AbstractID: 10746 Title: Total Skin Electron Therapy skin dose validation using optically stimulated luminescent dosimeters

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Methods and Materials: The institution's standard of care for total skin electron therapy (TSE) follows the Stanford Technique on a Varian 2300 EX linac that treats the patient standing in six different positions. The patient stands 140 cm from the beam's isocenter. A 9MeV HDTSe electron beam delivers 200 cGy to the skin's surface up to a depth of 0.8 cm with a rapid drop-off of dose. A 1.2 cm acrylic beam spoiler 30 cm was placed in front of the patient and a sheet of 1mm of aluminum is at the gantry head. Phantom measurements were made to determine suitability of optically stimulated luminescence dosimeters (OSLDs) for *in vivo* dosimetry of TSE patients. A 30x30x30 cm^3 solid water phantom was placed at 100 cm SSD. TLDs, OSLDs and calibrated plane parallel ion chamber were placed at the center of the phantom under 2.1 cm of build up. A dose of 100 cGy was delivered for calibration. For validating the response of the OSLDs, both TLDs and OSLDs were located at different locations around the torso of a Rando phantom. Following the technique described above, the Rando phantom was irradiated to deliver a surface dose of 200 cGy. In addition, *in vivo* measurements were made for a TSE patient at seven different body points.

Results: OSLD phantom measurements were 3% agreement with the ROOS chamber and 4.5% with TLDs during calibration. Skin dose validation of the Rando phantom between TLDs and OSLDs differed by as much as 5.6%. *In vivo* dosimetry using OSLDs for the patient agreed within 7% for TLDs.

Conclusions: Results for both the phantom and patient measurements shows that OSLDs are suitable for *in vivo* dosimetry in Total Skin Electron beam therapy.