Redefining MRI:
From Image to Insight

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Breast 3

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Dedicated Breast CT: A New Paradigm for Breast Cancer Imaging

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MRI is the reference modality for breast cancer detection in women with dense breasts, mammography and tomosynthesis have limited sensitivity in this subgroup.

Contrast-enhanced spiral photon-counting dedicated breast CT (CE-SBCT) is a novel 3D imaging modality that utilizes a direct-converting photon-counting detector to provide high spatial resolution images (0.15 mm isotropic voxels) at radiation doses comparable to mammography without the need for breast compression.

In a prospective intra-individual study in 139 women we compared the diagnostic performance of CE-SBCT and MRI for supplemental breast cancer detection. CE-SBCT and MRI demonstrated similar performance (AUC 0.94 for both in ROC-analysis; difference 0.002, p=0.89). Sensitivity, specificity, and negative predictive value for CE-SBCT exceeded 90% across all breast densities, including in dense (ACR C/D) breasts.

Conclusion:
Contrast-enhanced photon-counting dedicated breast CT (CE-dBCT) combines high diagnostic performance with short examination times (~3 minutes for both breasts) and high-resolution 3D imaging without compression. These advantages may expand access to high-quality breast imaging, particularly for women with dense breast-tissue

Keywords: *Spiral photon-counting dedicated breast CT, Breast cancer detection, Comparison with MRI*