clinical findings, and gave consideration to size of the tumour on predicting who is likely to be node positive and have ANC without SLNB.

Aims: The aim of this study was to look at the different criteria used for performing ANC in a District General Hospital and to study the sensitivity of each determinant criterion.

Methods: A retrospective study was performed on all patients who underwent ANC for any reason over a periodof 18 months. Demographic, radiological and histological data were collected from medical notes. The reason for doing ANC without SLNB was documented.

Results: 165 ANC were performed in that period and 40 were negative for metastatic disease, with an overall sensitivity of 80%. If we exclude SLNB, the combined sensitivity of all other predictor factors is 65%, which means we are sparing 2 out of 3 patients unnecessary ANC. On the other hand we are subjecting 1 out of 3 patients invasive and unnecessary ANC, It is interesting to note that clinical examination is as sensitive as US assessment (80%, and 75%), and when both are combined the sensitivity went up to 85%. It is noted that the intra-operative assessment is the least reliable.

Reason for axillary clearance	n	Positive ANC	Negative ANC	Sensitivity
Positive prediction on USG	32	24	8	75%
Size of tumour	18	10	8	55.5%
Recurrence of breast cancer	2	0	2	0
Patient request	2	0	2	0
MRI findings	1	0	1	0
Clinically suspicious nodes	40	32	8	80%
Concerns for fitness for surgery	7	4	3	57.1%
On-table decision (suspicious nodes)	11	1	10	9.0%
SLNB	52	52	0	100%

Conclusions: The combination of USG and clinical examination can correctly predict positive nodes in 85% of cases. To improve the sensitivity an additional assessment of abnormal lymph nodes with FNA or core biopsy is strongly recommended. Suspicious nodes noted intra-operatively should not be used as a criteria for performing ANC.

608   Poster
Visualisation of lymph nodes using optical projection tomography

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Background: Optical Projection Tomography (OPT) is a wholemount, *in vitro* imaging technique suitable for small biological specimens (1−15 mm in diameter) (Sharpe J. Science 2002;296:541−5). The aim of this study is to investigate whether human lymph nodes can be imaged using OPT and to compare the images with traditional H&E stained sections. The OPT scanner can be considered to be the optical equivalent of an X Ray CT scanner. It produces 3D images and virtual sections in 3 orthogonal planes through the whole of the specimen with a cellular level of resolution. Furthermore, since OPT is non-destructive, the tissue can subsequently be successfully processed for routine histology (either H&E or immunohistochemistry).

Methods and Materials: We retrospectively examined 24 lymph nodes taken from 7 patients who had a histological diagnosis of breast or colon adenocarcinoma with known lymph node involvement, and whose treatment would not be altered by the outcome of this study. The fixed lymph nodes were first prepared for OPT scanning. They were embedded in agarose, dehydrated in methanol and cleared in benzyl alcohol benzyl benzoate (in a 1:2 ratio). The tissue was then mounted and scanned at high resolution on an OPT Scanner 3001, using a Cy3 filter. The reconstructed virtual sections were visualised in 3 orthogonal planes using DataViewer. Once the images were obtained, the nodes were re-hydrated, de-embedded from agarose using a sucrose solution and prepared for histology in the traditional way. The H&E stained sections and the corresponding OPT virtual sections were examined by the Consultant Histopathologist.

Results: Direct comparisons were made between traditional H&E sections and the virtual monochrome sections obtained from OPT. Anatomical structures characteristic of lymph nodes could be visualised using OPT. Furthermore, areas of tumour and small areas of metastases could also be clearly identified.

Conclusions: This study demonstrates that it is possible to identify areas of metastasis and make a presumptive diagnosis based on OPT images of lymph nodes. The actual scanning of tissue using OPT takes

minutes, but the processing of tissue takes too long for it to be suitable for intraoperative diagnosis of metastatic spread. However it could potentially be used to direct subsequent histological sectioning or obtain a more accurate assessment of tumour size/extent of involvement within the lymph node. It may also have applications in other clinical scenarios.

609   Poster
A combined high temporal and high spatial resolution 3 Tesla MR imaging protocol for the assessment of breast lesions: initial results

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Purpose: To develop a 3.0 Tesla breast imaging protocol that combines high temporal and spatial resolution 3D MR sequences for quantitative time course and morphological analysis of breast lesions.

Materials and Methods: Thirty-four patients were included in the study (age range, 31−82; mean age, 54.3). The study protocol was approved by the Institutional Review Board and written, informed consent was obtained from all patients. The MRI protocol included: a coronal T1-weighted Volume-Interpolated-Breathhold-Examination sequence (VIBE), focused on high temporal resolution for optimal assessment of the contrast-enhancement behavior of lesions (SI 1.7 mm isotropic; TA 3.45 min for 17 measurements); a coronal T1-weighted turbo fast-low-angle-shot-3D sequence (FLASH), with water-excitation and fat-suppression, focused on high spatial resolution for morphologic analysis (SI 1 mm isotropic; TA 2 min); and a repeated coronal VIBE for detection of washout. Lesion size and morphology were assessed. ROIs for suspicious areas were manually drawn and evaluated for contrast-enhancement behavior by plotting intensity courses against time. Sensitivity and specificity with a 95% confidence interval and the negative predictive value (NPV) and positive predictive value (PPV) were calculated. Diagnostic accuracy was assessed. The histopathological diagnoses were used as a standard of reference.

