Case Report

Robotic thoracic surgery: $S^{1+2}$ segmentectomy of left upper lobe

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Abstract: We are going to share the experience of robotic surgery for lung segmentectomy. A 50-year-old patient underwent robotic-assisted thoracoscopic surgery for a ground glass opacity (GGO) in the $S^{1+2}$ segment of left upper lobe. The patient was discharged on postoperative day 3 without any perioperative complications. The pathological stage was T1aN0M0 (stage IA). Our result showed the robotic approach was feasible and reliable for lung segmentectomy.

Keywords: Robotic-assisted thoracoscopic surgery; segmentectomy

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Clinical data

A 50-year-old woman was found to have a pulmonary nodule for 4 years detected by computed tomography (CT). Chest CT (Figure 1) showed ground glass opacity (GGO) in the $S^{1+2}$ segment of left upper lobe. The lesion size increased from 5 to 8 mm during follow-up. The patient’s did not have any clinical syndrome and her cardiopulmonary function, blood gas analysis and laboratory tests were normal. There was no positive sign or supraclavicular lymph node enlargement on physical examination. She has no medical history.

Operation steps

Anesthesia and body position

The patient received general anesthesia by double-lumen endotracheal intubation and was placed in the lateral decubitus position and in a jackknife position, with single-lung (right) ventilation (1) (Figure 2).

Ports

A 1.5-cm camera port (for a 12-mm trocar) was created in the 8th intercostal space (ICS) at the left mid axillary line, and three separate 1.0-cm working ports (for 8-mm trocars)

Figure 1 Preoperative CT showed GGO in the $S^{1+2}$ segment of left upper lobe. GGO, ground glass opacity.
were made in the 6th ICS (#1 arm) at the left anterior axillary line, the 7th ICS (#2 arm) at the left posterior axillary line, and the left 8th ICS (#3 arm), 2 cm from the spine. An auxiliary port (for a 12-mm trocar) was made in the 8th ICS near the costal arch (2) (Figure 3).

**Installation of the operation arms**

The robot Patient Cart is positioned directly above the operating table and then connected. The 2# arm was connected with bipolar cautery grab and the 1# arm was connected with a unipolar cautery hook. Incision protector was applied in the auxiliary port (3).

**Surgical procedure**

See Figures 4-18.

**Postoperative condition**

Postoperative treatments included anti-inflammatory and phlegm-resolving treatment. The thoracic drainage tube was withdrawn 2 days after surgery, and the patient was discharged 3 days after surgery. No complications were observed during hospitalization. Pathologic diagnosis was microinvasive adenocarcinoma 0.8 cm in the apex posterior segment of the left upper pulmonary lobe. No metastasis was seen at the bronchial stump or in the sampled

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*Figure 2* Jackknife position.

*Figure 3* Ports in the 6th, 7th, and 8th ICS. ICS, intercostal space.
Figure 4 The pleura of hilum was opened, and the lymph nodes (No. 10) were removed.

Figure 5 The branches of the left upper lobe pulmonary vein were exposed.

Figure 6 The lymph nodes (No. 12) were removed.

Figure 7 V1+2 b+c was skeletonized and cut off after ligation.

Figure 8 The branches of A1+2 and A4+5 were exposed.

Figure 9 The A1+2 c were skeletonized, pulled using elastic cuffs, and cut by Endo GIA.

Figure 10 The A1+2 a+b were skeletonized and cut by Endo GIA.

Figure 11 B1+2 and B’ were dissected.
lymph nodes. The postoperational pathologic stage was pT1aN0M0 (IA stage).

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None.

**Footnote**

*Conflicts of Interest:* The authors have no conflicts of interest to declare.
Informed Consent: Written informed consent was obtained from the patient for publication of this manuscript and any accompanying images.

References


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