

## Multi-Site Mammotome® MR Biopsy with Implants

### History

Patient AD is a 57-year old woman with a remote history of breast carcinoma status post right lumpectomy and radiation therapy in 1982 with subsequent bilateral implant reconstruction who presented for work-up of left axillary lymphadenopathy. Breast MRI demonstrated multiple 2 to 3mm clustered enhancing nodules in the anterior 12 o'clock position of the left breast, as well as a 10mm speculated enhancing nodule in the mid-9 o'clock position of the left breast. Both sites had suspicious morphokinetic features, and therefore, biopsy was recommended. The left axilla was otherwise unremarkable. Sonography dated 11/10/2005 demonstrated an ill-defined and lobulated 10mm mass in the mid-left 9 o'clock position, which was associated with a vague speculated density on mammography in the same position. These mammographic and sonographic findings appeared to correlate with the MRI finding.

No significant sonographic or mammographic abnormality was identified in the anterior 12 o'clock position. Although the lesion in the 9 o'clock position was accessible for sampling under sonographic guidance, the patient required biopsy of the 12 o'clock lesion under MRI guidance, and therefore, both the 12 and 9 o'clock sites were biopsied in a single MRI-guided procedure.

### Procedure

Both biopsies were performed under aseptic conditions. The left breast 9 o'clock lesion was initially targeted (*Figure 1*). With the patient in the prone position, the left breast was placed in compression with careful attention to appropriately displace the implant using the Invivo (Invivo Corporation) OBC 4-channel breast coil, permitting exclusive lateral access to the left breast. After initial pre-gadolinium imaging demonstrated accessibility of both targets with the Mammotome® MR 11G probe, gadolinium was administered intravenously and then dynamic axial and sagittal imaging of the breast was performed at 90, 180, and 270 seconds. Post-processing was performed. Computer-assisted targeting was employed. Appropriate coordinates for both lesions were calculated (*Figure 2*). 20cc 1% buffered lidocaine was injected along the course of the biopsy needle employing a 25G spinal needle.

A small dermatotomy was made with a scalpel and then the 145mm Mammotome® MR targeting set was inserted employing the pillar and post device. Repeat axial and sagittal T1-weighted imaging without additional gadolinium administration was performed to verify appropriate positioning (*Figure 3*). The probe was inserted and 12 samples were obtained from the area in question. A micro-clip was deployed at the biopsy site. Again, repeat axial and sagittal T1-weighted imaging without additional gadolinium was performed and appropriate positioning was documented prior to removal of the biopsy device (*Figure 4*). Hemostasis was achieved with direct pressure. Attention was then directed towards the second target in the anterior 12 o'clock position (*Figure 5*).

