Digital breast tomosynthesis as an adjunct to digital mammography for detecting and characterizing invasive lobular cancers: a multi-reader study

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Objective

The authors compared the interpretive performance of digital breast tomosynthesis (DBT) as an adjunct to digital mammography (DM) versus DM alone. They reviewed a series of invasive lobular carcinomas (ILCs) and determined if DBT can be utilized to characterize ILC.

Materials and Methods

This is a multi-reader, retrospective study and 83 mammographic examinations revealed 107 newly diagnosed ILCs which were determined through histology. DM and DBT acquisitions were performed on consenting women. Twelve radiologists, with varying mammography experience, reviewed both DM alone and then DM + DBT. They evaluated the studies identifying lesion location, mammographic features, and malignancy probability, utilizing the BI-RADS system.

The statistical analysis for reading with DM versus DM plus DBT compared sensitivity, false positive rates (FPR), and interpretive performance utilizing receiver operating characteristics (ROC) curve and area under the curve (AUC).

Findings

The study's analysis for DM plus DBT yielded:
- DBT plus DM significantly increased pooled sensitivity (85%) compared to DM alone (70%)
- FPR did not vary significantly with the addition of DBT to DM
- Interpreting with DBT, compared to DM alone,
    - Increased the correct identification of ILCs depicted as architectural distortions (84% versus 65%, respectively) or as masses (89% versus 70%)
    - Interpretive performance was increased for both experienced and less-experienced radiologists
    - Less-experienced radiologists demonstrated larger gains in AUC
    - DM with DBT identified more frequently multifocal and/or multicentric and bilateral disease

Conclusion

The study demonstrated significant improvement of accuracy in the interpretation ILCs and contributed to characterizing disease extent with the addition of DBT to DM.

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