

AbstractID: 5424 Title: Study the difference between IMRT and Forward Planning in designing the flash required in breast Treatment

Purpose: Study the difference between IMRT and forward planning in designing the flash required in breast treatment

Method and Materials: Using the Pinnacle³ radiation treatment planning system to deliver a uniform dose to the Planning Target Volume (PTV) by using both forward planning techniques and inverse planning techniques (IMRT). The most important issue when it comes to IMRT breast treatment planning is to control the flash opening between the breast and the MLC in order to consider the breathing parameter. In forward planning 80% of the dose is delivered by open segmentation, and similarly, in IMRT the percentage of open segmentation can be controlled by drawing a flash target volume by extension of the PTV by 2.5 cm to 3.0 cm depending on the amount of flash desired. This flash target volume is included in the objective list of the IMRT parameters as "Uniform Dose" assigned to a minimum of 80% of the total prescribed dose and a minimal weight contribution such as 1E-15. In comparing IMRT and forward planning techniques, IMRT not only allows a percentage of flash similar to the forward plan but it also achieves a more uniform dose coverage of the breast both at superior and inferior borders with reduced dose to the surrounding structures such as heart and lung.

Results: Using a flash target volume with minimal weighting as a objective parameters allows a higher percentage of each beam to be treated open in the modulated segmentation.

Conclusion: For IMRT breast treatment planning, a flash target volume can be used as an objective parameter during optimization to help increase the percentage of segmentation to be treated as open.

Conflict of Interest (only if applicable):