Case Report

Ruijin robotic thoracic surgery: right S^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^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^6 segmentectomy for this patient with clinic stage IA lung cancer (*Figure 1*).

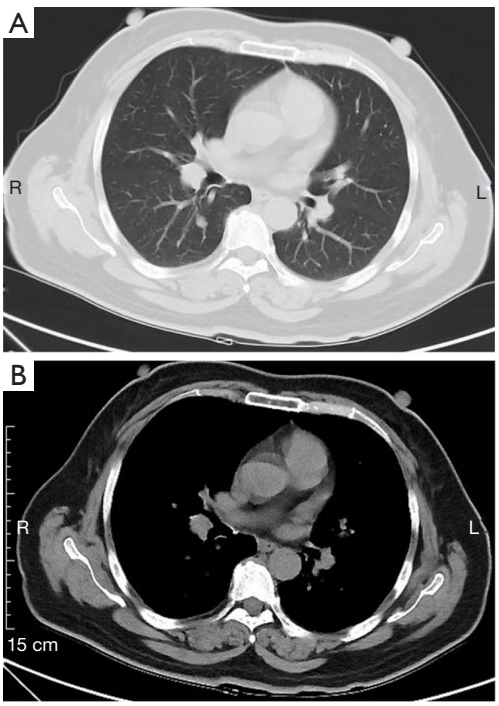

Figure 1 CT scan.

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 8th intercostal space (ICS) at the right middle axillary

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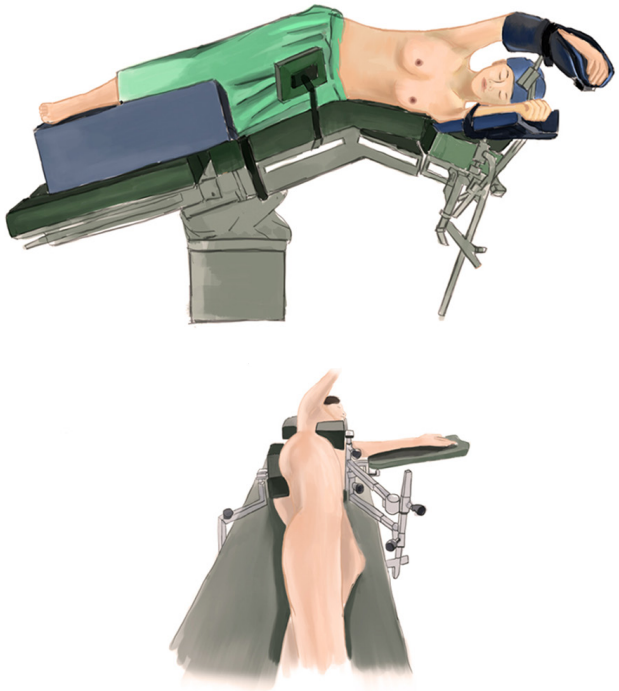

Figure 2 Jackknife position.

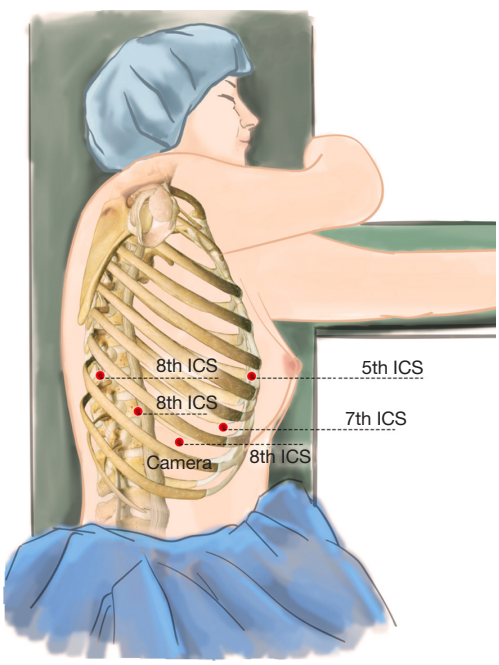

Figure 3 Ports in the 5th, 7th , and 8th ICS. ICS, intercostal space.

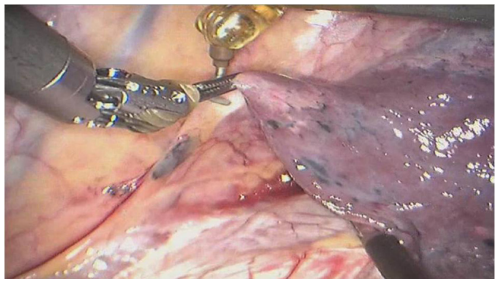

Figure 4 The right inferior pulmonary ligament was exposed.

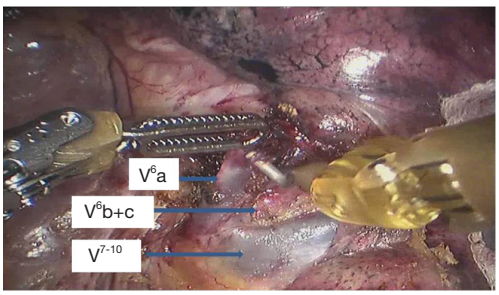

Figure 5 Pulmonary veins V^6a and V^6b+c were identified.

