

**AbstractID: 9096 Title: Quantitative fluoroscopy of respiration-induced abdominal tumor motion and the impact of motion on IMRT dose distributions**

The treatment of moving targets with Intensity Modulated Radiation Therapy (IMRT) may introduce errors in dose delivery. The motion of tumors in the abdomen was studied using quantitative fluoroscopic analysis, and the effect on dose delivery to the target was studied. Fluoroscopy sessions for seven patients with pancreas or liver tumors were recorded, converted to digital format, and analyzed to quantify the characteristics of tumor motion. Clip motion was quantified by analyzing each patient's fluoroscopy session, using image processing and recursive filtering techniques to track the motion of the tumor clips. For three patients (a total of five plans), IMRT treatment plans were generated, and the DVH for the target volume was compared for plans with and without tumor motion. The average magnitude of peak-to-peak motion for the seven patients in the cranio-caudal and anterior-posterior directions was 7.4 mm and 3.8 mm, respectively. The clip motion varied widely, as the maximum clip excursions were about 47% greater than the average clip excursions for each patient. The inclusion of tumor motion did not lead to a significant degradation in the target DVH for 4 of 5 treatment plans studied. The amount of tumor motion for most patients in this study is not large, but can in some instances significantly degrade the planned target DVH. For some patients, therefore, motion mitigation or intervention during treatment may be necessary.