AbstractID: 10301 Title: Treatment planning study of epithelial ovarian cancers using Helical Tomotherapy

**Purpose:** Whole Abdomen Radiotherapy (WAR) of epithelial ovarian cancer though effective has been used sparingly due to inadequate target coverage and poor sparing of Organs-At-Risk (OAR) leading to significantly higher toxicities. Newer radiation techniques have shown potential for significant improvement in the therapeutic ratio. The purpose of this study was to evaluate Helical Tomotherapy (HT) for WAR.

**Methods & Material:** HT plans were generated for five patients with field-width of 5.0/2.5cm, modulation factor of 3.5/3.0, and a pitch of 0.3. A dose of 25Gy in 25 fractions was prescribed to the abdomen with a simultaneous boost of 45Gy in 25 fractions to the pelvis. Dose-volume parameters and various indices were analyzed and compared with other published studies on WAR with IMRT, IMAT and HT.

**Results:** Mean volume (standard-deviation) of abdominal and pelvic PTV was 6630(±450)$cm^3$ and 1235(±98)$cm^3$ respectively. Mean length of PTV in cranio-caudal direction was 41(±4)cm. Volume receiving 95% and 107% of the prescription dose, $V_{95\%}$ and $V_{107\%}$ was 95.6(±2.7)% and 2.6(±0.5)% for abdominal-PTV, and 95.7(±2.4)% and 0% for pelvic-PTV respectively, which is superior as compared to other studies. Homogeneity and Conformity indices were 17.5(±1.7), 1.2(±0.03) for abdominal PTV, and 5.2(±0.7), 1.1(±0.02) for pelvic-PTV respectively. Median dose received by the kidneys, liver and bone marrow were 9.6(±1.2)Gy, 17(±2.7)Gy and 22(±1.4) Gy respectively. The kidney dose was lower, while liver and bone marrow was higher as compared to other series, which could be attributed that 1.5cm of liver surface was included in the PTV, while bone marrow includes ribs, vertebrae, pelvic bones & upper end of femerii.

**Conclusions:** HT achieves an excellent coverage of WAR target with simultaneous pelvic boost and OAR sparing. HT for WAR has the potential as consolidative therapy which is being evaluated further in a phase II cohort study in epithelial ovarian cancers.