

had micro-brush cytology showed papillary cells where as only 2 out of 11 patients who had ductal lavage were positive for papillary cells. Thus the sensitivity of the brush cytology technique for the diagnosis of papilloma was 87.5% and the sensitivity of ductal lavage 18%, ( $P = 0.0055$ )

In the later stage of same study, 66 consecutive patients had BDME prior to surgery. On Endoscopy, a papilloma was seen in 22 cases, signs of inflammation in 23 cases and dilated ducts only in 21 cases. The cases showing duct inflammation were compared to the pathology using a detailed system of description developed especially for this study. There was an extremely close correlation showing that BDME is the first non-invasive technique for identifying duct inflammation.

A morphological classification of the observed abnormalities was developed. This divides intra-ductal lesions into five main categories, namely epithelial surface abnormalities, Intraductal adhesions, duct obliteration/endoluminal obstructing lesions, intra-ductal calcification and papillomatous lesions. Papillomatous lesions may be subdivided into single or multiple.

**Conclusion:** This first phase of study showed that mammary duct micro-endoscopy is a practical and technically feasible procedure. Second phase of study proves that BDME and micro brush cytology are an effective way of sampling intraductal lesions and establishing the etiology of nipple discharge.

The pre-malignant/malignant nature of intraductal pathology will only be clarified when it is possible to accurately identify benign inflammatory changes and our work suggests that this can be done reliably and accurately. We suggest a simple morphological classification of endoscopically visualised endo-luminal abnormalities that include benign and malignant changes.

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Poster

#### Role of ultrasonography in detection of wide intraductal component of invasive breast cancer – A prospective study

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**Purpose:** This study investigates the efficiency of ultrasound (US) in the detection of the extent and direction of intraductal component in comparison with magnetic resonance imaging (MRI) and histopathological findings.

**Patients and Methods:** In 59 patients with 60 invasive breast cancers, US features of the intraductal component were classified as (a) solid ductal dilatation radiating from the tumor, (b) presence of satellite lesion in the same segment without ductal dilatation, (c) ductal dilatation between main tumor and satellite lesion. The direction of intraductal component was classified as towards nipple and towards periphery. MRI depicted the intraductal extension as the most enhanced area during first or second phase of the dynamic study. Other criteria for the detection of intraductal component by MRI were as follows (a) a satellite lesion around the main tumor, (b) bridging enhancement between main tumor and satellite lesions. The direction of intraductal component was classified similar to that of US.

**Results:** In 17 of 59 (28.8%) patients, wide intraductal component (15 or >15 mm) towards nipple and 3 out of 60 (5%) patients, wide intraductal component towards periphery, was proved histopathologically. US and MRI could accurately detect wide intraductal component towards nipple in 14 and 8 patients respectively out of 17 patients. Sensitivity, specificity and accuracy for detection of wide intraductal component towards nipple by US were 82.3%, 90.5%, and 88.1%, respectively. Sensitivity for detection of wide intraductal component towards nipple by MRI was 47.0%, specificity was 72.9%, and accuracy was 71.2%. When the results of both diagnostic methods namely US and MRI were combined, sensitivity rose to 93.7%, specificity was 72.1% and accuracy was 80.0%.

**Conclusion:** Ultrasound findings of intraductal extension from breast carcinoma and also its direction correlates well with histological intraductal extension and the direction.

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Poster

#### Relationship between number of nodes examined, number of positive nodes, invasive tumour grade and invasive tumour size

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**Introduction:** The Association of Breast Surgery at the British Association of Surgical Oncology (ABS at BASO) audit of screen-detected breast cancer is the world's largest and most complete surgical audit. In the eight years since its inception in 1998, the audit has examined the quality of the diagnosis and treatment provided to 78,603 cancers detected in 11,926,330

women screened by the UK NHS Breast Screening Programme (NHSBSP). The aim of this study was to use the ABS at BASO audit data to examine the relationship between the number of nodes examined, the number of positive nodes and the tumour grade and tumour size for invasive screen-detected breast cancers.

**Description:** 26,431 screen detected invasive cancers in women who were invited for screening between 1 April 2001 and 31 March 2004 were included in the study.

