

AbstractID: 8099 Title: The impact of intensity levels and number of segments on Skullbase IMRT plan quality and efficiency.

Purpose: The aim of this study was to investigate the impact of the number of intensity levels and segments, on plan quality and efficiency, when planning treatment for skullbase lesions. **Methods and materials:** Five previously treated cases of skullbase meningioma were re-planned using inversed planned IMRT to an escalated dose of 60Gy/30#. 3 IMRT plans were calculated for each case, using 5, 10 and 15 intensity levels. These plans were then compared, using physical (PTV Dmax, V100, V95, OAR Dmax, conformity index CI) and radiobiological parameters (Equivalent Uniform Dose EUD, Integral dose ID). Plan efficiency was measured as a function of 'beam on' time. **Results:** The optimal plan generated was a 7-9 coplanar beam arrangement in all cases. Doses to OAR were within clinical tolerance levels. There was no statistically significant difference between OAR sparing or PTV coverage based on the intensity level used to generate the plans. ($p>0.05$) The average V90%, V95% and V100% across all plans was 96.2%, 93.3% and 84.6% respectively. The average EUD and CI were 62Gy and 1.3 respectively. Brainstem Dmax was limited to an average of 47.4Gy (range 37.9Gy to 52.7Gy), Optics Dmax to an average of 48.9Gy (range 40Gy to 51.8Gy) and ID was limited to an average of 10.2Gy (range 3.4 to 27 Gy). On average, the numbers of segments for a 5, 10 and 15 level plan were 85, 171 and 238 respectively. Beam on time per fraction increased from an average of 17mins for a 5 intensity level plan to 50 minutes for a 15 intensity level plan. **Discussion:** When using IMRT for skullbase lesions, our department has adopted a standard intensity level of 5 for treatment planning. This will result in maximal plan efficiency without compromising plan quality. **Conflict of interest:** Research sponsored by Siemens Oncology Solutions.