

AbstractID: 10630 Title: Analysis on the Decrease of Planning Target Volume in the Case of Lung Radiation Surgery with the Application of Respiratory Gated Radiotherapy Method

Purpose: The application of a respiratory gated radiotherapy method to the lung radiation surgery was evaluated compared with the conventional method in which the whole tumor motion range is considered in the delineation of PTV (Planning target volume). **Method and Materials:** The four dimensional CT simulation images were acquired for the five NSCLC (Non-small cell lung cancer) patients for radiation surgery using the RPM (Real time position management) gating system. The respiratory gated plan was prepared with the end-exhalation (50% phase) CT images and the conventional method was planned based on the ITV (Internal target volume) which include all the target volumes created in each phase CT images within a whole respiratory period. The DVH (Dose volume histogram) of OAR (Organ at risk) which calculated in each method was compared for the evaluation of the plan properness. The relative decreases of OARs' DVH were verified in the application of respiratory gated method. **Results:** The average decrease rates in the application of respiratory gating method were 13.50% in the bronchus, 34.69% in the spinal cord, 30.97% in the chest wall and 36.99% in the lung. **Conclusion:** Based on these results, we could verify the applicability and the effectiveness of the respiratory gated method in the lung radiation surgery.