Conclusions: The study corroborates the current Association of Breast Surgeons UK guidelines that women under the age of 25 years who clinically and radiologically have a benign breast lump (ie. Fibroadenoma, Fat necrosis, lipoma, harmatoma) they do not require needle biopsy. All 495 who behaved clinically and radiologically bening (P2/U2) in our study were proven to have benign disease on FNA/CB. This study shows the guidelines are valid up to 30 years. If there is a discrepency between clinical and radiological findings there should be a low threshold for biopsy. Otherwise it may be safe to opt out of needle biopsy as it avoids unnecessary morbidity and use of precious resources in terms of cost, man power and time.

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Efficacy of One-Step Nucleic Acid Amplification (OSNA) for Intraoperative Diagnosis of Breast Cancer Metastases

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Background: OSNA (One-step Nucleic Acid Amplification) is new useful examination modality to detect the sentinel lymph node metastases using CK19 mRNA. The efficacy and safety of OSNA is controversial. We analyzed the benefits and problems retrospectively.

Materials: From November 2009, we started to use OSNA. Initial 3 months, the sentinel lymph-node was divided into two sections right after resection, one side is examined by the OSNA method, the other side is examined by pathologists using intraoperative frozen section (H&E). The cases diagnosed node positive by OSNA and/or pathology added axillaly dissection. After this period, we examined whole sentinel lymph nodes by only the OSNA method. We analyzed differences between two methods retrospectively (accuracy and the time for examinations).

Result: For initial 3 months, 27 primary breast cancer cases (36 sentinel lymph nodes) were examined. The total positive nodes were 5. The positive rate of OSNA and pathology were 13.8% and 5%. An overall concordance rate between the pathology and OSNA was 91%.Later periods, 59 primary breast cancer cases (86 lymph nodes) were examined. 14 nodes (15.3%) were detected metastases by OSNA. The lymph nodes with micrometastases (+) were 8 and those with macrometastases (++) were 6. In the OSNA- positive 17 cases, positive non sentinel node (non-SN) cases were 7 cases (41%), negative non-SN cases were 10 cases (59%), positive non-SN cases rate was (4/11)36% in OSNA micrometastases and (3/6)50% in macrometastases.

The average time for examination by OSNA was 38.9 minutes. (34.9 minutes for one node, 46.4 minutes for two nodes, 55 minutes in 3 or 4 nodes). There was no significant difference in examination time between OSNA and pathology.

Conclusion: The OSNA method was useful and convenient method comparing with pathology. Moreover, it could save the time for intraoperative frozen examination of pathologist and laboratory technician's labors.

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Diffusion Weighted MRI as a Biomarker for Breast Cancer Malignancy

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Background: To evaluate differences in apparent diffusion coefficient (ADC)-values of different types and grades of malignant breast tumors and the influence of these differences on the diagnostic accuracy of diffusion weighted (DWI) MRI at 3T.

Materials and Methods: 233 patients with 279 pre-detected focal breast lesions were included. All scans were performed on a 3T MR imager, before the application of any therapy. A T2-weighted sequence, a diffusion weighted single-shot echo planar imaging diffusion weighted sequence with (b-values: 0/850 s/m^2) and a dynamic, contrast enhanced (DCE)-T1 sequence were applied. Lesions were identified on the DCE-sequence and ADC was measured in the corresponding ADC-maps, using 2-dimensional regions of interest. An ADC-threshold of 1.25×10^{-3} mm^2/s was used to differentiate benign from malignant lesions. All lesions were biopsied and histopathologically classified using the TNM-system.

Results: While ADC-values were significantly lower in all subtypes of malignant tumors, than in benign lesions, ADC-values of non-invasive lesions were significantly higher than those of invasive ones. Tumor grades inversely correlated with ADC-values, but the difference was only significant between grade I and grade III lesions. While the overall sensitivity (89.9%) and specificity (90.0%) of DWI were good, analysis of the different tumor subtypes revealed a sensitivity of only 60.9% for non-invasive tumors, while for invasive tumors, 98.5% (invasive ductal) and 92% (invasive lobular) could be obtained.

