Multiple Segmentectomy for Synchronous Multiple Small Peripheral Lung Cancers: Report of Two Cases

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Treatment strategies for synchronous, multiple peripheral lung cancers remain controversial. Bilobectomy for multiple lung cancers could cause pulmonary function impairment. We report two patients with synchronous multiple peripheral non-small cell lung cancers, who underwent multiple segmentectomy simultaneously. This is the first report of consecutive segmentectomy of two segments.

Keywords: lung cancer, segmentectomy, pulmonary function

Introduction

Synchronous multiple peripheral non-small cell lung cancers (NSCLC) are relatively uncommon. However, with the widespread use of low-dose helical computed tomography (CT) for lung cancer screening, a noted increase in the detection of small peripheral adenocarcinoma has been recognized. The treatment strategies for the synchronous multiple peripheral lung cancers remain controversial. Choosing lobectomy of two lobes is a tough decision for surgeons. Simultaneous lobectomy of two lobes can jeopardize pulmonary function. Although lobectomy and mediastinal lymph node dissection have been accepted as a standard treatment for primary NSCLC, segmentectomy may alternate to lobectomy, especially for patients with multiple synchronous peripheral NSCLC. We report two patients with synchronous peripheral NSCLC located in the different lobes, who underwent two segmentectomy simultaneously.

Case 1

A 63-year-old man was referred to our institution for an abnormal shadow on chest CT. Chest CT showed a 1.5 cm nodule in the right S1 (apical segment) and a 1.9 cm nodule in the right S8 (anterior basal segment) (Fig. 1A and 1B). CT guided needle biopsy of the right S1 nodule showed adenocarcinoma. A pulmonary function test showed a vital capacity (VC) of 4760 ml and forced expiratory volume in one second (FEV 1.0) of 3180 ml. Segmentectomy of right S1, segmentectomy of right S8, and lymph node dissection was performed. The sentinel lymph nodes were identified and examined by intraoperative frozen sections as previously reported. The final pathological examination revealed mixed type adenocarcinoma with p-T1aN0M0 stage IA for both S1 and S8. Expansion of the residual lung in the right lung was reasonable. No postoperative complications were observed. The patient was discharged on the 7th postoperative day. His postoperative pulmonary function test in 3 months after the operation showed a VC of 3990 ml and FEV 1.0 of 2750 ml.

Case 2

A 67-year-old man was referred to our institution for...
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an abnormal shadow on chest CT. CT showed a 1.9 cm nodule in the right S1, a 1.0 cm nodule in the right S8 and a 1.0 cm nodule in the left S1 + 2 (apical and posterior segment) (Fig. 2A–2C). CT guided needle biopsy of right S1 nodule showed adenocarcinoma. A pulmonary function test showed a VC of 2780 ml and FEV₁₀ of 1880 ml. Segmentectomy of right S1, segmentectomy of right S8 and lymph node dissection was performed. The sentinel lymph nodes were identified and examined by intraoperative frozen sections. The final pathological examination revealed adenocarcinoma with p-T1aN0M0 stage IA for S1 and bronchioloalveolar carcinoma with p-T1aN0M0 stage IA for S8. The patients’ postoperative course was uneventful. The patient was discharged on the 5th postoperative day. His postoperative pulmonary function test in 3 months after the operation showed a VC of 2510 ml and FEV₁₀ of 1640 ml. This patient underwent thoracoscopic wedge resection of the left lung nodule in 4 months after the surgery. Pathological examination showed a bronchioloalveolar carcinoma.

Discussion and Conclusion

Results of Lung Cancer Study Group trial indicated an increased risk of local recurrence and reduced survival for patients who underwent limited resections. However, these conclusions have been challenged in recent years, and there is growing evidence to suggest that segmentectomy can yield results equivalent to lobectomy in patients with T1N0M0 stage I NSCLC. Several studies showed segmentectomy offered significantly better functional preservation compared with lobectomy.

In the present cases, complete resection was able to achieve by consecutive segmentectomy, on behalf of performing lobectomy of two lobes. In case 2, the patient...
was able to undergo the left lung wedge resection following right side surgery in consequence of the well preserved pulmonary function. Typically, segmentectomy has been applied to patients who may have issues related to limited cardiopulmonary reserve. However, consecutive segmentectomy of multiple segments is a reasonable option for multiple synchronous peripheral NSCLC in different lobes. This is the first report of consecutive segmentectomy of two segments. We do advocate that segmentectomy be considered the procedure of choice for multiple lung cancers located in the different lobes.

Disclosure Statement

Takashi Ohtsuka and other co-authors have no conflict of interest.

References