Prospective trial comparing full-field digital mammography (FFDM) versus combined FFDM and tomosynthesis in a population-based screening programme using independent double reading with arbitration

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OBJECTIVE

To compare double readings when interpreting full field digital mammography (2D) and tomosynthesis (3D) during mammographic screening.

MATERIALS AND METHODS

A prospective screening study is underway. 2D and 3D imaging were performed during the first year on 12,621 consenting women. Four radiologists independently interpreted each examination under 4 reading modes. Analysis was done on the paired double reading of 2D (Arm A+B) and 2D+3D (Arm C+D).

- Arm A – 2D
- Arm B – 2D+CAD
- Arm C – 2D+3D
- Arm D – synthesized 2D+3D

RESULTS

- Double reading of tomosynthesis-based examinations significantly reduced false-positive interpretations. False-positive interpretations were decreased by 18% using 2D plus tomosynthesis.
- Double reading of tomosynthesis-based examinations significantly increased the detection of breast cancers by approximately 30%. The detection of invasive cancers was increased by approximately 40%.

KEY FINDINGS

1. Tomosynthesis-based screening was successfully implemented in a large prospective screening trial.
2. Double reading of tomosynthesis-based examinations significantly reduced reduced false-positive interpretations.
3. Double reading of tomosynthesis significantly increased the detection of invasive cancers.

CONCLUSION

The study results demonstrated that double reading of 2D+3D significantly improves cancer detection rate during mammographic screening.

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