

Right lung upper lobe carcinoma radical excision plus superior vena cava angioplasty

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ABSTRACT

An elderly male patient was found to be with “nodule in upper lobe of right lung” during his health examination, although without any symptom. Chest CT at admission showed that the nodules were close to the superior vena cava, and CT reconstruction displayed an adipose space between the nodules and the superior vena cava. However, bronchoscopy showed negative results. Pre-operative exploration showed that the right upper lung nodules were tightly attached to the surface of superior vena cava and could not be effectively divided; an invasion could not be ruled out. The surgery was performed in a distal-proximal manner. The pulmonary fissure, bronchi, and arteries were divided firstly, followed by veins and the surrounding tissues of the lung. After the surrounding spaces of the tumor were sufficiently disassociated, superior vena cava angioplasty was performed using a stapler. The surgery was performed completely under thoracoscopy, during which the surgical incision was not enlarged. The main operation port was about 4 cm in diameter. Two axillary operation ports (about 1.2 and 0.6 cm in diameter, respectively) were also used. All the surgical equipment were used smoothly, and thus the surgery was completed with lowest invasion.

KEYWORDS

Lung cancer; superior vena; angioplasty; VATS

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Video description (Video 1)

A solid mass sized 2.5 cm × 2.5 cm × 2 cm was found at the apical segment of the right upper lobe. The mass invaded the junction where the azygos vein merges the superior vena cava. Multiple subcarinal, mediastinal, and hilar lymph nodes were found to be swollen.

Key surgical procedures

After the fissures in the right upper lung and the right hilar mediastinal pleura were separated, the right superior pulmonary vein and all the arterial branches were dissociated.

After the ligation and transection of the arterial branches in the posterior segment of right upper lung, the right superior pulmonary vein was transected using the same method.

The lymph nodes around the right upper lobe bronchus were removed, and the right upper lobe bronchus was then dissociated and transected.

Arteries at the apex and anterior segment of the right upper lung were dissociated, the azygos vein was transected, and the mediastinal pleura around the mass was released.

Under the mass, part of the side wall of the superior vena cava was excised by applying the GIA 60 stapler.

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Video 1. Right lung upper lobe carcinoma radical excision plus superior vena cava angioplasty.

After the dissection of mediastinal lymph nodes and leakage test, the chest was closed.

Comments

For patients with tumors with invasion to the superior vena cava, the conventional management often requires cardiopulmonary bypass using artificial or autologous vascular grafts. The procedures are often complicated, with long operative time and severe surgical trauma. These surgeries cannot be performed under thoracoscope. However, along with the development of thoracoscope instruments and the improvement of surgical procedures, the above described operation can be applied for the treatment of mediastinal lung cancer with local invasion. It

can achieve the same surgical effectiveness when reducing the surgical trauma. This operation is not too difficult and has been widely applied in our department in recent years. Young doctors often simply follow the way that they are trained and lack the spirit of innovation. For the patient described in our video, he might have received chemotherapy and thus missed the chance of surgery; or, he might have directly undergone open surgery. In contrast, a proactive thoracoscope-based surgical intervention would prolong his survival and meanwhile improve the clinical thinking of doctors.

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