Conclusion: Non-invasive breast tumors may present significantly higher ADC-values than invasive ones. This may lead to many false negative results, which has to be considered when using DWI as a diagnostic tool.

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Different Expression of Cyclin D1 in Normal Tissues and Normal Adjacent in Breast Cancer

R. Esmaeili[1], K. Majidzadeh-A[1], N. Abdoli[1], A. Olfatbakhsh[1], S. Mohammadi[1]. ***Background:*** *The role of tumor margin in breast cancer recurrence is one of the most important issues affecting prognosis and survival of the patients. Some observations have showed that pathologically confirmed tumor free tissues around the excised tumor may have some differences with normal tissue. identification of gene expression differences that may occur between 'normal tissue adjacent to the tumor', ' tumor tissue' and 'absolute normal tissue obtained from non-affected women' may help to confirm possible differences between normal tissue adjacent to the tumor and normal tissue.*

Material and Method: mRNA was extracted from 90 breast tumors, 90 normal adjacent and 15 normal tissues from cosmetic reductive surgery, cDNA was prepared using 1ug of total RNA (Qiagen, GmbH). mRNA expression of ki67, CDKN1B, CDKN1A, CCND1, CCNE was measured by Real-Time PCR (ABI7500) using ACTB and TFRC as endogenous control. Raw data was analyzed by Applied Bio Systems SDS software v.2. Gene expression analysis was done with REST 2009 software (Qiagen, GmbH).

Results: Comparison of gene expression between tumor and normal adjacent reveal that KI67 is up-regulated in tumors by mean factor of 3.025 with P (H1) =0. Same analysis between tumor and normal breast tissue shows up-regulation in Ki67 and down-regulation in CDKN1B by mean factor of 6.192 and 0.131 and P (H1) = 0.001 and 0.014 respectively. At last CCND1 is up regulated in normal adjacent in comparison with normal breast tissue by mean factor of 4.687and P(H1)= 0.039.

Conclusion: Although differences in gene expression profile of the tumor tissue vs. normal tissue are obvious, those of normal adjacent vs. normal breast tissue may spot to the fact that molecular analysis of surgical normal adjacent tissues can help to detect non-clear adjacent tissues which may change to tumor in the future. Obviously Excision of these tissues will reduce recurrence and improve prognosis and survival of the patients. Inclusion of more normal tissues, experiments with more genes and further analysis in protein level can help to verify this result.

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Digital Mammography Screening − Evidence of Incremental Breast Cancer Detection by Bilateral Ultrasound at Assessment

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Background: We aimed to quantify the incremental breast cancer detection rate and false positive biopsy rate of bilateral whole-breast ultrasound (US) as an adjunct examination to mammography at clinical assessment of lesions detected by digital mammography screening.

Materials and Methods: From October 2005 until July 2010, a total of 2,803 women underwent whole-breast US of 3,087 recall breast sides (with mammographic abnormality) and 2,519 contralateral breast sides (without any mammographic abnormality) at our screening assessment unit. We calculated the incremental breast cancer detection rate and associated false positive rate of US per assessment participant and per breast side (recall and contralateral) and compared these with mammography.

Results: Seven patients were diagnosed with a cancer lesion detected by US only, thereby increasing the breast cancer detection rate from 13.8% (386/2,803) to 14.0% (393/2,803) per assessment participant. For an additional two patients, US changed the diagnosis from unilateral to bilateral breast cancer. The incremental breast cancer detection rate of US was 0.13% (4/3,087) in recall sides and 0.20% (5/2,519) in contralateral sides. The overall false positive rate of biopsies induced by US only was 66.7% (18/27), compared to 62.3% (668/1,073) for mammography-induced biopsies.

Conclusions: We demonstrated that supplemental whole-breast US examination resulted in a relatively small incremental breast cancer detection rate in both recall and contralateral breast sides, whereas the associated false positive biopsy rate was acceptable. The incremental cancer yield should be weighed against the costs of bilateral whole-breast US in the clinical assessment of mammography screening.