) or invasive cancer, whereas others opt for annual surveillance and some discharge the patient.

This audit highlighted the huge variability in LCIS management and the need for an agreed national standard.

http://dx.doi.org/10.1016/j.ejso.2014.02.196

7. HER-2 positive breast cancer detected through the NHS Breast Screening Programme – A description of the clinical features and the variation in management across the UK

Emma Dugdale[1], Mark Teo[1], Shan Cheung[2], Olive Kearins[2], Tim Perren[1], David Dodwell[1]

[1] St James's Institute of Oncology, Leeds, UK

[2] West Midlands QA Reference Centre, Birmingham, UK

Introduction: Little is known about the clinical features and management of screen-detected HER-2 positive breast cancers diagnosed through the NHS Breast Screening Programme (NHSBSP). We investigated the clinical features, pathology and management of these cancers.

Methods: Data from 57,103 breast cancer patients detected by the NHSBSP between 2004 and 2009 were collected. Associations of HER-2 status with tumour phenotype, staging and chemotherapy use were studied.

Results: HER-2 positive breast cancers detected via the NHSBSP demonstrated a more aggressive phenotype compared to HER-2 negative disease with a higher incidence of grade 3 tumours, oestrogen receptor negative disease and nodal involvement ($P<0.001$). There was significant variation in reported adjuvant chemotherapy use with node positivity and HER-2 positivity across the different regions of the UK ($P<0.001$). Multivariate logistic regression revealed HER-2 status, age at screening, tumour stage, histological grade, oestrogen receptor status and geographical region to be independent factors for adjuvant chemotherapy use ($P<0.001$).

Conclusion: HER-2 positivity is associated with aggressive disease in screen detected tumours, as it is in symptomatically presenting disease. There is a wide variation in adjuvant chemotherapy use across the UK. NHSBSP survival data will be informative of the long-term outcomes from these varying management decisions.

http://dx.doi.org/10.1016/j.ejso.2014.02.197

8. The diagnostic efficacy of microdochectomy *versus* sub-areolar duct excision for unilateral nipple discharge: a comparative analysis of excision pathology

Abdul Hakeem, Natasha Jiwa, Peter Britton, John Benson, Parto Forouhi

Cambridge Breast Unit, Addenbrooke's University Hospital NHS Trust, Cambridge, UK

Introduction: Nipple discharge accounts for 10% of patients presenting to the symptomatic breast clinic, of which approximately 5-10% are diagnosed with cancers. It is this association with malignant pathology that has led to numerous patients undergoing diagnostic excision. There is currently no consensus on the diagnostic approach to pathological nipple discharge, with surgeons preferring either microdochectomy (MD) or sub-areolar duct excision (SADE). This study aims to assess the diagnostic efficacy of MD or SADE, in identifying malignant/significant pathologies.

Methods: This was a retrospective study of all consecutive patients presenting with nipple discharge to the Cambridge Breast Unit between January 1998 and June 2011. Out of 1625 patients during the study period, 1399 were unilateral nipple discharge. 69 patients (24.1%) underwent MD and 217 (75.9%) underwent SADE.

Results: There was no difference in malignant pathology between the two groups (MD *vs.* SADE; 6 (8.7%) *vs.* 24 (11.0%); p=0.658). However, 55.8% (121) patients who underwent SADE had normal or benign pathology in comparison to MD (26, 37.7%; p=0.012). Similarly, majority of those who underwent MD had significant pathology [43, 62.3%; cancer (6), complex sclerosing lesion (2), solitary papilloma (33) and multiple papilloma (2)] in comparison to SADE (96, 44.2%; cancer (24), complex sclerosing lesion (1), LCIS/ALH (2), solitary papilloma (64) and multiple papilloma (5)] (p=0.012).

Conclusions: This retrospective series demonstrates that a significant proportion of patients who undergo diagnostic excision for nipple discharge have either normal or benign pathology. MD leads to lesser number of normal/benign pathologies in comparison to SADE.

http://dx.doi.org/10.1016/j.ejso.2014.02.198

Session 6 – Submitted Papers, Monday 19th May 2014, 11:00 to 12:30

9. A study to determine the persistent level of disability following breast cancer treatment at one year and to identify subgroups of patients that might benefit from more intensive physiotherapy using the validated Disabilities of Shoulder and Hand (DASH) questionnaire

Anna Cox[1], Jo Adams[2], Dick Rainsbury[1], Siobhan Laws[1]

[1] Hampshire Hospitals NHS Foundation Trust, Winchester, UK

[2] Southampton University, Southampton, UK

Introduction: DASH is a validated, self-administered questionnaire to determine upper limb dysfunction (ULD). 27/30 questions must be answered for the DASH to be valid. A baseline score of $\geq$30 is clinically relevant as is a change in score of $>$13.

Method: A consecutive series of breast surgery* patients over one year completed the DASH questionnaire preoperatively at 6 weeks, 3 months and 1 year. Patient demographics and physiotherapy contact was recorded.

Significant findings: 124/184 (67%) patients returned questionnaires. Patients aged $\geq$70ys were more likely to have ULD at baseline. Persistent ULD at 1 year occurred in 1 in 5 of all cases. 9/29 patients reporting scorerise $>$13 at 6 weeks maintained ULD at 12 months. 6/41 patients scoring $>$13 at 6 weeks, worsened at 1 year (15%) (p=0.0348). The score at 6

weeks detects half of those who have ULD at 1 year (PPV 31%, NPV 87%).

