

AbstractID: 13014 Title: Study of dosimetric variation due to interfraction organ movement in High Dose Rate Interstitial (MUPIT) brachytherapy for gynecologic malignancies

Purpose:

To study the dosimetric effects of inter-fractional organ motion in HDR interstitial MUPIT brachytherapy application for gynaecologic malignancy.

Methods & Materials:

Ten patients with cancer of uterine cervix who underwent interstitial brachytherapy using MUPIT templates were selected. After implant, CT images were taken (CT1) using which bladder, rectum and CTV were delineated. The treatment plan P_{CT1} was generated and optimized geometrically on the volume. CT scan (CT2) was repeated before the second fraction of the treatment CTV and critical organs were delineated. The plan (P_{CT2}) was created by reproducing the Plan P_{CT1} in the CT2 images. The inter-fractional dosimetric variations between two fractions were estimated by comparing the P_{CT1} and P_{CT2} .

Result & Discussion:

Bladder, Rectum and CTV percentage volume variation ranges from +28.6 % to -34.3%, 38.4% to -14.9% and 8.5% to -15.2% respectively. Maximum dose variation in bladder ranges from + 17.1 % to -66.2% ,in rectum was up to 410% and in CTV was -13.0% in one patient and less than 1% in all other patients.

Conclusions:

The variations in volume observed from OAR and CTV are patient specific. Also, the dose to these structures varies independently with no strong correlation with the volume variation. Hence it is suggested that repeat CT and re-planning is mandatory before second fraction execution.

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