

AbstractID: 5629 Title: Feasibility of Using Stereotactic Body Radiation as an Alternative to HDR for the Treatment of GYN Sites

Purpose: Brachytherapy is frequently used to boost volumes at risk in the treatment of gynecological tumors. Not all the centers have an HDR, or LDR capabilities, however, all have a linear accelerator. We evaluated the possibility of using external beam radiation therapy using Stereotactic Body Radiation Therapy (SBRT) or Intensity Modulated SBRT (IM-SBRT) approach.

Method and Materials: Volumes covered by the HDR prescription were used to define a CTV, with a prescription of 3250 cGy to the CTV over 5 fractions. Planning started with 36 equi-spaced non-coplanar beams and beam weight optimization was used to choose the most effective beam orientations. Then, unmodulated beams produced the SBRT plans and by allowing beam modulation IM-SBRT plans were generated. Both absolute and film dosimetry were performed to ensure accurate deliverability.

Results: At least 96% of the CTV was covered by the prescription dose for SBRT and IM-SBRT plans. Relative to the original HDR plan, bladder dose reduced by 12.8% and 38.5% by SBRT and IM-SBRT respectively. Rectal dose increased by 49.3% using SBRT and decreased by 5.1% using IM-SBRT. As expected, The integral dose outside CTV was higher in SBRT and IM-SBRT approaches.

Conclusion: SBRT and IM-SBRT methods provided similar tumor coverage to HDR. IM-SBRT reduced dose to bladder and rectal point. In the near future we will be evaluating a novel new device to localize the anatomy on a daily basis so that a precise delivery is possible.