Despite our protocol, 17% of patients have ULD that persists at 12 months. 31% patients do not have face-to-face instruction but this did not correlate with ULD.

Conclusion: Despite pre-operative face-to-face advice and exercise leaflets, breast cancer treatment causes post operative morbidity at 1 year in 1 in 5 women. The DASH questionnaire can be utilised to select patients at long term risk of morbidity for more intense intervention. Despite a written policy based on NICE CG80, not all patients appeared to receive timely advice and intervention.

* Including conservation, reconstructive and restorative techniques.

http://dx.doi.org/10.1016/j.ejso.2014.02.199

10. 354 Acellular collagen matrix-augmented implant breast reconstructions in Edinburgh – trends over 5 years

Matthew Barber
Edinburgh Breast Unit, Edinburgh, UK

Introduction: The use of an artificial sling to augment implant-based breast reconstruction has become the standard approach over the last 5 years, largely replacing submuscular expander placement in immediate reconstructions. Trends in practice and outcome in the Edinburgh Breast Unit are presented.

Methods: Patient notes were examined for all procedures using a sling material to augment reconstructive breast surgery by surgeons working at the Edinburgh Breast Unit between July 2008 and November 2013.

Results: 354 sheets of material have been used on 341 breasts in 242 patients by 15 surgeons. There have been substantial changes in material used over time based on cost and ease of handling, largely involving a migration from Permacol to Strattice to Veritas. Loss rates at 3 months were 8.7%, 12% at 6 months, 15.4% at 1 year and 17.7% at 2 years with 2 further reconstructions being lost after 2 years. There is a trend towards improvement in loss rate over time but this is not statistically significant. The loss rate in those who have not received radiotherapy and who do not smoke is substantially lower and remains under 10% in the long term. 24.7% of the patients having this approach to reconstruction are smokers. There has been substantial variation in definitive implant placement at first surgery and nipple preservation.

Conclusions: There is no substantial learning curve in terms of reduced loss rates within 5 years of introducing the technique of sling-assisted implant-based breast reconstruction. Great care should be exercised in patient selection and consent.

http://dx.doi.org/10.1016/j.ejso.2014.02.200

11. Imaging post therapeutic mammaplasty

Katherine Gale, Eleanor Cornford, Douglas Macmillan
Nottingham City Hospital, Nottingham, UK

Background: Bilateral Therapeutic Mammaplasty (BTM) is an effective technique in breast conservation surgery, which combines tumour wide local excision (WLE) with breast reduction. Large adjustments in parenchymal architecture with BTM can potentially alter the imaging appearances of both breasts. This study aimed to evaluate the mammographic appearances after BTM and the frequency of additional imaging and biopsies compared to matched controls of woman who had a WLE only.

Methods: A retrospective analysis and film review was undertaken for 210 cancer patients who underwent BTM or WLE at the Nottingham Breast Institute from Jan 2001 to June 2008. Observations were recorded for both the ipsilateral (cancer) and contralateral breasts and on the operated side for the WLE group.

Results: Mammographic calcification at the post-operative site was present in 45% (47/105) of the ipsilateral BTM group, 9.5% (10/105) of the contralateral BTM group, and 37% (39/105) of the WLE group. In total, further imaging occurred in 51% (54/105) of the BTM group and 40% (42/105) of the WLE group, but the number of individual imaging episodes per patient was similar (1.59 TM vs 1.56 WLE respectively). The biopsy rate was 23% (24/105) for the ipsilateral BTM breast, 10% (10/105) for contralateral BTM breast and 21% (22/105) in the WLE breast.

Conclusions: Therapeutic mammaplasty does not significantly increase the rate of post-operative imaging or intervention when compared to standard WLE.

http://dx.doi.org/10.1016/j.ejso.2014.02.201

12. A multi-centre prospective phase-2 surgical study evaluating health related quality of life after immediate latissimus dorsi (LD) breast reconstruction: duration of effects over 2 years

Zoe Winters[1], Vali Balta[1], Rebecca Llewellyn-Bennett[1], Marcus Galea[2], Penny MacManus[3], Stewart Nicholson[4], Eva Weiler-Mithoff[5], Zenon Rayter[1], Rosemary Greenwood[1]
[1] University of Bristol, Bristol, UK
[2] Western General NHS Foundation Trust Swindon, UK
[3] Hull and East Yorkshire Hospitals NHS Trust, Hull, UK
[4] Newcastle Hospitals NHS Trust, Newcastle, UK
[5] NHS Greater Glasgow and Clyde, Canniesburn, Glasgow, UK

Introduction: International decision-making bodies recommend the integration of Patient Reported Outcome Measures (PROMs) alongside standardised clinical outcomes. Methodology evaluating PROMs after types of breast reconstruction (BRR) has been poor with respect to study design, statistics, missing data and absence of prospective documentation of pre-defined complication data in a systematic review of all studies since 1978[1]. Few studies investigate the clinical meaning and magnitude of HRQL changes following types of immediate latissimus dorsi (LD) BRR (either implant-assisted (LDI) or tissue only autologous (ALD)) in relation to effective covariates such as clinico-pathological factors, graded complications and adjuvant treatments. Previous findings at 12 months, showed persistently impaired role functioning and pain after ALD, with chemotherapy impairing all HRQL domains and no effects of radiotherapy (PMRT)[2]. This study aimed at examining longitudinal changes annually in each HRQL domain of a general cancer and breast cancer specific PROM and relationships for effective covariates over 36-months.

