

Two-view digital breast tomosynthesis screening with synthetically reconstructed projection images: comparison with digital breast tomosynthesis with full-field digital mammographic images

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Objective

To compare the diagnostic performance with 2D mammography combined with tomosynthesis after the implementation of generated 2D (Hologic's C-View software) plus tomosynthesis images in a breast cancer screening program.

Materials and Methods

In this study, 24,901 screening examinations were prospectively interpreted independently by 8 radiologists. Two versions (initial version and current new improved version) of reconstructed 2D images were used in this study. Initial version was used on 12,631 women during the periods 1 from November 22, 2010, to December 21, 2011; and the current new improved version was used on 12,270 women during the period 2 from January 20, 2012, to December 19, 2012. They were compared in terms of cancer detection and false-positive rates with the corresponding FFDM plus DBT interpretations. Two standard views (CC and MLO) were included in these modes.

Results

Interpretation of 24,901 independently interpreted examinations under these modes resulted in the following changes in performance measures. The use of synthesized 2D images combined with DBT performed comparably to FFDM plus DBT when interpreting screening mammograms in terms of cancer detection rates and false-positive scores

	DM + DBT		C-VIEW + DBT	
	Period 1	Period 2	Period 1	Period 2
False Positive Scores (%)	5.3	4.6	4.6	4.5
Cancer Detection Rates (per 1000 screening exams)	8.0	7.8	7.4	7.7
PPV (%)	28.5	32.1	30.3	34.9

Conclusion

The authors conclude that the use of generated 2D images (Hologic's C-View software) constituted an average dose reduction of 45% while not resulting in any clinically meaningful differences in diagnostic accuracy.

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