



DOUBLE SLEEVE LOBECTOMY FOR LOCALLY ADVANCED NON-SMALL CELL LUNG CANCER AFTER NEOADJUVANT TARGET THERAPY

Hongxu Liu*, Chenlei Zhang, Gebang Wang, Guan Wang, Jijia Li, Zhanwu Yu, Wei Wang
Department of Thoracic Surgery, Cancer Hospital of China Medical University, Liaoning Cancer Hospital & Institute, Shenyang 110042, China

*Correspondence to: Hongxu Liu. Department of Thoracic Surgery, Cancer Hospital of China Medical University, Liaoning Cancer Hospital & Institute, No.44 Xiaoheyan Road, Dadong District, Shenyang 110042, China. Email: hongxuliu@qq.com

Case presentation

A 75-year-old woman was admitted to our hospital due to stimulating cough for 1 month, and she had no history of concomitant pulmonary and cardiac disease. Computed tomography (CT) revealed the mass was located in the left upper lobe, with the maximum diameter of 6.8cm. Fine-needle biopsy was performed, and revealed a diagnosis of adenocarcinoma. The clinical TNM-stage of the tumor was cT3N1M0 (IIIA). The genetic test by NGS showed EGFR exon 19 deletion.

Gefitinib was thereafter given for neoadjuvant therapy after discussion by multi-disciplinary team including oncologists, radiologists and thoracic surgeons. Three months after targeted neoadjuvant therapy, CT showed the of tumor had shrunk, and the maximum diameter decreased to 3.1cm. The evaluation of the tumor was partial response (PR) according to RECIST 1.1. The patient was discussed by our multi-disciplinary team again, and the decision was made to continue the targeted therapy.

After nine more months of targeted therapy, the tumor size increased and the maximum of the tumor was 5.2cm. The patient was discussed again by our multi-disciplinary team. Salvage surgery should be performed after multi-disciplinary team decision-making. Therefore, double sleeve resection of left upper lobe with angioplasty and bronchoplasty was performed for this patient by hybrid VATS.

Description of the technique

An 10 cm-long hybrid VATS incision was made in the 4th intercostal space, and an incision protection retractor was used without rib spreader. A 1cm camera port was placed in the posterior axillary line of the 8th intercostal space.

The process of the surgery was as followings:

- I. First, we released the left inferior pulmonary ligament, opened and mobilized the left hilum. The lymph nodes of station 7,8,9,10 were removed completely.

- II. The left upper pulmonary vein and left pulmonary artery trunk was exposed and mobilized, and the 4L lymph nodes were removed. The left upper vein was transected with a vascular stapler.
- III. We encircled the left pulmonary trunk and left inferior pulmonary vein with vascular tapes.
- IV. The tumor and N1 lymph nodes invaded the left inferior pulmonary trunk, left main pulmonary trunk and left inferior pulmonary vein were blocked by vascular tapes after systemic heparinization (100 IU/kg, 6,250 IU).
- V. We opened the incomplete fissure with an endostapler. N1 lymph nodes, A8, A9+10 and A6 were divided by scissors. A3, A1+2a+b and the proximal part of the left inferior pulmonary trunk was divided by scissors. The left lower bronchus and left main bronchus were mobilized and divided with a cautery hook. The left upper lobe specimen was removed using an endobag. Intraoperative frozen section result revealed both margins of the left main bronchus and the lower lobe bronchus were negative. End-to-end anastomosis of the left main bronchus and the left lower bronchus was performed using twin needle stitch and continuous full-thickness 4-0 prolene suture.
- VI. A1+2a+b stump was closed using a running suture with 5-0 prolene. The inferior pulmonary trunk was trimmed to match the left main pulmonary artery caliber. The intrapericardial inferior pulmonary vein was fully mobilized in order to reduce the anastomosis tension.
- VII. The end-to-end anastomosis of the left inferior pulmonary trunk and A6+A9+10 artery was performed with continuous 5-0 prolene.
- VIII. End-to-end anastomosis between A3 artery stump and A8 artery was performed with continuous 5-0 prolene.

The patient received complete resection(R0) and the final TNM stage was ypT3N2M0 (IIIB). She was administered with osimertinib because EGFR exon 20 T790M mutation was detected by postoperative NGS genetic test. She had an uneventful recovery without obvious complications and had no local and distant relapse after 15-month follow-up period.

Conclusion

The hybrid VATS double sleeve lobectomy (SL) could provide an excellent operative field, a safe and relatively easy anastomosis, and reduced operative time for locally advanced NSCLC if anatomically and oncologically suitable. It is suitable for some complex SL cases especially in patients with tumors invading pulmonary artery.