Title: Breast cancer staging: combined Digital breast tomosynthesis and Automated breast ultrasound versus Magnetic resonance imaging

Authors: Rossano Girometti, Ludmila Tomkova, Lorenzo Cereser, Chiara Zuiani

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Informative title: Breast cancer staging: combined Digital breast tomosynthesis and Automated breast ultrasound versus Magnetic resonance imaging.

Rossano Girometti (rgirometti@sirm.org)

Ludmila Tomkova (ludmila.tomkova@yahoo.com)

Lorenzo Cereser (lorenzo.cereser@asuiud.sanita.fvg.it)

Chiara Zuiani (chiara.zuiani@uniud.it)

All the Authors have the following affiliation: Institute of Radiology, Department of Medicine, University of Udine – University Hospital „S. Maria della Misericordia“, p.le S. Maria della Misericordia n. 15 – 33100 Udine (UD), Italy, tel. +39 0432559231, fax +39 0432559867

Corresponding Author: Ludmila Tomkova (ludmila.tomkova@yahoo.com)

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ABSTRACT

Purpose: To investigate whether combined Digital breast tomosynthesis and Automated breast volume scanner (DBT-ABVS) are comparable to Magnetic resonance imaging (MRI) in staging breast cancer.

Methods: We retrospectively included seventy-three patients with histologically proven breast cancer who underwent preoperative DBT, ABVS and 1.5T MRI in the period July 2015–July 2016. Two radiologists in consensus recorded the number, site and Breast imaging-reporting and data system (BI-RADS) category of breast findings during two independent reading strategies, i.e. DBT-ABVS vs. MRI. Using histology or 1-year follow up as the standard of reference, we calculated the accuracy for cancer of both imaging strategies. Bland-Altman analysis was used to evaluate the agreement between MRI vs. DBT or ABVS in cancer size assessment.

Results: Patients showed a total of 160 lesions (108 malignant and 52 benign). Malignant lesions were unifocal, multifocal, multicentric and biltateral in 53, 15, 4 and 1 cases, respectively. Diagnostic accuracy of DBT-ABVS vs. MRI was comparable for all cancers (90.0% [95%C.I. 84.3-94.2] vs. 93.8% [95%C.I. 88.8-97.0], respectively). DBT-ABVS showed lower sensitivity and positive predictive values for additional disease (76.5% [95%C.I. 58.8-89.3] vs. 91.7% [95%C.I. 84.6-96.1], and 78.8% [95%C.I. 61.0-91.0] vs 93.4% [95%C.I. 86.9-