Comparison of one-view digital breast tomosynthesis (DBT) and two-view full-field digital mammography (FFDM)

Poster No.:	C-2258
Congress:	ECR 2012
Type:	Scientific Exhibit
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Keywords:	Neoplasia, Experimental investigations, Digital radiography, Breast
DOI:	10.1594/ecr2012/C-2258

Purpose

To compare one-view DBT and two-view FFDM in detection of breast lesion using histology as reference standard.

Methods and Materials

Forty-six patients (aged 59±11 years) with at least one breast lesion detected at screening (n=10) or diagnostic (n=36) FFDM underwent mediolateral oblique DBT (Giotto Tomo, IMS, Bologna, Italy). An independent dedicated breast radiologist reviewed all examinations (time interval at least 30 days). For each lesion, a BIRADS score was assigned both at FFDM and DBT. The BIRADS score distributions of FFDM and DBT were compared using the Wilcoxon test and the Cohen k coefficient. Considering BIRADS 1 and 2 as negative and BIRADS 4 and 5 as positive, sensitivity and 95% confidence intervals (CI) were calculated using histology of biopsied lesions as reference standard.

Results

A total of 54 lesions were detected (14 of them being invasive). Considering the five BIRADS score system (B1,B2,B3,B4,B5), the distribution at FFDM was (10,3,9,20,12), while that of DBT was (4,4,15,14,17). The BIRADS distribution of DBT was significantly shifted towards more clinically relevant scores respect the BIRADS of FFDM (p=0.048), corresponding to a poor between-technique agreement (Cohen k=0.351). Sensitivity of FFDM was 29/29 (100%; CI 88-100%), that of DBT was 28/29 (97%; 82-100%). In one patient DBT showed a bilateral tumor with only one lesion detected at FFDM; similarly, in another case, DBT showed a multifocal lesion with a focal lesion detected at FFDM.

Images for this section:

Fig. 1: Benign mass

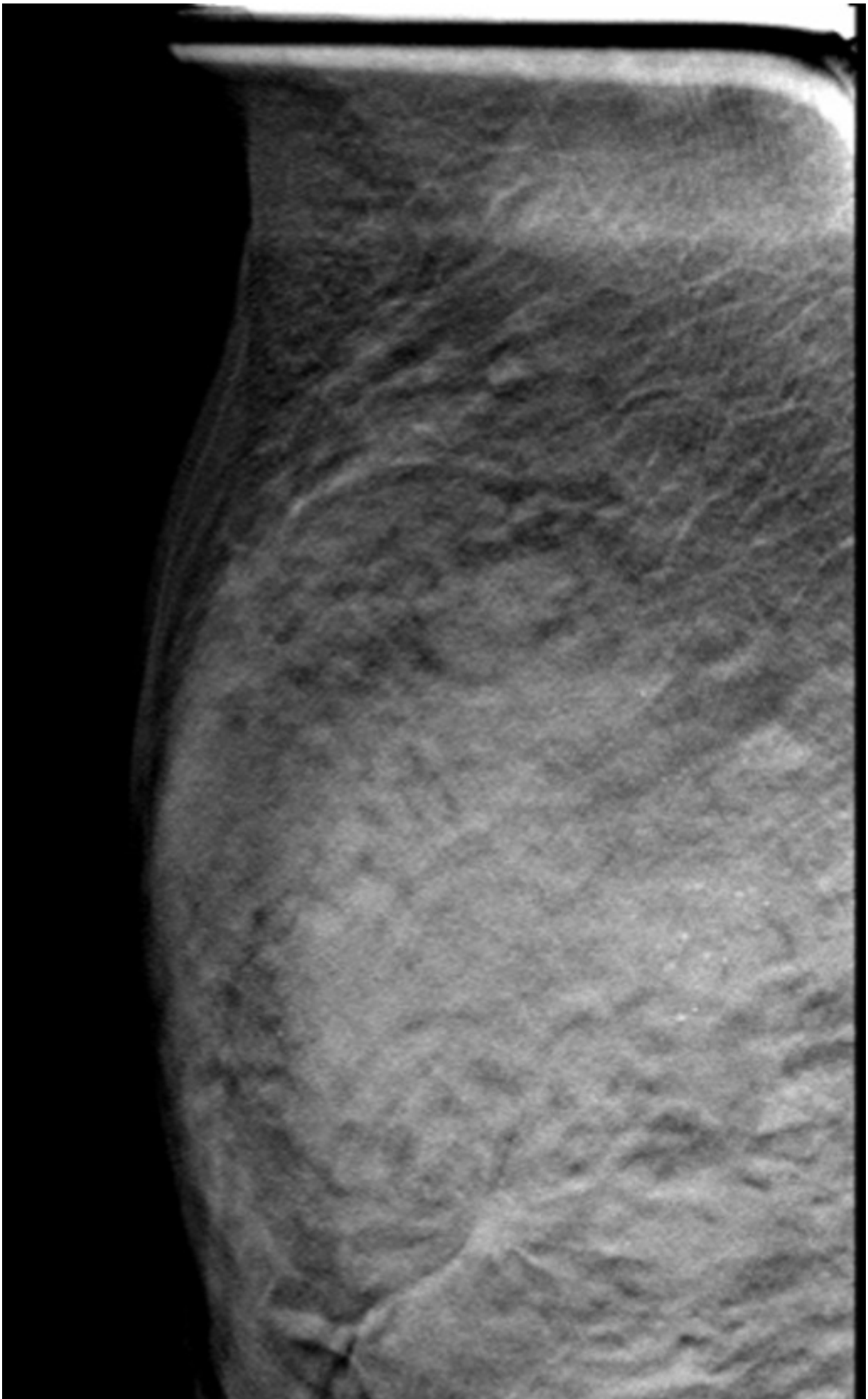

Fig. 2: malignant distortion

Fig. 3: Suspect mass

Conclusion

This preliminary study shows a diagnostic performance of one-view DBT at least equivalent to that of two-view FFDM.

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