AbstractID: 11895 Title: Contrasted-Enhanced Breast Tomosynthesis

Digital breast tomosynthesis (DBT) is on the verge of routine clinical use in the United States; every major mammography manufacturer has a prototype under development, numerous clinical trials are in progress and one manufacturer is selling systems in Europe. DBT has been shown to have clear value in increasing the conspicuity of lesions by removing overlaying structures present in mammograms.

Regardless of the advances, DBT is currently limited to the depiction of tumor morphology. We have recently installed a Hologic Dimensions DBT prototype that has been modified to allow contrast-enhanced (CE) imaging. Both dual-energy and temporal CE-DBT are under investigation. In previous work, we have shown that CE-DBT can provide results concordant with dynamic contrast-enhanced MR in a group of 17 women with known or suspected breast cancer. Our work continues with technique optimization, reconstruction algorithm development, motion correction, and scatter and other signal dependent corrections. With appropriate corrections, CE-DBT can accurate quantify contrast agent uptake.

CE-DBT has potential benefit in a number of roles, as illustrated by breast MR. These roles include screening high-risk populations, staging cancer patients through identification of multifocal, multicentric and contralateral cancer, and assessment of tumor response to neoadjuvant chemotherapy. Research is also ongoing in the field of targeted radiographic imaging agents for breast cancer.

Learning Objectives:

1) Review the state-of-the-art in DBT system design
2) Describe adaptations necessary to perform quantitative CE-DBT
3) Exemplify the clinical applications of CE-DBT

Research support for this project has been provide in part by XCounter AB, General Electric Health Care, and Hologic Corp, in addition to the Komen for the Cure Foundation, the Department of Defense and the Radiological Society of North America.