

Comparison Between Synthesized 2D Images And Full Field Digital Mammography In BI-RADS Categorisation And Density Assessment

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OBJECTIVE

To determine whether C-View images are comparable to FFDM in BI-RADS categorization. We hypothesized that C-view are equivalent to FFDM and can replace it in routine clinical practice.

METHOD

380 patients were included and underwent FFDM and tomosynthesis of both breasts. The tomosynthesis images were synthesized to 2D images (C-View). Three readers evaluated the FFDM and C-View images independently. BI-RADS category were assessed. Histopathology findings (n=40) were compared with both FFDM and C-View.

Statistical analysis was done comparing sensitivity, specificity, positive predictive value (PPV) and negative predictive value (NPV) of C-View with FFDM as standard of reference, and both C-View and FFDM with histopathology as gold standard. Agreement for BI-RADS categories between C-View and FFDM in readers were assessed.

RESULTS

Strong agreement in all readers in BI-RADS category between C-View and FFDM (κ : 0.811, 0.888, 0.934, $p < 0.001$). When taking FFDM as standard of reference, C-View yielded >94% sensitivity, >98% specificity with >88% PPV and >99.4% NPV, with comparable sensitivity, specificity, PPV and NPV between C-View and FFDM with histopathology as gold standard. High level of reliability between readers in BI-RADS category for FFDM and C-View (ICC of 0.911 (95% CI 0.894 – 0.925, $p < 0.001$) and 0.898 (95% CI 0.879 – 0.915, $p < 0.001$) respectively). Lower radiation dose to the breasts when using C-View instead of FFDM by 52%.

CONCLUSION

Synthesized 2D images are comparable to FFDM in BI-RADS category assessment. The sensitivity, specificity, PPV and NPV of synthesized 2D images were also comparable to FFDM.