Results: Fifty-five lesions were detected in 34 patients. All malignant breast lesions were identified correctly. There were five false-positive lesions. The sensitivity of contrast-enhanced MRI of the breast at 3Twas 100%, with a 95% confidence interval (CI) of 90.6–100%. The specificity was 72.2%, with a 95% CI of 49.1–87.5%. The PPV was 0.88 and the NPV was 1. Diagnostic accuracy was 91% with a 95% CI of 80.4–96.1%.

Conclusion: Our prospective study demonstrates that the presented 3 Tesla MR imaging protocol, comprising both high temporal and high spatial resolution, enables accurate detection and assessment of breast lesions.

610   Poster
Method of differential breast tumour diagnostics

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Background: *Oxidative stress* is a disturbance in the balance between the production of *reactive oxygen species* (ROS) and antioxidant defense. In patients with mammary gland tumors the processes of peroxide oxidation of lipids (POL) are increased and metabolism disturbed. *Glutathione-associated metabolism* is a major mechanism for cellular protection against agents which generate oxidative stress and peroxide oxidation of lipids. Glutathione, glutathione-dependent enzymes and glutathione S-conjugate efflux pumps function in an integrated fashion to allow cellular adaptation to oxidative stress. Co-ordination of this response is achieved, at least in part, through the antioxidant which is found in the promoters of many of the genes that are inducible by oxidative and chemical stress.

Purpose: A comparative investigation of the activity of antioxidative glutathione-dependent enzymes and glucose-6-phosphate dehydrogenase in the blood serum and saliva in the patients with breast dyshormonal hyperplasiae (BDH) and breast cancer (BC).

Material and Methods: Fifty-five patients aged 32−65 years (mean age 48.5±16.5 years) were studied before treatment and 30 healthy (a control group). In the blood serum and saliva the following enzyme activities were determined using SP "Humalyzer 2000": glutathione reductase (GR), glutathione-S-transferase (GST), gamma-glutamyltranspeptidase (GGT), glucose-6-phosphate dehydrogenase (G6PDH), and the content of the reduced glutathione (GSH).

Results: The results were calculated with the help of statistical Student method. Spearmen method was used for examination of interrelations

between the blood serum and salivary parameters. Also, there are calculated the ratios of the enzyme activities: GR/G6PDH, GR/GST, GR/GGT and GR/GSH. The levels of enzymes activity and analysis of correlation indicated the imbalance of the antioxidant defense system in the blood serum and saliva in the patients. The activity of enzymes and content of GSH were significantly decreased in the blood and saliva in the patients with BC in comparison with the BDH patients.

Conclusions: The Invention (MD N3717 G_2 2008) can be used for differential diagnostics of BDH and BC. The results reflect the interrelation between the activity of a pathological process and the imbalance of antioxidative defense in the patients with mammary gland tumors, and may be used for differential diagnostics and screening as an additional biochemical test.

611 Poster

Breast volume increase may negatively impact the accuracy of preoperative mammography in breast cancer: correlation in 49 patients

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Aim: To investigate the impact of breast volume on mammographic false negative rate.

Material and Method: In our unit, 49 patients undergoing breast conservative surgery were evaluated retrospectively. Preoperative breast volume (BV) measurement was made by Grossman-Roudner Disc (GRD) method. Patients with preoperative excisional biopsy and with other organ cancer were excluded from the study.

Mammographies have been performed in nine different radiology department. In mammographic evaluation, BIRADS 1−3 were considered as false negative while BIRADS 4 and 5 are accurate.

Findings: All patients with breast volume less than 425 ml had accurate mammographic findings (BIRADS 4 or 5), while the ones with breast volume over 425 ml had a 34.6 percent false negativity in mammography. The false negative rates of preoperative mammography were 10.8 in the patients with the breast volume below 700 ml and 41.7 percent in the patients with the breast volume above 700 ml (table 1).

Table 1

Breast volume (ml)	Number of cases	False negativity in preoperative mammography (%)
<425	23	0
>425	26	34.6 (p < 0.05)
<700	37	10.8
>700	12	41.7 (p < 0.005)
Total	49	18.4

The comparison of both cutoff rates of breast volume revealed that the difference was statistically significant (p < 0.05).

Conclusion: The data in this study showed that the false negative rate of preoperative mammography in breast cancer has been impacted negatively by the increase of the breast volume. But these results should be confirmed by the prospective studies that the mammographic examinations were made in a single radiology department.