Methods: An MREC approved multicentre prospective cohort study commenced in 2007. Serial PROMS using the EORTC QLQ-C30, BR-23, FACT-B, BIS and HADS, were completed pre-operatively and at 3, 6, 12, 24 and 36 months after surgery. Demographic and clinical data were compared between the surgical groups. Generalised estimating equations (GEE) were used up to 24 months, with data more sparse beyond this point; follow-up is ongoing. The effect sizes (mean difference divided by the standard deviation) were assessed for all HRQL domains up to 36 months compared to baseline and previously defined variables[2].

Results: A total of 142 patients had data recorded both at baseline and at 24 months (80 ALD, 62 LDI). Patients in the ALD group had a higher BMI (mean 27.6 versus 24.9 in LDI, p=0.0025, effect size 3.04), a higher incidence of neo adjuvant chemotherapy (12.5% versus 1.7% in LDI, p=0.041) and a higher incidence of symptoms as reason for surgery (60% versus 45% in LDI, p=0.047). Invasive tumour size was significantly larger in the ALD group (median 20, IQ range 14-30) than in the LDI group (median 15, IQ range 4.5-20.8) (p=0.0031, effect size 2.99), with significantly higher grade of invasive tumour (83% grades 2 and 3 for ALD, 70 % for LDI) (p=0.029, chi squared test), and a higher incidence of lympho-vascular invasion (41% in ALD versus 21% in LDI, p=0.019).

The effects of explanatory variables on quality of life after 24 months were noticeably weaker than that after 12 months[1]. There were no significant differences between the two types of operation on any aspect of HRQL. PMRT adversely affected social functioning (p=0.010, effect size = 2.6) and arm symptoms (p=0.049, effect size = 1.97). Early complications (<3 months) significantly impaired role functioning (p=0.017,

effect size = 2.39), social functioning (p=0.027, effect size = 2.21), pain (p=0.035, effect size = 2.11) and physical wellbeing (p=0.035, effect size = 2.11). Younger age adversely affected psychosocial functioning with decreased role functioning (p=0.055, effect size= 1.92) and social functioning (p=0.025, effect size= 2.24).

Conclusion: Evaluation of HRQL effects particularly in functional domains (role and social) are important beyond 12 months up to 3 years, particularly following early surgical complications and in younger women. The effects of PMRT may be considered a surrogate for more aggressive tumours affecting social functioning and arm symptoms in the context of improvements in most HRQL domains, notably global QL. Disease-specific PROMS have a complimentary role alongside surgery-specific PROMS and require future analyses in cohort studies.

1. Winters ZE, et al. Annals of Surgery 2010; 252(6): 929-42.
2. Winters ZE, et al. BJS 2013; 100(2): 240-51.

http://dx.doi.org/10.1016/j.ejso.2014.02.202

13. The ongoing requirement of operative procedures following latissimus dorsi reconstruction – are we looking at the tip of an iceberg?

Isabella Dash, Marcus Galea
Great Western Hospital, Swindon, UK

Introduction: Survivorship following breast cancer treatments means that the woman's 'reconstruction journey' often continues long after her cancer treatment has finished. Revision surgery together with increasing numbers of reconstructions means an increased surgical workload long after the primary cancer surgery.

Aim: The aim of this study was to look at the type, frequency and timing of additional surgery in a cohort of breast cancer women having Latissimus Dorsi reconstructions after mastectomy, managed in a single centre and with long follow up.

Methods: The data was from a prospectively maintained database of Latissimus Dorsi (LD) breast reconstructions following mastectomies from 1995 onwards.

Results: Three hundred and seventy women with a median follow up of 8 years (range:1-16yrs) are included. 186 (50%) women underwent a total of 351 further operative procedures. Of these 186 women, 101 (54%) had radiotherapy to their reconstruction and 85 had no radiotherapy; 124 (66%) had an implant assisted reconstruction against 62 (33%) with an autologous LD.

Procedure	No. of Women
Partial Skin Necrosis	13
Soft Tissue Flap Revision	14
Implant Removal	22
Capsulotomy & Implant Exchange	28
Skin Revision	30
Nipple Reconstruction	105

Timing of Further Procedures	Radiotherapy	No Radiotherapy
0-5 years	25%	18%
5-10 years	3%	3%
10 + years	1%	1%

Conclusion: Fifty percent of women having LD reconstruction for breast cancer undergo further operative procedures, usually for cosmesis and frequently related to the 'subflap' prosthesis. Women continue to have revision surgery many years after their initial breast cancer 'treatment'. This workload will continue to increase with more women having reconstructions and improved survivorship. With heightened expectation of good outcomes and early discharge from routine follow up, will this extended cosmetic journey remain funded within the current NHS framework.

http://dx.doi.org/10.1016/j.ejso.2014.02.203

14. Improving team working within a breast MDT: An observational approach

Tasha Gandamihardja[1], Susan McInerney[1], Tayana Soukup[2], Nick Sevdalis[2]
[1] Charing Cross Hospital, Imperial College Healthcare NHS Trust, London, UK
[2] Department of Surgery and Centre for Patient Safety, Imperial College, London, UK

Introduction: Multidisciplinary team (MDT) driven cancer care is a mandatory national healthcare policy in the UK. However, there are very few studies that have looked into how individual team-members work together within a cancer MDT setting. We report a study, which investigated team working within our institution's breast MDT.

Method: A prospective observational study was undertaken between June-November 2013 of the Breast MDT. A clinical observer scored quality of information, presentation and contribution by core members in real time, using a validated tool; MDT-MODe (Metric for the Observation of Decision Making)[1]. Each patient was scored separately (1-5 scales) and aggregated data across all discussed patients were produced. Data was analysed using descriptive and Kruskal-Wallis statistical analysis.

