

AbstractID: 2905 Title: Intensity Modulated Radiation Therapy (IMRT) as an Alternative to Adjuvant High Dose Rate (HDR) Brachytherapy in Endometrial Cancer Patients

Purpose: To evaluate the role of IMRT as an alternative to HDR brachytherapy for the adjuvant treatment of endometrial cancer patients following surgery.

Materials and Methods: The CT scans of five patients previously treated with adjuvant HDR were used in this study. All patients were scanned with a vaginal cylinder in place, and HDR planning was performed using the BrachyVision (Varian Medical Systems) software. In all cases, a dose of 700 cGy/fraction was prescribed at a distance of 0.5 cm from the cylinder surface. The same planning CT scans were then used for IMRT planning (Eclipse, Varian Medical Systems). In this paradigm, the vaginal cylinder is a component of a hypothetical immobilization system that would be indexed to the linac treatment table. The goal of IMRT planning was to deliver the prescription dose to the clinical target volume (CTV) while minimizing the volume of rectum and bladder irradiated. Dose volume histograms (DVHs) of the bladder, rectum and CTV were recorded and compared for both HDR and IMRT plans.

Results: The mean bladder doses (as a percentage of the prescription dose) were 31.8% and 32.2% ($p = 0.93$) for the HDR and IMRT plans, respectively. However, in 4 of the 5 plans, IMRT produced lower maximum bladder doses compared to HDR (averages: IMRT = 99.1% vs. HDR = 158.4%). IMRT plans also resulted in lower mean rectal doses (21.6%) than HDR plans (30.9%) ($p = 0.01$). Moreover, the maximum rectal doses were lower in all IMRT plans compared to the HDR plans (95.1% vs. 165.8%). On average, the minimum dose to CTV was slightly higher using IMRT (97.8% vs. 95.5%).

Conclusions: These results suggest that when used in conjunction with a suitable immobilization system, IMRT may provide an alternative to HDR brachytherapy in women with endometrial cancer following hysterectomy.