AbstractID: 7623 Title: Prediction of the tumor location in the lung from the skin motion

A tumor in the lung moves with the respiration. One can reduce the target volume by means of the gated radiotherapy, if appropriate technique of the detection of the target location is available. The system for predicting the target location from the skin motion is designed. This system is based on the fluoroscopic study, which made it possible to observe the skin and target motion at the same time. Ten patients with lung tumor were selected for this study - six patients for the right lung regions and four for the left, and two for each lobe. While the patients were lying down on the simulator with the radio-opaque markers on their skin, the fluoroscopic images were recorded in the analyzing computer - the A/P(anterior-to-posterior) and LAT(lateral) images. For examining the inter-treatment motion effect, all patients were set up again and then the same images acquisition procedures are repeated. The results that were analyzed from those images showed a strong correlation between the patients' skin motion and the target motion for most locations in the lung tumor, which means that the target location can be predicted from the displacement of the skin markers. However because of the superpositional movement of lung and heart, no functional relation have been founded for the target around the heart. Therefore we could show that it is possible to predict the exact target location from the skin motion observation, which would be useful to gated radiation therapy.