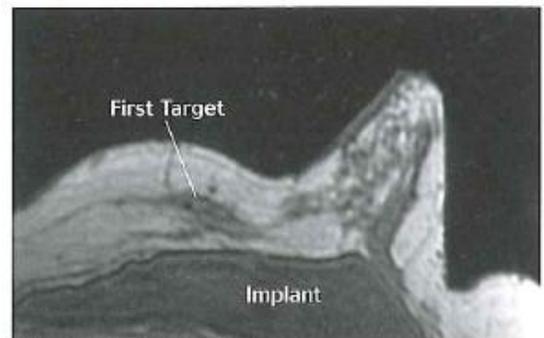


Figure 1 Lesion Image, Target 1



Figure 2 Fiducial at Skin Surface, Target 1



Figure 3 Targeting Confirmation Image, Target 1

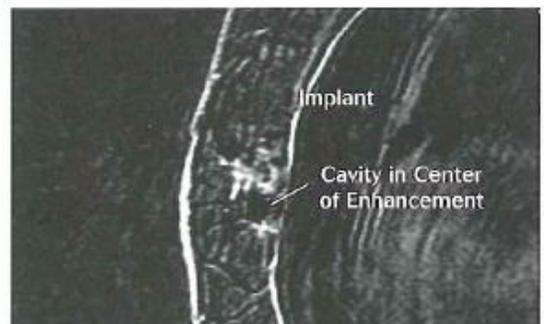


Figure 4 Post Biopsy Cavity, Target 1

A second small dermatotomy was made at an appropriate location with a scalpel, and then the 115mm Mammotome® MR targeting set was inserted employing the pillar and post device. Again, repeat dynamic axial and sagittal T1-weighted imaging following additional gadolinium administration confirmed appropriate targeting (*Figure 6*). Upon insertion of the Mammotome® MR probe, 12 samples were obtained from this region. A micro-clip was also deployed at the biopsy site. Follow-up MR imaging confirmed appropriate clip positioning (*Figure 7*). The biopsy device was removed and hemostasis was achieved.

A post-biopsy mammogram was ultimately performed and demonstrated appropriate clip positioning at both biopsy sites.

### Discussion

The proximity of the lesion in the 9 o'clock position to the implant required no significant deviation from the calculated needle path since there was only a 5mm margin of error which would otherwise potentially result in implant disruption. An experienced mammography technologist assisted with implant displacement positioning which permitted access to the lesion from the lateral aspect of the left breast.

The pillar and post technique, in association with the long Mammotome® MR biopsy needle permitted lateral access to a deep medial lesion with great precision and at the same time maintained implant integrity. Breast compression, in association with patient counseling and compliance, prevented motion and maintained target positioning, which ultimately also permitted a second target to be biopsied with ease in the 12 o'clock position, despite the fact that the lesions were sampled successively over a 70-minute period. The ability to imaging the sampling aperture with respect to the target elevated the level of confidence in targeting both lesions.

### Summary

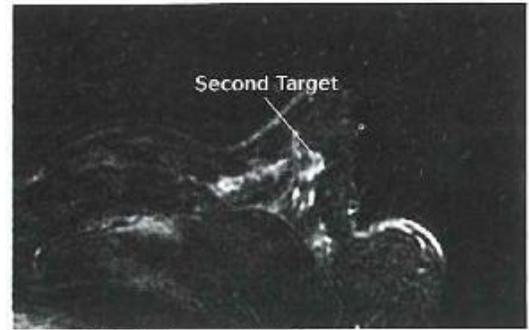
At the anterior left breast 12 o'clock position, benign breast tissue with changes of adenosis was reported without evidence of atypia or malignancy. These findings were concordant with the nodular enhancement in this region.

At the mid-9 o'clock position, benign proliferative breast disease, including benign breast tissue with focal epithelial hyperplasia of the usual type associated with rare microcalcifications, was identified. No atypia or malignancy was seen.

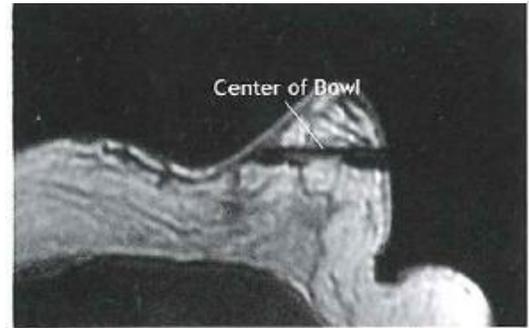
These findings were also concordant with the MRI appearance.

### Courtesy

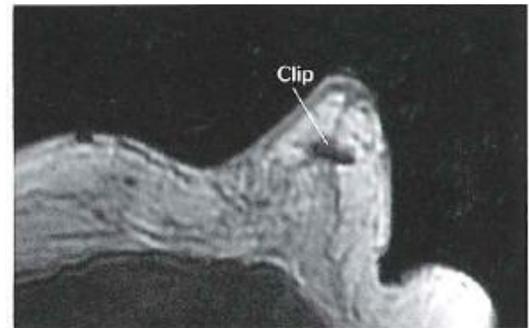
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*Figure 5* Lesion Image, Target 2



*Figure 6* Targeting Confirmation Image, Target 2



*Figure 7* Post Biopsy Tissue Marker Confirmation, Target 2