AbstractID: 1333 Title: An Implantable Radiation Dosimeter

A total of 17 patients have been implanted with telemetric radiation dosimeters. Placements were made in both the tumor GTV and nearby normal tissue sites. The device makes use of a MOSFET radiation detector, which is calibrated using TG-51 methodology. The device serves, additionally, as a radiographic marker and is easily visualized on planning CT images (thus allowing for a precise match between the RT plan predictions and measured sensor values). The sensor is encased in epoxy and glass, thus enabling permanent placement in the body. It is passive until polled by an external reading device and measurements during each radiation therapy session are accomplished in 5 seconds or less. Results from the first 10 patients completing therapy show potentially significant dose deviations from planned values in some subjects. In all cases a limited number of error sources are suggested by the data, enabling evaluation and potential correction by the clinical staff. It is suggested that the clinical utility of the implanted dosimeter is to provide a daily check on dose at depth to ensure both that the target receives the proper dose and collateral normal tissue is not overdosed.

This work is supported by: NCI R21 CA97859