

## AbstractID: 10298 Title: Dose comparison of rival plans for cranio-spinal irradiation using helical tomotherapy

**Purpose:** Evaluate the feasibility to compare and calculate differences between rival plans, optimized and calculated with Tomotherapy and LINAC. The comparison with Tomotherapy software is not possible at the present. The assessment of multiple plans can help to obtain information regarding dose distribution and allows the selection of the best plan for patients

**Materials and methods:** Treatment plans previously performed by non-planar fields techniques with LINAC, in patients with prone set-up have been redeveloped by Tomotherapy planning. The technique is based on the contouring of 2 volumes: PTV and PTVTx. Planned mobile junction is performed at PTVTx. To appreciate differences between the 2 levels of treatment, we have analysed plans performed by Tomotherapy, which allows the delivering of high doses with full sparing of OARs.

**Results:** Data analysis shows that treatments performed by Tomotherapy allow a uniform irradiation not achievable with conventional LINAC. PTV and PTVTx coverage is equal to 100% of the dose required for a volume >95% and dose inhomogeneity does not exceed 105-107% of the prescribed dose. In the case of treatments with LINAC and mobile junction techniques, dose inhomogeneity was between 90-115% at volume of 90-95%. The comparison between the rivals plans demonstrates that gradient and high dose conformation obtained by Tomotherapy, does not allow set-up mistakes. Tomotherapy allows dose uniformity otherwise not possible with LINAC-based treatments. On average, for the OARs a saving of 20-30% of the volume is been observed.

**Conclusions:** The results of the quantitative analysis confirms that Cranio-Spinal irradiation using Tomotherapy is advantages for PTV's coverage, to sparing OARs, for dose uniformity distribution and to decrease the treatment time. Possibility of drawing up rival plans allows comparing and finding the best plan for each patient, based on quantitative data.