

AbstractID: 3455 Title: Partial Volume Analysis in Permanent Seed Implantations

Purpose: Permanent seed implantation is a well accepted therapy for the treatment of low risk prostate cancer. In Europe the number of treated patients increases considerably. New techniques and planning systems allow a very safe intervention. A retrospective analysis is performed to show if there are additional parameters to optimize dose distribution and therefore to reduce side effects.

Method and Materials: In our institution 304 patients were implanted with I-125 radioactive seeds following the recommendations of the ABS and the ESTRO/EORTC for a permanent prostate brachytherapy. Basis for the dosimetry was an ultrasound guided intraoperative interactive real-time planning (VariSeed 6.7/7.0/7.1). Looking for coherences between dose distribution and side effects a partial volume analysis was performed particularly in the apical and basal part of the prostate. Dosimetric data analyzed were V100, V150, D90 and the mean dose.

Results: Postoperative follow-up is 1-54 months (mean 24 months). Different types of side effects such as urinary retention, proctitis, and erectile dysfunction occurred in 4%, 8% and 24% of our patients. Looking to the group with and without side effects we found relevant differences in the apical part of the prostate. The median for the V150 (apex) is 40,5% and 28,8%, the mean dose in the apex is 283,1Gy and 257,5Gy. The D90 and V100 is comparable in both groups (184,1Gy/182,3Gy, 98,9%/99,2%). No significant differences were found in the basal part of the prostate.

Conclusion: A partial volume analysis of the prostate during the implantation offers the possibility to lower side effects. It is not sufficient to look to the standard values such as V100, D90 for the prostate and D30 and V100 for the urethra and rectum. Looking more into detail for the dose distribution a better dose homogeneity with a better quality of life for the patient can be achieved.