Case Report

Ruijin robotic thoracic surgery: right S\textsuperscript{6} segmentectomy

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Abstract: We are going to share the experience of robotic-assisted thoracoscopic segmentectomy. A 55-year-old patient underwent robotic-assisted thoracic surgery for a nodule in the right segment 6. The patient was discharged on postoperative day 3 without any perioperative complications. This case showed the robotic-assisted technique is a safe approach for lung segmentectomy.

Keywords: Segmentectomy; robotic assisted thoracoscopic surgery

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Clinical data

The patient was a 55-year-old woman admitted because of pulmonary nodules for 7 months detected by computed tomography (CT). A CT scan revealed a nodule in the right segment 6 (S\textsuperscript{6}), which had enlarged during 7-month follow up. The patient's syndrome did not include cough, shortness of breath, fever, or hoarseness. 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 had no medical history. Survival of the patients who undergo segmentectomy is non-significantly worse (1,2) if the tumor size is smaller than 2.0 cm (3), but there is a functional advantage after radical segmentectomy compare with after a lobectomy (4). Therefore, we performed robotic-assisted right S\textsuperscript{6} segmentectomy for this patient with clinic stage IA lung cancer (Figure 1).

Operation steps

Anesthesia and body position

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

Ports

A 1.5-cm camera port (for a 12-mm trocar) was placed in the 8\textsuperscript{th} intercostal space (ICS) at the right middle axillary
line, and three separate 1.0-cm working ports (for 8-mm trocars) were made in the 5th ICS (#1 arm) at the right anterior axillary line, the 8th ICS (#2 arm) at the right posterior axillary line, and the right 8th ICS (#3 arm), 2 cm from the spine. An auxiliary port (for a 12-mm trocar) was made in the 7th ICS near the costal arch (Figure 3).

**Installation of the surgical arms**

The robot patient cart is positioned directly above the operating table and then connected. The #2 arm is connected to the bipolar cautery grab, and the #1 arm is connected to a unipolar cautery hook. An incision protector was used in the auxiliary port.

**Surgical procedure**

(I) The right inferior pulmonary ligament was exposed (Figure 4).

(II) Pulmonary veins V6a and V6b+c were identified (Figure 5).

(III) Vein V6a and preserve V6b+c (5) were cut (Figure 6).

The interlobar fissure was exposed to facilitate a later pulmonary artery skeletonization (Figure 7).

(IV) Artery A6 was cut (Figure 8).
(V) Bronchus B⁶ was cut (Figure 9).
(VI) The right lung was inflated and then deflated to show the inflation-deflation line. The S⁶ segmentectomy was completed along the simple intersegmental plane.
(VII) The stumps were exposed (Figure 11).

### Postoperative condition

The postoperative treatments include anti-inflammatory, and phlegm-resolving treatment. The 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 carcinoma (pT1aN0M0), and all the lymph
nodes were negative.

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**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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