

# Robotic thoracic surgery of the right posterior inferior mediastinal mass

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## Clinical data

### Medical history

The patient was admitted due to “a mediastinal mass found during health check-up four months ago”. Four months ago, she was admitted in a local hospital due to gas poisoning, during which CT showed a right posterior mediastinal mass. Later she was then discharged after the gas poisoning was resolved. She then visited our hospital for surgical treatment. She has a previous history of hypertension for 20 years and diabetes for 7 years. She underwent resection of uterine myoma 10 years ago.

### Physical examination

No positive sign was detected during the physical examination at admission.

### Auxiliary examination

Chest CT: an ovoid cystic mass sized 5.5 cm × 4.0 cm was found at the right posterior inferior mediastinum. The lesion had homogenous density and smooth margin (*Figure 1*).

## Pre-operative preparation

Conventional skin preparation was performed. The potential locations of the ports were marked on the skin.

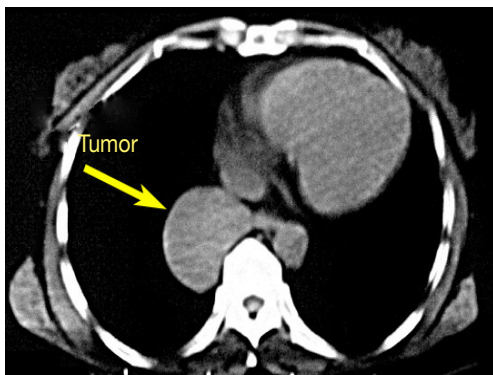
## Procedures

### Anesthesia and body position

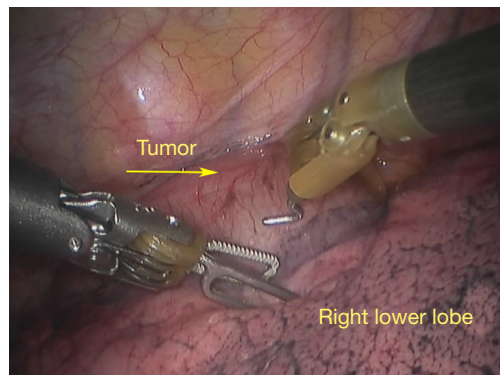
After the induction of general anesthesia, the patient was placed in a left lateral decubitus position under double-lumen endotracheal intubation. She was fixed in a Jackknife position, with the head slightly leaned forward.

### Surgical procedures

- (I) Incisions: a 1.2-cm camera port was created in the 5<sup>th</sup> intercostal space at right anterior axillary line. Two 0.8-cm working ports were created in the 3<sup>th</sup> intercostal space between the right middle axillary line and the posterior axillary line and in the 8<sup>th</sup> intercostal space between the posterior axillary line and the subscapular line, respectively (*Figure 2*).
- (II) Exploration of the thoracic cavity and insertion of the robot arms: the endoscopic airtight trocar was inserted through the camera port to establish 8-mmHg artificial pneumothorax, then the robotic endoscope was inserted for inspecting the thoracic cavity. Under the endoscopic monitoring, the robot trocars were separately inserted via the two working ports, so as to place the #1 robotic arm (right hand) and the #2 robotic arm (left hand). The #1 robotic arm was connected with the unipolar cautery hook, and the #2 robotic arm with fenestrated bipolar forceps (*Figure 3*).



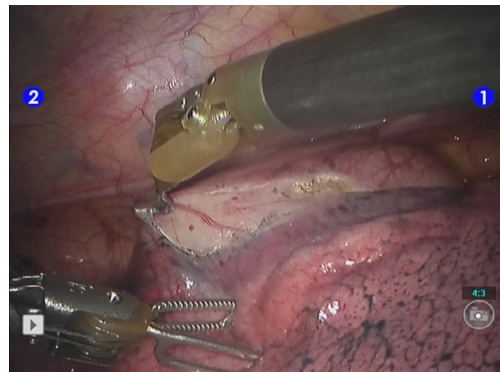
**Figure 1** Chest CT shows a mass in the in the right posterior inferior mediastinum.



