A MEASUREMENT ON THE TRANSMISSION FACTORS OF DYNAMIC WEDGES

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Purpose: The transmission factors of each dynamic and fixed wedge were measured for Varian CL-2100C/D sn: 481 linear accelerator. The factors were used to set-up the clinical treatment data tables for clinical dosimetry for dynamic wedges utilization. The data will be used to set-up the computer treatment planning database also.

Materials and Methods: The N.E. 0.6 cc Farmer type chamber (Type: 2571) connected to Ionex Dosemaster 2590 was installed on the chamber frame of Scanditronix RFA-300 water phantom with water prove protector. The axis of the chamber is perpendicular to the transverse plane of the wedge. Output factors in water were measured on the central axis of each field at 5-cm depth for 6 MV and 10-cm depth for 15 MV X-rays. The phantom was positioned with the water surface at 100 cm SSD. Measurements were performed for field sizes ranging from 4.0-20.0 cm and for equivalent square field to 25 cm. The measurements were performed for open, for fixed and dynamic wedge angles. The transmission factor of each field size was calculated from the output with/without wedge.

Results: The transmission factors of each fixed wedges were increased as field size increase. The increment is around 3%. The factors of the dynamic wedge were larger than the fix ones, but the factors were decreased irregularly when field size increase. The maximum decrement is 35%.

Conclusion: Transmission factor is an important parameter in clinical applications of wedge filters. The variation of the factors of dynamic wedges verse field size is not the same as fixed ones and more complex. Due to the variation of the factors, one should take more attention in the application and the data input of the planning system.

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