

AbstractID: 13564 Title: A novel conformal arc technique for postoperative whole pelvic radiotherapy of endometrial cancer

**Introduction:** Conventional whole pelvic radiotherapy (WPRT) with three-dimensional conformal radiotherapy (3D-CRT) exposes most of the contents of the true pelvis to the prescribed dose. Intensity-modulated radiation therapy (IMRT) provides more conformal dose distribution and better sparing of critical structures for WPRT. However, IMRT is more complicated in planning and delivery, requiring more expensive equipments and time-consuming quality assurance. We explore and evaluate a novel conformal arc radiotherapy technique for postoperative WPRT of endometrial cancer in this study.

**Methods:** This technique involves two-axis conformal arc therapy (2A-CAT) with 180 degrees rotation around two isocenters each in two separate dose shaping structures.

Dosimetric comparison with 3D-CRT and IMRT for ten endometrial cancer patients undergoing postoperative WPRT was performed to evaluate this new 2A-CAT technique.

**Results:** The mean conformity index was 0.83, 0.61, and 0.88 for the 2A-CAT, 3D-CRT and IMRT, respectively. The mean homogeneity index was 1.15, 1.08 and 1.10. The mean dose to bowel, rectum, bladder and pelvic bone marrow was 1.19 Gy, 3.39 Gy, 4.65 Gy and 1.64 Gy lower with 2A-CAT than with 3D-CRT ( $p < 0.05$ ), while a little higher than with IMRT. The mean dose to normal tissue was 1.87 Gy higher with 2A-CAT than with IMRT ( $p = 0.00$ ).

**Conclusions:** In postoperative WPRT of endometrial cancer, 2A-CAT significantly improves the dose conformity and sparing of bowel, rectum and bladder compared with 3D-CRT.

Despite dose uniformity and conformity being still inferior to IMRT, its simplicity, extensive availability combined with further improvement warrant it as a potential short-cut alternative to IMRT.