Results: Ten MDT meetings were observed (n=346 patients); 3 meetings were double rated revealing very good reliability of observations (reliability coefficients 0.73-0.93). An average of n=42 cases were discussed per MDT (range 29-51), with 3mins 20secs (range 31secs-9mins) dedicated to each patient. An outcome decision was made in 99% of cases. Breast care nurses scored significantly lower (mean=1.79, SD=0.12) compared to all other team-members in their contribution to discussions. Information on psychosocial aspects (mean=1.69, SD=0.68), co-morbidities (mean=1.36, SD=0.39) and patient's views (mean=1.47, SD=0.34) were also significantly less well represented compared to biomedical information. Moreover, overall quality of information (p=0.002) and discussion (p=0.000) significantly deteriorated over time within meetings, indicating possible meeting fatigue.

Conclusion: The study shows that evaluating an MDT via direct observation is feasible and reliable. There was a consistent level of quality of information coverage and contribution within the MDT, but these could be improved. Data were fed back to the team and interventions for improvement were decided, including having a dedicated chair-person, reducing the length of the MDT, and changing the room layout to increase individual contribution.

References

1. Lamb BW, Wong HW, Vincent C, Green JS, Sevdalis N. Teamwork and team performance in multidisciplinary cancer teams: Development and evaluation of an observational assessment tool. BMJ Quality & Safety 2011;20:849-56.

http://dx.doi.org/10.1016/j.ejso.2014.02.204

15. VTE prophylaxis in breast surgery – What are we doing?

Sophie Helme, Jake Sloane, Jasdeep Gahir, Syeda Gilani, Serena Ledwidge, Andrew Baildam, Jennifer Hu
St Bartholomew's Hospital, London, UK

Introduction: In breast surgery there is a balance of risk between venous thromboembolism (VTE) and post-operative haematoma.

The NICE guidelines (2010) state that all cancer surgery patients should be given mechanical and pharmacological prophylaxis unless contraindicated.

More recently published International Clinical Practice guidelines (2012) recommend pharmacological prophylaxis for cancer surgery patients to be given 2-12 hours preoperatively and continued for 7-10 days.

In the absence of national guidelines specific to breast surgery we sought to ascertain what current practice is within the UK.

Methods: A web based survey was sent to surgeons within the 199 Breast Units in the UK.

Results: Responses were received from 67 surgeons.

33% give LMWH to day-case patients and 72% to patients staying overnight.

27% use it for high risk patients only.

Pre-operative LMWH is given routinely in 11%, and in high risk patients in 33%. Only 3% give LMWH post discharge.

The type of surgery influences whether patients receive LMWH – over 90% for complex reconstructive cases and 50% for wide local excisions.

67% of units use Local Trust Policy Guidelines for general or breast surgery and 33% are guided by individual surgeon preference.

Conclusion: There is a wide variation in practice for use of VTE prophylaxis within UK Breast Units. In over 1/3 of units, there are no local or national protocols followed. We suggest a need for national guidelines specific to breast surgery to help guide best practice.

http://dx.doi.org/10.1016/j.ejso.2014.02.205

16. Is open diagnostic excision biopsy for B3 lesions redundant?

Caroline Strachan, Abeer Shaaban, Nisha Sharma, Kieran Horgan
St James University Hospital, Leeds, UK

Introduction: B3 lesions are defined by their indeterminate nature. Uncertain radiological appearance prompts core biopsy and subsequent B3 pathology traditionally prompts surgical excision due to malignant potential.

Vacuum assisted biopsy (VAB) represents a directional change for diagnosis and management of B3 lesions. Offering larger volume sampling allows more representative pathology and diagnostic confidence.

Methodology: Our Unit implemented a pathway of second line VAB, following an initial B3 core biopsy for a screened population. We present the 5 year results from analysis of our database.

Results: 366 patients with B3 core pathology were identified, of which 294 had 2nd line VAB. VAB allowed 219 to be discharged to mammographic follow up: either routine screening or 5 year annual mammography. No cancers were subsequently detected in this group.

Following VAB, 73 patients had surgery. 42 patients had therapeutic surgery, as VAB showed malignancy. In 33 cases, diagnosis remained indeterminate and diagnostic excision was required. 5 of these were malignant.

6 Patients with a VAB diagnosis of in-situ, showed invasive carcinoma on final excisional histology. No patients had downgrading of their pathology following surgery.

Conclusion: VAB has revolutionised B3 management, with 88.7% avoiding unnecessary diagnostic surgery.

The role of surgery in B3 lesions has evolved, from a 'gold standard' diagnostic procedure to definitive therapeutic intervention, following accurate pathological staging through VAB for the majority.

http://dx.doi.org/10.1016/j.ejso.2014.02.206

Session 11 – Nursing Submitted Papers, Monday 19th May 2014, 16:30 to 18:00

17. "Moving On" an education programme for people who have completed breast cancer treatment

Ruth O'Connor, Jane Watts, Pauline Boardman
Frimley Park Hospital, Surrey, UK

In 2009 the breast unit committed to Breakthrough Breast Cancers Service Pledge, which emphasises the need for support on completion of breast cancer treatment. After looking into education programmes already available for people after cancer, we could see there was nothing nearby for those who'd had breast cancer. These people often have specific queries about their health post treatment.

We responded by designing a Moving on programme and in Autumn 2011 we began three pilot programmes; one each in the morning, afternoon and evening, to cater for people who were working or had childcare commitments. We found a church hall venue and hoped that holding the sessions away from the hospital, where there was easy and free parking, would increase attendance.

