General principles

As a rule, we perform 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.

Operative steps

Approach for right S3 segmentectomy is similar to a right upper lobectomy. The surgeon and the assistant stand at the abdominal side of the patient. Camera is introduced through the utility incision and the inferior port is used for insertion of a lung grasping instrument and the endoscopic staplers if appropriate. Dissection begins from the anterior part of the hilum with exposure of the superior pulmonary vein and its branches. As shown in the video (Figure 1), isolation and retraction of the V1 vein assists in exposure of the truncus anterior and the A3 segmental artery. Dissection can be performed using monopolar diathermy with protected tip or energy device while the use of suction device maintains the surgical field dry. Dissection and division of the V3 vein is carried out using endoscopic stapler device from the inferior port. Development of the horizontal fissure may facilitate better exposure of the hilar vessels as demonstrated in the video.

The next step is the dissection of the A3 segmental artery, which is encircled and divided with the stapler, again from the inferior port which favors a better angle as shown in the video. After division of the A3 artery the bronchus for the anterior segment (B3) is dissected free from the
surrounding tissues, encircled and divided using endoscopic stapler. Before division of the segmental bronchus, the anesthetist is asked to re-inflate the lung to identify the intersegmental plane. An additional V3 branch from the V1 branch is then dissected with a right-angle instrument and divided using the endoscopic from the utility incision. The posterior part of the horizontal fissure is then completed with endoscopic stapler.

Occasionally an additional segmental artery for the anterior segment (A3a) may arise from the truncus intermedius as in the case presented in the video. This has to be dissected and divided in a similar fashion.

The final step of the right anterior segmentectomy is the division of the parenchymal intersegmental plane with the use of endoscopic staplers along the inflation-deflation line. The specimen is removed using a protective bag from the utility incision. A systematic lymph node sampling is the final step of the procedure.

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Footnote
Conflicts of Interest: The authors have no conflicts of interest to declare.

References

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