

Marker Clips: a Necessity for Every Breast Biopsy Procedure

Percutaneous needle biopsy is firmly established as standard of care in the diagnosis of breast disease. Insertion of a tissue marker following percutaneous needle biopsy has been referenced in multiple clinical studies to be essential in managing patient care, both for treatment and subsequent imaging studies.

"The use of biopsy markers after percutaneous biopsy is one of the keys for optimal patient management, helping the radiologist to deal with multiple lesions, to insure correlation across different imaging modalities and to follow-up benign lesions, helping the oncologist by marking a tumor prior to neoadjuvant chemotherapy, helping the surgeon by facilitating preoperative needle localization, to precisely mark the margins of extensive disease and to guide intra-operative tumor resection, and helping the pathologist to insure the lesion of interest has been removed and to identify the region of interest in a mastectomy specimen."

Thomassin-Naggara et al., A plea for the biopsy marker: how, why and why not clipping after breast biopsy?, Breast Cancer Res Treat (2012) 132:881-893.

There is compelling clinical rationale to support the placement of tissue markers for all percutaneous breast biopsies for the following reasons.

All mammographic/sonographic evidence of the lesion has been removed

"In some patients, the tumor is no longer visible either on mammography or sonography, thus making the preoperative needle localization difficult or even impossible. By placing a radiopaque marker before the lesion becomes unidentifiable, one can confidently localize the tumor bed at surgery."

Usefulness of tissue marker clips in patients undergoing neoadjuvant chemotherapy for breast cancer, Dash et al., AJR Volume 173, Number 4 October 1999.

"The markers reportedly were the only remaining evidence of the original tumor site in 23 of 49 patients (47%)."

Julia L. Oh, MD et al. Placement of Radiopaque Clips for Tumor Localization in Patients Undergoing Neoadjuvant Chemotherapy and Breast Conservation Therapy, CANCER Volume 110, Number 11, 1 December 2007

Detection of a malignancy

"...only the detection of clips allowed the pathologist to discriminate between the pathological specimens and locate the focal lesion."

Samimi et al. Mastectomies after vacuum core biopsy procedure for microcalcification clusters: Value of clip European Journal of Radiology Volume 69, Issue 2, Pages 296-299, February 2009

A landmark is needed for pre-surgical therapies such as neoadjuvant chemotherapy where the lesion has shrunk from treatment and there is nothing left to localize for surgery

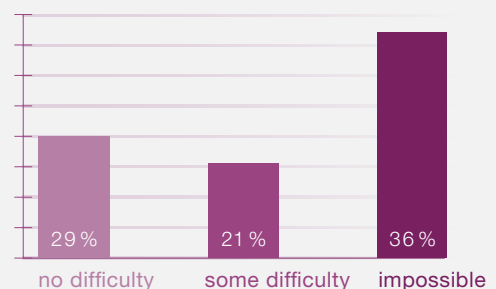
"The placement of radiopaque clips in patients who were receiving neoadjuvant chemotherapy and breast-conservation therapy was associated with better local control independent of stage and other clinicopathologic findings."

Julia L. Oh, MD et al. Placement of Radiopaque Clips for Tumor Localization in Patients Undergoing Neoadjuvant Chemotherapy and Breast Conservation Therapy, CANCER Volume 110, Number 11, 1 December 2007

"...clip placement was valuable in 57.1% of...patients at the time of preoperative needle localization."

Nilima Dash et al. Usefulness of tissue marker clips in patients undergoing neoadjuvant chemotherapy for breast cancer AJ R Am J Roentgenol October 2009, Volume 173, Number 4

EASE OF PRE-OPERATIVE WIRE LOCALIZATION WITHOUT MARKER CLIP FOLLOWING NEOADJUVANT CHEMOTHERAPY¹



Presence of several lesions, allowing future identification of areas already sampled at biopsy

“Women with multiple solid lesions are often followed for years, and clips can clearly show which lesions have been sampled, avoiding re-biopsies when patients are investigated in different institutions.”

Thomassin-Nagarra et al., A plea for the biopsy marker: how, why and why not clipping after breast biopsy?, Breast Cancer Res Treat (2012) 132:881–893

Patient is transferred to another facility

“Multiple biopsy sites can also yield differing pathologic results, some requiring excision while others only need surveillance; ...biopsy clips allow for precise surgical planning and facilitate mammographic follow-up.”

Thomassin-Nagarra et al., A plea for the biopsy marker: how, why and why not clipping after breast biopsy?, Breast Cancer Res Treat (2012) 132:881–893

Correlation of the lesion(s) between mammogram and another modality

“...the MicroMark clip was embedded in the superior end of the mammographically visible nodule, objectively proving that the sonographic abnormality that had been biopsied and the mammographic lesion were indeed the same structure.”

Mark A. Guenin, Clip Placement During Sonographically Guided Large-Core Breast Biopsy for Mammographic–Sonographic Correlation AJR October 2000, Volume 175, Number 4

Benefits of Collagen

Collagen markers are proven to offer several advantages, including support of hemostasis post-biopsy, minimizing clip migration and enhanced sonographic visibility. The application of collagen as a hemostat takes advantage of the inherent property of platelet binding to collagen, an action that initiates the clotting cascade in patients with hematoma.

“Collagen-based products are activated on contact with bleeding and provide a scaffold to which platelets can adhere. This stimulates the body’s normal coagulation mechanism. These products provide a stable matrix for clot formation, but also enhance platelet aggregation, degranulation, and release of clotting factors, which further promotes clot formation.”

Moss, Management of Surgical Hemostasis, An Independent Study Guide, AORN 2013

“...we found significantly fewer cases in which the clip-to-target distance was 1 cm or greater on at least one mammographic projection with the collagen-plug marker clip (5/31) than with the conventional metallic marker clip.”

Rosen et al. Accuracy of a Collagen-Plug Biopsy Site Marking Device Deployed After Stereotactic Core Needle Breast Biopsy AJR Am J Roentgenol. 2003 Nov;181(5):1295-9

“The most significant advantage we found with the MammoMARK is the ability to consistently localize [it] using sonography.”

Krakos et al. Advantages of Using the New MammoMark Percutaneous Breast Biopsy marker – a Large Center Experience.

References:

1. Nilima Dash et al. Usefulness of tissue marker clips in patients undergoing neoadjuvant chemotherapy for breast cancer AJ R Am J Roentgenol October 2009, Volume 173, Number 4