

AbstractID: 1634 Title: Role of Image Fusion in IMRT Planning for Head and Neck Cancers

Intensity Modulated Radiation Therapy (IMRT) addresses the clinical need to improve tumor control without compromising normal tissues by facilitating higher, more conformal tumor doses. The conformality of dose distribution and sparing the surrounding normal tissues with IMRT depends on accurate delineation of Target Volume. It is well known that the most of the Head & Neck lesions are identified more accurately using the MRI modality than the CT, but MRI modality fail to apply any inhomogeneity corrections for dose calculation. The CT/MRI fusion plays very important role in achieving both the goals in IMRT planning. In this study we report the significance of Image Fusion for IMRT planning and dosimetric outcome.

The CT/MRI fusion studies have been routinely used in our department for IMRT planning of Head & Neck cancers. The CT and MRI scans were obtained for 7 Head & Neck cases. Image fusion studies were performed on Voxel Q terminal of AcQsim and Corvus planning system from Nomos. On both systems Mark and Link Registration method was used. The criteria for acceptable image fusion were 100% match between both the set of images.

Using CT, MRI and fused CT/MRI various target volumes and critical structures were outlined. Treatment plans were compared using the PTV coverage to 95% volume and critical structure doses to 5% organ volume. Compared with CT, the CT/MRI fused images presented significant improvement in target volume coverage in all the patients. More details on dosimetric outcome will be presented.