AbstractID: 2074 Title: "Anatomical variations and dosimetric consequences for prostate cancer radiotherapy after neoadjuvant androgen deprivation treatment"

The changes of the volume of a cancerous prostate gland during the course of neoadjuvant androgen deprivation (NAD) treatment is well documented[1], and the appropriate length of NAD therapy prior to radiation treatment has been studied[2]. However, many planning facilities still have conflicting opinions on the length of NAD before treatment. If the prostate continues to shrink over the course of radiotherapy and this change is ignored during treatment planning, what anatomical variations will occur and what dosimetric consequences will result from these variations? Twenty patients were selected for a retrospective study to determine whether the increased planning target volume (PTV) taken prior to treatment would sufficiently cover the target volume as the prostate continues to shrink during radiotherapy. Intuitively, a plan designed to treat a large prostate volume prior to radiotherapy would still cover the target area. However, 15 of the 20 patients received significantly less dosage to the PTV than intended during treatment planning. These coverage discrepancies were attributed to asymmetric shrinkage of the prostate during treatment. Anterior and inferior movement of the geometric centroid of the prostate showed a significant correlation with the decreasing volume of the prostate during treatment. These results indicate that a PTV taken shortly after NAD may not sufficiently cover the PTV during the entire course of radiotherapy if symmetric shrinkage of the prostate is assumed.

[1]Lilleby, et al. Radiotherapy and Oncology, 57(195-200), (2000).
[2]Sanguineti, et al. Radiotherapy and Oncology, 66(151-157), (2003).