

Prospective study aiming to compare 2D mammography and tomosynthesis + synthesized mammography in terms of cancer detection and recall. From double reading of 2D mammography to single reading of tomosynthesis.

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Objective

This prospective study has two objectives. The first objective is compare single reading of tomosynthesis examinations to double reading of 2D examinations. The second objective is to assess whether 2D FFDM have any added value when using synthesized 2D mammography (s2D) together with digital breast Tomosynthesis.

Method

The prospective, population-based study included 16,067 women, ages 50-69 years, who underwent biennial screening exams with tomosynthesis plus 2D mammography between January 2015 and December 2016. Five experienced radiologists evaluated the exams.

Readers were blinded with four arms

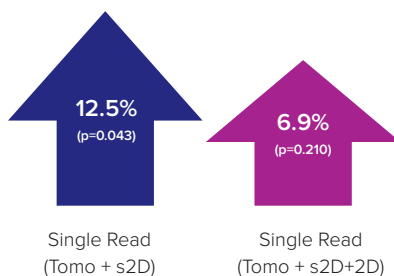
- 2D mammography (first reading)
- 2D mammography (second reading)
- Tomosynthesis + synthesized (third reading)
- Tomosynthesis + synthesized + 2D (fourth reading)

Analysis was also made of paired double reading of 2D (1st +2nd) compared to tomosynthesis single reading.

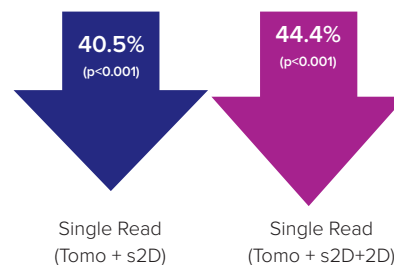
Results: In the 16,067 participants, 1,196 recalls and 98 cancers were identified.

Arm	Cancer Detection	Recall Rate	PPV Recall	PPV Biopsy
Double Reading 2D (1 st + 2 nd)	4.7%	5.0%	9.4%	39.4%
Single Reading DBT (Tomo + s2D)	5.4%	2.9%	18.0%	46.0%
Single Reading DBT (Tomo + s2D + 2D)	5.0%	2.8%	18.0%	44.8%

Single reading DBT Cancer Detection



Single reading DBT Recall Rate vs. Double Reading 2D



Other interesting results:

- Cancers detected by Tomosynthesis were smaller (size ≤ 10 mm, $p=0.021$)
- Breast density composition of study cohort (a=22.8%, b=51.0%, c=23.5%, d=2.7%)
- The addition of 2D to Tomo+SD2 did not improve results, meaning no need for 2D when SD2 is available.

Conclusions

The authors found single-reading Tomosynthesis plus synthesized 2D mammography significantly increased cancer detection and decreased recalls compared with double-reading standard 2D mammography. Adding 2D did not provide additional benefit, while using synthesized 2D results in a decreased dose.

Summary presented by Hologic Medical Education

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