

AbstractID: 1225 Title: Comparison Between CT-based and Ultrasound-based Daily Target Localization for IMRT Post- prostatectomy Patients

Post-prostatectomy patients often receive radiation treatment to the surgical bed. The prostate bed can significantly change its position from day to day, due to rectal and bladder filling. Therefore, daily localization of the target prior to the treatment is essential to advanced treatment techniques such as IMRT. The ultrasound BAT system (Nomos Corporation) is a popular tool for alignment of patients with intact prostate, and it is also used for prostate beds alignment. We conducted a study comparing BAT alignments with daily alignments based on CT data. The daily CT scans were taken with a Primatom CT-on-rails (Siemens Medical Solutions). Nine patients with daily BAT alignment and two CT scans per week were included in the study. We accepted CT as a reference technique, which has a reproducibility of 2 mm. For the first three patients we performed a direct comparison. For the other six patients we created BAT templates based on the shifts from the CT during the first week of their treatment. The results showed that: (1) when the initial target displacements are smaller than 4 mm, using a CT based template does not improve the positioning of the target; (2) when the initial target displacements are smaller than 4 mm, the target positioning can be deteriorated by the BAT alignment when a CT based template is not used; and (3) when the initial target displacements are greater than 5 mm, BAT alignments based on the CT templates improve the positioning of the target.