### MEDICAL EDUCATION

# Artificial Intelligence Enhanced Synthetic Thick Slabs Versus Standard Slices in Digital Breast Tomosynthesis

Sauer ST, Christner SA, Kuhl PJ, Kunz AS, Huflage H, Luetkens KS, Schlaiß Y, Bley TA, Grunz JP, **Br J Radiol.** 2023 Mar 27:20220967. DOI: 10.1259/bjr.20220967.

## Study Goal

• Retrospective analysis of the impact of reading AI enhanced synthetic 6-mm SmartSlices versus standard 1-mm slices in a diagnostic assessment center in Germany

## **Study Population**

- 111 diagnostic DBT exams from 101 patients (100 female, 1 male)
  - All patients were either symptomatic (19.8%), had a conspicuous finding in a previous examination (41.6%), were evaluated preoperatively for biopsy-proven malignancy (28.7%), or received further assessment during / after cancer therapy (9.9%).
- Inclusion criteria included presence of one or more lesions with either histopathological correlation or benign result as per one-year consistency, definite benign correlate in ultrasound or pure summation artifact (asymmetry).
- Mean age: 59.7 years
- Breast Density:
  - 6.3% Almost entirely fatty (A)
  - 51.4% Scattered fibroglandular (B)
  - 33.3% Heterogeneously dense (C)
  - 9.0% Extremely dense (D)

## Key Outcome Measures

Interpretation time and readers performance

• 3 readers with 6, 4 and 2 years of breast imaging experience and DBT, respectively

## **Key Findings**

- No significant difference was found between BIRADS categories assigned based on 6mm SmartSlices vs. 1mm datasets (p>0.317).
- Diagnostic accuracy was comparable for readings of 6mm SmartSlices and 1mm slices (p≥0.125).
- Median overall diagnostic confidence of all three readers was at least good for 6mm SmartSlices and 1mm slices.
- Mean interpretation time was found to be substantially reduced for 6-mm SmartSlices compared to 1-mm slices. (p<0.001)
- One reader reported higher confidence with 1 mm slices (R1: p = 0.033).

#### Conclusion

Employing a reconstruction protocol with artificial-intelligence-enhanced synthetic 6-mm SmartSlices instead of 1-mm slices for digital breast tomosynthesis allowed for substantial interpretation time reduction without a decrease in interpretation accuracy in the presented diagnostic setting.

#### Presented by Hologic Medical Education

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