Patient: 49-year-old female
Diagnosis: Invasive Ductal Carcinoma, T1, Stage 1
Rx: 34Gy B.I.D. x 5 days delivered via single-entry, multi-catheter applicator
Challenge: Maintaining safe dose limits to critical structures in patient with augmented breasts

The patient, a 49-year-old female with augmented breasts, was found to have a ductal carcinoma of the right breast. After discussion about surgical options, the patient opted for a breast conserving procedure to include Accelerated Partial Breast Irradiation (APBI).

A circumareolar incision was made superiorly and tissue was dissected down to the level of the implant. A specimen, approximately 3 inches in diameter, was removed including the wire and marker. Specimen radiograph was taken confirming the tissue marker in the specimen. This was then sent for radiographic confirmation from the radiologist and the pathologist.

Following lumpectomy, a CT was taken prior to the placement of a HDR applicator. CT scans revealed the lumpectomy cavity to be in close proximity to the implant (Figure 1).

Through a separate incision and using ultrasound guidance, a trocar was used to create a tract to the cavity and a SAVI Prep™ Catheter (SPC) was placed via that tract. Based on the fill volume of the SPC and an assessment of the cavity measurements, a SAVI 8-1 applicator was selected and placed via that same tract.

For women with augmented breasts who are receiving breast irradiation, capsular contracture is a significant concern. For these women, breast brachytherapy represents the best opportunity to minimize radiation to the breast tissue/implant interface. Using the SAVI applicator, a treatment plan was developed which was able to sculpt the dose, limiting exposure to the skin, chestwall, and implant simultaneously (Figure 2).

Following NSABP B-39 dosimetry criteria guidelines, the treatment plan yielded the following data:

<table>
<thead>
<tr>
<th>PTV</th>
<th>90%</th>
<th>V150</th>
<th>V200</th>
<th>Max Skin Dose</th>
<th>Max Chest Wall Dose</th>
<th>Max Implant Surface Dose</th>
</tr>
</thead>
<tbody>
<tr>
<td>56.45cc</td>
<td>99%</td>
<td>23.9cc</td>
<td>12.3cc</td>
<td>337 cGy</td>
<td>193 cGy</td>
<td>494 cGy</td>
</tr>
</tbody>
</table>

34 Gy was delivered B.I.D. for 5 days. Dressings were changed at each fraction. Patient was seen at four weeks, post-radiation therapy, with excellent cosmetic results (Figure 3).

**Conclusion:** The multiple peripheral source lumens of the SAVI applicator allow for excellent target volume coverage while simultaneously providing the flexibility for significant dose modulation at multiple critical structures (skin, chestwall and tissue/implant interface) simultaneously.