# AbstractID: 10738 Title: Dose Verification for Total Marrow Irradiation using HELICAL TOMOTHERAPY Planned Adaptive

**Purpose:** To perform a dosimetric evaluation of the dose delivered to a Total Marrow Irradiation (TMI; 12Gy in 6 fractions, BID) patient using Planned Adaptive software by Helical Tomotherapy. **Methods and Materials:** The dose delivered after each fraction to a TMI patient was recomputed on the MVCT used for patient positioning and compared to the original kVCT-based treatment plan using the Planned Adaptive (PA) software module. Each MVCT scan was merged with the reference planning scan acquired by a CTsim, and new contours on the MVCT scan were drawn. The software then enables the re-calculation of the dose on the MVCT scan, which can be compared to the original dose as planned on the kVCT images. The DVH and median dose per fraction for the PTV and critical organs were obtained to make dose comparisons. **Results and Discussion:** The average dose difference per fraction between the delivered and the planned dose was 0.006±0.006 Gy for the PTV. The maximum dose difference per fraction during the entire treatment was 0.0144Gy, which was 0.6% of the planned dose. The average dose difference per fraction for the lung was 0.046 ±0.046 Gy, the maximum dose difference per fraction during the entire treatment was 0.103 Gy, which was 9.84% of the planned dose. **Discussion and Conclusion:** We used the Planned Adaptive option of the HT system to evaluate the planned dose against the delivered dose, where the latter is a recalculation using the pre-treatment MVCT acquired during patient setup. The data shows clearly that for mobile structures variations between planned and delivered doses are found, although not significant. Since the PTV is the bone marrow, an organ far less mobile than others, the PTV dose variation was essentially nil. This study adds additional evidence that TMI dose can be delivered as accurately as planned.