

AbstractID: 2899 Title: Comparison of dose to rectum and bladder with 3DCRT and IMRT plans for the treatment of prostate

**Purpose:** Major goal of IMRT is to escalate dose to prostate while keeping doses to bladder and rectum equal to or less than that with 3DCRT. This study is to compare 3DCRT and IMRT to evaluate how far this goal has been achieved.

**Methods and Materials:** Dosimetry of 6-field 3DCRT and 5-field IMRT plans, generated for the same 32 patients, has been compared. With 3DCRT, prescription to SV and prostate was 45 and 75.6 Gy, respectively. With IMRT, prescription to SV and prostate was 45 and 81 Gy, respectively. IMRT required to keep doses to 30%, 50% and 70% of bladder and rectum less than 70%, 60% and 40% of 81 Gy and to cover 95% PTV with 95% isodose. Dose to rectum and bladder were estimated from DVH. Less than 5% difference in rectal and bladder doses between 3DCRT and IMRT was considered insignificant.

**Results:** Higher the dose to rectum and bladder with 3DCRT, higher also was the dose with IMRT ( $P < 0.001$ ). Dose to 50% rectum with IMRT was equal to that with 3DCRT in 15 cases (47%) and more in 17 cases (53%). Dose to 10% of rectum with IMRT was equal to that with 3DCRT in 9 cases (28%) and more in 23 cases (72%). Dose to 50% and 10% bladder with IMRT were equal to that with 3DCRT in 7 cases (22%) and more in 25 cases (78%).

**Conclusions:** Preliminary analysis suggested that the space between rectum and prostate+SV, and the volume of rectum and bladder in beams path are related to doses to these structures. Higher doses to rectum and bladder with IMRT are a result of trade-off between doses to PTV, rectum and bladder. This may be acceptable because percent dose coverage to 95% PTV is better with IMRT (93-98%) than with 3DCRT (86-93%).