

Digital Breast Tomosynthesis: State of the Art

Srinivasan Vedantham, PhD, Andrew Karellas, PhD, Gopal R. Vijayaraghavan, MD, MPH
Daniel B. Kopans, MD

Radiology: Reviews and Commentary – State of the Art
Volume 277: Number 3—December 2015 - radiology.rsna.org 663

Objective

- Examine the foundation for the use of digital breast tomosynthesis (DBT)—its advantages, limitations, and the importance of results from previously published major clinical studies.
- Identify the differences between the various vendors and their technological approaches.
 - General Electric: SenoClaire/Senographe Essential
 - Hologic: Selenia[®] Dimensions[®]
 - Internazionale Medico Scientifica: Giotto Tomo
 - Siemens: MAMMOMAT Inspiration
- Validate the potential of digital breast tomosynthesis in improving the confidence for diagnosis

Materials and Methods

The authors provide a review of digital breast tomosynthesis previously published papers. A comparison of current imaging systems through identifying geometry, reconstruction algorithms, and radiation dose are explained. Several of the published clinical studies are discussed in reference to the screening population, the advantage of DBT+FFDM over FFDM alone as well as the addition of a synthesized 2D images.

Findings

The majority of the studies concluded

- DBT, when performed alone or with FFDM, is either non-inferior or superior to FFDM alone
- One view DBT was proven to be non-inferior to two view FFDM
- Two view DBT was superior to one view DBT + FFDM
- Newer algorithms for generating a synthesized 2D image has the potential to reduce radiation dose
- DBT is valuable as a screening tool

Conclusion

DBT is not the same across all vendors. A two view DBT is the preferred method for imaging. Increasing cancer detection rate can be achieved when DBT is added to the screening environment. Results from the previously published clinical studies may only be applied to specific DBT systems and may not be applied to all DBT systems.

hologic.com | info@hologic.com | +1.781.999.7300