

AbstractID: 11618 Title: Reduction of Larynx Dose in Head and Neck IMRT: A Restricted Field Approach

Purpose: To develop a Whole-Field Head and Neck IMRT technique that allows for a considerable reduction in dose to the uninvolved larynx and post cricoid/inferior constrictor structures without sacrificing target coverage or introducing uncertainties associated with matched field techniques.

Materials and Methods: Seven coplanar beams are used to treat target volumes located superior to the larynx. The inferior jaws of these beams are fixed at the superior extent of the larynx. Three additional beams, on both the left and right sides, are typically used to treat the entire superior to inferior extent of the disease, but with the medial collimator jaw edges fixed at the edge of the larynx. The three beams chosen on each side, are typically an AP and 2 steep posterior obliques approximating an AP/PA approach in the inferior portion of the target volumes. All beams are placed in a single plan and undergo optimization simultaneously (Eclipse, Varian, Palo Alto, CA).

Results: Excellent target coverage is maintained while dramatically reducing dose centrally through the larynx region. Point dose measurements for a sample patient in the larynx, post cricoid and inferior constrictors are 14Gy, 8.8Gy and 8.9Gy respectively. There are also no adverse effects on parotid sparing or dose conformality in the region superior to the larynx.

Conclusion: The restricted field head and neck IMRT technique allows for excellent coverage of the target volumes while providing dramatically reduced larynx and post cricoid/inferior constrictor doses when compared to using the optimization algorithm alone in the whole field IMRT technique. In addition, this technique eliminates the inhomogeneity associated with a matched field technique due to collimator position tolerances and avoids matching through disease.