Endorectal balloons in post-prostatectomy: Do gains in stability lead to more predictable dosimetry?

There are several studies which have looked at the use of endorectal balloons (ERB) in the definitive prostate radiotherapy setting to stabilise internal pelvic anatomy. It has been proposed that ERB may be useful in post-prostatectomy setting by acting as an internal stabilisation device. We have conducted a study comparing organ motion and resulting dosimetric variation for patients treated with and without endorectal balloons in the post prostatectomy setting.

We have assessed the organ motion and deformation using in house developed tools that can quantify changes in: 1) Volume, 2) Location in 3D, 3) Dimension in 3D, and 4) Concordance index.

We further used in house developed tools to assess the cumulative equivalent uniform dose (EUD) for targets and normal tissues.

Figure 1. Shows sagittal CT of weekly clinical target volume variation over the course of treatment for ERB (a) and non ERB (b).

Figure 2. Shows CT and radiotherapy isodose wash of balloon V.S. no Balloon for a patient with and without balloon for axial (a & b), and coronal (c & d)
The results of this study have been used to assess the effectiveness of ERB in stabilising pelvis anatomy and providing more consistent dosimetry on a daily basis.

References: