

a mean time of 1 hour and 42 minutes (range, 1 hour 22 minutes - 2 hours 15 minutes). The mean balloon-to-skin distance by ultrasound for the 12 patients was 1.5 cm (range, 1.0 cm - 1.9 cm). All margins of excision were negative on final pathology. At a median follow-up of 15 months, overall cosmesis was rated as excellent in 10 of 12 patients and good in the remaining 2 patients. Three patients reported mild breast pain, 3 patients developed mild erythema of the skin, 1 patient developed grade 2 fibrosis, and 2 patients developed grade 1 fibrosis. To date, there have been no incidences of infection, fat necrosis, desquamation, or rib fracture. To date, no patient has developed a recurrence.

**Conclusions:** IORT utilizing XB is feasible and can be accomplished in a total procedure time of approximately 2 hours. At short follow-up, XB IORT appears to be well tolerated. Further research on XB and other methods of IORT is needed to establish clinical efficacy and safety for patients with early-stage breast cancer.

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## 2099 Comparison of Target Breast Volume Treated for Accelerated Partial Breast Irradiation (APBI) Devices

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**Purpose/Objective(s):** The Strut Adjusted Volume Implant, SAVI, is a multi-catheter, single entry brachytherapy device for APBI designed for adaptability to anatomic constraints. There are four sizes with 6, 8, or 10 peripheral struts available for source dwell positions providing excellent dosing flexibility. Since the sizes were designed to fit multiple cavity sizes, a study was undertaken to evaluate the amount of target breast tissue treated with each device, and compare that to published data for other available devices.

**Materials/Methods:** A retrospective review of 67 patients treated at the University of California San Diego was undertaken to evaluate the size of the treated target breast tissue. Mean sizes and ranges of the PTV-eval (1 cm expansion of the cavity excluding the cavity volume, 5mm below the skin, and chest wall) were evaluated for each SAVI size. The data was further subdivided into patients with no normal tissue restrictions on the PTV-eval, and those with chestwall and/or skin restrictions, limiting the size and shape of the PTV-eval.

**Results:** A symmetrical expansion of 1 cm from the 6, 8 and 10 SAVI would give ideal PTV-evals of approximately 59, 74, and 110cc. In this patient population, the 6 mini, 6, 8, and 10 strut device treated a mean and SD (with range in parentheses) of  $45.2 \pm 6$  cc (37.9-53.9 cc),  $47.6 \pm 11$  cc (23.2-65.9 cc),  $71.9 \pm 17$  cc (40.5-105.1 cc), and  $89.3 \pm 22$  cc (62-133.1 cc). Review of the data confirms that proximity to the skin, chestwall, or both reduced the PTV-eval. Published data on the Contura catheter demonstrates a mean PTV-eval of 89.7 cc (71.9-108.9 cc) and  $94.9 \pm 12$  cc (74.4-119.8) for the Mammosite. Of the patients treated with the 6 mini or 6 SAVI, 86% had the PTV-eval reduced secondary to either proximity of skin or chestwall. Of all patients treated, 48% had skin bridges less than 7 mm, 30% less than 5 mm, and 15% less than 3 mm. Dosimetry for the entire cohort demonstrated a V90% (volume receiving 90% of the dose) of 96%, V150 and V200 (volume of tissue receiving 150 and 200% of the dose, respectively) of 27 and 13 cc.

**Conclusions:** As expected, the size of the PTV-eval increases with size of SAVI catheter device. In this study, the 8 strut and especially the 10 strut device can treat an equivalent PTV-eval size well within the ranges published for MammoSite and Contura. The 6 mini device and 6 device, while treating less normal tissue, was usually chosen secondary to normal tissue proximity restrictions, limiting the amount of target tissue desirable to treat. In fact, many of these patients would not be eligible for balloon brachytherapy only based on skin proximity of < 5mm and < 3 mm, and disregarding chestwall proximity.

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## 2100 Accelerated Partial Breast Irradiation at Virginia Hospital Center: Post Hoc Analysis of Dosimetry Comparing Mammosite, Contura, and SAVI Devices

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**Purpose/Objective(s):** Dosimetric factors in 123 consecutive patients treated with accelerated partial breast brachytherapy using three different applicators were analyzed to evaluate mean differences across key planning variables.

**Materials/Methods:** Between May 2008 and November 2009 a total of 123 women with node negative invasive carcinoma and carcinoma in situ of the breast underwent accelerated partial breast high dose rate irradiation using one of three devices: MammoSite Single Lumen Balloon, Contura Multi-Lumen Balloon, and SAVI (Strut Adjusted Volume Implant). An ultrasound guided closed technique post lumpectomy was used in all patients. All patients were treated to a dose of 3.4 Gy BID for 10 fractions prescribed at a depth of 1 cm from the surface using an Iridium 192 source.

**Results:** Age of patients ranged from 41 to 82, with an average age of 59.6 years old. 80% of patients underwent MRI staging. 32 patients were treated with single lumen Mammosite, 38 patients with multilumen Contura and 53 patients with SAVI. The median tumor size was 1 cm (range, 0.4-2.5 cm). Median balloon volume was 41 cc (range, 8 cc to 70 cc). Median skin bridge was 13 mm (range, 1 mm to 35 mm). Those with 96%. On Tukey analysis, the Mammosite device showed the mean difference to be significantly greater at the .05 level for skin distance and V150 when compared to the other devices. There was no difference in minimum skin distance between Contura and SAVI. The V200 was statistically greater for the SAVI (mean 12 cc vs. 6 cc vs. 6 cc) when compared to the other devices.

**Conclusions:** With careful surgical planning, proper device selection, and versatile treatment planning, excellent dosimetric plans can be achieved in the community setting using any catheter based APBI device. Post hoc analysis showed no difference in D90, with the multilumen devices showing planning flexibility due to smaller skin distances when compared to single lumen devices. V200 was higher in SAVI, but still within acceptable treatment guidelines.

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