We invited people who had completed treatment for primary breast cancer, excluding Herceptin. We asked them to commit to attend all six sessions. For the three pilot courses, 100 invitations were sent out, 52 people responded and 40 attended. Only one person dropped out. The courses were run by the breast care nurses and the hospital's clinical psychologist. We recruited speakers from the hospital and our local cancer centre at no cost, to cover diet, exercise, finance, health and wellbeing, surgery, oncology and lingerie.

To monitor the course's effectiveness we asked the participants to complete two questionnaires before and after: the Quality of life Scale (QoLS) and the General Health Questionnaire (GHQ). The GHQ scores showed significant improvement and the QoLS remained stable. When we evaluated the course, all attendees said they'd recommend it to a friend.

We are now running the course three times a year, alternating between day and evening sessions. The course maintains a core of topics and speakers, but is adapted to suit the attendees each time. Each course is evaluated to ensure content is up to date. We have come to the end of our sixth group and have three more booked for 2014. So far 84 people have completed the programme and the most recent course had a waiting list.

From the programme a choir for breast cancer patients has started and a secondary breast care support group has been formed. The programme benefits patients, but it also educates healthcare professionals. We too easily assume that once people complete treatment they're on the road to recovery. But it can take a long time to recover enough to return to work and family life.

http://dx.doi.org/10.1016/j.ejso.2014.02.207

18. The breast care nurse role in the management of breast cancer in a young woman with diminished mental capacity – An example of collaborative working

Claire Moody, Jan Harley, Alice Townend
North Tees NHS Foundation Trust, Teesside, UK

Introduction: This is the case of L, a 45 year old female with learning difficulties who presented to the one stop breast clinic with suspected breast cancer and refused to have mammography or biopsy. The dilemma here was

how to proceed to treat this patient without preoperative histological diagnosis and how to manage her sensitively taking into account her needs.

Methods: A best interest meeting was held with L's parents and the professionals involved in her care in both hospital and community. The consensus was to proceed with definitive surgery based on clinical examination and ultrasound diagnosis as L refused to have mammogram or biopsy. L's parents also confirmed that she would not be able to undergo radiotherapy. This therefore ruled out breast conservation, yet proceeding to mastectomy without histological confirmation would be unethical. Following MDT discussion the pathology department agreed to frozen section with definitive surgery depending on the results. Essential safeguarding advice was sought and appropriate documentation completed by all relevant parties. Communication with L was in simple terms with illustration.

Results: L was accompanied to theatre by the breast care nurse and her carer. Frozen section confirmed a node positive carcinoma and mastectomy and axillary clearance was performed with no drains. The breast care nurse arranged a private room for L and her Mum to stay overnight. Formal histology confirmed the initial findings. L made a good recovery and accepted her breast loss without any concerns.

Conclusions: This demonstrates that working collaboratively with all parties involved in the care of patients with reduced mental capacity leads to a more positive experience for the patient and nursing satisfaction with the care given.

http://dx.doi.org/10.1016/j.ejso.2014.02.208

19. Setting up a nurse-led seroma service: Our experience

Vanessa Hewick, Claire Hall, Steven Goh
Breast Unit, Peterborough City Hospital, UK

Introduction: We described our experience in developing a breast care nurse (BCN) - led seroma clinic. We hope this will inform others of the processes required to set up this service.

Method: An initial scoping exercise was undertaken to learn from similar services within the region. The next step involved creating a unit guideline which included training requirements, consent, selection criteria and documentation proforma. The guideline was endorsed and published on the Trust intranet after multiple scrutinies by the Governance Committee and the Nursing & Midwifery Advisory Group. BCNs were required to undergo a period of programmed training which consisted of anatomical and theoretical knowledge, observing at least 10 procedures, and performing 20 supervised interventions which included obtaining informed consent. Each BCN kept a caseload and procedural logbook. Competency was assessed by consultants and once achieved, BCNs started to practice independently. The whole process took six months.

Results: Our weekly seroma clinic has been running for 3 months since its conception. Thirty nine patients have been reviewed (average 3.25 patients per clinic). The average volume of seroma aspirated was 181mls [70-700]. Three cases required a consultant input but there have been no reported complications.

Conclusion: The setting up of any new clinical services can be bureaucratic and time consuming but this nurse-led seroma service has allowed professional development of BCNs and afforded an increased capacity in our consultant clinics. It has also provided flexibility and continuity of care to our patients. The service will be audited within the next six months.

http://dx.doi.org/10.1016/j.ejso.2014.02.209

Session 12 – Submitted Papers, Monday 19th May 2014, 16:30 to 18:00

20. The impact of the NICE guidelines on the use of oncotype DX for guiding adjuvant chemotherapy decisions in breast cancer patients

Reena Shah, Jonathan Horsnell, Ben Boxall, James Bristol, Fiona Court
Cheltenham General Hospital, Gloucestershire Hospitals NHS Foundation Trust, Cheltenham, UK

Introduction: NICE has recommended the use of Oncotype DX® (Genomic Health) to help guide adjuvant chemotherapy decisions in patients with ER+, HER2- and lymph node negative (LN-) breast cancer of intermediate risk of distant recurrence (defined by a Nottingham prognostic indicator (NPI) score of >3.4). This study aimed to evaluate the local implications of this guidance.

