

AbstractID: 11498 Title: Dosimetric Comparison of SAVI, MammoSite, Contura and Clearpath for Accelerated Partial Breast Irradiation

Purpose: The number of intracavitary HDR brachytherapy devices available to treat women with early stage breast cancer has increased significantly in the past several years. Blending the dosimetry of interstitial and the ease of use of MammoSite; SAVI, Contura, and Clearpath have made their way into the arena. One would postulate that the evolution of the devices in the sense of dose modulation, from least to greatest, would be MammoSite, Contura, Clearpath, and finally SAVI. This stems from the location of peripheral struts in relation to the cavity boundary. In this study, we compare the dosimetry between the 4 devices and assess their efficacy through dose volume histograms (DVH) and maximum point doses of critical structures. Comparing these modalities will help determine either the best overall treatment device or the best device for a particular type of patient.

Materials and Methods: Nine patients treated with SAVI at UC San Diego were selected for this comparison. CT scans were retrospectively evaluated for delivery of APBI via MammoSite, Contura and Clearpath by simulating them in place of the SAVI in the lumpectomy cavity. The anterior tissue surrounding the balloon devices was linearly expanded to simulate tissue displacement by the balloon. All plans were generated using Brachyvision TPS (Varian Medical Systems, Palo Alto, CA).

Results: DVHs of the target volume were evaluated against planning criteria taken from the NSABP B-39 protocol. All devices met the criteria and had similar target coverage (V90 ~ 98%). However, there were differences in the dose received by normal tissue with skin dose lowest in SAVI patients (~71% of prescribed dose). This was followed by Contura, MammoSite and Clearpath, respectively.

Conclusions: All devices had similar coverage of the target volume, but SAVI had the most dose flexibility for patients with close skin spacing and chestwall proximity.