

AbstractID: 1671 Title: Dosimetric Comparisons between MammoSite HDR
Brachytherapy and Conventional Electron Boost after External Beam Radiotherapy for
Early-Stage Breast Cancer

Currently, electron radiotherapy is the primary method to boost a lumpectomy tumor bed following whole breast radiation. A commonly used positional landmark, the surgical scar, often does not lie directly over the tumor bed. Thus, much of the tumor bed might not receive adequate dose. In this study, the use of a MammoSite applicator is proposed as an alternative technique for delivering the tumor bed boost. A comparison of the dose distributions between CT based electron boost and MammoSite RTS of boost irradiation are computed and evaluated. Eight patients treated with HDR brachytherapy using the MammoSite applicator were investigated in this study. The electron field was drawn clinically and energy was determined based on CT scan. The resulting isodose distributions and DVH were generated and compared (Fig.1). The mean value of V90 for the electron boost plan was 37.6% (S.D.± 15.7%). The coverage was improved to 100% when the MammoSite applicator was used. For the equivalent total skin dose, the area exposed to radiation was much higher when treated with a conventional electron field as compared to using the MammoSite applicator. In conclusion, the use of the MammoSite applicator appears to deliver a boost dose to the primary tumor bed with much greater precision and accuracy relative to the conventional electron boost technique. The benefits of better dose localization to the target and minimization of skin surface dose with the MammoSite technique may result in better local control and cosmesis.