

AbstractID: 1615 Title: Comparative study of various IMRT techniques in the treatment of pancreatic cancer - Reduction of toxicity study

Escalation of doses in pancreatic cancer is largely hindered by the presence of several dose-limiting organs. IMRT offers the potential of delivering higher doses to the target volume (PTV) while respecting the tolerance of the organs at risk (OAR). We studied three different IMRT plans to treat unresectable pancreatic cancer. A seven beam plan and same beam orientation was selected for this study. PTV1 is defined as pancreatic tumor plus 1 cm. margin. PTV2 is defined as adjacent lymph nodes plus 1 cm margin.

PLAN(1) Sequential treatments of PTV1 & PTV2 delivers 1.80 Gy daily to PTV2 to a total dose of 45.00Gy then boost plan for PTV1 to a cumulative dose of 63.80 Gy in 36 fractions. **PLAN(2) Differential fraction size** delivers 2.12Gy to PTV1 and 1.50Gy to PTV2 daily. Total PTV1 dose=63.60Gy, PTV2=45.00Gy in 30 fractions in 30 days.

PLAN(3) Hyperfractionated concomitant in-field boost delivers 1.10Gy/Fraction to PTV2 twice for 11 days, then continues PTV2 in AM fraction while treating PTV1 in PM. Total PTV1 dose=63.80Gy, PTV2=44.00Gy in 58 fractions in 29 days. The three plans were compared in 3 patients in regards to PTV coverage and OAR constrains. While PLAN(2) proved superior in constraining dose to small bowel and left kidney, PLAN1&3 appear better in PTV coverages and in minimizing liver dose. The three plans accomplished excellent agreement with OAR constraints, achieving significantly less OAR doses than published data. IMRT for unresectable pancreatic cancer is a feasible and powerful tool allowing safe escalation of doses to PTV

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