

## BREAST SURGERY

### BS001

#### MOLECULAR BASIS OF TARGETED CANCER THERAPY

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The careful dissection of the molecular mechanisms of cancer provides a rational basis for designer drugs that is already delivering dramatic clinical benefits. Those most successful so far in the clinic are inhibitors of the receptor tyrosine kinase (RTK) group of growth factor receptors and their downstream signalling molecules, like BRAF and mTOR. These include monoclonal antibodies, like trastuzumab and cetuximab, and small molecules, like imatinib, gefitinib, erlotinib, lapatinib and sorafenib. 'Cross-talk' between the RTK signalling pathways and the oestrogen receptor signalling pathway provides a rational basis for overcoming resistance to hormone therapy. RTK ligands, like Vascular Endothelial Growth Factor (VEGF) have also been effectively targeted with drugs like bevacizumab. Other clinically relevant molecular targets include farnesyltransferases, cyclin-dependent kinases, proteasomes, histone deacetylases, and transcription factors. Clinical trials of new monoclonal antibodies to T cell surface molecules like CTLA4, (ticilimumab, ipilimumab), offer new hope of profoundly enhancing anti-tumour immunity in cancer therapy. The regulation of apoptotic pathways provides clinically useful targets for therapeutic manipulation, exemplified by the use of drugs like oblimersen that inhibit the bcl-2 family of apoptosis inhibitor proteins. The standard testing ground of heavily pre-treated patients may be inappropriate for these new drugs. Short-term testing in the neoadjuvant setting has many advantages, using biomarker responses to select active agents for more extensive clinical trial.

### BS002

#### PLANNING SURGERY AFTER NEOADJUVANT THERAPY

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Randomized trials have demonstrated that the use of chemotherapy prior to surgery increases the rate of breast conserving therapy (BCT). Patients unlikely to benefit from this approach include those with multicentric carcinoma or EIC. Patients with high grade, ER negative, and ductal rather than lobular tumors are most likely to respond to neoadjuvant chemotherapy. In studies of preoperative chemotherapy, the absolute difference in the rate of BCT is only about 10%, but increases to 25% if only patients who would have required mastectomy if surgery were performed initially are considered. Determining the appropriate extent of resection after preoperative therapy remains a challenge. A meta-analysis of trials of neoadjuvant versus adjuvant therapy reported a relative risk of locoregional recurrence of 1.22 after neoadjuvant treatment. Since a smaller volume of tissue than was originally occupied by the tumor is resected after neoadjuvant therapy, margin status must be considered in a different way than after primary surgery. If diffuse, viable tumor is present throughout the lumpectomy specimen, even if the margins are negative, consideration should be given to resecting additional breast tissue. Lumpectomy after chemotherapy should include 1) sampling of any clinical or radiographic abnormalities, 2) a generous sampling of normal breast tissue in the area formerly occupied by the tumor, 3) consideration of both margin status and extent of viable residual tumor and its growth pattern to determine the adequacy of resection. In the patient who is clinically node negative at presentation, sentinel node biopsy after neoadjuvant therapy accurately predicts nodal status.

### BS003

#### RACS NATIONAL BREAST CANCER AUDIT UPDATE

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**Background** At its inception the National Breast Cancer Audit (NBCA) was designed as an information tool for breast surgeons who wished to self

audit. However, it was recognised that self audit was not an adequate means of ensuring high quality breast cancer surgery. The focus of the NBCA subsequently changed to become a full clinical audit where data is collected and surgical practice is assessed against pre-defined standards.

**Methods** Substantial progress has been made towards developing and implementing a full clinical audit. The online data entry system was launched in May 2004. Standards for the surgical treatment of breast cancer in Australia have been developed and a process for evaluating and reporting surgeons' results was ratified by RACS Council and endorsed by members of the RACS Breast Section.

**Results** Following the adoption of a Web-based system of data entry in May 2004, the number of breast cancer episodes has risen from 17 500 to over 36 000. A new web-based system will be introduced in 2006 that will enable surgeons to assess their results compared with the quality thresholds for the 5 key performance indicators. The data will also be interrogated for issues relating to the management of breast cancer in young women, the elderly and re-excision rates after breast-conserving surgery for invasive/In-situ breast cancer.

**Conclusion** It is anticipated that the full-audit cycle will be implemented within the next few years. The success of this process requires the support of all participating surgeons and the RACS.

### BS004

#### BREAST SURGEONS NSW – FOCUSING ON CLINICAL TRIALS AND FACILITATING PARTICIPATION BY SURGEONS

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Breast Surgeons NSW is a newly established collaborative group of breast surgeons working across metropolitan and regional NSW in public and private hospitals. The group is involved in primary surgical management of approximately 2000 breast cancer patients each year i.e. approximately 50% of the state's workload. Membership is open to any breast surgeon.

The main aims of the group are to

1. Increase the standards of breast surgery across NSW and improve QA working within the framework established by the RACS Breast Section
2. Facilitate awareness and participation in surgical clinical trials
3. Increase levels of communication throughout a broader breast surgeon community and provide a greater emphasis on adjuvant trial participation by the multidisciplinary teams members work within
4. Be involved in a dossier of 'worthy trials' as judged by members of the group. This judgment would be in cooperation with established groups such as the Cancer Institute of NSW, Cancer Trials NSW and ANZBCTG.
5. Monitor the participation levels within the trial dossier
6. Develop and facilitate local research protocols
7. Development a common core data set
8. Provide appropriate access to this common data set for members wishing to investigate approved projects
9. Encourage and facilitate all members to achieve audit and QA requirements
10. Provide an education function in CME for members and trainees
11. Provide a mechanism and infrastructure for distributing resources more equitably amongst members of the group

Progress and barriers to development of this group will be discussed.

