

AbstractID: 12926 Title: Comparison of Helical Tomotherapy Patient Quality Assurance Using PTW Seven29 and ScandiDos Delta4

Purpose: The purpose of this project is to compare the Delta4 and Seven29/OCTAVIUS phantoms on the basis of patient Quality Assurance (QA) plans for Helical Tomotherapy. **Materials and Methods:** The PTW Seven29 2D-ARRAY inserted into the OCTAVIUS octagonal phantom as well as the ScandiDos Delta4 phantom are intended for the dose validation of IMRT plans in which the dose delivery is from different angles. A total of 20 patient QA plans were delivered using Helical Tomotherapy with the Delta4 and Seven29/OCTAVIUS for comparison. Each plan was compared based on gamma percentage with both the clinical, 3% and 3mm, parameters and more stringent, 2% and 2mm. **Results:** Using the clinical gamma criteria, 3% and 3mm, the average gamma pass percentage was 96.03% for the Delta4 and 98.00% for the Seven29/OCTAVIUS. Using gamma criteria 2% and 2mm, the average gamma pass percentage were 83.31% and 89.54% respectively. On 14 out of 15 plans for 3% and 3mm, and 11 of 14 for 2% and 2mm, the Seven29/OCTAVIUS had a higher gamma percent than Delta4. Both the Seven29/Octavius and Delta4 had a 90% or greater gamma percent for all plans with 3mm, 3% parameters, and therefore each plan was considered clinically acceptable. **Conclusions:** In order to deliver the most accurate IMRT treatments to clinic patients, a QA plan must be performed and must pass the clinical standards before delivery. The Seven29/OCTAVIUS and the Delta4 phantoms are comparable in performance based on average gamma passing percents. Based on these measurements however, the Seven29/Octavius gives better results when using the clinical passing criteria of 3%, 3mm as well as the more stringent 2% and 2mm when comparing QA plans with Helical Tomotherapy.

Research sponsored by PTW corporation.