

## AbstractID: 1972 Title: Dosimetric Implications of Target Motion in Prostate Radiotherapy

EPID-based on-line prostate localization using implanted fiducial markers was performed for 20 patients. The patients were setup using skin marks and anterior and lateral pre-treatment portal images were acquired. The positional deviation of the prostate (indicated by implanted markers) was measured with Varian PortalVision and the patients were repositioned, moving the prostate to its prescribed location. The patients were treated with a 4 field box, acquiring through-ports of each of the treatment beams. Retrospective localization of prostate in the pre-treatment images indicates the targeting accuracy that would have been achieved if skin marks were the lone positioning technique. Localization of the prostate in through-ports denotes the targeting accuracy achieved through on-line intervention. Positional variations from the pre-ports and through-ports are used to calculate daily doses delivered to the prostate, bladder, and rectum by skin mark and on-line localization. These daily doses are summed over the treatment course and compared to the treatment plan. In general, the full prescription dose is delivered to the prostate in both the skin-mark and on-line localization techniques. The PTV margins (7.5 mm) were adequate to account for positional variations from either technique. Rectal doses in the on-line imaging deliveries are similar to the treatment plans, but treating these patients with just skin marks would have resulted in a significantly lower volume of rectum receiving 60 Gy. However, on-line localization does allow for the prostate to be treated to full dose with margins as small as 3 mm, resulting in significantly lower rectal dose.