### BS005

#### ONCOLOGIC ISSUES IN MASTECTOMY WITH RECONSTRUCTION

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Skin sparing mastectomy (SSM) has become the standard approach for patients undergoing immediate reconstruction. Contraindications to its use include inflammatory cancer S/P chemotherapy, skin involvement by tumor, or inability to obtain adequate exposure. Retrospective studies of SSM show no increase in the rates of local recurrence (LR) or the time to LR compared to conventional mastectomy. Reconstruction does not interfere with the detection of LR since the majority of recurrences occur in the skin or the scar. Adequate exposure through skin incision and intraoperative examination

of the gross specimen will minimize the risk of positive margins and the need for post-op RT. Studies of preservation of the nipple areolar complex in patients with peripheral tumors and no EIC, selected with intra-op frozen sections, show low rates of recurrence in the preserved nipple areolar complex, but further data is needed before this can be considered standard practice. In the patient with a high likelihood of needing post-op RT, approaches to reconstruction include 1) delay until after RT, 2) flap reconstruction and acceptance of cosmetic changes from RT, and 3) initial placement of a tissue expander, RT, and conversion to flap if cosmesis is unsatisfactory.

#### BS006

##### THE CHALLENGE OF RECONSTRUCTION IN THE RURAL SETTING: EXPERIENCE WITH IMMEDIATE RECONSTRUCTION

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**Aim** Oncoplastic surgery of the breast is a growing subspecialty in Australia and around the world. This paper aims to demonstrate these techniques can be successfully applied in a regional setting without a resident plastic surgeon.

**Methods** A retrospective review was undertaken and a satisfaction rating was obtained from the reconstruction patients via an independent phone interview.

**Results** 404 breast cancers were treated over 5 years. 162 (40 %) had mastectomies. 18 (11.1%) of these had a reconstructive procedure. 9 had immediate reconstructions after skin sparing mastectomies using the latissimus dorsi flap with or without an implant. 9 had skin sparing mastectomies with immediate implant reconstruction. 17 additional patients had an extended breast conserving procedure. 9 had latissimus dorsi mini-flap reconstructions. 8 had breast reduction assisted breast conserving surgery (BCS). Mini-flap or breast reduction assisted BCS were favoured if the patient was likely to need radiotherapy.

Patient satisfaction rating was high. One patient experienced an infected implant. One had a minor area of flap necrosis, which required debridement.

**Conclusion** Oncoplastic techniques are well established overseas and now mainstream in the U.K. Increasingly surgeons are adopting them in Australasia. The experience in Wagga has shown that these techniques can be applied successfully in a regional setting without the need for a resident plastic surgeon. These techniques offer patients a wider range of options than traditionally offered to patients whether in an urban or regional centre.

#### BS007

##### EVALUATING NEW TECHNOLOGIES AND THERAPIES FOR BREAST SURGERY, MRI AND NON-SURGICAL ABLATION

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New technologies should be proven to be safe, effective and less morbid than existing technology prior to their widespread adoption. The routine use of MRI for selection of local therapy has been suggested based on its ability to identify additional cancer not found by physical exam or mammography in 25–50% of patients. This finding is difficult to reconcile with reports that local failure at 10 years after breast conservation occurs in fewer than 5% of women selected with routine imaging. Pathologic studies using serial sub-gross sectioning demonstrate additional disease beyond the primary tumor in 50–60% of cases, with a distribution very similar to what is seen on MRI. Experience has proven that the majority of this disease is controlled with radiotherapy. Prior to adopting MRI for patient selection, proof of clinical benefit is necessary to avoid unnecessary mastectomy. Non surgical ablation attempts to replace a low morbidity surgical procedure with proven outcome with one in which cancer outcomes will not improve, multiple expensive imaging studies are needed to determine if viable tumor remains, and cosmetic benefits are unclear. Studies using a variety of ablation techniques have demonstrated complete tumor kill in 8%–100% of cases, with poor results in tumors larger than 1.5 cm and in DCIS. The wisdom of destroying tumor tissue in the era of molecular profiling is unclear. Data is needed to address local control. Cosmetic outcome, cost effectiveness and patient satisfaction with the loss of certainty of tumor removal.

