

Purpose: To evaluate the potential advantages of high dose rate(HDR) brachytherapy for boosting mesothelioma incisions extending beyond the hemithoracic target volume. HDR treatment was compared with abutted, enface electron fields.

Methods and Materials: One case describes catheter placement, dosimetric advantages, setup uncertainties, and treatment delivery. The right lateral decubitus position, in alpha cradle, was selected to permit consideration of HDR versus electrons. Comparative analyses of treatment plans were performed, and HDR setup and dosimetry were preferred. The HDR treatment utilized 3 catheters atop 5mm of bolus. The HDR setup required physician to confirm catheter placement. Tape, 5mm bolus, and wet towels secured the catheters and provided shielding. The prescription was 3.0Gy to 1.2cm from catheter including bolus (7mm depth in tissue). Dwell positions every 5mm were used to cover the entire length of the scars (22cm and 34cm). The corresponding electron plan required 5 thin strip cutouts and a physician present to approve field setup and feathering of the junctions. A phantom was used to simulate treatment of lesion with electrons and entire process was timed.

Results: The total setup and treatment time for 6 HDR treatments was approximately 270minutes (time varies with activity, prescription dose, and volume) compared with 450minutes for 15 electron fractions (2Gy/fraction). Planning time for either modality is comparable. Electron treatments involve additional time for cutting blocks, measuring cutout factors, and physician approved junction changes. One additional concern is dose homogeneity caused by feathering electrons versus brachytherapy which provides a reliable dose distribution.

Conclusions: HDR brachytherapy provided an optimal solution over the complicated and time-consuming electron treatment and should be considered as a viable option for mesothelioma patients with a considerable scar length beyond hemithoracic target volume. Clinical data to support the use of brachytherapy over electrons for coverage of incisional scars is still needed.