

Post-implant dosimetric evaluation of a permanent prostate implant using either Pd-103 or I-125 seeds is essential in ensuring and improving quality of the implantation techniques. Accuracy of placement of seeds in the target volume can only be determined with the use of volumetric data of patient anatomy, such as CT images. Accurate seed localization is difficult on both transverse CT images and orthogonal x-ray films. Seed localization and subsequent dose distribution calculation, using transverse CT images and multiple-planar reconstruction (MPR's) of sagittal and coronal images from CT data is now possible with the availability of 3D treatment planning systems. We report our experience with the use of a commercial 3D treatment planning system for the post-implant dosimetric evaluation of permanent prostate implants. Automatically correlated transverse, sagittal, and coronal images of patient anatomy that contain a given seed are used to localize the seed position and define the seed orientation accurately. In-vitro experiment demonstrates that this technique can achieve seed localization accuracy of better than 2 mm routinely. The time required for performing a post-implant dosimetric evaluation procedure using this technique is typically less than 1 hour, representing an improvement over the traditional techniques based on orthogonal or stereo-shift films. This approach in prostate implant dosimetry therefore allows accurate and fast dosimetry evaluation of prostate post-implant dosimetry.