Abstract ID: 17973  Title: How Certain Can the Real-Time Plan Predict the Post Dosimetry for Prostate Seed Implant?

Purpose: To investigate the correlation between the post dosimetry and the real-time plan for the transrectal ultrasound guided prostate seed implant.

Methods: Prostate seed implants were performed with preloaded needles and transrectal ultrasound imaging guidance. Customized stranded seeds based on the real time treatment plan generated in the operation room were preloaded in the needles for the implant. Post dosimetry was performed at the same day and three week later based on patient’s CT and MR images. Target DVH parameters of the real-time plan and the post dosimetry at the week three were studied retrospectively for 100 patients. The correlation between them was analyzed and uncertainty of the prediction on the post dosimetry was calculated.

Results: Though the post dosimetry meets clinic criteria for most of the patients, big uncertainty on the target dose is observed, 12.4% on D90 and 7.6% on V100. The correlation coefficient between the DVH parameters of the post dosimetry and the real time plan is poor. The mean ratio of the V100 (D90) between the post dosimetry and real time plan is 0.92 (0.88) with a standard deviation of 0.07 (0.1), which means on average that a 100% V100 is required in the real time plan for a 90% post dosimetry V100 and a 115% D90 for a 100% post dosimetry D90. The mean ratio between the post V100 (D90) and the real time V150 is 1.5 (1.76) with a standard deviation of 0.19 (0.25). The mean ratio of V200 between the post and the real time is 1.1 with a standard deviation of 0.4.

Conclusions: In order to reduce the dosimetry uncertainty, the implant technique and the consistence need to be improved. The post dosimetry is necessary for patient dose evaluation because it can not be predicted accurately based on the real time plan.