Digital Breast Tomosynthesis (DBT) In Breast Cancer Detection & Screening

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DBT, first approved for use by FDA in 2011, produces a series of thin images of the breast acquired by multiple low dose X-Ray exposures along an arc. This stack of thin images can be displayed individually or in cine mode. DBT is rapidly becoming the new standard of care for X-Ray breast imaging in both the diagnostic and screening settings.

DBT leads to improved visualization and characterization in terms of better definition of lesion shape, margin and size, and in the detection of multifocal and multicentric cancer. DBT has higher sensitivity and specificity in breast cancer detection compared to the use of digital mammography (DM) alone. The false positive recalls in screening, and false negative rates are reduced, with a trend in reduced interval cancer detection compared to DM use alone. These improvements are especially seen in the heterogeneously dense breasts.

DBT improves the efficiency of a breast center as additional 2D views (e.g. rolled or localized compression views) are no longer necessary. It has resulted in an approximately 50% reduction in the proportion of lesions assigned to the BIRADS 3 probably benign assessment category, and improved the positive predictive values of diagnostic biopsies by >50%. This in turn has led to less follow-ups and cost savings, and reduced patient inconvenience and anxiety.

Concerns regarding higher radiation dose from DM/DBT imaging is addressed by the introduction of the reconstructed synthetic 2D (s2D) view to replace the 2D portion of the DM/DBT study. This s2D view (or C-view on Hologic system), was FDA-approved in 2013, and reduced the dose by 45% to ~1.2 times that of the standard DM. Increased storage requirement is currently solved by improved data compression techniques. The longer time for radiologists' interpretation is countered by overall improved outcome with DBT.