Original Study

Localization Methods for Excisional Biopsy in Women With Nonpalpable Mammographic Abnormalities

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Abstract

Wire-localized excisional breast biopsy should remain a stable of the surgeon's practice owing to the fact that radiologists and surgeons are familiar with the technique, it is low-cost, and it does not involve special expensive equipment or radioactivity handling. The use of wire-localized excisional breast biopsies in expanded scenarios will decrease costs for the health care system and make the technique accessible to more patients.

Introduction: With the advent and proliferation of breast cancer screening programs, more women are being diagnosed with mammographic abnormalities that require tissue diagnosis. If imaged-guided biopsy is not possible or previous image-guided biopsies reveal pathologies that require more extensive surgery, guided excisional biopsy/lumpectomy may be necessary. **Methods:** Fifteen women were enrolled in the study of the feasibility of off-site or day-before wire-localization excisional biopsy of the breast with mammographic abnormalities. Five patients had their localization wire placed the day before, whereas 10 patients had their localization the same day with surgery in a distant procedure room under straight local anesthesia. **Results:** Two of the 15 patients had an eventual cancer diagnosis from their wire-localized excisional breast biopsy. All patients had their mammographic abnormality removed with the previously placed core biopsy clip, and there was 100% radiologic/clinical correlation. All patients' wounds healed primarily without any surgical site infections. **Conclusion:** The protocol answers 2 questions concerning the wire-localized excisional breast biopsy technique. The series shows that the wire-localization technique can be performed the night before or in a location away from the procedure room that would allow better synchronization with surgical schedules or allow the procedure to take place in low-cost settings away from the expense of the hospital operating room.

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Introduction

With the introduction of screening mammography programs across the country in the 1980s and 1990s and clinical research showing that these programs can diagnose breast cancer at an earlier stage with accompanying better prognosis, more surgeons will be called upon to obtain tissue diagnosis of these nonpalpable mammographically detected lesions. Most of these abnormalities are initially biopsied with an image-guided core technique. The easiest method to implement is an ultrasound-directed core for most mammographic abnormalities or with the stereotactic technique that is primarily used to biopsy suspicious areas of microcalcifications that cannot be seen on ultrasound. Image-guided core biopsies may not be applicable to areas in the breast, including superficial lesions or abnormalities in the subareolar area or axillary tail. In addition, with some pathology reports from core biopsy, including atypical ductal hyperplasia (ADH), atypical lobular hyperplasia, nonconcordant pathologies, or a cancer diagnosis, an excisional biopsy or lumpectomy may be necessary. The wire-localization technique has been the most popular method to direct the surgeon during excisional biopsies or guided

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lumpectomies in these situations. Lately, a number of new technologies, including radio-guided surgery[1] or radio—frequency-guided surgery[2] have been proposed to be used in this situation. This report details the newer technologies used for localized excisional biopsies or lumpectomy and makes a case for the standard procedure of wire-localization in expanded scenarios of use.

Methods

The series includes 15 women with suspicious abnormal mammograms. Six patients had the mammographic finding of clustered microcalcifications in areas of the breast not amenable to image-guided core biopsy; 4 patients had new densities that wanted them completely removed; 2 patients had ADH on core biopsy, and an excisional biopsy was recommended; and 3 patients had no insurance and needed to limit costs of the procedure for out-of-pocket payment. Ten patients had their wire-localization placed the morning of their surgical procedure in the Radiology Department of the hospital and were then transported to the outpatient clinic building for their wire-localization procedure the same day under straight local anesthesia. The remaining 5 patients had their wire-localization performed up to 18 hours prior and were sent home. The next day they underwent their surgical procedure in an outpatient surgery center under laryngeal mask airway-general anesthesia at 7:30 am the next morning. The localization wires were placed with mammography or ultrasound guidance, localizing the previously placed core-biopsy marker clip or the mammographic abnormality. In the procedures performed the previous day, the wire-localization was secured with taping to minimize any trauma to or movement of the localization wire.

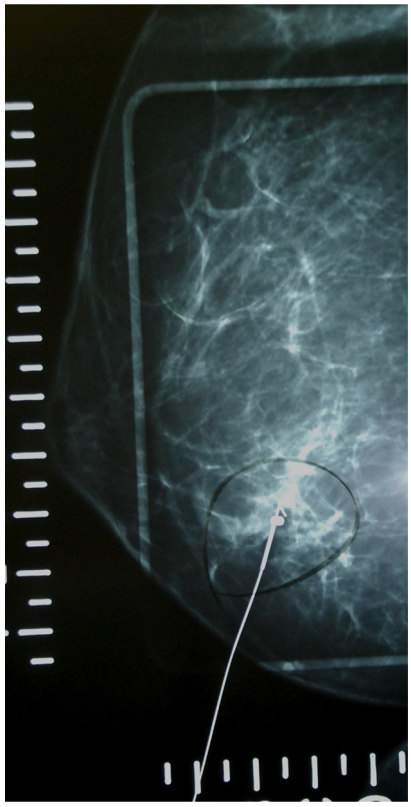
The anesthesia technique is important when this procedure is performed under straight local anesthesia. One percent Xylocaine with epinephrine is used, diluted 50% with normal saline. The skin incision is drawn over the approximate location of the mammographic abnormality and the skin and subcutaneous tissue is dissected sharply and with electrocautery. Hemostasis is secured with electrocautery. The localization wire is found in the subcutaneous tissues and brought into the wound. Flaps are created in all directions with local anesthesia being instilled as the flaps are created so that communication can occur with the patient as the anesthesia is administered to ascertain the correct location and judge the efficacy of the local anesthesia. Allis clamps are placed in each corner, and a retraction suture is placed at the approximate location of the mammographic abnormality. The remainder of the peripheral flaps are fashioned, and the biopsy is subsequently turned under to obtain a suitable deep margin. Again, local anesthesia is given to this deep margin as it is created to obtain patient feedback and not use excessive local anesthesia.

Five patients had their wire-localization the night before and underwent successful excisional biopsy the next day with documented clinical/pathology correlation. Another 10 patients had their wire-localization in the radiology section of Tampa General Hospital and, with suitable taping, were transported to an off-site clinic procedure room for their wire-localization the same day.

Results

All 15 women underwent successful needle-localization biopsy with recovery of the previously placed biopsy clip and/or the mammographic abnormality as documented in the specimen or with specimen mammography. Two of 15 patients were diagnosed with malignancy, whereas the other 13 patients had a benign final diagnosis.

Figure 1 Medeolateral (ML) View Mammogram of the Left Breast After Wire-Localization of Core Biopsy Clip in the 4:00 Area



Figures 1 and 2 shows the mediolateral oblique and craniocaudal views of the left breast of a case after wire-localization of a typical patient who had the diagnosis of ADH on image-guided core biopsy. The localization wire is left long and taped down to the chest wall throughout its length (Figure 3) to minimize the risk of movement or dislodgement. At the time of the biopsy, the localization wire is cut to a more manageable length (Figure 4), and the wire-localized biopsy proceeds under straight local anesthesia in the clinic or under monitored anesthesia care-general anesthesia in the outpatient surgical center. Figure 5 shows the surgical specimen with a localization wire in place.

There were no surgical site infections in the 15 patients that underwent the delayed excisional biopsy after the wire-localization. There were no incidences of migration or displacement of the localization wire between the time of the wire placement and the excisional biopsy.

Discussion

With the advent of screening mammography programs in the United States and in the international community, more women are being seen with mammographic abnormalities that are not palpable