

AbstractID: 8421 Title: Quality Assurance and Dosimetric Analysis of Intensity Modulated Radiotherapy using Compensators for Head and Neck cancers

Purpose: In this study we describe our experience in implementing compensator based Intensity Modulated Radiotherapy (IMRT) for head and neck cancer with regard to pre treatment quality assurance (QA), dosimetric parameters and other technical detail.

Method and Material: This study represents the analysis of initial 48 patients who underwent IMRT with compensators for head and neck cancers. All patients were treated with pre treatment QA in terms of point dose with ion chamber & spatial dose comparison with film dosimetry.

Results: In our study for all 48 patients, compensators revealed a deviation in central axis dose of $2\% \pm 1.82\%$ in terms of cumulative calculated versus measured dose. Target coverage for high dose volume (70Gy) was adequate in terms of volume receiving 93% and 95% of the prescription dose, which was 98.5% and 97.5% respectively. Parotid and other critical organs were spared adequately. Contralateral parotid (CLP) was spared. V30Gy and V35Gy was 55.9% and 36.8% for CLP and average dose was 31.7Gy. Median variation in cumulative measured dose versus cumulative calculated dose was 1.8% (SD + 1.8) and mean variation was 2.5% (95% CI 1.5, 2.6). Range was 0 to 7%.^a

Conclusions: Compensator based IMRT is practically feasible. Our QA tests revealed high degree of concordance between cumulative measured doses versus cumulative calculated doses. All dosimetric parameters were within acceptable limits. The manufacturing of compensator is cumbersome but it is a one time job followed by easy treatment delivery and simple QA procedure, high MU efficiency & less treatment time. IMRT with compensator is easy to implement and now can be applied to larger number of patient with different type of tumor.