Comparison of dosimetric characteristics of physical and enhanced dynamic wedges
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Abstract

Background: Wedge filters can be used as missing tissue compensators or wedge pairs to alter the shape of isodose curves so that two beams can be angled with a small hinge angle at a target volume without creating a hotspot. Aim: In this study the dosimetric properties of Varian Enhanced Dynamic Wedge (EDW) and physical wedges (PW) were analyzed and compared.

Materials and methods: Ionometric measurements of open field output factor, physical wedge output factor, physical wedge factor and EDW factor for photon beams were carried out. A 3D scanning water phantom was used to scan depth dose and profiles for open and PW fields. The 2D ionization matrix was used to measure profiles of physical and EDW wedges. The isodose curves of physical and EDW angles were obtained using a therapy verification film.

Results and discussion: The PW output factors of photons were compared with the open field output factors. The physical and EDW factors were compared. The difference in percentage depth dose for open and PW fields was observed for both photon beams. The measured isodose plots for physical and EDW were compared.

Conclusion: The wedge field output factor increases with field size and wedge angle compared to that of the open field output factor. The number of MU to deliver a particular dose with the EDW field is less than that of the PW field due to a change in wedge factor. The dosimetric characteristics, like profile and isodose of EDW, closely match with that of the PW.

Keywords: Physical wedge Enhanced dynamic wedge Profile Wedge factor Profile