Purpose: To compare the dose distributions from HDR brachytherapy using interstitial catheter implants and Intracavitary Savi applicator for breast cancer patients following lumpectomy.

Methods: We have treated over 200 post lumpectomy breast patients with brachytherapy and Savi applicator (Cianna Medical). The interstitial technique used a custom built template for placement of catheters under the image guidance. The Savi applicator was placed into the resected cavity and the applicator was expanded to cover the cavity under CT image guidance. The criteria used for plan evaluation was prescription dose covered 95 to 100% of the volume 1.5x prescribed dose to cover <30% of the PTV and 2.0 x prescribed dose covered <10% of the PTV. The Savi plans were evaluated with PTVeval to cover 90 to 95% of the prescribed dose and 1.5xPTVeval not to exceed 50cc, 2xPTVeval to cover <10% of volume.

Results: The PTV for interstitial ranged from 29 to 170cc, and that for Savi the PTVeval varied from 28 to 111. For interstitial the 1.5x dose reference expressed as % of PTV varied from 11% to 30% with a median at 24.9%. For Savi the 1.5x dose reference volume expressed as % of PTVeval ranged from 30 to 50% with a median of 40%. The 2x dose reference covered volume expressed as % of PTV varied from 5.5 to 30% of PTV at a median value of 8.5%. The same for Savi varied from 13 to 31% at a median value of 19.4%. The skin dose for interstitial implant was less than 70% whereas same for Savi application was <100%.

Conclusions: We conclude that the dose uniformity for V1.5 and V2 were better with interstitial implant as compared to Savi application. Also the interstitial implant allowed covering the desired margin of resection without restriction imposed due to air gap. Savi application, being less invasive was better preference by the patient over interstitial.