Methods: Electronic cancer registry records were used to identify new cases of breast cancer diagnosed between August 2012 and August 2013 within our trust. Final histological data was collected for all patients. NPI scores were calculated for all ER+, HER2-, LN- patients. Predict and Adjuvant online tools were used to calculate the estimated benefit of adjuvant chemotherapy.

Results: 528 patients with a new diagnosis of invasive breast cancer were identified. 70% (367/528) had surgery as their primary treatment. Within the surgical group 54% (197/367) were ER+, HER2- and LN-. 23 of these had a NPI of greater than 3.4. Within this group 53% (12/23) received adjuvant chemotherapy. Differences in age (p=0.24), tumour size (p=0.39), NPI (p=0.88), or 10 year overall survival benefit of chemotherapy as predicted by adjuvant online (mean 7.4% v. 6.4%, p=0.242) or Predict (7.2% v. 6.1%, p=0.1116) were not statistically significant between those who had, or had not received, adjuvant chemotherapy thus highlighting the difficulties of guiding patient choice in this group.

Conclusion: Based on current guidance Oncotype DX® would be used in a small percentage of patients. Ongoing audit will document its impact in this group of patients where decision making is difficult.

http://dx.doi.org/10.1016/j.ejso.2014.02.210

21. Experience with the oncotype DX Assay in a UK centre

Nigel Bundred[1], Anne Armstrong[2], Sacha Howell[2], Andrew Wardley[2], Gavin Wilson[1], Juliette Loncaster[2], Richard Welch[2], Jane Ooi[3], Abbas Chittalia[2], Lester Barr[1]
[1] University Hospital of South Manchester NHS Foundation Trust, Wythenshawe, Manchester, UK
[2] The Christie NHS Foundation Trust, Manchester, UK
[3] Bolton Hospital NHS Foundation Trust, Bolton, UK

Introduction: The 21-gene Recurrence Score (RS) assay (Oncotype DX, Genomic Health) has been validated to quantify distant recurrence risk and predict chemotherapy benefit in patients with ER+ Her2- breast cancer (BC). The results of the first patients studied with the Oncotype DX assay in Greater Manchester are reported.

Methods: Patients with early ER+ Her2- BC who had completed breast surgery and an Adjuvant!Online/ PREDICT survival benefit from chemotherapy were offered the Oncotype DX assay to aid decision making. Pre-menopausal women were required to be node negative but post-menopausal women could be node positive. All eligible patients would have undergone chemotherapy without the Oncotype DX result.

Results: Eighty women underwent Oncotype DX testing with an intermediate risk of 4-39 RS and a mean benefit of 16.8. Following the Oncotype DX assay only 27 of the 80 patients (34%) went on to receive chemotherapy. Only 3 of 35 patients with a RS of <18 received chemotherapy. All patients with a RS of >25 received chemotherapy. Out of 6 patients with micrometastases, 5 had a low RS <18.

A further 21 patients had Oncotype DX for a 2-3% chemotherapy benefit. Four out of 21 (19%) subsequently received chemotherapy because they had a high RS.

No relationship was found between the RS and Ki67 or the Adjuvant! Prediction, indicating that the RS is providing additional predictive information not derived from current pathological parameters.

Conclusion: Oncotype DX testing with minimum thresholds for its use reduces adjuvant chemotherapy use by 66%, as indicated by NICE.

http://dx.doi.org/10.1016/j.ejso.2014.02.211

22. Invasive breast cancer after a diagnosis of ductal carcinoma in situ: does mode of presentation influence recurrence risk?

Shan Cheung[1], Mary Booth[3], David Dodwell[2]
[1] West Midlands PHE, Birmingham, UK
[2] St James Hospital, Leeds, UK
[3] University of Leeds, Leeds, UK

Introduction: DCIS is treated surgically either by mastectomy or wide local excision (WLE) with or without breast radiotherapy to prevent recurrence or progression into invasive breast carcinoma. The aim of this study was to evaluate the risk of invasive recurrence following surgical treatment of DCIS and to study factors, which may predict recurrence. We specifically evaluated the risk of ipsilateral and contralateral invasive recurrence with respect to the mode of detection - screen-detected (SD) and non screen-detected (NSD).

Methods: This study includes 3,930 patients who were diagnosed with DCIS in the West Midlands between January 1988 and March 2008. Demographic and pathological information and treatment details for the non-invasive cancer and the most recent subsequent invasive cancer were obtained from the cancer registry records. Cumulative incidence and Cox proportional hazard on competing risks were carried out using R statistical software.

Results: The average annual incidence of ipsilateral invasive cancers after DCIS is 0.53%. Patients whose DCIS is treated with mastectomy have a significantly lower risk of developing subsequent ipsilateral recurrence than those treated with BCS (p-value<0.0001). Non-screen detected DCIS cases have a higher risk of subsequent ipsilateral recurrence than screen-detected DCIS in patients treated with BCS with radiotherapy, BCS without radiotherapy and mastectomy. These differences are not seen in the analysis of contralateral recurrence. Multivariate analysis suggests that mastectomy and radiotherapy reduced the risk of ipsilateral recurrence for NSD patients after adjusting for age, year of diagnosis and tumour grade. For SD patients, being diagnosed in recent years, having lower grade cancer, aged 50-59, having mastectomy and having radiotherapy can reduce the risk of ipsilateral recurrence.