#### BS008

##### BREAST CANCER IN YOUNGER WOMEN: SPINNING AROUND

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The National Breast Cancer Centre has recently reviewed the evidence surrounding the management of breast cancer in younger women (2003). This includes women under 40, premenopausal, and either with young children or with childbearing concerns. The diagnosis of breast cancer in performer Kylie Minogue at the age of 36 highlights many of the relevant issues, which will be explored in this session:

- Poorer prognosis
- Delayed detection and difficulties in screening
- Differences in tumour biology
- Options for endocrine therapy, which include current clinical trials (SOFT/TEXT/Perche)
- Side effects of therapy, including premature menopause, with acute and long term consequences
- Greater incidence of distress and poorer psychosocial outcomes
- Fertility and pregnancy concerns
- Genetic predisposition
- Impact on partners and sexual functioning
- Impact on children and difficulties in communication
- Greater information needs and differences in information seeking behaviour

#### BS009

##### KCONFAB AND THE SURGEON

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The Kathleen Cuninghame Foundation Consortium for Research into Familial Breast Cancer ('kConFab') is a unique multidisciplinary collaborative with the purpose of enrolling families with a strong history of breast or ovarian cancer into a de-identified central relational database. Biological samples and comprehensive genetic, epidemiological, clinical and psychosocial data is collected by more than 120 breast cancer geneticists, clinicians, surgeons, genetic counsellors, psychosocial researchers, pathologists and epidemiologists in 44 institutions across Australasia. kConFab also searches for and characterizes inherited mutations in genes from blood, cancer tissue and other biological specimens collected and banked from members of these families. This immensely valuable collection of data and biospecimens is made available to researchers for use in peer-reviewed, ethically-approved funded research projects. Achievements to date (January 2006) include 979 completed families, 8714 individuals for whom a blood specimen is available for analysis (with an average of 8.9 bloods stored per family), and the provision of biological specimens and data to more than 40 research projects world-wide. Two things make kConFab unique: the large number of families and individuals who are enrolled in the study and the depth of information available about each of them; and the coordinated efforts of the health professionals involved. Surgeons play a vital role in this internationally-recognised model for how data collection and research can and should be done by recruiting high risk patients and facilitating the collection of fresh tissue specimens.

#### BS010

##### THE USE OF ULTRASOUND IN BREAST PRACTICE

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Ultrasound is an investigative procedure whereby the differential reflection of sound waves is recorded and tissue characteristics determined and imaged. The interpretation of the images while very dynamic and operator dependent can be acquired to a basic level relatively easily.

Its use in breast practice enhances the accuracy of clinical diagnosis, the sensitivity of biopsies and the accuracy of surgical excision.

Ultrasound is usually employed as focussed ultrasound by surgeons whereby a focal area is assessed.

- Aid to clinical examination to determine the pathology or absence thereof at a site of clinical interest.

2. To guide biopsy of a lump and determine that the needle is accurately placed.
  3. To follow the changes or absence thereof in benign lumps or cancer treated with neoadjuvant therapies.
  4. To determine the optimal site of incision for removal of breast lesion.
  5. To delineate the extent of a tumour in the breast at the time of excision.
- Examples and characteristics of these procedures and lesions will be presented.

#### BS011

### A RANDOMISED CLINICAL TRIAL EVALUATING THE ROLE OF PROPHYLACTIC ANTIBIOTICS IN PATIENTS UNDERGOING NON-RECONSTRUCTIVE BREAST SURGERY

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We conducted a single-institution clinical trial, in non-reconstructive breast surgery, evaluating the ability of a single dose of two grams of IV flucloxacillin, to prevent wound infection when compared with no prophylaxis.

The study involved 618 patients who underwent local excision (n = 490), mastectomy (n = 107), and microdochectomy (n = 21). Of these, 312 patients had hookwire insertion; 129 had sentinel node biopsy; and 254 had axillary node clearance. The masked randomisation process was based on random numbers. Patients were monitored for 42 days after surgery by a research nurse. The primary endpoints were the incidence of wound infection (defined as the presence of either pus or a serous discharge containing a pathogen) and wound morbidity (using our previously validated scoring system for breast wounds). The groups were well matched for baseline characteristics and had a similar incidence of wound infection: Flucloxacillin Group 10/311 (3.2%) c.f. Control Group 14/307 (4.6%) –  $X^2 = 0.75$ ,  $P = 0.39$ ; Relative Risk = 0.71 (95% CI = 0.32 – 1.53). The mean time to presentation of wound infections was 16 days. Staphylococci were present in all but one of the 18 positive isolates. The groups also had similar numbers of patients with wound scores >10 points: Flucloxacillin Group 42/311 (13.5%) c.f. Control Group 50/307 (16.3%) –  $X^2 = 0.94$ ,  $P = 0.33$ ; Relative Risk = 0.83 (95% CI = 0.57 – 1.21).

It is concluded that a single-dose of flucloxacillin did not reduce the incidence of wound infection after non-reconstructive breast surgery. It remains to be determined whether specific subgroups of patients at high risk of a wound infection would benefit from antibiotic prophylaxis.

#### BS012

### ACCURACY OF INTRAOPERATIVE SUBAREOLAR FROZEN SECTION IN NIPPLE AREOLAR COMPLEX SPARING MASTECTOMIES

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**Purpose** In patients selected for nipple areolar complex sparing mastectomies (NSM), intraoperative subareolar frozen section (ISFS) is used to assess the nipple areolar complex's (NAC's) suitability for preservation. This study investigated the positive predictive value (PPV), negative predictive value (NPV), sensitivity and specificity of the ISFS as compared to the formal paraffin histopathological results.

**Methodology** In a five year retrospective study, 52 candidates for NSM had ISFS analysed for malignant or atypical duct changes. Candidates were considered for NSM if their primary breast pathology was greater than 3cm from the NAC and not multifocal in nature. ISFS results were compared to formal histopathological results, allowing analysis of its sensitivity, specificity, PPV and NPV. False negatives (ISFS negative, histopathology positive) were further examined to determine why the ISFS was negative.

