AbstractID: 10366 Title: Treatment Planning Changes to Reduce Side Effects from Prostate Cancer Brachytherapy with Cs-131

Purpose: To reduce gastrointestinal (GI) and genitourinary (GU) side effects in patients receiving Cesium-131 prostate brachytherapy by modifying the treatment planning technique. **Methods and Materials:** 15 patients were pre-planned with Cs-131 according to the modified peripheral loading technique. For the next 15 patients, the planning technique was modified to increase seed placement around the periphery of the gland, reduce the prostate V150, and decrease dose to the rectum. All implants were conducted with pre-loaded needles and stranded seeds. Dose volume statistics were analyzed according to a 2-sided T-test with 95% confidence interval. The follow-up range was 6 to 19 months. Maximum GI and GU toxicity scored according to the Common Terminology Criteria for Adverse Events (NCI, version 3.0) were reported for all patients. Minimum PSA value in the 6-11 month follow-up period was reported. **Results:** The number of seeds and total activity implanted decreased 22.0%($p<0.0001$) and 14.9%($p<0.005$), respectively. The prostate V150 decreased 19.2%($p<0.02$), the rectum D10 and V100 decreased 24.8%($p<0.0002$) and 73.3%($p<0.04$), respectively. The prostate V100, V90, D90 and urethra UV150 were unchanged. Before the planning change, 40% (6 out of 15) of patients reported higher grade (Levels 2 and 3) GI toxicity and 53.3% (8 out of 15) of patients reported higher grade GU toxicity. After the planning change, these values reduced to 13% (2 out of 15) GI and 40% GU (6 out of 15). 4 patients in the first group and 1 in the second group experienced urinary retention. The mean PSA follow-up was 8.93 and 8.5 months for the first and second groups, respectively. The minimum PSA reported was unchanged (1.00 in the first group, 0.98 in the second group,$p=0.95$). **Conclusion:** Implementing these treatment planning changes reduced the severity of GI and GU side effects without compromising dosimetric coverage of the prostate or initial PSA response.