

AbstractID: 1964 Title: In vivo measurements on head and neck IMRT patients using a MOSFET dosimeter

In vivo measurements traditionally are part of a comprehensive quality assurance program. We initiated such a project at our institution involving 3 IMRT patients with tumor lesions in the head and neck (HN) region. The oral cavity in the HN region is readily accessible for in vivo dosimetry. To perform in-vivo measurements on these patients, we employed a standard MOSFET dosimeter (Model TN-502RD) provided by Thomson & Nielson Electronics® and a custom-made tongue depressor. The tongue depressor was made of acrylic that provided a build-up for our measurements. A canal was designed through the handle of the tongue depressor for placement of a MOSFET dosimeter. Before its use, the MOSFET dosimeter was calibrated with bolus on top as a water equivalent build-up material under the known condition. A Varian® 2300 EX model was used to deliver a 6 MV beam for MOSFET calibration and IMRT treatments. The patients were then brought to a CT scanner. Before scanning, patients were immobilized by an acrylic tongue depressor, a mouth guard, and an ORFIT® fixation device designed for HN patients. The CT images were then exported to Varian Eclipse® radiotherapy treatment planning (RTP) system. A reference point corresponding to the MOSFET dosimeter was identified on the planning CT images and dose to that point was calculated using Varian Eclipse® RTP. Patient setup, including positioning of the MOSFET dosimeter was verified by Varian Portal Imaging®. The result of the measurements of these three patients is within 5% of error compared to the plan.