

Low Dose Molecular Breast Imaging (MBI) in the Surgical Setting: Initial Clinical Experience

Stanley B Pollak, MD; Susan Coletta, RT(M), CB-NI ; Conellia Ha, MD

INTRODUCTION

Over the last decade molecular breast imaging with γ -emitting technetium labelled radiotracers has gained increased interest as a complementary tool to mammography (Mx). Molecular breast imaging (MBI), using ^{99m}Tc -sestamibi has demonstrated in clinical studies high sensitivity in the detection of small size (≤ 10 mm) carcinomas, with values ranging from 86 to 91% [1-4]. The use of MBI imaging to guide surgical management involves careful evaluation of additional suggestive findings. One study has shown MBI to be effective in preoperative staging in subjects with lesions that are highly suggestive of malignancy at Mx [5]. Metabolic information provided by MBI could play a major role in guiding the preoperative investigation and patient treatment planning.

The aim of this study was to retrospectively evaluate the potential benefits of low dose molecular breast imaging (MBI) in the context of the diagnostic surgical setting to evaluate women with a prior history of breast cancer, equivocal mammography finding or positive mammography finding.

METHODS

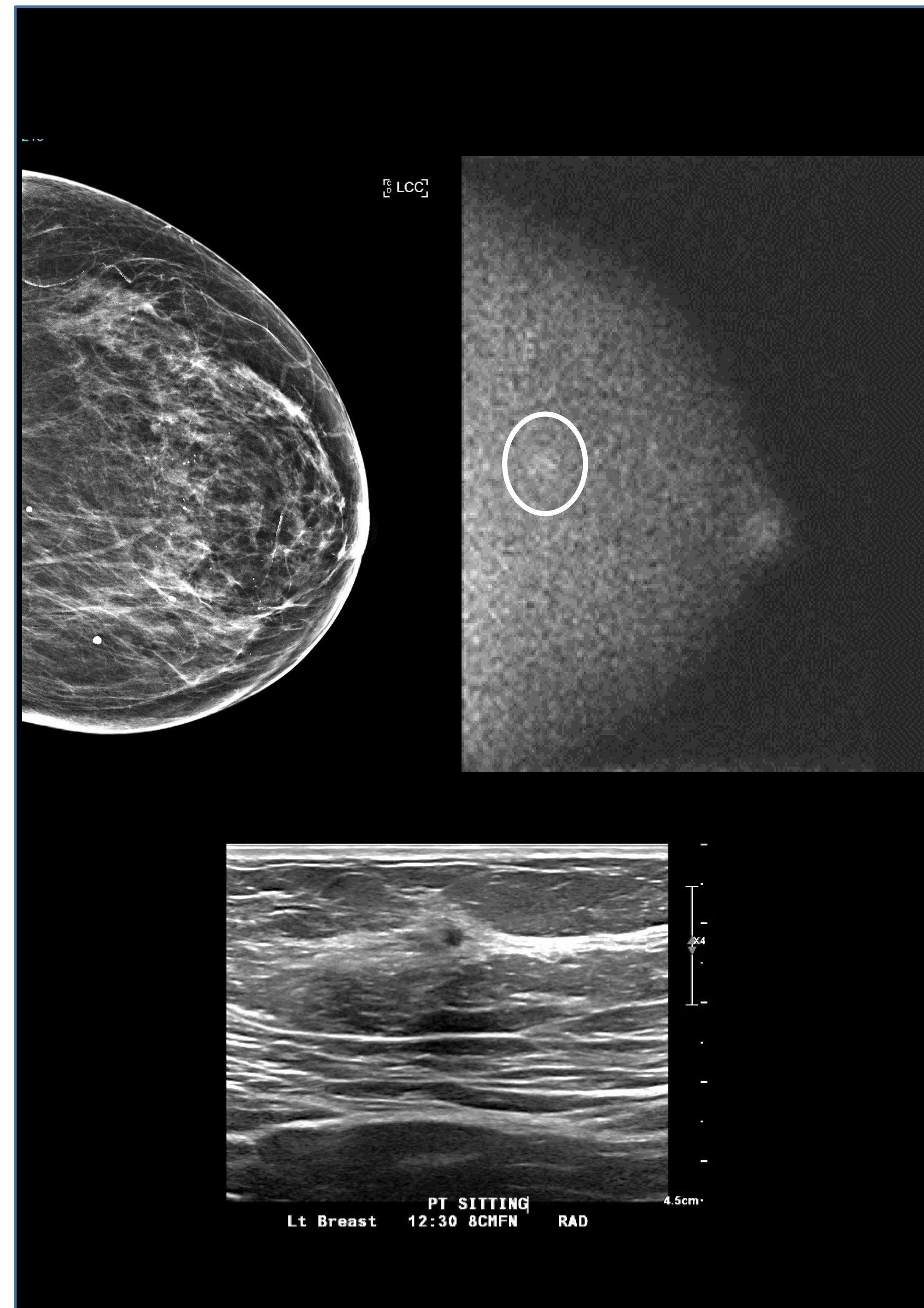
MBI was performed on 93 patients at our center between March 2017 and June 2018. Patients ranged in age from 30-79 years with an average age of 57.9 years. All of the patients underwent bilateral MBI scanning after intravenous injection of 8mCi ^{99m}Tc -sestamibi. Imaging acquisition was initiated within 5 minutes using the LumaGEM dual head, planar, solid state digital system with cadmium zinc telluride (CZT) technology. Standard cranio-caudal and medio-lateral oblique views of each breast were obtained.

