

Linac-based stereotactic radiosurgery for treating brain lesions has become popular in recent years. However, accurate determination of dosimetry data (total scatter factors and TMRs) for very small cones remains a challenge. Standard detectors for large field dosimetry are often too large for such small fields. Various detectors such as TLDs, micro-ionization chambers, plastic scintillators, MOSFET detectors as well as silicon diodes have been reported for dosimetry of small cones. Each detector has its advantages and disadvantages. In this study, we modified a scanning silicon diode<sup>1</sup> to measure dosimetry data of very-small radiosurgery cones of 5-10 mm diameters. The effective detection volume of the diode is a round shape with a diameter of 1 mm, and thickness of 50  $\mu\text{m}$ . Total scatter factors and TMRs for cones of 5-10 mm were measured with the modified scanning diode. The results are consistent with published data. For larger cones the dosimetry data were measured with a parallel-plate ionization chamber with a diameter of 3 mm. For cones between 12.5 and 17.5 mm, possible errors caused by averaging over the area of the 3-mm detector were examined. We believe that this silicon diode detector is an easy to use alternative for very small cone dosimetry.

<sup>1</sup>The diode detector described in this abstract was provided by Sun Nuclear corporation, Melbourne, FL.