Conclusions: The risk of invasive recurrence after treatment for DCIS is low. This study suggests that patients with screen detected DCIS have a lower risk of invasive recurrence than those presenting outside the screening programme, although a limitation of our study is a lack of information on tumour size. This observation requires confirmation in other datasets.

http://dx.doi.org/10.1016/j.ejso.2014.02.212

23. Inclusion of KI67 significantly improves performance of the predict prognostication and prediction model for early breast cancer

Gordon Wishart[1], Emad Rakha[2], Andrew Green[2], Ian Ellis[2], Paul Pharoah[3]
[1] Anglia Ruskin University, Cambridge, UK
[2] University of Nottingham, Nottingham, UK
[3] University of Cambridge, Cambridge, UK

Introduction: Predict (www.predict.nhs.uk) is a prognostication and treatment benefit tool for early breast cancer (EBC). The aim of this study was to incorporate the prognostic effect of KI67 status in a new version (V3) and compare performance with the Predict model that includes HER2 status (V2).

Method: ER+ tumours that express KI67 are associated with a 30 per cent poorer relative survival. KI67 positivity for PREDICT is defined as >10% of tumour cells staining positive. The validation study was based on 1,726 patients (ER-, n=452; ER+, n=1274) with invasive breast cancer treated in Nottingham between 1989 and 1998. ROC curves were constructed for Predict models with (v3) and without (v2) Ki-67 input. Comparison was made using the method of DeLong.

Results: In 1274 ER+ patients, addition of KI67 improved both calibration and discrimination of Predict. In ER+ patients the predicted number of events at 10 years increased from 196 for v2 to 204 for v3 compared to 221 observed. Discrimination as estimated from the area under the ROC (AUROC) curve improved from 0.7611 to 0.7676 (p=0.005). When all 1726 patients (ER+ and ER-) were analysed, the addition of KI67 to the Predict model significantly improved the AUROC from 0.7546 to 0.7595 (p=0.0008).

Conclusion: Addition of KI67 to the Predict model has led to a statistically significant improvement in function of the Predict model for ER+ patients (p=0.005). Further studies should determine whether any gene profile tests provide additional prognostic information to that provided by Predict in ER+ patients with EBC.

http://dx.doi.org/10.1016/j.ejso.2014.02.213

24. The reduction of secondary axillary procedure after the introduction of OSNA

Uma Sridharan, Susan Hignett, Mandana Pennick, Anne Tansley, Geraldine Mitchell, Christopher Holcombe
The Royal Liverpool University Hospital, Liverpool, UK

Aim: OSNA was introduced to the Breast Unit in November 2012 to improve and optimise patient care. Our aim was to assess the impact of OSNA in reducing the need for a second axillary procedure.

Method: All consecutive patients were informed & consented for OSNA aware that our management of their axilla would be dependent upon the result. Data were collected prospectively from the hospital electronic system.

Results:

Table 1
Results of OSNA

	OSNA Nov 2012 – Oct. 2013 266 patients
Number of patients	266
Mean Age (range)	61 (27-89)
Mastectomy	88
WLE	175
SLNB prior to Neoadjuvant treatment	3
Positive sentinel node n (%)	119 (45%)
Micrometastasis n(%)	80 (30%)
Macrometastasis n(%)	39 (14.7%)

Table 2
Axillary Management for Positive Sentinel Nodes

	Number of patients	No Axillary Clearance	Axillary Clearance	Further involved nodes
Micro metastasis	80	46 (58%)	32 (40%) & 2 ANS	1
1 LN	69	43	24	1 micro
2 LN	10	3	7	
3 LN	1	0	1	
Macrometastatsis	39	1	38 (97%)	18 (46%)
1 LN	14	1	13	3 (21%)
2 LN	14	0	14	10 (71%)
3+ LN	4	0	4	4 (100%)
Micro − Macro mets	7	0	7	1 micro

Conclusions:

- A second axillary procedure was avoided in 97% of patients with macrometastasis detected by OSNA
- Axillary clearance for micrometastasis is overtreatment
- Two or more macrometastasis certainly justify performing an axillary clearance
- Need long term follow up of all patients with micrometastasis not undergoing axillary clearance

http://dx.doi.org/10.1016/j.ejso.2014.02.214

25. Overcoming ageism bias in the treatment of breast cancer: standard and non-standard strategies in the elderly

Asad Parvaiz, Deepak Selvakumar, Rahul Chotai, Christopher Davies, Brian Isgar
New Cross Hospital, Wolverhampton, UK

Background: About 30% of all breast cancers occur in women aged over 70. The primary challenge of caring for older cancer patients is providing treatment options that maximize long-term survival while accounting for comorbidities, life expectancy, and effects of treatment.

Methods: All breast cancer patients aged over 70 in the last five years were included. Preoperative fitness assessment segregated patients into two groups.

Results: See Table 1.

Reasons for inclusion in group B included medically unfit (50), mental health issues (3), patients choice (14) and unknown (6).

Conclusion: Patients in group A were relatively younger, healthier, had a significantly longer survival and longer time to death. Mortality was significantly higher in group B. With appropriate selection of patients into standard and non-standard treatment groups, elderly breast cancer patients can be treated to maximize long-term survival. These favourable clinical findings should help clinicians counter highly prevalent 'ageism' bias in the breast cancer treatment.

http://dx.doi.org/10.1016/j.ejso.2014.02.215

26. The effect of the timing of radiotherapy on clinical and patient reported outcomes after breast reconstruction: a 10 year study

Lashan Peiris, Siobhan Laws, Nicola Dawson, Dick Rainsbury
Hampshire Hospitals NHS Foundation Trust, Winchester, UK

Background: It is widely accepted that radiotherapy (RT) adversely affects the reconstructed breast, but there is little data on the timing of RT on the clinical and patient-reported outcomes (PROMs) in women undergoing expander-assisted Latissimus Dorsi (ELD) or autologous (ALD) breast reconstruction (BR).

