

**Abstract:** Improved image resolution of the TRUS technology has provided enhanced visualization of implanted sources. Reliable identification of the radioactive seeds is made possible with the application of linked strands of radioactive seeds and spacers that remain linearly connected in the gland after implantation. Based on the linearity of a source chain, the distribution of the radioactive seeds can be determined by localizing the first or last source of an individual source chain in relation to the TRUS image slice. A case study was performed for the analysis of the post-implant dosimetry using either TRUS or CT technique. The principle dosimetric parameters (D90, V100, and V150) were calculated on a commercial planning system and compared. A correlation has been observed for the principle dosimetric parameters (D90, V100, and V150) between TRUS-based and CT-based post-implant dosimetry. D90 derived from TRUS-based dosimetry had a factor  $\sim 1.1$  of that from CT-based dosimetry and V100 had a difference less than 4%, over three cases in this study. The outcome of the implantation is reasonably predictable with the TRUS-based post-implant dosimetric analysis. The implementation of the TRUS imaging modality for intraoperative implant dosimetry of the prostate brachytherapy could be practical and promising.