

Technical aspects of biportal video-assisted thoracoscopic left S1+S2 segmentectomy of the lung

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Abstract: The technical aspects of the biportal anterior approach for left apical and posterior segmentectomy are described. The approach is a fissure-based one. The fissure is opened and the segmental arterial branches are identified and divided. The division of the arterial branches exposed the segmental B1+2 bronchus, which is divided after lymphadenectomy. The segmental vein is not divided. Finally the intersegmental plane is completed along the inflation-deflation line.

Keywords: Apical and posterior segmentectomy; video-assisted thoracoscopic (VATS); S1 segmentectomy; S2 segmentectomy; lung resection

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General principles

As a rule we perform video-assisted thoracoscopic (VATS) anatomic segmentectomies through a biportal approach, including a 3–4 cm anterior utility incision and another 1.5 cm inferior port.

We utilize a 5 or 10 mm, 30 degree angled HD video-thoracoscope.

The surgeon and the assistant are usually positioned on the anterior (abdominal) side of the patient. The surgeon can change position and place himself cranially or caudally with respect to the assistant depending on the different steps of the operation.

Initially, the anterior utility incision is made and the wound is protected by a plastic soft tissue retractor (wound protector) kept in place by a ring in the chest cavity and one outside the skin (Alexis Retractor, Applied Medical USA). This incision is usually placed at the 4th–5th intercostal space between the tip of the scapula and the breast in the anterior axillary line.

A second 1.5 cm port is positioned more posteriorly at the level of the 7th intercostal space just anterior to a straight line down from the tip of the scapula and is performed under endoscopic guidance using the thoracoscope through the utility incision made previously.



Figure 1 Technical aspects of biportal video-assisted thoracoscopic left S1+S2 segmentectomy of the lung (1).

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Operative steps (Figure 1)

In case of the left S1+2 segmentectomy, the whole procedure can be performed with the thoracoscope placed through the inferior port. The upper lobe is retracted anteriorly throughout the procedure and the dissection is performed from posteriorly as demonstrated on the video. After identification of the nodule, dissection starts from the fissure using energy device. The posterior aspect of

the fissure is divided with the use of endoscopic stapler. The segmental arteries for the posterior and apical segments are dissected and divided using endoscopic stapler. In the case presented, there was a single arterial branch.

After division of the artery, the bronchial division for the apico-posterior segment (B1+2) is exposed and dissected free from lymph nodes and surrounding tissues. Usually we clamp the bronchus and the anesthetist is asked to inflate the lung. The bronchus is isolated and divided using endoscopic stapler. As shown in the video the stapler is passed through the utility port.

Final step of the procedure is the division of the segment with serial linear staplers after identification of the intersegmental plane. This is accomplished through the inflation-deflation line. The specimen is then removed using an endobag. Finally a systematic lymph node sampling is performed. As shown in the video, dissection of the V1+2 vein is not necessary.

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