

# A comparison of the accuracy of film-screen mammography, full-field digital mammography, and digital breast tomosynthesis

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## OBJECTIVE

To compare the accuracy of conventional film-screen mammography and full-field digital mammography (FFDM) with the addition of digital breast tomosynthesis (DBT) in a diagnostic setting in women recalled for further work-up after a screening mammogram.

## MATERIALS AND METHODS

738 women with 759 lesions were recalled for further work-up after a routine screening with film screen mammography. Bilateral two-view FFDM and two-view DBT were performed on these women. Each lesion on these exams was scored separately by the readers for the probability of malignancy, and scores were compared to histopathology findings.

## FINDINGS

Of the 759 lesions included in the study:

- 204 lesions were malignant (147 invasive and 57 *in-situ*), 286 benign and 269 normal.
- Receiving operating characteristic (ROC) and measurement of area under the curve (AUC) were used to evaluate the diagnostic accuracy.
- AUC showed improvements with each additional modality included:
  - DBT + FFDM + film-screen mammography = 0.9671
  - FFDM + film-screen mammography = 0.8949
  - film-screen mammography = 0.7882
- AUC values for soft-tissue lesions were greater compared to calcifications:
  - DBT + FFDM + film-screen mammography
    - » Soft-tissue lesions = 0.9905 and microcalcifications = 0.7920
  - FFDM + film-screen mammography
    - » Soft-tissue lesions = 0.9201 and microcalcifications = 0.7843

## CONCLUSION

The study concludes that the diagnostic accuracy of the assessment of soft-tissue mammographic abnormalities increases with the addition of DBT, compared to combined FFDM and film-screen mammography and film-screen mammography alone.

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