

AbstractID: 14179 Title: Clinical Experiences and Dosimetric Comparison of the Model 6711 and 9011 I-125 for Intra-operative Prostate Implant

**Purpose:** This study compares the film dosimetric characteristics of seed model 9011 I-125 (THIN) and model 6711 I-125 (Both sources from Oncura). The THIN seed uses a smaller 20 gauge needle diameter compared to the 18 gauge standard used for model 6711. **Method and Materials:** Twenty patients (pts) underwent transperineal brachytherapy; 10 each with model 9011 and model 6711 seeds, respectively. Both groups were implanted with dynamic intra-operative technique using the MICK applicator. The source activity range was 0.45 -0.5 mCi. Three weeks after the implant, a chest x-ray, pelvic x-ray and pelvic CT were obtained. The intra-operative and post-implant evaluations were done with Variseed 8.0.1. Additionally, Model 9011 and 6711 seeds were exposed to Gafchromic EBT2 films and scanned with the Vida Pro Advantage film scanner. The dosimetric properties of the two models were analyzed and compared using RIT software. **Results:** Film dosimetry demonstrated that the dosimetric parameters for THIN seed model 9011 were similar to those of model 6711. Anisotropy and radial dose function were slightly different, within 1% for  $r > 1$  cm. Intra-operatively, the thin needles were better-visualized and easier to track on ultrasound images. Visualization of individual sources on pelvic X-ray films for model 6711 and 9011 were similar. There was no seed migration to the lung for either group. For post-implant evaluation model 9011 seeds were more difficult to identify on pelvic CT images using Seed Finder module of Veriseed software. **Conclusion:** The dosimetric characteristics of THIN seed model 9011 and model 6711 are similar. Intra-operative visualization of the THIN seed improved source capture on the intra-operative planning system. Post implant source localization was more difficult on CT images.