**Results** Of 52 ISFS, 47 (90%) were negative and 5 (10%) were positive. Of the 47 negative results, 39 were true negatives whilst 8 were false negatives. Of the 5 positive results, 5 were true positives and there were no false positives. This makes the PPV 100%, NPV 83%, sensitivity 38% and specificity 100%. Of the 8 false negatives, 4 (50%) were due to sampling errors, 3 (37.5%) were due to interpretation errors and 1 (12.5%) was due to diathermy artefact.

**Conclusion** ISFS is a specific but non-sensitive test. It is useful in NSM because in 10%, a positive result allows immediate NAC excision. Its low sensitivity and NPV means that 15% of patients (negative ISFS, positive histopathology) will need a secondary excision of the NAC. 85% of patients can however have a single stage excision.

#### BS013

### NATIONAL SURVEY OF BREAST RECONSTRUCTION TECHNIQUES IN THE UK AND IRELAND

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Breast reconstruction is increasing in both Plastic and Breast Surgical Units. The wide variety of surgical techniques and growing patient expectations necessitate the provision of various reconstructive options within individual units.

**Aim** We sought to find out which techniques were currently performed to reconstruct both breast mound and nipple-areolar complex.

**Methods** Postal questionnaires were sent to all consultant members of the British Association of Plastic Surgeons (BAPS) and The Association of Breast Surgery (ABS) at The British Association of Surgical Oncology.

**Results** 145 BAPS respondents (52%) were compared with 133 ABS respondents (34%), two-thirds of surgeons in each group performing breast reconstruction. Latissimus dorsi reconstruction was most commonly performed (93% BAPS vs 88% ABS). Marked differences existed in the use of TRAM flaps (74% BAPS vs 34% ABS), and free flaps (67% BAPS vs 4% ABS).

Nipple-areolar complex reconstruction was performed more frequently by BAPS members (82% BAPS vs 55% ABS). The Skate flap was used by half the respondents in each group, loss of projection and colour mismatch being the commonest complications.

**Conclusions** Our study highlights marked variations in the provision of different reconstructive methods between Plastic and Breast Surgical Units. We encourage further co-operation between these surgical disciplines to improve training and service delivery.

#### BS014

### COMBINATION BLUE DYE SENTINEL NODE BIOPSY AND AXILLARY NODE SAMPLING: THE EDINBURGH EXPERIENCE

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**Introduction** Axillary lymph node status is an important prognostic factor for breast cancer. At the Edinburgh Breast Unit, we have combined the technique of blue dye Sentinel Node Biopsy (SNB) with Axillary Sampling (ANS). This allows targeted localization of the relevant nodes. We aim to audit our experience of this technique which is performed on all patients with invasive breast cancer under 2 cm.

**Methods** All relevant cases between January 2003 and June 2005 were retrieved. There were 1307 newly diagnosed breast cancer in this period, 1121 underwent surgery and 434 had the combined technique performed.

**Results** The mean number of nodes removed was 5 (mean of 2.2 SN). The identification rate was 92% and node positivity rate 22% (97 cases). 82 patients had positive SN with 2 cases of false negativity (false negative rate = 2.4%, negative predictive value = 99.4%). There were 36 cases of failed localization and out of these, 13 had positive sample nodes. This group represented a higher node positivity rate (36%). 12 of these had significant replacement type nodal metastases. In these cases, heavy tumour burden in the SN may block the uptake of dye and result in failure of localization. We recommend careful palpation of the axillary wound in all cases for suspicious nodes during the procedure.

**Conclusion** The technique of combination SNB/ANS was found to be accurate, reliable and easy to perform. It is useful in situations where there had been failure of localization of the SN. It is inexpensive and does not require nuclear medicine facilities.

### BS015 DIFFERENCES IN BREAST CANCER BIOLOGY BETWEEN ETHNIC GROUPS IN NEW ZEALAND

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**Purpose** International studies have demonstrated differences in breast cancer biological characteristics related to ethnicity, however no studies have been performed investigating NZs indigenous and Pacific population. This study was undertaken to ascertain whether there is any difference in tumour biology between different ethnic groups in NZ.

**Methodology** The Auckland Breast Cancer Study Group established a prospective database in 2000. All people diagnosed with Breast Cancer in the greater Auckland area are eligible for inclusion by consent. Data from 2000–2002 was tested to see whether there were differences in measures of tumour severity in different ethnic groups. For estrogen receptor (ER), progesterone receptor (PR) and lymphovascular invasion (LVI) a chi square test was performed. For size of tumour an analysis of variance was performed, while for grade and involved nodes a Kruskal Wallis Analysis of variance was used. A logistic regression was performed to see whether differences in the number of involved lymph nodes for different ethnic groups were still present when the degree of tumour severity had been adjusted for.

**Results** 1183 patients were included in the study. There was strong evidence of a difference between ethnic groups in the number of involved nodes ( $P < 0.0001$ ), tumour grade ( $P < 0.0001$ ) and tumour size ( $P = 0.009$ ). Pacific Island and Maori people had a greater number of involved nodes and higher grade tumours, and Maori had larger tumours.

**Conclusion** These data suggest differences in tumour biology related to ethnicity in NZ Maori and Pacific Island people. This has implications for breast cancer screening and management.

