

AbstractID: 5522 Title: A Modified Azakawa Technique for Total Scalp and Neck Irradiation Utilizing a Custom Wax Bolus

**Purpose:** To develop a durable custom bolus helmet for Total Scalp and Neck Irradiation and to quantify the dosimetric aspects using a Modified Azakawa Technique for treatment delivery.

**Method and Materials:** A custom bolus helmet for total scalp and neck treatment was fabricated from dental wax overlaid on a dual exoskeleton of Med Tech™ face mask mesh that conformed to the patients head. With helmet on, the patient was immobilized with a conventional facemask. Following CT simulation, treatment planning was performed in ADAC™ Pinnacle 3 planning system in heterogeneous mode for the combined photon and electron treatment fields. Opposed photons fields (6x) treat the sagittal scalp and posterior neck; lateral scalps are treated with enface electrons that overlap the photon fields by 3-4 mm. Lateral necks were treated with en face electron fields that abutted the electron scalp fields. Beam central axes were kept coincident to provide ease of setup for the 6 customized ports. After half of the dose was delivered all field junctions were “feathered” by altering the junction locations by about 1 cm. A diode with 2mm build-up was calibrated as a point detector to validate the dosimetry at multiple patient points.

**Results:** Compared to the maximum dose of the prescription, the measured doses typically ranged from -5% to +15%; a single point yielded +20% at a photon and electron junction.

**Conclusion:** The wax helmet proved to be extremely durable for more than 30 fractions. Additionally, the helmet provided “instant bolus” easily accommodated by the patient, appreciated by the RTT staff, and aided in reproducible dosimetry for this challenging treatment site.