

Use of ClearView Gel Dosimeter for Quality Assurance and Testing of Stereotactic Radiosurgery

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Abstract

This experiment evaluates the use of ClearView gel dosimeter for radiation quality assurance in Stereotactic Radiosurgery (SRS). ClearView differs from other gel dosimeters in that it uses tetrazolium salt in its chemical make-up in place of traditional Fricke-type compounds. Using a Varian TrueBeam radiotherapy system to deliver the radiation, three vials of ClearView gel dosimeter were tested in three different dose delivery scenarios. The first test examined the dosimeter's response to a static beam with the dose isocenter targeted to the centroid of the vial. The second evaluation consisted of a full rotational SRS delivery about the center of the dosimeter. Finally, a complete end-to-end treatment plan was performed to evaluate the accuracy of the dosimeter in a full SRS procedure. The three dosimeters were then scanned to measure the dose distribution throughout the gel. Finally, the resulting data was compared to the initial treatment plan to determine the accuracy of the gel. Based on these results, it can be concluded that ClearView gel is well suited for SRS dosimetry applications in clinical settings.