

## AbstractID: 1183 Title: The Effects of CT Contrast Agents on Head and Neck IMRT Treatment Planning with Heterogeneities

A large number of treatment approaches for H&N cancers utilizing IMRT have recently been published in literature<sup>1</sup>. However, the effects of heterogeneities in inverse planning due to CT contrast agents that often are used for visualization of nodal PTVs has not been fully addressed. For centers that IMRT is the modality of choice for treating H&N and contrast agents are used to produce the CT study on which the plan will be based on, special care should be taken if heterogeneities are to be used for the entire inverse planning process. We present a protocol developed in-house for managing inverse planning for H&N cancers imaged with contrast agents and we studied the effects of the heterogeneities on the deliverable plan. The study included 5 patients for various total dose levels to their PTVs and dose-volume objectives for the critical structures. The step-and-shoot technique was utilized for delivery. We performed two different inverse planned patients of the actual patient, one without and the other with contrast and a final plan that was the “transfer” of the contrasted plan onto the no-contrast CT data set, to simulate the treatment conditions. Based on the results of this study, we concluded that developing an in-house protocol that is clinically feasible and dosimetrically understandable is very crucial before answering the question: “Does one need to perform two CT studies for H&N IMRT planning if contrast is used and how different the heterogeneous calculations are in those cases?”

<sup>1</sup>L. Cozzi et al, IJRP. 58(2) 617-624, (2004).