AbstractID: 10963 Title: Dosimetric evaluation of a 120-MLC plan delivered on a 80-MLC linear accelerator

Purpose:
To evaluate a 120-multileaf collimator IMRT plan delivered on a 80-multileaf collimator linear accelerator.

Materials and Method: In practice, it is possible to deliver a conventional treatment plan generated for the planned linear accelerator on another machine with matching characteristics. This study reviewed four intensity modulated radiotherapy treatment plans (IMRT) using the Pinnacle^3 Treatment Planning System generated for a Varian 2100C/D 120-Millenium MLC linac. Using the Varian MLC Shaper application, each field was reconfigured for a 80-MLC Millennium machine. The new fields were uploaded to the Pinnacle treatment planning system via RadCalc software. Each plan was recalculated to deliver the same dose to the same treatment volume using the same number of monitor units for the entire treatment regime. The isodose distribution and dose volume histogram (DVH) of both plans were compared.

Results: Evaluation of 120- and 80-MLC plans was based on DVHs of the planned target volume and critical structures and isodose line distribution. Generally, the lower isodose lines were similar for both plans. The higher isodose values differed. Hotspots were significantly larger for the 80-MLC plans for the planned target volumes.

Conclusion: The results indicated that delivery of a 120-MLC IMRT plan delivered on an 80-MLC linac can vary. Investigation of each individual plan must be evaluated before the transfer delivery of treatment on the 80-MLC linac. In cases were a patient is transferred to another machine for a small number of fractions of the total dose regime, changes in dose distribution may be insignificant. Further investigation of evaluating delivery of dose with both and 120 and 80-MLC units is forthcoming.