

## AbstractID: 5428 Title: Comparison of Dose Prescription Using Single versus Multiple Reference Points for MammoSite RTS Treatment Planning

**Purpose:** To retrospectively compare dose prescription for MammoSite RTS using single versus multiple reference points through DVH evaluation.

**Method and Materials:** CT images of four women treated with MammoSite RTS were selected for a retrospective study of dose prescription. The balloon was identified and contoured on the CT images using Plato BPS. A PTV was created by volumetrically expanding the balloon volume by 1cm. The final volume, PTV\_EVAL consisted of the PTV minus the balloon volume. Six reference points were added along the outside edge of PTV\_EVAL. Four points were added at locations lateral to the axis of the catheter, and two points were added along the axis of the catheter. Dose was prescribed to the six points individually, and DVHs of PTV\_EVAL were calculated. Then dose was prescribed to 4, 5, and 6 reference points simultaneously, and a new DVH was created for each of those three cases.

**Results:** For each prescription, the V150, V100, V90 and D95 from the DVH for PTV\_EVAL were recorded and averaged across the four patients. When dose was prescribed individually to the two points along the catheter axis, the tissue volume receiving excess dose was unacceptable. When dose was prescribed individually to the 4 points lateral to the catheter axis, the coverage became inadequate. Plans in which dose was prescribed to multiple points simultaneously displayed sufficient coverage with lower volumes receiving excess dose.

**Conclusion:** Due to the anisotropy of the source, prescriptions to individual points resulted in unacceptable coverage of the target volume or excess dose to tissue, while prescribing to multiple points simultaneously resulted in both more acceptable coverage and lower volumes of tissue receiving excess dose. Using four lateral points and one axial point resulted in the most target coverage while still limiting excess dose to tissue.