

**Results:** 400 consecutive breast core biopsies were performed over this 18 month period.

	Free hand biopsy	Image guided biopsy	p value
Total number (%)	304 (76%)	96 (24%)	
Median number of cores taken per biopsy (range)	2 (1-8)	4 (1-7)	<0.00001
Median number of days lapsed between patient assessment and core biopsy (range)	0 (0-50)	8 (0-34)	<0.00001
Median number of days lapsed between patient assessment and result given (range)	7 (2-52)	16 (2-44)	<0.00001
Sensitivity	294/304 (96.7%)	95/96 (98.9%)	0.19
Cancer Ratio	1:1.1	1:2.5	0.04

**Conclusions:** 76 % of biopsies have been performed free hand with no significant difference in diagnostic sensitivity compared with image guided biopsies. In a selected group, free hand biopsies provide the added advantage of early diagnosis and subsequent treatment.

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### Examination of the Sentinel Lymph Node Identification in Breast Cancer That Used the Contrast-enhanced Ultrasonography and Blue Dye Without Radioisotope

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**Background:** The utility of Sentinel lymph node (SLN) biopsy is clear, therefore the axillary lymph node dissection is omitted. At present, the SLN identification method has technique of the radioisotope and the blue dye method, and combination method or independent method is performed. There were a merit, a demerit in each, and we performed blue dye independent method thus far, but we have experienced the case that identification of SLN has difficulty with. Omoto reported the technique using the contrast-enhanced ultrasonography with Sonazoid as a new method to make up for these faults in 2009. The Combination method of radioisotope and blue dye method is very effective because identification rate, but there is the problem that being bombed and the difficult treatment. Therefore we planned feasibility study of SLN identification method by the combination method with contrast-enhanced ultrasonography with Sonazoid (CEUS) and blue dye.

**Materials and Methods:** Twenty-six patients with Primary breast cancer were recruited. The cases of axilla lymph node metastasis clinically were excluded. The method is sonazoid 2ml intracutaneous injection at the subareolar and identified SLN guiding ultrasonography guide after enough massages and marked the skin of the part. Indigo carmine 1ml intracutaneous injection at the subareolar was performed during an operation, and make an incision in the marked point by CEUS, and SLN biopsy is performed.

**Results:** As for the identification of SLN by CEUS, one SLN was 18 cases, two were 8 cases, and an average was 1.3 of SLN. As for the identification of SLN by blue dye, an average number of SLN was 2.11(1-7), non SLN was 2.42(1-6). After the axillary incision, an average time of SLN identification was 10.8 minutes(3-22).

**Conclusions:** Positioning of SLN which was more precise than before incision was enabled by CEUS combined with conventional blue dye method, and it contributed to shortening in SLN identification time. Furthermore, the identification of the lymphatic vessel was enabled by CEUS, and the identification of SLN which it was hard to identify was possible by the blue dye method. As for the SLN identification method by CEUS, the precision of the blue dye method improves without the danger of the being bombed; the combination method with CEUS and blue dye was feasible.

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### Feasibility of Contrast-enhanced and High-resolution 7 Tesla MRI in Patients with Suspicious Breast Lesions

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**Background:** 7T MRI offers diagnostic possibilities that have the potential to improve the staging of breast cancer patients. The purpose of this study was to assess the feasibility of 7T contrast-enhanced breast MRI, using a sensitivity-optimized RF coil setup, and its amenability to BI-RADS-MRI-conform analysis.

**Materials and Methods:** 18 women with 21 suspicious lesions on mammography or ultrasound (BI-RADS 4 (n=4), and BI-RADS 5 (n=14)) were included for 7T imaging (Philips Healthcare, Cleveland, USA), using a homebuilt two-channel unilateral RF breast coil. The scan protocol included a fat-suppressed 3D T1w gradient echo dynamic series during which 0.1 mmol/kg Gadobutrol was injected [TR/TE 5.0/2.0ms, FOV 160<sup>3</sup> mm<sup>3</sup>, acquired res. 1 mm isotropic, temp. res. 63s]; and a high resolution T1w 3D gradient echo SPAIR sequence [TR/TE/TI 7.0/2.9/120ms, FOV 120<sup>3</sup> mm<sup>3</sup>, acquired res. 0.45 × 0.57 7times; 0.45 mm<sup>3</sup>]. Two radiologists scored all exams blinded for clinical information. Image quality of the dynamic series was scored as insufficient, sufficient, good or excellent. All lesions were scored according to BI-RADS-MRI criteria. High-resolution images were similarly scored for image quality, and for additional clinical value using 4 options: none; increased reader confidence; change in interpretation or other. Only biopsy-proven malignant lesions were included in further analysis.

**Results:** Image quality of the dynamic series was scored sufficient (n=8/8, (radiologist 1/ radiologist 2)), good (n=9/10) and excellent (1/0). All 18 malignant lesions were detected by both radiologists, scored according to the BI-RADS-MRI criteria and assessed as a BI-RADS-MRI category 4 or 5 lesion, i.e. suspicious abnormality or highly suggestive of malignancy, respectively. High-resolution images were obtained in 15 patients. They showed great detail of the lesions' morphological features. Image quality was scored sufficient (n=1/0), good (n=2/9) and excellent (n=12/6). More than half of the high-resolution scans increased reader confidence (n=13/9 cases). Moreover, in some cases (n=3/5) the radiologist changed his interpretation of BI-RADS-MRI descriptor(s).

**Conclusion:** This study has shown the technical feasibility, at least sufficient image quality, and amenability of contrast-enhanced and high-resolution 7T MR exams to BI-RADS-MRI-conform analysis. This allows for further exploration of the clinical potential of high-field breast imaging while simultaneously providing BI-RADS-conform diagnoses at 7T.

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### Completion Axillary Dissection Can Safely Be Omitted in Screening Detected Breast Cancer Patients with Micrometastases in the Sentinel Node Biopsy

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**Background:** The need for completion axillary dissection in breast cancer patients with micrometastases in the sentinel node biopsy is controversial.

**Material and Methods:** During 2001 to 2010 a total of 1822 breast cancer patients had surgery at Lund University Hospital. Of 1822 patients, 1323 had a sentinel node biopsy and all patients with micro- and macrometastases had axillary dissection. Isolated tumour cells in the sentinel lymph nodes were not offered any further axillary surgery. The sentinel lymph nodes were analyzed by frozen sections at the time of surgery and on paraffinembedded tissue for definitive pathological result.

**Results:** Micrometastases >0.2 mm and ≤2.0 mm were found in 42 (8%) of 521 screening detected cases and in 80 (10%) of 802 cases with clinical breast cancer. None of the screening detected cases with micrometastases had metastases in the completion axillary dissection whereas metastatic non-sentinel nodes were found in 17 (21%) of the clinical cases with micrometastases. Screening detected cases with micrometastases had a median tumour size of 14 mm (7-30 mm) as compared with a median tumour size of 18 mm (5-51 mm) of the clinical cases. No statistical difference was seen in age (median 61 vs 57 years), number of sentinel nodes (median 3.0 vs 2.5), number of axillary nodes (mean 13 vs 12 nodes), size of micrometastases (median 1 mm in both groups), ER status (83 vs 91% cases positive), PgR (69 vs 80% cases positive), or histological grade (grade 1, 2 and 3: 31, 55, 14 % vs 24, 49, 27%). For clinically