

Digital tomosynthesis spot view in architectural distortions: outcomes in management and radiation dose

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Abstract

Purpose: To evaluate if digital breast tomosynthesis spot compression view (DBT-SCV) could be an additional projection to confirm or deny architectural distortions (ADs) detected by digital breast tomosynthesis (DBT) while assessing the average glandular radiation dose.

Methods: This is a retrospective cohort study enrolling 8864 DBT exams, of which only cases detecting primary AD and with BI-RADS 2-5 score were considered. Seventy-one AD cases examined with DBT-SCV, US and MRI were evaluated for correlation in terms of BI-RADS score; variables among exams were assessed for inter-relationships.

Results: Of all ADs identified at DBT, biopsy yielded malignancy in only 38%. PPV in identifying malignancy of ADs was higher for DBT-SCV than DBT ($p < 0.05$); the NPV of DBT-SCV was 94%. The difference between DBT and DBT-SCV in the detection of benign ADs was statistically significant ($p < 0.05$). AD without US or MRI confirmation was less likely to represent malignancy ($p < 0.05$). In detecting malignant cases of ADs, both DBT and DBT-SCV were strongly correlated with US and RM ($\text{Kappa} > 0.90$). In identifying benign cases of ADs, DBT-SCV was poorly/moderately correlated with US and RM ($\text{Kappa} 0.25$ and 0.66); DBT was negatively correlated with US and MRI.

Conclusion: DBT-SCV could be useful to better characterize AD firstly identified by DBT, keeping dose levels within the reference limits. If AD is detected by DBT without an US or MRI correlate, that is not confirmed by DBT-SCV, a "wait and see" approach can be applied to reduce unnecessary biopsy.