AbstractID: 1480 Title: Assessment of Prostate Position Relative to Bony Anatomy Using an EPID

EPID-based on-line prostate localization using implanted fiducial markers is currently in routine clinical practice. Localization data from 20 patients was retrospectively reviewed to assess the relative position of the prostate versus the pelvic bony anatomy (BA). Images from 6 ports (AP-RLAT preport plus 4 field box treatment) were evaluated for each fraction of each patient (over 6000 data points) to determine the position of the prostate (indicated by the implanted markers) and the BA both at setup and at treatment (including any setup corrections) using Varian Portal Vision. Three dimensional magnitudes of the prostate and BA displacement were compared as were their positions along each body axis. The initial 3D displacement for the prostate was 5.6mm while the final (following correction) improved to 2.8mm ($p<0.001$) for the cohort. For the BA, initial 3D displacement was 4.4mm while the final displacement was unchanged at 4.4mm ($p=0.46$). When analyzed along individual axes, the initial SI displacement of the prostate improved from 2.5mm to 1.4mm ($p<0.001$) yet worsened for the BA from 1.7mm to 2.5mm ($p<0.001$). In the AP direction, displacement of the prostate improved from 3.7mm to 1.6mm ($p<0.001$) and remained static for the BA at 2.8mm($p=0.39$). In the RL direction, the prostate improved from 1.9mm to 1.1mm ($p<0.001$) as did the BA from 2.0mm to 1.2mm ($p<0.001$). This data suggests that the prostate moves independently of the pelvic BA in the SI and AP directions. Thus, BA is not a reliable surrogate for the position of the prostate.