

## AbstractID: 3138 Title: Evaluation of the dose within the abutment region between tangential and supraclavicular fields for various breast irradiation techniques

**Purpose:** To compare the uniformity of dose in the abutment region (matchline) between breast tangential and supraclavicular fields produced by irradiation techniques having different means of forming the match (e.g. external block, MLC, collimator jaw).

**Method and Materials:** A film dosimetry system was developed and validated by comparing lateral and percent-depth-dose (PDD) profiles measured with EDR2 film in a plastic water phantom to ion chamber measurements made in water. Field sizes of 5x5, 10x10, and 20x20 cm<sup>2</sup> were examined covering a range of depths. Once established, EDR2 film was placed in solid phantom at various depths and used for characterization of the abutment region produced by several three-field intact-breast irradiations. The abutment regions ( $\pm$  2.5 mm on either side of the central matchline) of the various techniques were analyzed via a Dose Area Histogram (DAH) and compared to each other. Preliminary data are presented, in which DAHs are used to evaluate the abutment region between a field collimated with a jaw and another field collimated with the configurations mentioned above.

**Results:** Characterization of the film dosimetry system demonstrates that, for all field sizes and depths, all lateral profiles and depth-dose curves measured agree with ion chamber measurements to within  $< 3\%$  in low dose gradient regions and  $< 2$  mm distance to agreement (DTA) in high dose gradient regions ( $\geq 30\% \text{ cm}^{-1}$ ). Inspection of preliminary abutment region data indicates that the DAH clearly and sensitively demonstrates uniformity differences between the various methods used to create the match.

**Conclusion:** We have developed a film-based dosimetry tool that uses DAHs to accurately portray relative dose distributions within the abutment regions of smooth-edge and MLC-produced fields. This tool will be used, subsequently, in an anthropomorphic phantom using actual breast treatment fields.

**Conflict of Interest:** Research supported in part by Varian Medical Systems.