

AbstractID: 10422 Title: Selective Extended Field IMRT Can Protect Larynx and Adequately Treat the Lower Neck Lymph Nodes in Head and Neck Cancer

Objectives: Radiation dose to the larynx has been a major concern in the treatment of head and neck cancer. The use of splitting field (SF) IMRT can improve the dose to the larynx but it may result in inadequate tumor coverage and dosimetric uncertainties at the matchline. In this study, we propose a selective extended field (SEF) method to avoid the use of splitting field while reducing the larynx dose and achieving the adequate tumor coverage.

Materials and Methods: Five nasopharyngeal patients with the gross tumor volume extended to the lower neck were treated with extended field (EF)-IMRT. SEF IMRT plans were created by extending only three anterior and anterior oblique beams to the supraclavicular region while the other fields were restricted to the superior of the vocal cord. For comparison, SF-IMRT plans were also created and matched with the conventional AP field. All plans were compared based on the tumor volume coverage, mean dose to the larynx while meeting other planning requirement in RTOG protocol of 0225.

Results: The average doses to 95% (D95) of the pGTVs and pCTV were 67.10 ± 6.56 Gy, 70.65 ± 1.62 Gy, 72.74 ± 1.76 Gy and 55.21 ± 3.41 Gy, 57.17 ± 1.51 Gy, 59.92 ± 1.01 Gy for SF, SEF, and EF-IMRT plans, respectively. The tumor dose coverage in SF IMRT plans was the worst among three methods. Accordingly, the average mean doses to the larynx were 29.25 ± 5.61 Gy, 29.41 ± 2.99 Gy, 41.87 ± 10.61 Gy, respectively. The mean dose to the larynx in EF-IMRT plans were the highest among the three methods.

Conclusions: The selective extended field IMRT provides adequate tumor dose coverage and protects the larynx with the similar mean dose as the SF method.

Research is supported by Siemens Corporation.