

Purpose:

Optimizing I-125 prostate implant (I125PI), quality/outcome, and safety; reporting 15 years QA experience.

Methods and Materials:

Before I125PI, we did

PT/PTT coagulation profile screening;
CXR, lung disease, *scoliosis foreseeing*;
Catheterization, CT scan (CTs), balloon localization QA;
US image (USI) scan (Fig1), *pre-plan* with our developed criteria:
Calibration system QA;
Seed activity calibration;
Needles seed loading and autoradiographic filming QA (Fig2);
Needle depth calibration (Fig3).

At I125PI, 1st administrate spinal (or local, if scoliosis) anesthesia. Urologist performed needles insertion; radiation oncologist verified the needle coordinates/depths.

I125PI done, cystoscopy for stray seeds, fluoroscopy for seeds counts.
CTs to establish the seed distribution within the prostate.

One month later, a post implant CTs was followed to identify the seeds locations relative to the prostate target and quantify DVHs of I125PI (Fig3)

1098 patients have undergone I125PI. All pre-plan and post implant dosimetries were analyzed.

RESULTS:

Fig2, pre-planned isodose distribution; **Fig3**, the CTs after I125PI. **Fig6**, DVHs of I125PI. **Fig7** illustrates how radiation oncologist guiding urologist to put the needle at designated coordinate position; **Fig8**, how we adjusting the needle depth; **Fig9**, needle depth calibration from *USI*; **Fig10**, films of needle seed number QA; **Fig11**, X-ray seeds count after I125PI, also illustrates one seed went astray to the bladder, removed later. **Fig12** shows the prostate volumes variation between pre-plan, and post I125PI indicating one month after I125PI, prostate volume shrank by 3~10 cc. **Fig. 13** illustrates the Tc^{99} decay calibration of the calibration system. **Fig14** shows I-125 activity calibration vs manufacturer's reference activity, agreement within +/- 3%. **Figs15-20** show patient's prostate, urethra, rectum doses and volumes isodose coverages. **Appendix** illustrates I-125 monogram for seed number expectation.

Conclusions:

Our QA for I125PI is reliable, successful; no accidents happened and finished the procedure in 11/2 hours. Our I125PI for 1098 patients meet contemporary standard requirements.