612 Poster

The efficacy of stereotactic vacuum-assisted biopsy and needle localization vacuum-assisted biopsy for diagnosing breast microcalcification

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Background: This study was conducted to evaluate the efficacy of 2 percutaneous breast biopsy techniques for diagnosing microcalcification: stereotactic vacuum-assisted biopsy (VAB) and needle localization VAB.

Material and Methods: Between November 2002 and September 2007, 138 patients underwent percutaneous breast biopsy for microcalcification. Of these, 59 patients underwent needle localization VAB and 79 patients underwent stereotactic VAB with using a prone-table mammographic unit, respectively. patients with focally clustered microcalcification underwent stereotactic VAB and patients with diffuse or deep seated microcalcification and patients with small breast underwent needle localization VAB. we retrospectively reviewed the characteristics of the lesions and the percutaneous biopsy results for all the cases.

Results: Percutaneous biopsy was successful in 135 cases (97.8%). Of the 135 successfully performed cases, 34 cases (25.2%) were malignant and there were 4 (11.8%) underestimations. For the stereotactic VAB group,

13 of the successfully performed 76 cases (17.1%) were malignant and there were 2 (15.4%) underestimations. In needle localization VAB group, 21 (36.6%) of the 59 cases were malignant and there were 2 (9.5%) underestimations. There was no major complication in all the cases.

Conclusions: With using stereotactic VAB and needle localization VAB, we can biopsy accurately and safely in almost all cases with leaving only minimal scar. So, percutaneous biopsy can be considered as a substitute for surgical biopsy for microcalcification of the breast.

613 Poster

Ultrasound guided vacuum assisted biopsy of suspicious microcalcifications of the breast

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Background: The pre-operative diagnosis of suspicious microcalcifications usually require stereotactic biopsy or surgical excision after wire localization. Although both technique are successful in diagnosis of microcalcifications, the techniques require mammographic compression of the breast that is uncomfortable for the patients, and cause problems of ionizing radiation. Generally U/S guided procedures are more preferred by patients because they are more comfortable supine, the breast is not compressed, and the procedures are often performed faster. The purpose of this study was to evaluate the feasibilities of ultrasound guided mammotome biopsy of microcalcifications of the breast.

Material and Methods: Between September 2006 and october 2009 One surgeon performed consecutive 61 procedures in 59 patients presenting with microcalcifications without associated mammographic or ultrasonic or palpable masses. If there is uncertainty in correlating mammographic findings with ultrasound findings, the area is reevaluated after long straight needle localization (9 cases). Specimen mammograhps were obtained for each lesions, with success of the procedure based on identifying over 90% of clustered calcifications and over 50% of segmental distributed calcifications. Stereotactic biopsy was carried out when ultrasound guided biopsy was unsuccessful.

Results: Of 83 lesions, 61 lesions were identified sonographically (identification rate: 73.5%). Except for two lesions, 59 lesions were successfully biopsied (success rate: 97%). All procedure could be performed within 30 min (9−28 min). There was no major complication except minor hematoma or pain.

Conclusion: Ultrasound guided vacuum assisted biopsy of microcalcifications of breast can be successfully performed at experienced hand.

614 Poster

Punch Biopsy: a useful adjunct in a rapid diagnosis breast clinic

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Background: Triple assessment of breast lesions usually involves the use of core biopsy or FNAC. Punch Biopsy (PB) is a technique widely used by dermatologists and can be used in superficial breast lesions with dermal involvement. The technique involves taking a small disk of full thickness skin under local anaesthesia using a circular blade. We studied the utilization of PB in a rapid diagnosis breast clinic.

Method: We introduced PB in the assessment process in a rapid diagnosis breast clinic in December 2001. In this clinic patients undergo triple assessment in a single clinic visit. We reviewed all PB's done over a 7-and-a-half-year period from its introduction to May 2009. The indications for the biopsy and the contribution of PB to final diagnosis were recorded.

Results: One hundred patients underwent a PB. The commonest indications were to rule out Paget's disease in patients presenting with itchy/eczematous nipple or breast skin (n = 25), discolouration of the breast skin (n = 23), breast lump with skin involvement (n = 23) or frank ulceration (n = 4) and nodules in the breast skin or a previous surgical scar (n = 18). The mean age was 56 years (range 17−98 years). Eighteen patients had a previous history of breast cancer. Final diagnosis was benign in 80 patients and malignant in 20. In 80 patients with benign conditions, PB was the only pathological component of the triple assessment in 74. The malignant diagnoses consist of primary breast cancer in 12, recurrent breast cancer in 5 and metastatic breast cancer, basal cell carcinoma and radiation-induced angiosarcoma in one patient each. In 8 of these patients PB was the only source of histological diagnosis.

Conclusion: PB is a valuable adjunct to conventional methods of tissue diagnosis such as core biopsy and FNAC in both benign and malignant breast lesions.