

Clinical Experience with Hologic Brevera® Breast Biopsy System

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Introduction

Screening mammography has led to the detection of earlier stage asymptomatic breast malignancies. In fact, 15-20% of the breast cancers detected at screening are non-invasive ductal carcinoma in situ, DCIS.¹ Often the only sign of cancer on the mammogram is a calcification.¹ While certain patterns of calcifications are associated with a higher likelihood of malignancy, biopsy is required to definitively distinguish between benign and malignant calcifications.^{2,3} Vacuum assisted stereotactic guided breast biopsy has emerged as the preferred method for diagnosing calcifications.⁴ Not only is stereotactic biopsy as sensitive as surgical excisional biopsy in detecting malignancy, but it is also more cost effective, less invasive, and less time consuming.^{5,6} Since 70-80% of biopsies of calcifications are benign, it helps patients avoid unnecessary surgery.^{4,7} For patients diagnosed with malignancy, the precise preoperative histologic diagnosis allows for better treatment planning.⁷

The Hologic Brevera breast biopsy system further optimizes the performance of stereotactic guided breast biopsy. Its time saving features improve upon the overall efficiency of the process, decreasing procedure time by an average of 10 minutes.⁸ This positively impacts the patient experience and facility workflow.

In this white paper, I will discuss our center's experience with the Hologic Brevera breast biopsy system. Over the past year, we have performed more than 370 biopsies with this system. As a busy center, performing over 44,000 exams per year, the Brevera biopsy system allows us to free up resources while also improving the patient's experience.

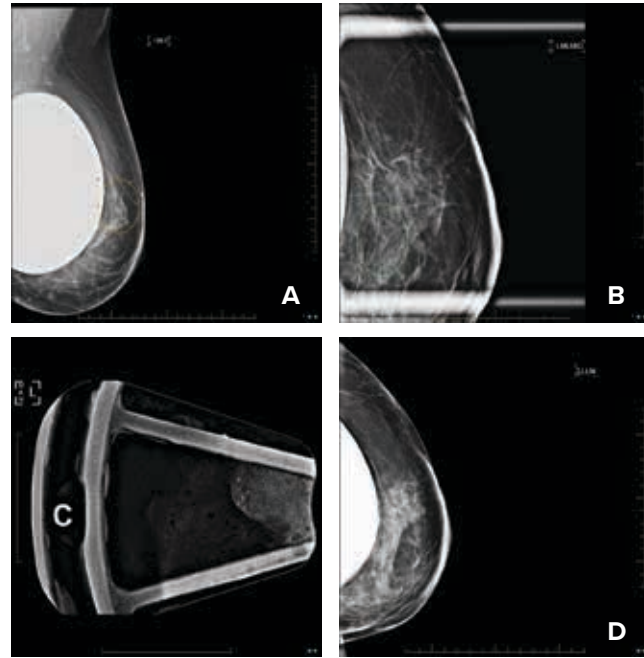
Brevera allows instantaneous sample verification:

During stereotactic guided breast biopsy, specimen radiographs are obtained to confirm the presence of the calcifications and adequate targeting of the lesion. Traditionally, imaging of a tissue specimen is performed on a mammography unit outside of the procedure room after all of the samples are obtained. The patient waits in compression with the needle in place in her breast until the presence of the calcifications within the specimen is verified. If the sample is not sufficient, the process repeats itself. Moving from room to room for verification, lengthens the time of the procedure and ties up resources.

The Brevera breast biopsy system obtains a tissue specimen after each specimen is acquired. The image of the specimen displays on the screen of the unit itself within seconds of acquisition. This allows more adequate sampling since real time adjustments can be made if the target calcifications move due to injected lidocaine, needle advancement, hematoma or patient movement. It also decreases the number of samples taken since the radiologist can stop when a sufficient number of calcifications are present in the samples. In our practice, this has resulted in a 50% reduction in the number of samples taken during a biopsy, decreasing patient time in compression and the risk of bleeding.

The instant verification can be particularly helpful in challenging settings. In our practice, we have a significant number of patients with breast implants. During a recent biopsy of calcifications in close proximity to an implant, the radiologist could limit the number of samples taken by verifying immediately that calcifications were present in the first three samples. See Figure 1.

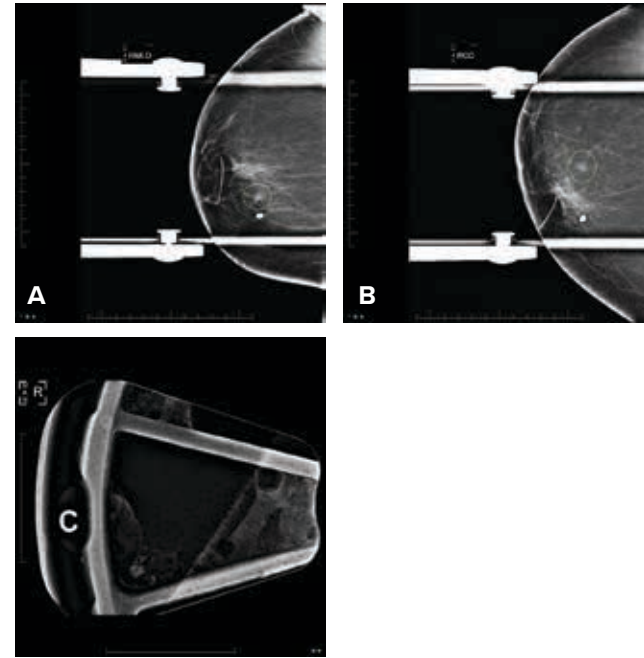
Figure 1.



