

AbstractID: 1962 Title: Determining the Probability of Esophagitis using Mini Esophagus Disks

Acute radiation esophagitis (RE) is a dose limiting toxicity in the delivery of high radiation therapy (RT) doses to patients with non-small cell lung cancer (NSCLC). Eighteen patients with NSCLC treated in the stereotactic body frame were analyzed to find a predictor for RE. Standard dose volume histograms (DVHs) give a representation of the total dose absorbed over the entire structure, including the organ outside the radiation portal. Within this DVH, information on the location of a net hot spot cannot be determined. An approach to locate the hot spot is to divide the esophagus into discs consisting of two 1.5 mm thick CT slices merged together and here called an esophagus disc (ED). We evaluated the effect of dose to the esophagus circumference, length of esophagus in the RT port and the number of EDs on developing RE. Parameters evaluated as predictors for RE were any volume (V) of ED receiving $\geq 100\%$ prescription dose (pd), 50% V receiving $\geq 80\%$ pd and 50% V receiving $\geq 50\%$ pd. Our hypothesis was that as the number of EDs receiving $\geq 100\%$ pd increased so would the probability of experiencing some grade of RE. Our results indicate the dose distribution along esophagus circumference predicts for RE; however, the length of esophagus inside the RT port does not. In addition, patients with two or more EDs receiving $\geq 100\%$ pd to any circumferential V experience RE.