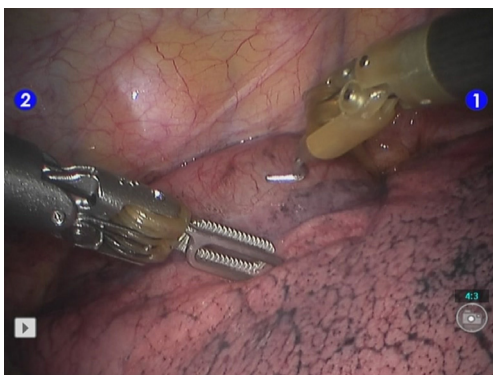
**Figure 4** Lesion and lung adhesion.



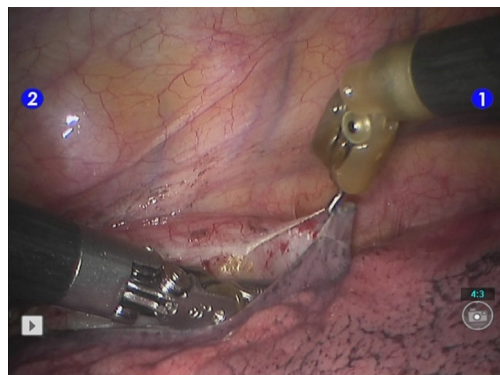
**Figure 2** Location of each port.



**Figure 5** Cut open the mediastinal pleura on the tumor surface with the unipolar cautery hook.



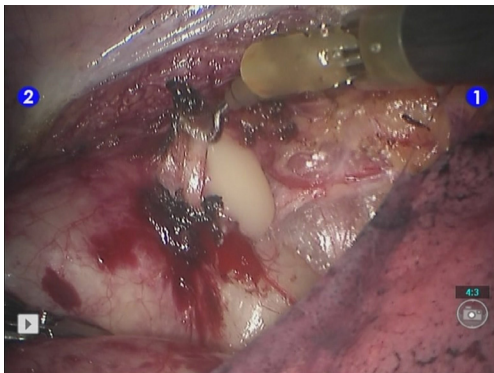
**Figure 3** The #1 robotic arm (right hand) and the #2 robotic arm (left hand) under the endoscope.



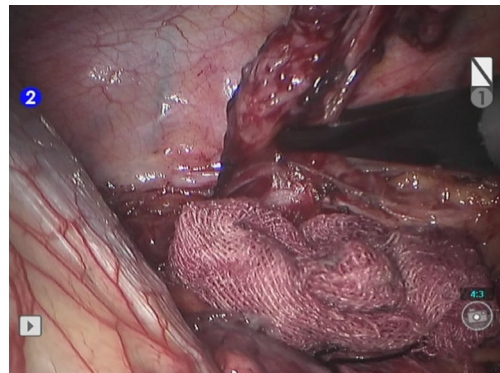
**Figure 6** Dissociate lung adhesions with cautery devices.

(III) Inspection of the lesion and its relationship with the neighboring tissues/organs: there was no adhesion or effusion inside the pleural cavity. The lesion was located in the right posterior inferior mediastinum

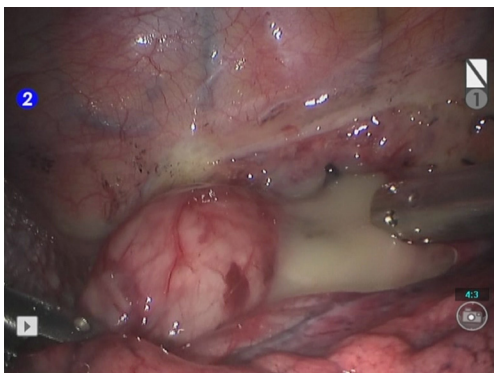
and adhered to the posterior basal segment of the lower lobe of the right lung (Figure 4).  
 (IV) Open the mediastinal pleura (Figure 5).  
 (V) Dissociate the tumor (Figures 6-8).



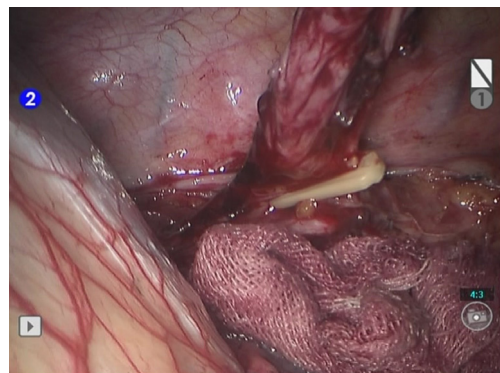
**Figure 7** The tumor capsule was ruptured during the dissociation, releasing light-yellow thick cystic liquid.