**Summary of results:** The majority of invasive cancers had between 4 and 15 nodes examined. Small invasive cancers (<15 mm diameter) had fewer nodes examined than larger cancers ( $p < 0.0001$ ). Overall, 25% of the invasive cancers had positive nodal status. The proportion of cases with positive nodal status increased with invasive tumour size ( $p < 0.0001$ ). A linear relationship was apparent between node positivity and tumour size for tumours with diameters between 10 and 30 mm, with a 50% chance of finding positive nodes in 30 mm diameter tumours. The chance of finding positive nodes was significantly higher when 7–10 nodes were examined compared with 4–6 nodes ( $p < 0.0001$ ). There was also a strong relationship between the number of positive nodes and tumour grade; with 85% of grade 1 tumours having no positive nodes compared with 65% of grade 3 tumours ( $p < 0.0001$ ).

**Conclusion:** The data suggest that a minimum of 7–10 nodes should be examined in invasive screen-detected breast cancers found to be positive on sentinel node biopsy, and that clearance of the axilla should be undertaken with caution for small (<15 mm diameter), grade 1 tumours where the side effects of extensive surgery to the axilla may not be outweighed by the chances of finding positive nodes.

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Poster

#### Contrast enhanced MR imaging of the breast: one-side increased vasculature as a predictor of invasive cancer

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**Purpose:** To test the diagnostic value of an increased ipsilateral vascular maps as MR imaging (D-MRI) sign of breast cancer.

**Subjects and Methods:** 204 consecutive D-MRI exams using a 1.5-T equipment entered the analysis. Seventy-two exams were excluded due to unilateral imaging or previous treatment. For the remaining 132, maximum intensity projections (MIPs) of the first subtracted images of a T1-weighted 3D GE sequence (coronal 1-mm 128 partitions; TR/TE = 11/4.8 ms; FA = 25°; FOV = 384 mm; matrix = 384 × 192 mm; 1-mm<sup>3</sup> voxel; 0.1 mmol/kg Gd-DOTA; 120-s time resolution; 1 pre- and 4 postcontrast phases) were reviewed. A one-side increased vasculature was reported when two or more vessels (of 30 mm or greater in length and 2 mm or greater in maximal transverse diameter) was found per breast. Gold standard was pathological examination or at least negative 1-year follow-up (for negative exams).

**Results:** Excluding two bilateral cancers (with symmetrical vascular maps), a one-side increased breast vascular maps was found in 46 exams: 39 malignancies of 22.9 ± 12.9 mm in diameter and 7 benignities (22.6 ± 14.0 mm) at pathology. Vascular maps were symmetrical in 86 exams: 35 benignities and 10 malignancies (11.4 ± 3.2 mm), three of them being pure DCIS (8–15 mm) at pathology, and 39 negative follow-up. Sensitivity was 80% (39/49), specificity 91% (74/81), PPV 85% (39/46), NPV 88% (74/84).

**Conclusions:** One-side increased vascular maps is highly associated with ipsilateral invasive breast cancers, not with DCIS.

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Poster

#### Gray-scale and power Doppler US in the evaluation of axillary metastases in breast cancer patients with no palpable lymph nodes

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**Purpose:** The purpose of this study was to evaluate prospectively the predictive value of gray scale and Doppler US findings for the detection of axillary metastases in breast cancer patients with no clinical evidence of axillary involvement.

**Materials and Methods:** We detected 237 axillary lymph nodes in 107 women with breast cancer. Each node was localised and evaluated with gray scale and doppler US. Absence of echogenic hilum, asymmetrical cortical thickening, round shape and presence of asymmetrical or peripheral flow on power Doppler US were considered signs of malignancy. The longest diameters and longitudinal/transverse axis ratios were also documented. In all cases we performed FNAB.

**Results:** Histopathologically 136 node were malignant, and 101 were benign. All prospective criteria were statistically significant for malignancy. Size was not a significant criterion. In lymph nodes smaller than 1 cm, only asymmetric cortical thickening ( $p < 0.001$ ) and presence of asymmetrical or peripheral flow ( $p = 0.012$ ) were significant. The sensitivity, specificity,