

AbstractID: 1371 Title: Breathing Motion Comparison of Prone and Supine Breast Setups using MRI

Most current breast cancer treatment is done in the supine position. However, the prone position might be more desirable due to the possible minimization of intrafraction motion i.e. breathing. Minimization of motion is due to the fact that the patient's chest is resting on the table and cannot move while in the supine position the chest is free to move. A minimization of breast motion allows a smaller PTV to be contoured. In order to test this hypothesis, a breathing motion study was done using MRI. Gadolinium filled fiducal markers were placed on a patient's breast. Series of 2D time-dependent scans were taken along the markers both sagittally and axially with 1s time resolution in both the prone and supine positions. The scans were done with breath hold and free breathing techniques. The experiment showed that breathing motion in the prone position was less than 1mm for both breathing techniques while the motion in the supine position was significantly more for free breathing. The breath hold technique in the supine position had minimal motion except when the patient could no longer hold her breath. This causes the breast to move suddenly. This study not only confirmed that breast motion from breathing is less in the prone than supine but it also quantified it. This study also demonstrated that the technique of treating breast cancer in the prone position using IMRT should be investigated further.