

AbstractID: 8226 Title: TomoTherapy for Post-mastectomy Radiotherapy (PMRT): TLD  
Chest Wall dose measurements

**Purpose:** To compare measured and calculated skin doses in post-mastectomy radiation therapy (PMRT) of the chest wall (CW) treated with the TomoTherapy Hi-Art system.

**Method and Materials:** *In-vivo* dosimetry has been used to assess CW skin dose at a single point for multiple fractions of 9 patients. On the first treatment day, a radiation therapist marked a point on the CW near the mastectomy scar and took pictures of the mark placement. A thin packet of TLD LiF powder was taped over the mark prior to megavoltage CT alignment and dose delivery. Following treatment, TLD readout was performed using a REXON TLD reader, with TL being converted to dose using a 6-MV calibration curve. In the Pinnacle TPS, a Point of Interest (POI) was added at the location of the mark by comparing the pictures with 3D skin rendering. Calculated POI dose was obtained and compared to measured dose.

**Results:** The number of daily TLD measurements acquired throughout the course of treatment ranged from 5 to 25 per patient. Overall for the 9 patients, the TLD measured (delivered) dose was less than the calculated (TPS) dose by  $3.7 \pm 4.2\%$ . This results in approximately 7% of the patients receiving less than 90% of the calculated dose. Reasons for the delivered dose being low are under investigation, but are likely due to inaccuracies in the TPS dose calculation, CW respiratory motion, and air gap between the bolus and patient.

**Conclusions:** *In-vivo* TLD measurements are useful in evaluating the dose delivered by TomoTherapy for PMRT of the CW. Understanding the reasons for the dose differences could allow improvement to our existing technique.

**Conflict of Interest:** This work funded in part by a research grant with TomoTherapy, Inc.