Local recurrence map to guide target volume delineation after radical prostatectomy.


Abstract

PURPOSE: To describe the various anatomic locations of recurrent disease, in a cohort of men with radiographically visualized, biopsy-proven recurrent prostate cancer after radical prostatectomy (RP), in order to help guide contouring of the prostatic fossa clinical target volume (PF-CTV) when no gross recurrence is visible or when magnetic resonance imaging (MRI) is not used.

METHODS AND MATERIALS: Ten representative patients with MRI-detected, biopsy-proven local recurrences of prostate adenocarcinoma after RP were selected. Areas of recurrence were delineated on individual MRI images, and then mapped onto axial and sagittal "template" MRI images to compositely demonstrate the documented areas of recurrence. Coverage of these anatomic areas of recurrence was then evaluated by applying Radiation Therapy Oncology Group (RTOG)-consensus PF-CTV contours to a postoperative computed tomographic template.

RESULTS: The median age at the time of RP was 61 years (range, 50-73). In the superoinferior direction, recurrences ranged from the superior retrovesical region, to the inferior retrovesical region, to the posterior anastomosis, and as inferiorly as the posterior urogenital diaphragm. In the anteroposterior direction, the areas of recurrence ranged from involving the posterior bladder wall anteriorly to invading the rectum posteriorly. Recurrences were found at the center, right, and left of the prostate and seminal vesicle fossa. When target volumes were delineated using RTOG-defined consensus PF-CTV contours, coverage was marginal on recurrences in the posterolateral aspects of the CTV near the rectum and mesorectal fascia and lacking on recurrences occurring inferiorly at the posterior urogenital diaphragm.

CONCLUSIONS: Our findings describe the variation in location of prostate cancer recurrences and can be used to improve target definition in conformal radiation therapy in the postoperative adjuvant or salvage setting. RTOG-consensus contours for the PF-CTV should be applied carefully, with potential modifications in the posterolateral and inferior aspects.

PMID: 25407875 [PubMed - in process]