### BS016 ROYAL ADELAIDE HOSPITAL ONCOPLASTIC BREAST SURGERY UPDATE

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**Purpose** Oncoplastic breast surgery has an emphasis on a holistic approach in all aspects of breast cancer diagnosis and surgery. The aim of this study was to determine the proportion of oncoplastic and reconstructive breast cancer procedures undertaken within a specialist breast practice.

**Methodology** An audit of breast related cancer procedures was undertaken for cases of early breast cancer between 1 January 2001 and 31 December 2005 treated at the Royal Adelaide Hospital and private practice.

The proportion of oncoplastic and breast reconstructive procedures was calculated to determine the clinical impact on a specialist breast surgical practice.

**Results** Breast cancer resection procedures accounted for 1514/2113 operations (72%). Of these (897/1514, 59.2%) were wide local excision or re-excision procedures. Total breast reconstruction operations (ie autogenous tissue flaps, tissue expander/implant reconstructions) accounted for 251 procedures. Of these, 67 (26.7%) were performed at the time of simple mastectomy. Contralateral breast procedures and nipple reconstructions accounted for 138 and 153 procedures respectively. Oncoplastic procedures such as skin sparing mastectomy, latissimus dorsi mini-flap and therapeutic mammoplasty accounted for 57/599 procedures (9.5%). In all, breast reconstruction and oncoplastic operations accounted for 599/2113 procedures (28%).

**Conclusions** Oncoplastic and reconstructive procedures accounted for 28% of all breast cancer-related surgery in this series. Subspecialist training in breast surgery should incorporate experience in breast reconstructive and aesthetic surgery for trainees who wish to practice as specialist breast surgeons in the future.

### BS017 BREAST MAGNETIC RESONANCE IMAGING: A MORE ACCURATE MODALITY FOR LOCAL STAGING OF EARLY BREAST CANCER

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**Purpose** The local extent of early breast cancer is currently determined by Triple Assessment (TA); clinical size, mammogram/ultrasound size and FNA/core. Unfortunately, TA can underestimate the tumour size so that some women with inadequate margins after wide local excision (WLE) require further surgery. This study aims to determine whether breast MRI is more accurate for local staging of early breast cancer compared to TA.

**Methodology** Women with confirmed invasive breast cancer, suitable for WLE by TA had a preoperative MRI. Since we have limited experience with MRI, the surgeon was blind to the MRI result, and performed WLE irrespective of the MRI findings. An independent radiologist and surgeon reviewed the MRI and TA, and made a recommendation for the preferred extent of the initial operation – either: WLE consistent with TA, more extensive local excision, or initial mastectomy based on more extensive local disease on the MRI. This recommendation was compared with the final required operation.

**Results** 59 patients were included in the study. Overall 16 required more extensive surgery than WLE. The MRI correctly identified the need for more extensive surgery in 13 of these patients. MRI also detected 2 cases of contralateral cancer not detected by standard imaging. Furthermore, MRI was more accurate in determining the size of the cancer (mean error = 7.76 mm) compared to TA (mean error = 10.68 mm,  $P = 0.032$ ).

**Conclusions** Preoperative breast MRI is a more accurate modality for the local staging of early breast cancer, with the potential to predict the definitive operation and thus avoid repeat surgery.

### BS018 POOR SURVIVAL FOR BREAST CANCER FOR INDIGENOUS WOMEN: AGGRESSIVE DISEASE OR PASSIVE TREATMENT?

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**Purpose** Indigenous Australian women (I) have lower rates of breast cancer but much lower survival compared with their Non Indigenous (NI) counterparts. This study analyses the aetiological factors for the poorer outcome.

**Methodology** Ten years (1991–2000) of case notes were retrospectively reviewed of all women in the Northern Territory as identified as being diagnosed with breast cancer. Epidemiological data, mode of presentation, pathology, treatment and survival data were compared for Indigenous and Non-Indigenous women.

**Results** Of the 409 women diagnosed during this period, 357 case notes (87%) were available for review (314 NI, 43 I). Two-year and five-year survival rates were 94% and 85% for NI and 78% and 65% for I women.

There was no difference in ER status, nor Bloom and Richardson Grade.

However Indigenous women were more likely to present with more advanced disease ( $P = 0.001$ ).

Indigenous women had similar rate of compliance with surgical treatment therapy, but were less likely to accept or complete chemotherapy (NI 86% v I 63%,  $P = 0.014$ ), radiotherapy (NI 94% v I 81%  $P = 0.045$ ) and hormonal therapy (NI 75% v I 53%  $P = 0.08$ ).

**Conclusion** Using grade and ER negativity as a marker of aggression, Indigenous women do not present with more biologically aggressive cancers, but do present with a more advanced stage. Adjuvant treatment uptake and completion rates in Indigenous women were low. This study defines some of the reasons for the poorer survival of Indigenous women with breast cancer in the Northern Territory.

### BS019 DOES THE 10% RESIDUAL COUNT RULE APPLY WHEN USING TECHNETIUM-TC-99M ANTIMONY-SULPHIDE IN SENTINEL NODE BIOPSY FOR BREAST CANCER?

