

AbstractID: 4358 Title: High Dose Rate (HDR) Brachytherapy with Surface Applicators - Treatment for Nonmelanomatous Skin Cancer

Purpose: To assess the use of HDR surface applicators as an alternative radiotherapy modality to external radiation for the treatment of skin lesions.

Materials and Methods: A total of 17 patients were treated to 18 sites, which included lesions of the face, scalp, trunk and extremities. Thermoplastic casts were fitted with Leipzig Surface Applicators and custom molded to the patient for non-melanomatous carcinomas ≤ 2 cm in diameter. A custom surface mold applicator (Freiburg Flap) was used for lesions up to 4cm. PTV included the tumor plus a 5mm margin. Photographs of the treatment volume were taken for monitoring of reactions. Prescribed dose was 5Gy/fraction, twice per week for four weeks to a 5mm depth. TLD's were placed at the center of the treated volume under the applicator and at critical structures (i.e. lateral canthus) twice during the course of treatment.

Results: Patients' setup and reproducibility were accurate and treatment time was short. With the HDR surface applicators, dose distribution was uniform at the skin surface and at 5mm depth in the whole area of the applicator. Differences between the areas of maximum and minimum dose at this depth did not reach values higher than 5% of the prescribed dose. At the edges of the applicators, the dose gradient was sharp, with the detected dose at 5mm from the applicator negligible. An exudative radiation reaction was noted in some patients, which reversed with appropriate therapy.

Conclusions: HDR Brachytherapy offers a highly effective treatment of skin carcinomas. Surface applicators, used with HDR brachytherapy equipment, enable a uniform dose distribution and sharp dose gradient at the edge of the treatment field. Surface applicators are easy and safe to use and offer reproducibility for subsequent treatment fractions. These applicators have the ability to become the standard treatment for skin carcinomas in the near future.