Breast tomosynthesis biopsy: a case study

Dr Pierre Gignier, radiologist at the Medical Imaging Center at the Hôpital Privé d’Antony, Paris, France, describes how tomosynthesis is used to accurately target small lesions, shorten procedure time and lower radiation dose, resulting in a more efficient breast biopsy.

When the Medical Imaging Center at the Hôpital Privé d’Antony implemented breast tomosynthesis in 2009, its staff realised it would lead to the emergent need to use tomosynthesis imaging for biopsies. “When we find a suspicious lesion with tomosynthesis, which we could not see on 2D, we need to use the same imaging modality to biopsy the lesion,” explains radiologist Dr Pierre Gignier. “If we try to perform the biopsy with digital mammography, we sometimes cannot visualise the lesion or find it very challenging to locate, making targeting more difficult, if not impossible.”

The Medical Imaging Center, located outside of Paris, France, is one of the best-equipped imaging centres in the region, offering a full range of breast services, including mammography, biopsy and ultrasound. The Center’s staff of three dedicated breast imagers perform approximately 7000 mammograms annually using the Hologic® Selenia® Dimensions® tomosynthesis system. They also complete as many as four biopsies a week using the Hologic Affirm™ breast biopsy guidance system with the Dimensions system.

Pioneering advanced diagnostics
When the hospital originally considered the adoption of tomosynthesis, Dr Gignier evaluated the two companies that had commercial tomosynthesis systems available at the time. With an eye to the future, he was interested in working with a company to develop a tomosynthesis biopsy solution. “I saw the need for tomosynthesis-guided biopsy capabilities and wanted an affiliation with a company that recognised the same need,” declares Dr Gignier. “Hologic seemed to be the ideal partner.”

Today, the Medical Imaging Center is one of the first to utilise the Affirm system for tomosynthesis-driven breast biopsy procedures, enabling radiologists to easily locate and target lesions, including those visible only on the 3D images.

Locating subtle lesions
The hospital uses tomosynthesis for all patients, so being able to biopsy using the 3D images is critical to accurately locating subtle lesions. “Tomosynthesis is essential for the visualisation of small lesions or architectural distortions that may be hidden by superimposed tissue.”

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Case study

Dr. Gignier states, “Now the Affirm tomosynthesis option lets me accurately target those lesions, which may not be visible on standard 2D images.”

In a tomosynthesis scan, the X-ray tube head moves over the breast, acquiring 15 low-dose images over a 15-degree arc. These images are reconstructed into thin, 1-mm thick slices which can be viewed on a diagnostic workstation. The tomosynthesis images are designed to reveal the inner architecture of the breast free of interference from superimposed tissue above and below the slice of interest.

The tomosynthesis images are an easy add-on to the Dimensions system and using the tomosynthesis biopsy option enables significantly simplified procedures. According to Dr. Gignier, the Affirm system provides a larger field of view, enabling him to view the entire breast in the scout view, not just the area displayed in the biopsy window. Dr. Gignier also notes that the Affirm tomosynthesis biopsy procedure uses a lower dose than stereotactic biopsies, because only one view is needed to check the positioning and to target. Dr. Gignier finds that breast biopsy using tomosynthesis guidance requires fewer views, saves procedure steps and time compared with stereotactic breast biopsy procedures.

Dr. Gignier uses Hologic’s ATEC® breast biopsy system with a 9-gauge hand piece, which gives him the flexibility to choose which needle to use depending on the breast size and location of the target. “I tried different biopsy systems and I prefer the ATEC system. It enables us to acquire samples more quickly because they are automatically collected in the closed chamber at the back of the hand piece. I can control the biopsy better, and I can inject anaesthetic during the procedure.”

Conclusions

“Tomosynthesis is a major breakthrough in breast imaging,” concludes Dr. Gignier. “Now with tomosynthesis biopsy, we have better visualisation of lesions, and we can shorten the procedure time, lower the dose and provide a more efficient procedure. Personally, I always use tomosynthesis biopsy.”

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