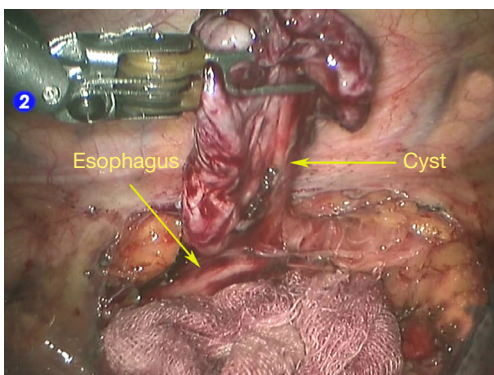
**Figure 10** Clamp the basal part of the cyst with absorbable hem-lock.



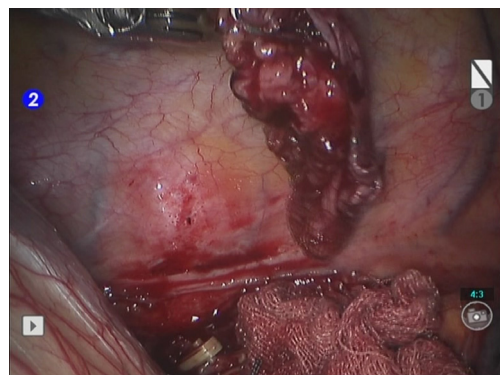
**Figure 8** Suction the cystic liquid with a suction apparatus.



**Figure 11** The clamped basal part of the cyst.



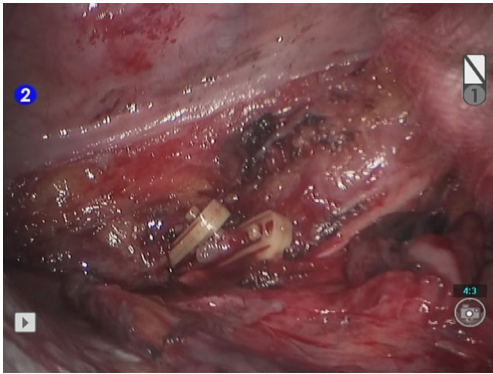
**Figure 9** Divide the adhesions till the basal part of the cyst, which had a close relationship with the esophageal wall.



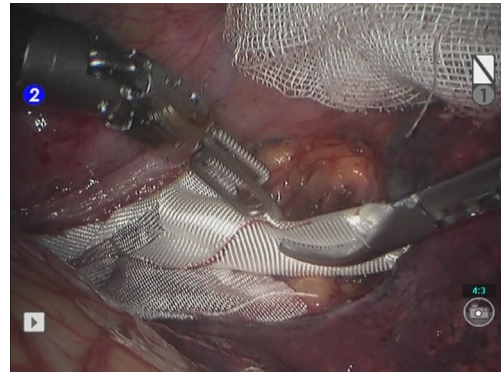
**Figure 12** Lift the tumor and cut its basal part, thus completely resecting the tumor.

- (VI) Handle the esophagus adhesions (*Figures 9,10*).
- (VII) Resection of tumor (*Figures 11,12*).
- (VIII) Hemostasis of the tumor bed (*Figures 13,14*).
- (IX) After the robot system was withdrawn, the thoracic

drainage tube was indwelled at the camera port. Close the chest after sputum suctioning and lung recruitment. The intraoperative blood loss was about 10 mL; no blood was transfused.



**Figure 13** The tumor bed after resection.



**Figure 14** The wound surface was covered with a hemostatic gauze.

### Postoperative treatment

After the surgery, the patient received symptomatic treatment under routine general anesthesia. No antibiotic or hemostatic agent was applied.

### Pathological diagnosis

The specimen was sized 4.0 cm × 2.0 cm × 1.0 cm. It had a

grey-red surface, with cystic cutting margin. The cyst had smooth walls and was moderately hard. Pathological diagnosis was the right posterior mediastinal bronchogenic cyst.

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*Disclosure:* The authors declare no conflict of interest.

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