

AbstractID: 3944 Title: Assessment of Prostate Position during External Beam Treatments for Patients Post Brachytherapy Implantation

Purpose:

To localize the prostate for patients undergoing an external beam boost after receiving an I-125 implant to within 3mm and confirm the position of the prostate post-treatment using marker seeds implanted in the prostate as a surrogate for its position.

Method and Materials:

Twenty patients receiving an I-125 prostate implant had three marker seeds implanted in the prostate during the procedure. After the implant the patients underwent a CT simulation for an external beam radiotherapy boost. The marker seeds were contoured and projected onto a DRR with a reference field. Prior to each treatment, radiation therapists imaged the patient with an EPID. The therapists then localized the seeds relative to reference field and determined the error in the alignment of the prostate. If the alignment error was greater than 3mm in any one direction the patient was shifted and re-imaged to verify the shift. A portal image was acquired after the patient's treatment to confirm the position of the prostate post-treatment.

Results:

Averages and standard deviations for pre-treatment prostate alignment error ranged from -0.10 ± 0.18 to 0.15 ± 0.14 cm, -0.13 ± 0.16 to 0.16 ± 0.16 cm, and -0.17 ± 0.24 to 0.14 ± 0.19 cm in the right/left, superior/inferior, and anterior/posterior direction, respectively. Averages and standard deviations for the difference between the pre-treatment and post-treatment prostate alignment error ranged from -0.13 ± 0.08 to 0.09 ± 0.16 cm, -0.12 ± 0.18 to 0.21 ± 0.26 cm, and -0.15 ± 0.17 to 0.09 ± 0.15 cm in the right/left, superior/inferior, and anterior/posterior direction, respectively.

Conclusion:

Pre-treatment the prostate was localized to within 3mm using markers seeds implanted in the prostate and an EPID. Post-treatment portal images confirmed the prostate position to be within 3mm of its pre-treatment position.