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**Purpose** Sentinel node biopsy (SNB) is a standard of care and yet there are different materials (dye/isotope), injection methods and isotopes. In Australia, a smaller particle isotope is used, Technetium-Tc-99m antimony-sulphide colloid. This may migrate faster than other isotopes, accumulate in more axillary nodes and identify more nodes as sentinel, according to the 10% rule.

This study aims to explore whether the background count need be as low as 10% before completing SNB when using this Australian made isotope.

**Methods** All SNB performed before January 2004 and November 2005 by 2 surgeons adhering to the SNAC protocol, were audited. Sentinel node and residual counts were recorded. Results were analysed to determine the threshold for identifying positive nodes as a percent of the highest SNB count.

**Results** There were 173 SNB (158 patients with invasive cancers and 15 patients needing mastectomy for DCIS or prophylaxis.) The median primary tumour size was 15 mm. 11 (6%) procedures failed. The median number of nodes removed per patient was 2 (SD1.6). There were 52 (30%) patients with positive nodes. No patient had a positive node below 25% of the highest SNB count. 85% of positive nodes were found above 50%.

**Conclusion** It is possible that the smaller particle isotope used in Australia, allows us to identify more SN if we adhere to the 10% background rule. It may be possible to raise the threshold for the residual background count to 25%, thereby minimising unnecessary dissection, intraoperative frozen section and pathology without disadvantage to the patient.

### BS020P MULTIPLE PAPILLOMAS OF BREAST: IS CURRENT MANAGEMENT ADEQUATE?

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Multiple papillomas (MP) are subject to debate in terms of their clinical and pathological significance and management. To date the ideal management is still not well established. The Royal Perth Hospital Multidisciplinary Breast Service has prospectively accrued clinical and pathological data on over 9000 patients since 1994. The database was interrogated and all pathology reports retrospectively reviewed.

A total of twenty three cases with the diagnosis of MP were retrieved from the database between 1994 and 2004. Of these twenty three cases, thirteen (56.5%) were diagnosed by core biopsy, nine (39.1%) on excision biopsy and one (4.4%) on a mastectomy specimen.

The average age of patients was 56.4 years (range 44–74 years). The average duration of follow up is 4.1 years (range 1–10 years).

In our series, a close association with malignancy was noted for MP, which was also associated with a spectrum of proliferative breast disease. Contemporary guidelines should be developed for this controversial condition. We recommend that all patients with MP, especially when associated with atypia, undergo wide excision of the lesion with clear margins of at least 10mm and that these patients be monitored closely with annual imaging.

### BS021P LAPAROSCOPIC OOPHORECTOMY IN THE MANAGEMENT OF BREAST DISEASE: A SAFE PROCEDURE

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**Purpose** Oophorectomy is being increasingly performed in the management of breast disease, either as adjuvant treatment or for prophylaxis of ovarian and fallopian tube cancer. The aims of this study were (1) to determine the surgical outcome of laparoscopic oophorectomy (LO) when performed by breast surgeons (2) whether LO can be safely performed during the same anesthetic as breast surgery.

**Methodology** Patients who had LO performed by the two breast surgeons (LJ, PW) were retrospectively reviewed with regard to the indication, surgical outcome, and concurrent procedures. LO was performed with a three port technique. Salpingectomy was also performed when the indication was prophylaxis.

**Results** 52 patients with breast disease had LO between Jan 2000 and Jan 2006. 30 had LO for endocrine treatment of early breast cancer, 18 for prophylaxis, 2 for endocrine and prophylactic reasons, 2 for metastatic breast cancer. 13 patients had LO and breast surgery (including TRAM flap) at the same time, without complication. Of note, some patients with BRCA mutation had bilateral mastectomies, bilateral reconstruction and bilateral LO for prophylaxis. No patient required conversion to an open procedure including 12 patients with previous abdominal surgery. The only complication was an abdominal wall haematoma, which was managed conservatively. 2 patients had unexpected ovarian or breast cancer in the ovary.

**Conclusions** LO can be safely and efficiently performed by breast surgeons with expertise in laparoscopic surgery. Previous abdominal surgery did not prevent a successful laparoscopic approach. Breast oncological and/or reconstructive surgery and LO can be reliably performed as a combined procedure.

### BS022P ER AND PGR RECEPTOR EXPRESSION IN BREAST CANCER: A COMPARISON BETWEEN CORE BIOPSY AND SURGICAL SPECIMEN

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**Purpose** Core needle biopsy is a common technique for diagnosing breast cancer. The aim of this study was to compare the expression of oestrogen receptor (ER) and progesterone receptor (PgR) on the core biopsy and surgical specimen.

**Methodology** Patients with hormone receptor analyses performed on both the pre-operative core and surgical specimen were identified from the pathology database. Patients with pre-operative chemo, endocrine or radio therapy and patients who had surgery  $\geq 4$  weeks subsequent to the core biopsy were excluded. The percentage of cells expressing ER or PgR was compared using a Signed Test for matched-pairs. The ER and PgR status (positive or negative) on the core was compared to the result on the surgical specimen.

**Results** 48 cases were studied. The immunohistochemical expression on diagnostic core biopsy was significantly higher than the surgical specimen for ER ( $P < 0.001$ ) but not for PgR ( $P = 0.60$ ). For ER, only 3 cases were positive on the core biopsy and negative on the surgical specimen. All negative cases on core were also negative on the surgical specimen. Therefore 45 cases were categorized the same for each specimen. For PgR, 4 cases were positive on core biopsy and negative on the surgical specimen, while 3 were negative on the core and positive on the surgical specimen.

