

AbstractID: 12931 Title: Commissioning of PTW Seven29 for Helical TomoTherapy Quality Assurance

Purpose: The purpose is to commission the Seven29 inserted into Octavius for use with TomoTherapy. **Materials and Methods:** The PTW Seven29 2D-ARRAY in conjunction with the Octavius octagonal phantom is intended for the dose validation of IMRT plans for which the dose delivery is from different angles. Cylindrical treatment plans were produced with the TomoTherapy Hi-Art Treatment Planning System (TPS) using pitches 0.287, 0.433, 1, and 2 and field widths (FW) 1.06cm, 2.49cm, and 5.02cm; a total of twelve plans. Each plan was based on the same PTV but varying parameters to accomplish each plan. Most plans delivered 2Gy/fraction to the cylindrical PTV, but due to limits of the TPS, four plans were optimized with an intended dose of 0.5Gy/fraction. **Results:** Using the clinical gamma criteria, 3% and 3mm and suppressing doses below 20% of the maximum, all FW and pitch plans had a passing percentage of 90% or greater. Using gamma criteria 2% and 2mm, plans with FW of 5.02cm and 2.49cm passed with gamma greater than 93% for all pitches excluding a pitch of 2. All plans with a pitch of 2 failed, with a gamma of 81.50% for 5.02 FW, and an average of 80.20% for 2.49cm FW, except for 1.06cm FW which passed with a gamma percent average of 91.90%. The remainder of the 1.06cm FW plans failed with average gamma percent of 79.80%. **Conclusions:** Accurate dose validation is a key component in the successful delivery of patient treatments. The PTW Seven29 with Octavius is accurate with the clinical criterion of 3% and 3mm and is also accurate with more stringent criteria, 2% and 2mm, for clinically used field widths and pitches. With more obscure settings of 1.06cm FW and pitch of 2, higher discrepancies were observed using more stringent criteria.

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