Implementation of Synthesized Two-dimensional Mammography in a Population-based Digital Breast Tomosynthesis Screening Program

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Objective

The goal of this study was to compare the performance of synthesized 2D mammography in a screening population utilizing only digital breast tomosynthesis (DBT) with a generated 2D images. A comparison of recall rates and cancer detection rates to prior outcomes of full field digital mammography (FFDM) and DBT.

Materials and Methods

The study utilized prior screening studies, from October 2011 to February 2013 from 15,571 women. Recall rates, cancer detection and biopsy rates were compared to 5,366 exams acquired between January and June 2015. The radiation dose from these exams was also reviewed and compared. The examinations were performed with the Hologic Selenia® Dimensions® system and C-View™ software.

Results

The study results conclude that DBT exams with generated 2D images are comparable to FFDM + DBT exams in their effectiveness at detecting invasive breast cancers (4.1/1000 and 3.9/1000, respectively). In evaluating the cancer detection rate between the two, there was no significant difference noted. Additionally, the low-dose screening option demonstrated an increase in the probability of a patient's biopsy finding cancer, in comparison to traditional FFDM + DBT exams (39% and 27%, respectively). Both screening methods had comparable performance, but the associated dose was significantly reduced by 39% with the adoption of a generated 2D image.

Conclusion

Screening with DBT and generated 2D images resulted in similar outcomes compared to FFDM + DBT imaging. The benefit is the decrease in radiation dose when compared to FFDM + DBT.

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