**Conclusion** The expression of oestrogen receptors was seen more often on core biopsies when compared with the excision specimen. The results suggest that hormone receptor status on core specimens may be more reliable than the surgical specimen for therapeutic decision making.

### BS023P INTRA-OPERATIVE ANALYSIS OF SENTINEL LYMPH NODE IN BREAST CANCER-KEEPING IT SIMPLE

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**Purpose** Intra-operative analysis of sentinel lymph node (SLN) in breast cancer is useful to surgeons and usually involves frozen section (FS) or imprint cytology. The technique used is not standardized and can be a time consuming activity for pathologists. Our aim was to determine if macroscopic (naked eye) examination (ME) compared favorably to FS in performing intraoperative SLN assessment.

**Methodology** Retrospective analysis of a protocol involving macroscopic SLN examination +/- frozen section was used for 123 patients with invasive breast cancer. 'RPH protocol' involved up to 2 SLN examined intra-operatively, initially by ME, with FS only if the former was uncertain or suspicious for malignancy. All SLN submitted were subjected to H&E examination.

**Results** Both intra-operative examination techniques had poor false negative rates (ME 71%, FS 53%), poor NPV (ME 85%, FS 79%) but excellent PPV (ME, FS 100%) and reasonable overall accuracy (ME 86%, FS 82%). ME and FS were not significantly different in predicting SLN status ( $P = 0.13$ ). Multivariate analysis showed Age < 50, larger number nodes taken, ER negative, Grade 3, multifocality, and the pathologist used significantly increase the risk of ME being incorrect.

**Conclusion** ME of SLN is as accurate as frozen section analysis. ME is more likely to be inaccurate in certain subgroups. A protocol involving ME seems justified and may help reduce anaesthetic time, pathologist time/effort and costs.

#### BS024P PAPILLOMATOUS LESIONS ON CORE BIOPSY IN THE SCREENING POPULATION

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**Background and aims** When a papillary lesion is diagnosed on core biopsy of an impalpable breast lesion, standard practice involves excisional biopsy. If correlation of core biopsy histopathology and imaging can identify patients with benign papillary lesions, surgical excision may be avoided in some patients. The aims of this project were to assess the incidence of breast papillary lesions in a screen-detected population, to evaluate the concordance between histology and imaging findings and to assess the subsequent management of such lesions, to determine whether surgical excision of papillary lesions is always necessary.

**Methods** We identified all patients having core biopsy between February 1988 and October 2005 at North Western Breast Screen, Melbourne. Pathology results of the core biopsies of all patients were reviewed, and imaging findings and final pathology of all patients having papillary lesions on core biopsy were reviewed.

**Results** Two thousand and twenty five patients had core biopsy and 42 of these showed a papillary lesion. On core biopsy, 32 were reported as benign, 5 were atypical and 5 were malignant. Thirty-eight patients (90.4%) proceeded to excisional biopsy; 4 patients were followed up with mammography with no subsequent development of malignancy. Of the 28 benign core biopsies, only 21 were benign on final pathology and 7 (22%) were malignant. Of the 5 atypical lesions on core biopsy, 3 were benign and 2 were malignant and all malignant lesions on core biopsy were malignant on final histology. There were 92 papillary lesions found on excisional biopsy that had not been diagnosed pre-operatively.

#### BS025P THE INCIDENCE OF ADJUVANT CHEMOTHERAPY INDUCED PERMANENT MENOPAUSE IN YOUNG BREAST CANCER PATIENTS

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**Purpose** To describe the incidence of permanent menopause induced by anthracycline based chemotherapy in pre menopausal women with breast cancer.

**Method and materials** retrospective data base audit of all pre menopausal women with breast cancer treated between Jan 2000–Aug 2002 at Sir Charles Gairdner hospital (W A) with Anthracycline based regimen. Phone and outpatient interview conducted.

**Results** one hundred patients met the inclusion criteria but only seventy-five were interviewed. The median of age at diagnosis was 44 (range 27–51). Sixty-four patients had regular periods before diagnosis. Eleven patients had irregular periods at time of diagnosis. Sixty-two patients had symptoms of menopause including permanent amenorrhoea after treatment. Forty of them were on tamoxifen. Thirteen patients had their periods resumed after treatment. Ten of them on tamoxifen.

**Conclusion** the addition of anthracycline based chemotherapy appears to produce high rate of premature permanent menopause in young women with breast cancer.

**Notes** these result are preliminary only.

#### BS026P ABBI BIOPSY – THE PATIENTS' PERSPECTIVE

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Newer techniques to diagnose non palpable breast lesions by percutaneous biopsy have been developed. One of these is the Advanced Breast Biopsy Instrumentation (ABBI) system. The diagnostic accuracy of this technique is well established, however the way that patients tolerate the procedure and the outcomes is not. The aim of this study was to see how patients tolerated this procedure.

Patients undergoing the ABBI biopsy were asked to give a pain score from 0–10 upon completion of the procedure. They were also asked to give a pain score for their previous mammogram and these scores were compared. Upon their follow up visit, each patient was asked to fill out a questionnaire to evaluate residual pain effects, scar rating and overall breast appearance.

