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Conversion of measured percentage depth dose to Tissue maximum ratio values in the small fields: Is it worth?

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Abstract:

The goal is to find if there were clear differences between the direct measurement of TMR and that calculated from PDD. The dedicated 6-MV and 10-MV treatments were delivered on Siemens (Siemens Medical Solutions, Malvern, PA) ONCOR Expression linear accelerator with an 82 multi-leaf collimator (MLC)-based Stereotactic radiosurgery and radiotherapy (SRS/SRT) is used in Children's Cancer Hospital. The dosimetric data were taken using PTW water phantom. The cone sizes vary from 12.5 to 40.0 mm diameter. Mean error $\leq 1.5\%$ was observed between the measured and calculated TMR values for all clinically relevant field sizes and depths. The data Present of no significant differences between TMR values with a p-value < 0.05 . The differences between measured and calculated TMR values averaged over depth shows a strong positive correlation with the field size ranging from 1 cm x1cm to 10 cm x10cm.

Keywords: TMR, PDD, Dosimetry

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