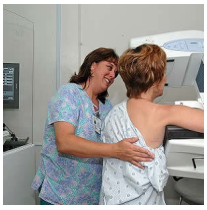
Breast Tomosynthesis Technique Reduces Screening Recall Rate



Researchers have developed a new digital breast tomosynthesis (DBT) technique that can reduce the rate at which women are called back for additional examinations without sacrificing cancer detection. The new method may render full-field digital mammography (FFDM) in breast imaging unnecessary, according to a report published in the journal Radiology.

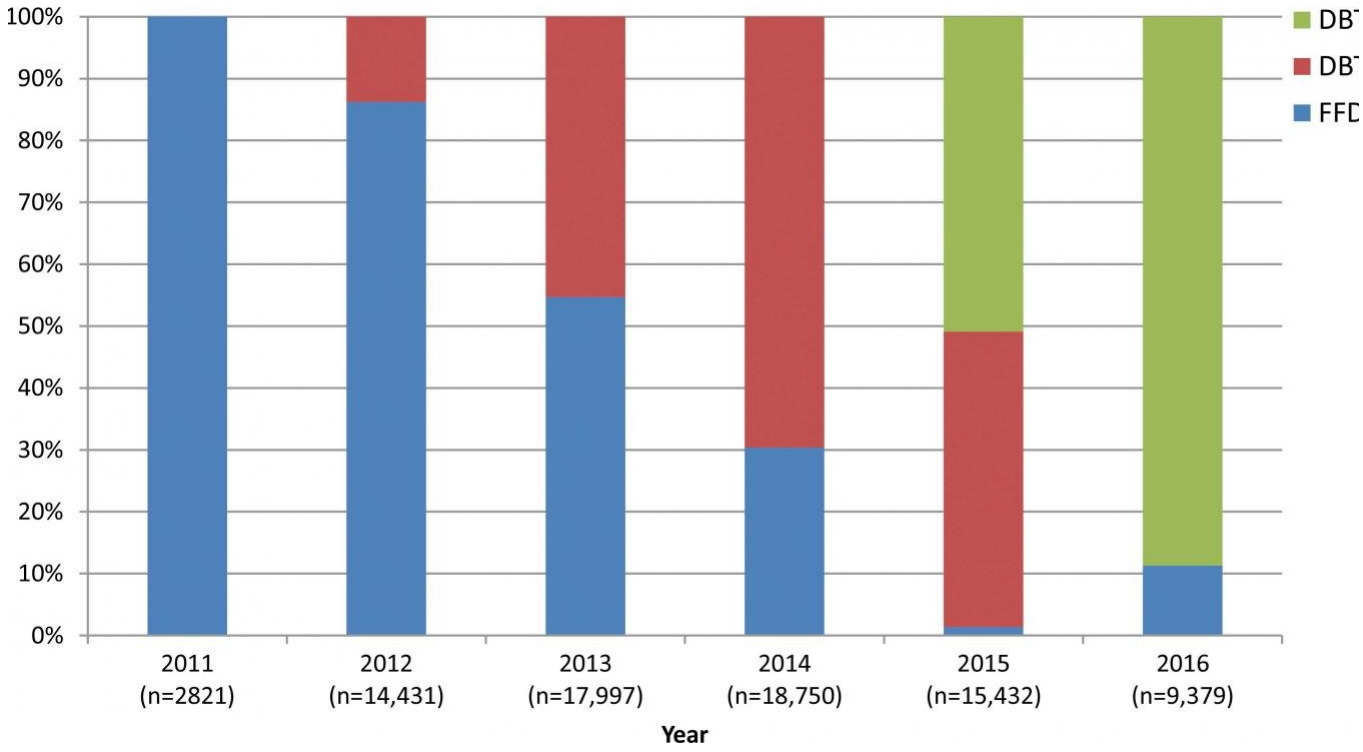
See Also: Improving Early Detection of Breast Cancer

DBT uses a scanner that rotates partially around the breast, providing individual images of thin layers of tissue. When used with FFDM, DBT has been shown to improve cancer detection and reduce callbacks for additional examinations. However, the combination of the two methods requires a second radiation exposure to the breast, while also slightly increasing the time a patient spends in breast compression.

The new technique involves the use of DBT images to create a synthesised 2D (s2D) compilation image. "The adoption of s2D mammography combined with DBT into screening programmes would limit radiation exposure to the patient, and, on the basis of our results, may improve clinical performance," says Jacqueline S. Holt, MD, FACR, director of Breast Imaging at Christiana Care Health System's Helen F. Graham Cancer Center & Research Institute.

Dr. Holt and colleagues set out to compare the clinical performance of DBT-s2D with that of DBT-FFDM and FFDM alone. As part of a community oncology programme dedicated to breast imaging, the researchers were able to study 78,810 screening mammograms performed from 2011 to 2016. In the study group, 32,076 women were screened with FFDM, 30,561 women were screened using DBT-FFDM and 16,173 women were screened using DBT-s2D. Performance was assessed by looking at recall rate, the cancer detection rate, and positive predictive value (PPV), or the ability to predict if an image-detected abnormality is cancer. The key findings include:

- Overall detection rates were similar, but DBT-s2D detected 76.5 percent of invasive cancers (vs. 61.3 percent for DBT-FFDM)
- Recall rate: 4.3 percent for DBT-s2D vs. 5.8 percent for DBT-FFDM
- False positive rate: DBT-s2D's 3.6 percent was significantly lower than DBT-FFDM's 5.2 percent
- The positive predictive value of biopsy for DBT-s2D was 40.8 percent, compared to 28.5 percent for DBT-FFDM



Graph shows percentage of screening breast examinations of each modality per year included in the study period. Note gradual decrease in percentage of FFDM studies from 2011 to 2015 and corresponding increase in percentage of DBT studies. Sample size (n) refers to number of breast examinations.

In addition, the positive predictive value of biopsy for DBT-s2D was 40.8 percent, compared to 28.5 percent for DBT-FFDM.

"If synthesised 2-D imaging is performed, you'll get equal or better patient outcomes and go to a lower radiation dose," Dr. Holt says. "These findings could be a practice-changer globally."

The doctor also notes the potential cost savings arising from the adoption s2D mammography. "The downstream cost reduction when women don't need to be called back for additional imaging amounts to millions of healthcare dollars saved."

Source: Radiological Society of North America
Image credit: Radiological Society of North America
Image credit: United States Marine Corps

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