Incidental enhancing lesions found on preoperative breast MRI: management and role of second look ultrasound

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PURPOSE: To investigate the role of second look high resolution ultrasound (US) for the evaluation of incidental enhancing lesions detected on preoperative breast magnetic resonance imaging (MRI) that have no correlation on x-ray mammography and first look ultrasound.

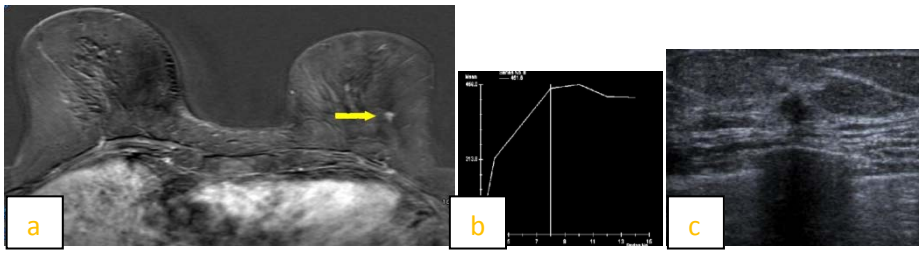

Fig.1 The transverse contrast enhanced T1-weighted subtracted MR image reveals an enhancing mass (arrow) with spiculated margins in the lower outer quadrant of the left breast (A). Second-look US directed at the site of the lesion revealed a hypoechoic mass (arrow) with malignant features (C). The lesion was resected after US-guidance localization and was subsequently confirmed as an ILC at pathology

MATERIALS AND METHODS: Between November 2004 and March 2007, 182 patients with suspected breast cancer based on conventional imaging modalities and confirmed by pathology underwent breast MRI with 0.1 mmol/kg o c.a. for staging. Patients with additional incidental lesions on breast MRI thereafter underwent a second look high resolution US examination directed specifically at the site of the incidental finding. Correlation of enhancement patterns (mass vs non-mass) between MR and US was performed. Images were evaluated in consensus and comparison was performed for diagnostic performance. Final diagnosis was based on biopsy or follow up.

RESULTS: Breast MRI detected 55 additional lesions in 46/182 patients that were not seen on x-ray mammography or initial whole-breast US. Of these 55 lesions, 42 corresponding lesions were subsequently detected on second-look US in 38/46 patients. Twenty-four of the 42 lesions with a US correlate were confirmed as malignant compared with 7 of 13 lesions without a US correlate. Second-look US depicted 8/9 BI-RADS 5 lesions, 16/22 BI-RADS 4 lesions and 18/24 BI-RADS 3 lesions. The ability of second look US to identify incidental lesions was higher for mass than for non-mass enhancement. Sensitivity, specificity, accuracy, PPV and NPV for the differentiation of malignant from benign lesions was 100%, 88.9%, 94.5%, 90.3% and 100%, respectively, for MRI and 90.5%, 61.9%, 76.2%, 70.4% and 86.7%, respectively, for second-look US.

CONCLUSIONS: Direct second look US is a feasible confirmatory method for incidental findings in breast MRI. Directed second-look US is potentially a cheap and readily available technique for localization and biopsy of suspicious incidental lesions detected on MRI alone.