

AbstractID: 7320 Title: Is Jaw-Only IMRT feasible for Head and Neck cancer treatment?

Purpose: The Direct Aperture Optimization (DAO) has enabled direct machine parameters such as positions of MLC or conventional jaws use in optimization for IMRT treatment. With DAO, one can create IMRT plans using conventional jaws. Feasibility studies for simple tumor shapes such as the prostate and breast were reported. This study is to investigate the feasibility of using conventional jaws to deliver complicated IMRT plans for patients with nasopharyngeal cancer

Method and Materials: Six patients with nasopharyngeal cancer previously received IMRT treatment at our institution were re-planned with jaw only (JO) and MLC options using a commercial treatment planning system. The same beam angle arrangements (typically 9 beams) as in the original IMRT plans were used for both JO and MLC plans. The plan acceptance criteria were established according to the RTOG-0225 protocol. Number of segments per beam from 5 to 9 was experimented with JO and MLC plans.

Results: Of six these patients, the JO plans with the maximum 9 segments per beam met the plan acceptance criteria. Four MLC plans with 9 segments per beam met the plan acceptance criteria, and one MLC plan met the criteria with minor variation. Because the TP system uses the simulated annealing method for optimization, one MLC plan did not meet the acceptance criteria, potentially trapped in local minima. More specifically, we compared the plan conformity and uniformity for one patient, and found that the MLC plan has better plan conformity than the JO plans, 77.2% vs. 69.5%. The uniformity of the MLC and JO plans was similar, 87% vs. 86%.

Conclusion: We concluded that JO IMRT plans are clinically feasible for patients with head and neck cancer, with estimated delivery time of 15 minutes without including patient setup time.

Conflict of Interest: This study is partly supported by Prowess.