RESULTS

We are reporting on 63 patients, 64 at the breast level (1 bilateral case). Thirty patients were excluded from this analysis because they do not yet have reference standard. Twenty two subjects (35%) had a prior history of breast cancer. Breast density was reported by interpreting radiologist as C or D in 66.7% (42/63). Nineteen subjects (30.1%) had histologic confirmation of current breast cancer, 6 of these had biopsy prior to MBI. MBI was used to evaluate extent of disease in these patients.

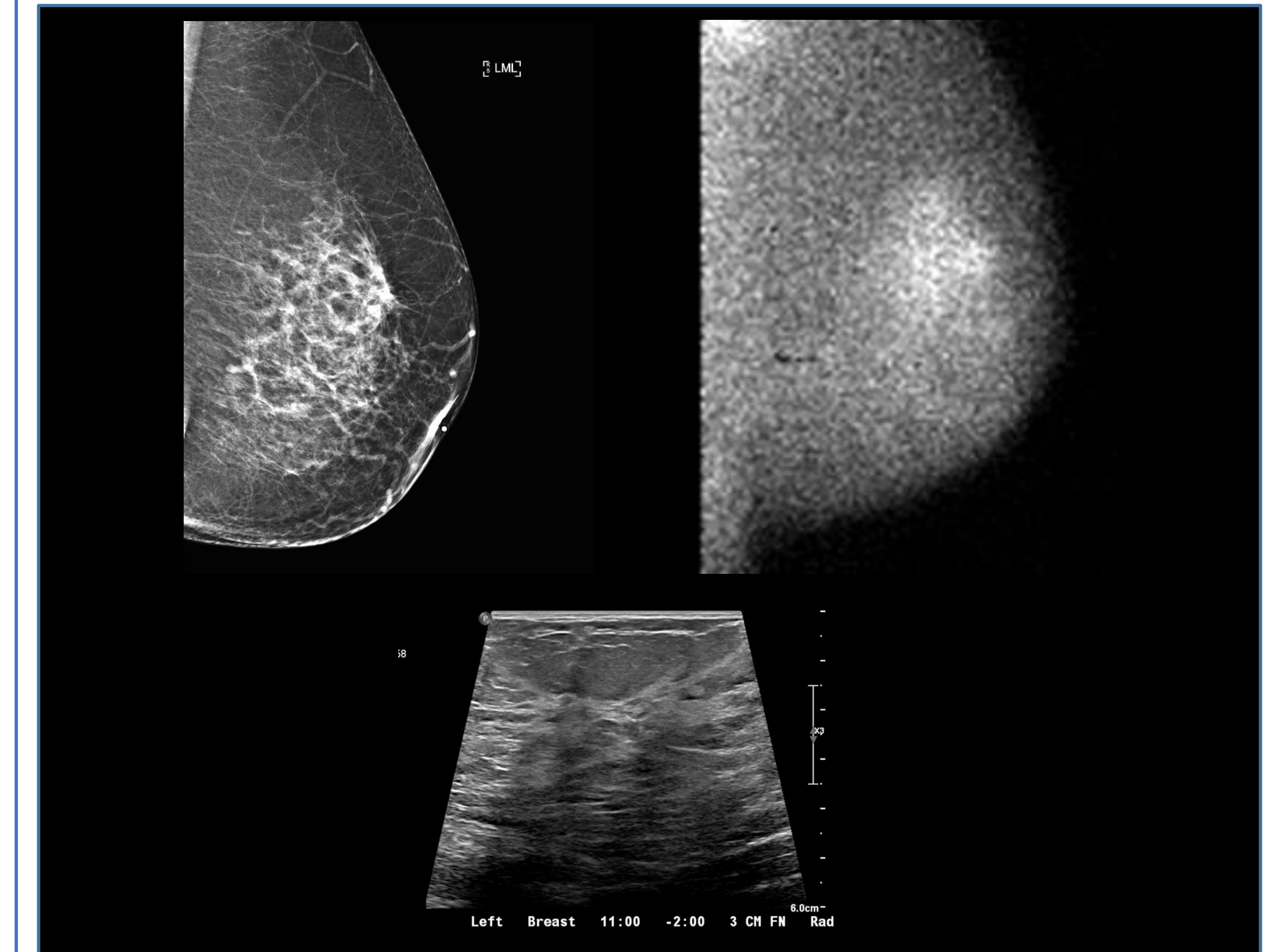
MBI was positive in 100% of pre-biopsy histologic confirmed cancers (13/13) Mammography was positive in 91.7% (11/13), and equivocal in 16.7% (2/13). MBI downgraded BIRADS in 10 cases (15.8%).

Figure 1: Occult Contralateral Cancer



58 y/o woman with confirmed right breast cancer. MBI done for surgical planning. Subtle focal tracer uptake seen in the left mid-breast. Biopsy confirmed Invasive Ductal Carcinoma (IDC).

Figure 2: Invasive Lobular Carcinoma



Outside referral mammogram and sonogram negative, patient complaint of skin thickening left breast. Referred for MBI for further workup. Diffuse uptake left breast. Biopsy confirmed Invasive Lobular Carcinoma (ILC).

CONCLUSIONS

Low dose MBI is an effective adjunct imaging modality in the surgical setting to evaluate patients who present with prior history of breast cancer or current mammographic findings. It is also a valuable tool to evaluate disease extent in newly diagnosed patients.

REFERENCES

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