Lateral (A) and lateral magnification views (B) of suspicious microcalcifications adjacent to the implant in the 3:00 position of the left breast. First specimen radiograph demonstrated calcifications (c). After 3 samples with calcifications present, a clip was deployed confirming adequate sampling and the close proximity of the biopsy site to the implant (D). The pathology report confirmed infiltrating ductal carcinoma with associated intermediate grade DCIS.

While stereotactic breast biopsy is predominantly performed for microcalcifications, it can also be used for sampling other mammographic findings without sonographic correlates such as small masses, asymmetries or distortions. As with microcalcifications, the acquisition of a tissue specimen can demonstrate the successful removal of the mass or target lesion. When performing a biopsy of a small mass, as in Figure 2, sampling can be stopped when the target lesion is confirmed on the Brevera system.

Figure 2.



Mediolateral oblique (A) and craniocaudal spot views (B) of a small mass in the 9:00 position of the right breast. When the specimen radiograph demonstrated the small mass, the biopsy was concluded (c). The pathology report described an abscess with focal necrotic debris.

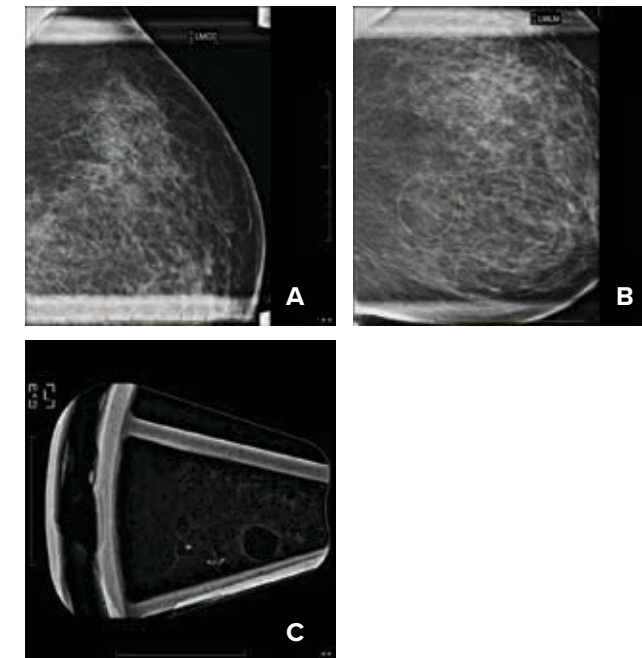
Brevera decreases procedure time:

The reduced procedure time from using the Brevera breast biopsy system improves workflow in our facility. By acquiring the tissue specimen in the procedure room, we no longer need to block time on our mammography units for specimen image acquisition, allowing for more efficient use of the unit. Our technologists have also found that the preparation time for the procedure is shorter. This has been observed at other sites as well. When 293 technologists were surveyed on their experience with the Brevera biopsy system, 86% percent of the respondents said that the preparation time was somewhat better or much better.¹³ Decreasing the amount of time that the technologists spend performing the procedure optimizes department workflow, making them available for other exams.

Brevera improves patient experience:

The patient's experience is an integral part of percutaneous breast biopsies and is influenced by her comfort during the procedure itself.^{9,10} With stereotactic guided breast biopsies, patients often report discomfort unrelated to the procedure itself, such as neck, back or rib pain.² When compared to an ultrasound guided core needle biopsy, 28% of patients reported body position as a source of discomfort compared with 0.4% of patients undergoing ultrasound guided core needle biopsy.¹¹ With the Brevera biopsy system, the patient is in compression for a shorter period of time and the overall length of the procedure is decreased, minimizing patient discomfort and improving the overall patient experience. The Brevera system allows us to successfully biopsy patients with back or neck issues that can only lie prone for a brief period of time. This is particularly helpful with an aging population. The images in Figure 3 are from a stereotactic guided breast biopsy performed with the Brevera system on a patient who had undergone a cervical fusion. The patient was able to tolerate lying prone for the short duration of the procedure and the diagnosis of DCIS was made with percutaneous biopsy.

Figure 3.



Craniocaudal (A) and lateral (B) magnification views of suspicious calcifications in the lower outer quadrant of the left breast. Radiograph (c) obtained during specimen acquisition confirmed the presence of the calcifications, limiting the number of specimens obtained and decreasing procedure time which was critical for this patient with cervical fusion.

Brevera separates samples for pathology:

With the Brevera biopsy system, the samples are collected in a 12 chamber filter which automatically separates the samples for pathology, enhancing the efficiency and accuracy of the procedure. The samples with calcifications can easily be identified for the pathologist on the specimen container. The automatic separation of the samples prevents the loss of specimen integrity that can sometimes occur with manual handling of the samples. The automation of sample collection allows the technologist to focus on the patient and other aspects of the procedure.

Brevera needle versatility:

For patients with breast tissue that compresses to less than 3 cm in thickness, a petite biopsy device with a shorter excursion and smaller aperture may be needed to acquire samples.¹² Most stereotactic biopsy systems have two different biopsy needles – a standard (20 mm aperture) and a petite (12 mm aperture). With the Brevera system, each individual needle has the capability to be used with a standard or a petite aperture. By rotating the introducer, the 12 mm or 20 mm aperture can be selected for each procedure. This allows rapid conversion between standard and petite apertures based on the calculated breast thickness and lesion depth. It simplifies purchasing and minimizes waste related to incorrect selection of the biopsy device prior to the procedure.

Conclusion

The Brevera breast biopsy system has revolutionized stereotactic guided breast biopsy. Real time imaging of specimens, automated specimen handling and needle versatility positively impact the patient experience, increase procedure accuracy, decrease procedure time and improve facility workflow.

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