

AbstractID: 11371 Title: Breast density measurement with cone-beam CT and MRI: a post mortem study

**Purpose:** To compare breast density measurements from cone-beam CT and breast MRI. **Methods and Materials:** Three pairs of postmortem breasts were scanned with MRI and cone-beam CT. The cone-beam CT system was built in our lab using a standard x-ray tube, a rotation stage, and a flat panel detector. The imaging technique was 80 kVp, 0.16 mAs and 921 frames spanning 360 degrees. Each scan used a total of 147 mAs. MR images were acquired with an Aurora 1.5T dedicated Breast MRI system. A T1-weighted gradient echo technique was used to maximize the contrast between the adipose and glandular tissues. Image processing procedures were implemented to segment the glandular tissue from adipose tissue. Specifically, median filters and isodata thresholding were used to identify tissue types. Percentage glandular tissue was compared between the two imaging modalities. **Results:** Breast densities computed from CT ( $D_{CT}$ ) were related to densities computed from MRI ( $D_{MRI}$ ) as  $D_{CT} = 0.851 D_{MRI} + 0.012$  ( $r^2 = 0.973$ , SE = 0.012). The average error between  $D_{CT}$  and  $D_{MRI}$  was 9.75%. **Conclusion:** The breast density measurements using Cone-beam CT and breast MRI were highly correlated. However, it is anticipated that more sophisticated segmentation techniques can further improve the results.