AbstractID: 10260 Title: Dosimetric Evalualtion of a Commercial Compensator for Spatially Fractionated Radiation Therapy

Purpose: Spatially fractionated GRID therapy is utilized to treat large tumors by irradiating the volume through isolated small openings. The technique has shown high efficacy for bulky tumors, but it is used at relatively few facilities. In this study, we exploit the use of a prototype brass GRID, which could make GRID therapy more attractive to physicians and more widely available to patients. **Method and Materials:** A prototype GRID compensator was constructed by milling divergent holes of 1 cm diameter at the isocenter in a cube of brass. The GRID block is manufactured so that it can irradiate a maximum field size of $25x25cm^2$. Measurements for the characterization of the dosimetric properties of the GRID were performed using a Varian 23Ex linac, in a solid water phantom at 100cm SSD, for both 6MV and 18MV. Radiographic films were placed perpendicular to the beam axis to obtain lateral profiles, and parallel to the beam axis to find the percent depth doses (PDDs). A pinpoint ion chamber under the central hole was used to find the output factors. **Results:** The profiles have an obvious peak and valley pattern, with transmissions under the solid portion of the block of approximately 15% for 6MV and 30% for 18MV. The PDDs are less penetrating than their open-field counterparts, for both 6MV and 18MV when compared against the $10x10cm^2$ open field. **Conclusion:** This prototype brass GRID compensator is a viable alternative to the cerrobend compensators or MLC-based fields currently in use. Its ease of creation and use give it decided advantages. We believe this compensator can be put to clinical use, and will allow more centers to offer GRID therapy to their patients.
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