THE AMERICAN SOCIETY OF Breast Surgeons

# POSITION STATEMENT ON IMAGE-GUIDED PERCUTANEOUS BIOPSY OF PALPABLE AND NONPALPABLE BREAST LESIONS

The goals of minimally invasive biopsy techniques (MIBT) are to accurately diagnose malignant or pre-malignant breast lesions when present and to avoid an open surgical procedure for those with benign abnormalities.[1,2] The use of MIBT to establish a diagnosis of cancer prior to any surgical procedure is considered a Breast Quality Measure.[2-5] A preoperative diagnosis of a malignant or pre-malignant abnormality allows consideration of additional breast imaging prior to initial therapy and maintains patient eligibility for neoadjuvant systemic therapy trials. Furthermore, fertility, plastic surgical, and genetic consultations, when appropriate, can all be obtained before the definitive surgical excision is performed. A preoperative diagnosis also optimizes oncologic and cosmetic surgical planning of the breast and axillary staging with the goal of minimizing the number of surgical interventions. When a diagnosis of cancer has been made preoperatively, surgery can more often be performed as a single procedure with clear margins, resulting in fewer financial and nonfinancial burdens to the patient.

MIBT include, but are not limited to, fine needle aspiration (FNA) (25-28 gauge), core needle biopsy (CNB) (8-14 gauge), vacuum-assisted needle techniques (7-11 gauge), and rotating cutter and other types of devices. The choice of device depends on the target lesion (mass vs microcalcifications), target location (mid-depth breast vs adjacent to skin or implant vs axilla), intent to remove the entire lesion, and training and experience of the surgeon**.** A CNB or vacuum-assisted technique is usually preferable to FNA cytology for all breast lesions because the tissue obtained with a core biopsy provides histology to characterize lesion architecture and to perform marker analysis and immunohistochemistry staining. For smaller lesions (1 cm or less), percutaneous excision using a vacuum-assisted or other enhanced tissue acquisition device with clip placement may be considered. Sampling error may be reduced in such cases although randomized controlled trials to compare these techniques to standard CNB have not been reported. For larger (greater than 1 cm) suspicious masses, 14-gauge core needle biopsy is often sufficient. In general, a clip or other marking device should be considered at the time of percutaneous biopsy of all suspicious lesions to improve the accuracy of future localization if there is concern the lesion may be completely removed during MIBT or if the patient is

anticipated to undergo neoadjuvant therapy. Neoadjuvant treatment may result in loss of target due to tumor regression prior to surgical excision.

Image guidance for MIBT is recommended for both palpable and nonpalpable lesions to increase accuracy of sampling. A percutaneous breast biopsy of a palpable mass without the use of image guidance may lead to a false-negative result since the biopsy device cannot be confirmed to be within the lesion of interest as some palpable lesions have a surrounding inflammatory reaction that may be palpable but not contain malignant cells. In most instances, ultrasound (US) is the preferred modality for image guidance in patients with palpable masses. Imaging modalities available for targeting of nonpalpable breast lesions include breast US, mammogram (stereotactic), and magnetic resonance imaging. If the lesion is visible sonographically, this biopsy technique is preferred as it optimizes patient positioning and comfort. Multiple professional organizations provide recommendations for proper image annotation, image archiving, and medical record documentation for MIBT.[4,6-9]

High success rates to achieve pathologic and imaging concordance by MIBT are achievable.[5] Multiple reports demonstrate a success rate of 90% or greater. After MIBT, care providers must perform imaging-histology concordance assessment and consider whether a malignant or pre-malignant lesion may have been "missed" by the percutaneous needle biopsy.[10-14] Concordance of clinical breast examination, imaging, and the biopsy results must always be determined.[4,6,7,9-14] Discordant biopsy results are an indication to either repeat a percutaneous biopsy or proceed directly to the OR for surgical excision.

There are justifiable reasons why the diagnosis of a breast abnormality cannot be made by MIBT. Lesions that cannot be accurately targeted by image guidance and some lesions immediately juxtaposed to an implant, chest wall, or skin may not be amenable to MIBT. There are also multiple patient factors that may preclude MIBT, including inability to lie prone for stereotactic or MRI-guided MIBT, mental disability that limits patient cooperation, and body habitus, such as extreme kyphosis or obesity. The management of patients who are receiving antiplatelet and anticoagulant treatment who are referred for MIBT is unclear. The risk of the patient bleeding from MIBT must be balanced against their risk of anticoagulation cessation prior to the procedure. This decision may require consultation with the patient's prescribing care provider. Finally, patient preference of biopsy technique or lack of access to imaging-guided biopsy equipment may not allow MIBT. The ASBrS supports patient shared decision-making regarding MIBT.

The use of MIBT for diagnostic breast evaluation has been endorsed as a Quality Measure by the ASBrS.[2] There are other measures of quality that also help define the full extent and complexity of MIBT.[3,5,12] Surgeons who perform MIBT should track the number of discordant results that required surgical biopsy and the number of "missed cancers" in patient follow-up,

and document post-MIBT management of patients who have benign or "high risk" lesions. A comprehensive discussion of the management of patients with "high risk" lesions and discordant lesions is beyond the scope of this position statement but can be found in the references below.[10,12,14] Care providers who offer MIBT are advised to utilize a patient database to document long-term follow-up to allow them to document the sensitivity, specificity, positive predictive value, and negative predictive value of their MIBT practice.[3,5,12] The ASBrS Mastery Program provides a patient registry and synoptic templates for quality review of patients undergoing MIBT.[15]

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