

Purpose: To evaluate the influence of isotope and prostate size on International Prostate Symptom Score (IPSS) normalization, catheter dependency and the need for surgical intervention following permanent prostate brachytherapy.

Materials and Methods: 976 consecutive patients underwent permanent brachytherapy for clinical stage T1b-T3a prostate cancer. Of these, 789 were implanted with Pd-103 and 187 with I-125. Patients were stratified into size cohorts $\leq 25.0 \text{ cm}^3$, $25\text{-}35 \text{ cm}^3$, $35\text{-}45 \text{ cm}^3$, and $> 45.0 \text{ cm}^3$. 418 received androgen deprivation therapy (ADT). 486 received supplemental external beam radiation therapy (XRT). In all patients, an α -blocker was initiated prior to implantation and continued until the IPSS returned to baseline. The median number of IPSS determinations per patient was 21. Clinical, treatment and dosimetric parameters evaluated included patient age, pretreatment PSA, Gleason score, clinical T-stage, percent positive biopsies, preimplant IPSS, ultrasound volume, planning volume, isotope, $V_{100/150/200}$, D_{90} , urethral dose, supplemental XRT, ADT, and the duration of ADT (≤ 6 months versus > 6 months).

Results: For both isotopes and all size cohorts, IPSS peaked 1 month following implantation and returned to baseline at a mean of 1.9 months. Stratification of prostate size cohorts by isotope resulted in no significant differences in prolonged catheter dependency, IPSS resolution or postimplant surgical intervention. In Cox regression analysis, IPSS normalization was best predicted by preimplant IPSS, XRT and any need for a catheter following brachytherapy. Catheter dependency correlated with prostate volume, while the need for surgical intervention was related to catheter dependency, maximum urethral dose, ADT and maximum IPSS increase.

Conclusions: When stratified by prostate size, the choice of isotope did not impact IPSS resolution, catheter dependency or the need for postbrachytherapy surgical intervention. While prostate size did predict for short-term (< 5 day) catheter dependency, it did not influence IPSS resolution or the need for surgical intervention.