

AbstractID: 8621 Title: Exclusion of Seminal Vesicles (SV) Spares Bladder More Than Rectum During IMRT for Prostate Cancer

Purpose: To study the relationship between SV volumes versus dose to SV, rectum and bladder during 81 Gy IMRT to prostate, either excluding SV or including SV to 45 or 81 Gy.

Method and Materials: SV, prostate, rectum and bladder were contoured on CT images. Proximal SV was defined as SV including 2-cuts superior to prostate. Prescription with two IMRT plans was 45 and 36-Gy to prostate+SV and to prostate, respectively, with 0.5-1 cm margins. Dose-volume constraints were to keep dose to 70%, 50% and 30% of bladder and rectum less than 30%, 50% and 70% of 81-Gy. Priority: PTV>rectum>bladder. DVH data from plans with no SV, or SV to 45 or to 81-Gy were compared for 42 patients. Linear regression and paired 't' test were used for statistical analysis.

Results: Mean (\pm SD) and (range) of volumes (cc): SV: 11.7 ± 5.14 , (1.9-22.8); prostate: 53.3 ± 24 , (17.2-139); rectum: 124 ± 24 , (50-235), and bladder: 207 ± 129 , (25-561). Dose to rectum and bladder was not related to SV volumes ($P>0.05$). Inclusion of SV to 45-Gy increased dose to rectum and bladder up to 30% but not at 10% volume. Dose (Gy) to 30% bladder, and rectum with no SV: B- 27.8 ± 16.8 , R- 40.4 ± 6.7 ; SV to 45-Gy: B- 35.6 ± 14.2 , R- 44 ± 5.2 ; and SV to 81-Gy: B- 42.4 ± 14.7 , R- 48.9 ± 5.5 , respectively. **Excluding SV spared bladder (53%) more than rectum (21%) at 30% volume ($P<0.001$).** Mean dose to SV to 45-Gy: entire SV - 68.3 ± 6 (57.4-79.4) and proximal SV - 74.5 ± 2.5 (66.8-79.4). For small SV volumes, dose to bladder and rectum was same with SV to 45 or 81-Gy.

Conclusions: Margins, priority and inverse-optimization might be reasons for sparing bladder more than rectum with SV exclusion during IMRT. Single plan to 81-Gy for small SV cases would reduce planning and QA time to half. These results suggest reevaluation of reasons for inclusion/exclusion of SV during IMRT.