

AbstractID: 13084 Title: Dosimetric Measurements of Onyx Embolization Glue for Stereotactic Radiosurgery

Purpose: Arterio-venous malformations (AVM) are often treated with a combination of embolization and stereotactic radiosurgery (SRS). Concern has been expressed in the past regarding the dosimetric properties of glues used in embolization and the effects that the introduction of these glues into the brain may have on the quality of the radiosurgery plan. To quantify these effects we have taken large volumes of Onyx[®]35 and Onyx[®]18 (ethylene-vinyl alcohol copolymer doped with tantalum) and measured the attenuation and interface effects of these glues. **Methods and Materials:** The manufacturer provided large cured volumes (~28 cc) of both Onyx glues. These samples were 8.5 cm in diameter with a nominal thickness of 5 mm. The samples were placed on a block tray above a stack of solid water with an Attix chamber at a depth of 5 cm within the stack. The Attix chamber was used to measure the attenuation. These measurements were made for 6 MV and 16 MV beams. The interface effects were measured by placing the sample directly on the solid water stack and varying the thickness of solid water between the sample and the Attix chamber. CT numbers of approximately 2700 were measured for both glues. **Results:** The transmission through the glues relative to solid water was approximately 98% and 97% for 16 MV and 6 MV beams respectively. The interface effect shows an enhancement of approximately 2% and 1% downstream for a 16 MV and 6 MV beams respectively. The largest effect that must be considered is the correction for the apparent attenuation due to the large CT numbers of the glue. **Conclusions:** The introduction of embolization glues has negligible affect on the dose distribution of MV therapeutic beams. These results are in quantitative agreement with previous Monte Carlo calculations by others. Research sponsored by the MTI Corporation.