1. No.
   2023G016

2. Title
   Emphysematous Changes and Complication Rates Assessed by 3D-CT Volume Analysis in Patients With a History of Smoking Who Underwent Lung Cancer Resection

3. Period
   2023-2025

4. Summary

   This study investigated the relationship between emphysematous changes assessed by three-dimensional computed tomography (3D-CT), postoperative complications, early mobilization, and readmission in patients with a history of smoking undergoing lung cancer resection. In this prospective cohort, both preoperative six-minute walking distance (6MWD) and the percentage of low-attenuation area (LAA%) were identified as independent predictors of postoperative complications. Receiver operating characteristic (ROC) analysis demonstrated that LAA% had moderate predictive performance (AUC = 0.681, sensitivity = 71.7%, specificity = 70.0%, cut-off value = 7.827).

   In contrast, no significant difference was observed in 30-day readmission rates between groups. Although frailty was more prevalent in the complication group in univariate analysis, it was not retained as an independent factor in multivariate analysis.

   These findings suggest that combining functional capacity (6MWD) and structural lung damage (LAA%) provides a clinically useful approach for risk stratification of postoperative complications in smokers with lung cancer. This integrated assessment may contribute to improved preoperative evaluation and optimization of perioperative rehabilitation strategies, ultimately enhancing postoperative outcomes and patient management.