

AbstractID: 5123 Title: A useful tool developed for trial comparison and developing composite plan between Tomotherapy and Pinnacle

Purpose: To develop a software tool for processing the dose matrix from the Hi Art Tomotherapy unit for trial plan comparison and summation of doses between plans.

Method and Materials: A Visual C++ tool was developed in order to manipulate the dose matrix generated by the Tomotherapy planning station. The tool reads in the tomotherapy dose matrix which is then exported into the Pinnacle³ planning station. Two different tomotherapy trials can be compared dosimetrically or a composite tomotherapy plan can be computed by summing together multiple tomotherapy trials. A Pinnacle³ script is written out by the tool which allows the Pinnacle planning station to setup the appropriate parameters and import the tomotherapy data. The Pinnacle tools can then be used to perform trial comparison, show DVH, isodose distribution etc. Eight patients treated by Tomotherapy have been selected randomly as candidates for this study. The ages of the patients ranged from 15 years to 72 years. Two female patients and 6 male patients were selected. The PTV volumes ranged from 23.10 cm³ to 1059.90 cm³. The treatment locations included head and neck, larynx, tonsil, lung, prostate, abdomen, brain, and cranio-spinal.

Results:

Eight Tomotherapy patients plans were successfully imported into Pinnacle³ planning station using our TomoExport software tool. Plan comparisons have been performed considering biological uniform dose and integral dose.

Conclusion: A Visual C++ tool has been developed for processing the dose matrix generated by Tomotherapy treatment planning station and export it to the Pinnacle³ treatment planning station. The tool has been used for eight patients treated with Tomotherapy and the plans have been compared against the Pinnacle³ IMRT plans. The TomoExport tool is useful for both clinical and research applications allowing us to perform plan comparisons between Tomotherapy and Pinnacle³ and develop composite plans.