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Benefits of CT-angiography localisation in the surgical planning of deep inferior epigastric perforator flap breast reconstruction

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Introduction The aim of breast reconstruction in the postmastectomy cancer patient is to restore breast contour and dimensions whilst minimising the cosmetic impact. The deep inferior epigastric perforator (DIEP)-flap is a complex but state-of-the-art procedure that provides a durable and natural result. It is rapidly becoming the preferred choice at many institutions, including our regional plastic surgery unit. In achieving superior cosmesis without sacrificing abdominal wall musculature, a successful DIEP-flap requires painstaking and time-consuming microdissection of the inferior epigastric artery perforators. This relies on a high level of surgical expertise and results in prolonged anaesthetic times. As greater volumes of breast reconstructive surgery are performed, there will be increasing requirements for such preoperative imaging. We describe the required optimisation of CTA protocols to obtain the pertinent information and demonstrate how best to convey this complex information to our surgical colleagues.

Methods Since 2009 we have provided CT-angiography in the preoperative planning for DIEP-flap breast reconstruction. We explored the implications of CT-angiography to optimise localisation of arterial perforators and identified the benefits of this imaging-guided approach.

Results A total of 60 female patients have benefitted from CTA-guided perforator localisation, providing valuable procedural-planning information to our surgical colleagues. We have shown benefits in terms of markedly shorter operative duration with consequently reduced hospital stays and morbidity. Two patients had unsuspected metastatic disease identified, precluding reconstructive surgery.

Conclusions An imaging-guided approach optimises preoperative planning. Accurate identification of arterial perforators enables targeted intraoperative localisation. This results in decreased operative time and patient morbidity, providing benefits for the cost of healthcare provision.

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Interval breast cancers: positive influencing behaviour

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Introduction Studies estimate that 10 to 32% of breast cancers are overlooked in mammograms. One of the important causes of interval breast cancer is fatigue and loss of concentration. The likelihood of fatigue increases with the duration of a reporting session and errors are more likely to occur towards the end of the session. The purpose of this talk is to address the lack of awareness of the issues that drive reporting performance.

Methods A retrospective study was carried out on interval breast cancers from a 2-year period. This identified 90 histopathologically proven interval breast cancers. Each interval cancer mammogram was reviewed by two blinded consultant radiologists and placed into one of three categories on retrospective radiological review: Category 1: normal; Category 2: uncertain; Category 3: suspicious. Each case was then analysed further to correlate the interval categories with their position on the mammography roller viewer.

Results Of the 90 interval breast cancers, 59 (66%) were Category 1, 14 (16%) were Category 2 and 17 (18%) were Category 3. Statistical analyses with one-way ANOVA test revealed the presence of clinical significance between Category 3 cases and their position in the roller viewer ($P < 0.021$).

Conclusions Fatigue is identified as an important factor responsible for missing breast cancer. Aside from making changes in double-reporting techniques, human performance factors such as nutrition, rest, behaviour prior to reporting and environment have to be considered. A national programme has to be implemented to facilitate a plan to raise awareness of these factors in the NHS culture.

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Benign solitary breast masses in the prevalent screening round: do they contribute to a high recall rate?

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Background The Breast Test Wales prevalent round recall rate between 2003 and 2006 was 9.07% (above the NHSBSP target of 7%) and remains high. This study was based on the hypothesis that recall of benign solitary masses might be a major contributor to this as no prior imaging is available.

Methods Prospectively collected data from Breast Test Wales (South East Wales) identified all prevalent screens in a 3-year cycle recalled for a benign mass lesion confirmed by core biopsy. All women attended a subsequent screen and remained free of cancer. Mammograms were retrospectively reviewed and the lesions were re-evaluated by applying criteria typical of a benign mass.

Results A total of 2,322 women following a prevalent screen were recalled; 2,069 were returned to routine recall without biopsy (cysts are included in this group), 186 were diagnosed with cancer and 105 had a benign biopsy where mammography had been considered benign or probably benign. The benign to malignant biopsy ratio was 1:1.8. A total 46.6% ($n = 49$) lesions on retrospective review of mammography showed typical benign characteristics. Dense breast composition and overlying glandular tissue were noted to correlate with higher rates of retrospectively indicated recall.

Conclusions Stricter adherence to applying classification of benign solitary lesions could reduce the recall rate and decrease the psychological distress for these women without adversely compromising the cancer detection rate. The impact on the overall recall rate would be small but would significantly improve the benign to malignant biopsy ratio. The issue of breast density and overlying tissue may be resolved with the advent of digital applications such as tomosynthesis.

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Breast MRI screening for high-risk family history: the Sheffield experience

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Introduction Around 5% of breast cancers can be attributed to gene mutations. NICE guidelines have recently advocated the use of MRI screening in high-risk young women. We have retrospectively audited our unit's experience in this field.

Methods All eligible women were identified from the family history database. Notes, imaging and pathology were reviewed.

Results One hundred and thirty-three breast MRI scans were performed on 91 women with a high-risk family history between 2007 and 2010. Sixteen women were recalled for assessment (one woman was recalled twice). The total recall rate was 12.7%. Of the recalled patients, four had normal ultrasound (US) and follow-up imaging has remained unchanged. Thirteen patients had corresponding US-detected abnormalities. Twelve were biopsied, the other was a normal intramammary lymph node. Eight of the biopsies were benign (benign core biopsy rate 6%). Four biopsies were malignant (age range of women 35 to 45), giving a cancer detection rate of 3%. Three of these were solitary lesions (8 mm, 11 mm and 16 mm). One patient had multifocal malignancy, the largest single lesion being 16 mm. All were node-negative ductal carcinoma. Two patients were oestrogen receptor-positive, all were herceptin receptor-negative. Only the extensive malignant change could be seen on conventional mammography.

Conclusions We suggest that MRI screening is beneficial in these patients, and although our recall rate lies a little above what is to be recommended by the NHSBSP (7 to 10%) we feel this can be attributed to the steep learning curve that introducing a new screening technique to a service invariably brings.