

AbstractID: 6448 Title: Evaluation of IMRT Delivery Differences for Varian and Elekta Accelerators

Purpose: To analyze and evaluate treatment delivery time, total number of MU, and number of control points with similar IMRT plans delivered both on Varian 21EX and Elekta Synergy accelerators. Comparison of maximum dose based on a minimum volume of 2ccs was also reviewed.

Method and Materials: Prostate and breast plans with similar +/-5% angles and using the same step and shoot technique were chosen for this study. These plans were created with the Pinnacle v7.4 DMPO planning system. The total MU, time (normalized for minor differences in dose rate delivery) and number of control points needed to execute these IMRT plans was compared. Maximum dose was evaluated utilizing the treatment planning software statistics and DVH.

Results: The Synergy took slightly more time to deliver a similar IMRT plan than the 21EX. The 80 Elekta leaves moved more slowly than the 120 Varian leaves but the most time consuming element was the fact that the Elekta diaphragms moved for each segment. Although the carriage shifts laterally for Varian 120 leaf MLC delivery for very large fields necessitating more time, this was not needed for any of the cases studied.

Conclusion: The advantage of the diaphragm movement is that larger field sizes may be delivered with the Elekta MLC without splitting beams. The movement is necessary to block the inherent leaf gaps due to the MLC limitation. Because of the slightly longer treatment time with the Elekta, patient selection and patient movement must be considered. The study did not account for time for any imaging including port films or CBCT for localization. Both accelerators produced clinically acceptable treatment plans for delivery.

Conflict of Interest (only if applicable):