Methods: A 10 year retrospective analysis of all BRs performed by our unit was carried out (follow up 56 [14-134] months), identifying control (no RT) and treatment (RT) groups. Patients undergoing ELD BR and RT were divided into 3 groups according to RT timing. Gp1: mastectomy (MX), immediate BR (IBR) then RT. Gp2: RT then MX and IBR. Gp3: MX, RT then delayed BR (DBR). Patients following ALD BR and RT, and control patients comprised Gp4 and Gp5, respectively. Early and late complications requiring unplanned intervention were recorded. PROMs 'Breast Q' questionnaires were circulated covering physical, emotional and sexual well-being, breast symptoms and functional problems.

Results: 118 of 313 patients undergoing 389 BRs received RT (65 ELD, 28 ALD, 27 other BR). Both use and timing of RT influenced clinical outcomes. All complications Gp1+2+3 *v* controls, 44% *v* 18%, p=0.003, Gp1 *v* Gp2+3, 63% *v* 27%, p=0.008. Late complications Gp1+2+3 v ALD+RT, 32% *v* 16%, p=0.0001. Delaying BR until after MX and RT reduced complications to levels observed in control patients: Gp3 v Gp4, 20% *v* 18%, p=1.0. 'Breast Q' scores were similar for emotional well-being (RT *v* no RT, 42.5 *v* 42.8, p= 1.0), satisfaction with breast appearance (82% *v* 85%, p=1.0), breast symptoms (25% *v* 7%, p=0.2) and shoulder symptoms (35% *v* 38%, p=1.0).

Table 1

Total	Group A (Standard treatment)	Group B (Non-standard treatment)	p value
n = 262	192 (73%)	70 (27%)	
Age range (median) 70-97 (79)	70-95 (78)	71-97 (84)	< 0.0001
Surgery	192 surgery under general anaesthesia (69 mastectomies, 123 wide local excisions)	12 Wide local excision under local anaesthesia	
Adjuvant treatment	14 chemotherapy 146 radiotherapy 161 hormone treatment 7 trastuzumab (Herceptin)	60 primary endocrine treatment 6 palliative radiotherapy	
Surviving patients n = 215 (82%)	173 (90%)	42 (60%)	< 0.0001
Mortality n = 47 (18%)	19 (10%)	28 (40%)	< 0.0001
Follow-up Range 0-59 months (median 30)	0-59 (29)	4-58 (32)	
Time to death 0-58 (20) months	3-58 (24)	0-47 (19.5)	< 0.0001

Conclusion: The timing and type of LD BR chosen by patients receiving RT has a significant impact on the risk of subsequent complications and unplanned interventions, but longer-term patient experience and quality of life appears to be unaffected by RT-associated complications.

http://dx.doi.org/10.1016/j.ejso.2014.02.216

27. Stromal (fibroblast) upregulation of the Tissue Factor-thrombin pathway occurs in breast cancer at the pre-invasive stage

Hudhaifah Shaker[1], Nigel J. Bundred[1], Harith Albadry[2], Sarah L. Nicholson[2], Susan Pritchard[2], Goran Landberg[3], Cliona C. Kirwan[1]

[1] The University of Manchester, Manchester Academic Health Science Centre, Department of Academic Surgery, University Hospital of South Manchester, Manchester, UK

[2] Department of Histopathology, University Hospital of South Manchester, Manchester, UK

[3] Breakthrough Breast Cancer Unit, Paterson Institute for Cancer Research, Manchester, UK

Background: We have recently shown that stromal fibroblast expression of thrombin (extrinsic) clotting pathway factors Tissue Factor (TF) and thrombin, and their receptors PAR1 and PAR2 are increased in breast cancer, and particularly in ER negative, HER2 positive, high Ki67 and high grade cancers. Stromal gene expression signatures in DCIS correlate with invasive signatures. We hypothesised that stromal thrombin pathway activation occurs in DCIS as a precursor to invasion.

Methods: Stromal (fibroblast) and epithelial expression of TF, thrombin, PAR1 and PAR2 was determined by immunohistochemistry in early invasive breast cancer (n=182), ductal carcinoma in situ (DCIS, n=45) and normal breast tissue samples (n=93).

Results:

Fibroblast expression: In DCIS, TF ($p<0.01$), thrombin ($p<0.01$), PAR 1 ($p<0.001$) and PAR2 ($P<0.001$) expression was increased compared to normal breast tissue. In invasive breast cancer, TF ($p<0.01$) and thrombin ($p<0.01$) were increased compared to DCIS. PAR1 and PAR2 were increased in cancer compared to normal breast tissue ($p<0.001$, both) but not in cancer compared to DCIS.

Epithelial expression: There was no difference in expression of TF, thrombin, PAR1or PAR2 between DCIS and normal breast tissue, however epithelial expression of Thrombin ($p<0.01$) and its receptor PAR1 ($p=0.03$) were increased in cancer compared to DCIS and normal breast tissue.

Conclusion: Fibroblast stromal expression of the thrombin/ PAR1 and TF/ PAR2 axes are upregulated in invasive cancer and DCIS compared to normal tissue. Stromal upregulation of the thrombin pathway occurs in in-situ cancer, implying cancer-stromal communication at the pre-invasive stage. Stromal thrombin pathway components may represent an avenue for the understanding the transition of pre-invasive to invasive cancer as well as novel targets for the treatment of breast cancer.

http://dx.doi.org/10.1016/j.ejso.2014.02.217