

AbstractID: 7232 Title: The place of helical tomotherapy in breast cancer : a planning and positioning comparison between tomotherapy and conventional techniques.

Purpose : The feasibility to use helical tomotherapy on breast cancer patients was investigated using conventional treatment (tangential beams) as golden standard. A diversification was made between prone and supine positioning techniques.

Method and materials: Five clinical breast cancer patients were enrolled in this study. To study the influence of treatment position, 2 planning-CTs in prone and supine were acquired and planning target volume (PTV), ipsi- and contralateral lung, heart and contralateral breast were delineated. Both conventional (tangential beams) and tomotherapy (rotational) plans were generated leading to 4 plans per patient. Dose prescription was 42Gy in 15 fractions with at least 95% on the full PTV volume and a maximum of dose of 110%. The V17 and mean dose for the lung, and maximum, mean and V17-dose for the heart and contralateral breast were used for reporting.

Results: For ipsilateral lung the tomotherapy prone plan was superior in 3/5 cases with a V17 ranging from 0.73 to 7.45% and mean dose from 1.55 to 3.99Gy. However, for the heart, conventional supine was superior. The conventional supine plans show to give less dose to the contralateral breast in 4/5 cases. The differences between the 2 modalities for heart dose were negligible. In a case by case overview the optimal plans were tomotherapy supine (2/5), tomotherapy prone (1/5) and 'equivalent' (tomotherapy and conventional) supine (2/5). : Tomotherapy in prone position provided dosimetric improvements mainly for ipsilateral lung, but with an increase of dose on the contralateral breast.

Conclusion: It is feasible to use the helical tomotherapy technique for breast cancer and, in some cases, improve target coverage. However, this could result in a higher dose on the contralateral breast, but this is mainly due to anatomical issues and not technique dependant.