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 V^6a and V^6b+c were identified (*Figure 5*).

(III) Vein V^6a and preserve V^6b+c (5) were cut (*Figure 6*).

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

(IV) Artery A^6 was cut (*Figure 8*).

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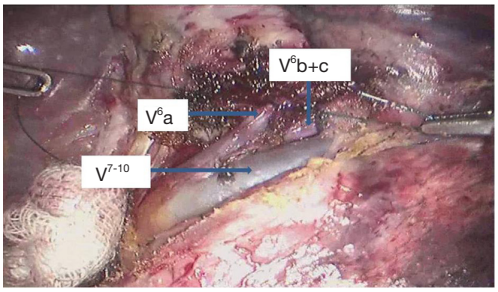

Figure 6 Vein V^6a and preserve V^6b+c (6) were cut.

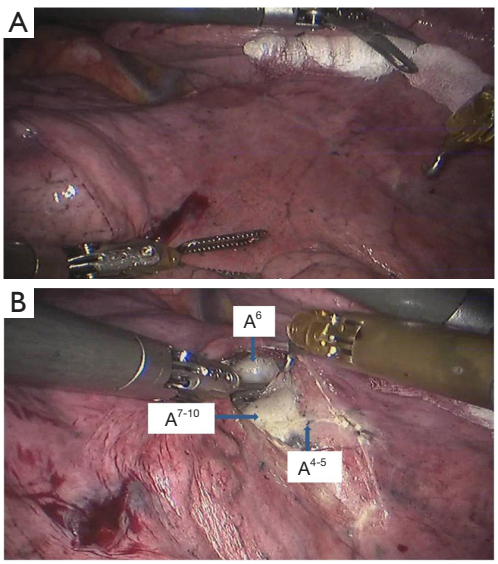

Figure 7 The interlobar fissure was exposed to facilitate a later pulmonary artery skeletonization.

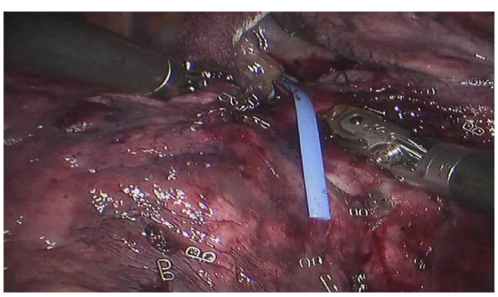

Figure 8 Artery A^6 was cut.

(V) Bronchus B^6 was cut (*Figure 9*).

(VI) The right lung was inflated and then deflated to show the inflation-deflation line. The S^6 segmentectomy was completed along the simple intersegmental plane (*Figure 10*).

(VII) The stumps were exposed (*Figure 11*).

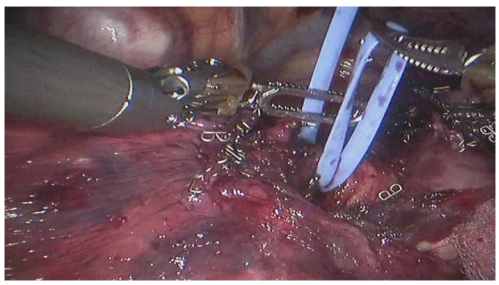

Figure 9 Bronchus B^6 was cut.

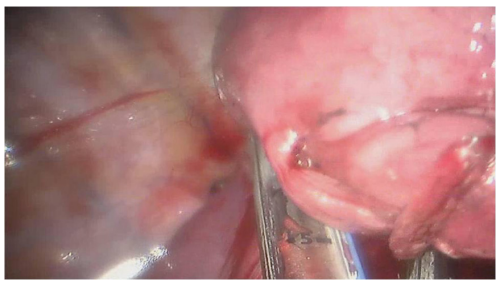

Figure 10 The right lung was inflated and then deflated to show the inflation-deflation line. The S^6 segmentectomy was completed along the simple intersegmental plane.

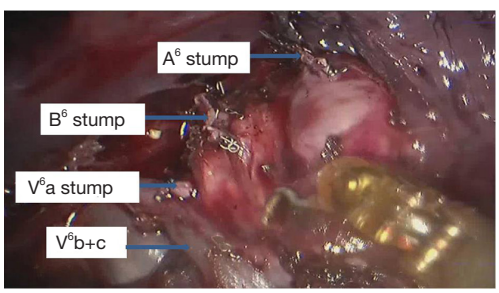

Figure 11 The stumps was exposed.

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

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nodes were negative.

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Footnote

Conflicts of Interest: The authors have completed the ICMJE uniform disclosure form (available at http://dx.doi.org/10.21037/amj.2017.01.11). The authors have no conflicts of interest to declare.

Ethical Statement: The authors are accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved. All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee(s) and with the Helsinki Declaration (as revised in 2013). Written informed consent was obtained from the patient for publication of this manuscript and any accompanying images.

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