was 74.2Gy and it ranged from 75.3Gy-77.2Gy in the deformed plans. V65 and V70 of bladder ranged from 7%-28.3% and 5.7%-24.3% versus 13.7% and 11.5% in the pCT respectively. Prostate D98 and D2 ranged from 75Gy-75.8Gy and 77.2Gy-77.9Gy versus 74.2Gy and 76.2Gy in the pCT. Mean deformed volume of the prostate ranged is 40.6cm³ (35.5-44.4cm³) versus 40.4cm³ in the pCT. Mean centre of mass (COM) shifts of the prostate in the x-y and 2 directions were -0.02cm, -0.16cm and -0.02cm respectively. Mean bladder volume is 171.4cm³ (83.3-268.9cm³) versus 195.9cm³ in the pCT. Mean centre of volume of contoured structures. The DIR algorithm had various statistical parameters such as COM shifts, DSC and Conclusions: 

SmartAdapt is a useful tool in generating various statistical parameters such as COM shifts, DSC and volume of contoured structures. The DIR algorithm had performed well in achieving DSC >0.8 for the prostate structure set. Daily dose statistics can also be analysed for evaluation of the delivered doses with consideration of anatomical changes.

EP-1637

Dosimetric impact on different target separations in craniocaudal direction using dynamic jaws in Tomotherapy W.W. Lam1, H. Geng1, C.W. Kong1, Y.W. Ho1, B. Yang1, T.L. Chiu1, H.F. Choi1, K.Y. Cheung1, S.K. Yu1

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Purpose/Objective: Helical Tomotherapy (HT) has the capacity of treating multiple targets continuously in a treatment fraction. In conventional fixed jaw delivery mode, the choice of the field width determines the dose gradient in superior-inferior (SI) direction. A wider field width elevates the dose significantly to normal tissue superior and inferior to PTV. By using the new dynamic jaw technique of HT, there is a potential improvement in the dose gradient and the conformity in the craniocaudal borders of targets. However, the effectiveness of this dose reduction between targets using dynamic jaw may possibly be affected by the distance between targets in SI direction. In this study, the dosimetric impact and the effectiveness of reducing dose between targets as a function of separation between targets in SI direction using dynamic jaw technique was investigated.

Materials and Methods: Two sets of HT plans in fixed and dynamic jaw settings were generated. In each plan, two identical cylindrical targets with 6 cm diameter and 4 cm length in solid water phantom images were used for planning. The targets were aligned along SI direction with separations varied from 3.5 to 1 cm with 0.5 cm decrement in each plan for each mode. All plans were optimized with identical prescription (2 Gy per fraction to 95 % of both PTVs) and planning objectives using 2.5 cm fixed and dynamic jaw settings, respectively. The longitudinal dose profiles along the central axis in SI direction were measured for all the plans. The corresponding absolute and relative doses were calculated and compared. All plans were delivered and verified by film dosimetry. The dose distribution at the central coronal plane of the target was measured with EDR2 film sandwiched at the solid water phantom. Measured and calculated dose distributions for each plan were compared using Gamma analysis with criteria of 2% in dose difference and 2 mm in DTA were calculated.

Results: Measured dose distributions using films showed good agreements with those calculated by the TPS. The passing rates of Gamma analysis were higher than 90% for all plans. From Fig. 1, the minimum relative dose within the separation along the SI direction normalized with the prescribed dose were increased from 18.9, 32.6, 62.4, 77.8, 94.3 and 100.7 % for 3.5, 3, 2.5, 2, 1.5 and 1 cm separation between targets, respectively, using dynamic jaw mode. It showed that the effectiveness of dose reduction decreased with the decrease in the distance between targets in SI direction. For fixed jaw mode, the corresponding minimum relative dose were increased from 81.9 to 100.8 % for 3.5 to 1 cm separation between targets, respectively.

Conclusions: As rapid dose fall-off at the craniocaudal borders of targets can be achieved using dynamic jaw delivery technique, dose between targets can be reduced significantly compared with fixed jaw delivery. However, it decreased significantly with the decrease in the separation between targets in SI direction.

EP-1638

Evaluation of ovary dose using Tomotherapy for childbearing woman with breast cancer
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Purpose/Objective: The aim of this study is to evaluate unwanted scattered dose to ovary by scattering and leakage generated from treatment fields of Tomotherapy for childbearing woman with breast cancer.

Materials and Methods: The radiation treatments plans for left breast cancer were established using Tomotherapy planning system (Tomotherapy, Inc, USA). They were generated by using helical and direct Tomotherapy methods for comparison. The CT images for the planning were scanned with 2.5 mm slice thickness using anthropomorphic phantom (Alderson-Rando phantom, The Phantom Laboratory, USA). The measurement points for the ovary dose were determined at the points laterally 30 cm apart from mid-point of treatment field of the pelvis. The measurements were repeated five times and averaged using glass dosimeters (1.5 mm diameter and 12 mm of length) equipped with low-energy correction filter. The measures dose values were also converted to Organ Equivalent Dose (OED) by the plateau dose-response model.

Results: Scattered doses of ovary which were measured based on two methods of Tomo helical and Tomo direct