126 patients were recruited between 1998 and 2002 and gave pain scores. 109 of these patients completed the follow up questionnaire. The mean pain score for the biopsy was 3.23 and the median pain score was 3. The mean pain score of mammogram was 4.01 and median score was 3.42% of patients had no ongoing discomfort and 52% had mild discomfort. 28% of patients thought the scar was unnoticeable and 59% thought it was barely noticeable. No patient was unhappy with the appearance of their breast.

The ABBI system is an accurate diagnostic tool and is well tolerated by patients. It provides a cosmetic result that patients are happy with.

#### BS027P THE PRINCE OF WALES HOSPITAL EXPERIENCE WITH IMPRINT CYTOLOGY INTRA-OPERATIVE SENTINEL LYMPH NODE ASSESSMENT

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Methods available for intra-operative assessment of the sentinel lymph node (SLN) in breast surgery include imprint cytology and frozen section. Advantages of imprint cytology in comparison to frozen section include excellent cytological details and tissue preservation for paraffin section histopathology. We audited our initial experience with imprint cytology.

76 consecutive patients had undergone SLN biopsy and intraoperative evaluation of the SLNs from April 2004 to June 2005.

The primary carcinoma pathology included invasive ductal NOS, invasive lobular NOS, mucinous, tubular and cribriform invasive ductal.

The sentinel node was identified through the use of lympho-scintigraphy.

After excision, identified sentinel nodes are delivered fresh to anatomical pathology for imprint cytology assessment.

Sentinel nodes <6 mm were bisected along longitudinal axis. Those >6 mm were serially sectioned @ approximately 2–3 mm intervals.

Imprint smears made from all cut surfaces. Slides were immediately fixed, stained and then examined by a cytologist.

All slices were then fixed in formalin, processed and embedded into paraffin blocks. Paraffin blocks are each then sectioned @6 levels. One section at each level was stained for H&E and a cytokeratin stain (CAM 5.2) was performed on the section @level 3.

**Results** Sensitivity = 57%. Specificity = 100%. PPV = 100%. NPV = 84%. Accuracy = 87%.

The intra-operative feedback from imprint cytology at our institution compares well with recent publications. Analyses of our data may demonstrate that sensitivities of imprint cytology are lower in cases of isolated tumour cells and micrometastases compared to macrometastases.

**BS028P**  
**FELLA'S, GRAB YOUR GAMMA PROBES – HELPFUL**  
**CHARACTERISTICS OF SENTINEL LYMPH NODES IN BREAST**  
**SURGERY**

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**Purpose** To examine the characteristics of sentinel lymph nodes resected for staging of primary breast carcinoma at Peter MacCallum Cancer Centre, and determine clinicopathologic characteristics that would predict the likelihood of metastatic involvement.

**Methodology** A retrospective review of all patients at Peter MacCallum Cancer Centre who underwent sentinel lymphadenectomy for breast carcinoma from 1998–2005 was performed. Data on the characteristics of the patients, primary carcinoma and all resected lymph nodes were analysed.

**Results** A total of 811 sentinel, and 200 non-sentinel, lymph nodes were resected from 332 patients. There were 138 sentinel nodes showing metastatic carcinoma in a total of 93 patients. Chi-squared & independent t-tests were used for univariate analysis. In those patients with nodal involvement, there was a significant association between absolute node size, and having the highest relative radioactivity of all nodes resected, and the likelihood of a sentinel lymph node being positive. This relationship became non-significant when positive and negative nodes were analysed together. There was no significant relationship between the number of nodes resected and nodal involvement. Labelling the sentinel node as Hot, Blue or Hot + Blue was not clinically useful in terms of sensitivity or specificity. The positive predictive values of these characteristics were 18.7%, 42.7% and 21.4% respectively.

**Conclusions** There are several clinical characteristics of sentinel lymph nodes that predict their involvement with metastatic breast carcinoma.

**BS029P**  
**SENTINEL LYMPH NODE BIOPSY IN INVASIVE BREAST**  
**CANCER USING 99mTc-EVANS BLUE DYE**

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**Purpose** Lymphoscintigraphy and sentinel node biopsy are currently used in the axillary staging of patients with breast cancer. Current practice involves administration of radioactivity and blue dye at separate times prior to surgery. 99mTc-Evans Blue (EB) contains both radioactive and colour signals in a single dose, and this agent has been previously examined in animal models. The purpose of this study was to validate 99mTc-EB in patients with clinically proven invasive breast cancer intended for mastectomy with immediate axillary lymph node clearance.

**Methodology** In eligible patients with informed consent, 99mTc-EB containing EB was administered peritumourally at 4 sites per patient, the injection site massaged and then scintigraphic images were obtained over 30 min. The SLN was identified, marked and the patient transferred to theatre. Following surgery, a gamma probe was used to measure counts of the tumour, lymph nodes and the background tissue post dissection.

**Results** In two of three patients, the SLN was identified on the scintigraphic scans within 22 minutes after injection. In 2 out of 3 patients the highest concentration of counts and blue colour were in the SLN. No radioactivity or tumour was found in the other excised axillary nodes. Further clinical data will be presented.

**Conclusions** 99mTc-Evans Blue agent rapidly localises the SLN during lymphoscintigraphy. There should be no differences between the distribution of the radioactive and colour signals. It may represent a useful alternative to particulate tracers in the staging of breast cancer patients.