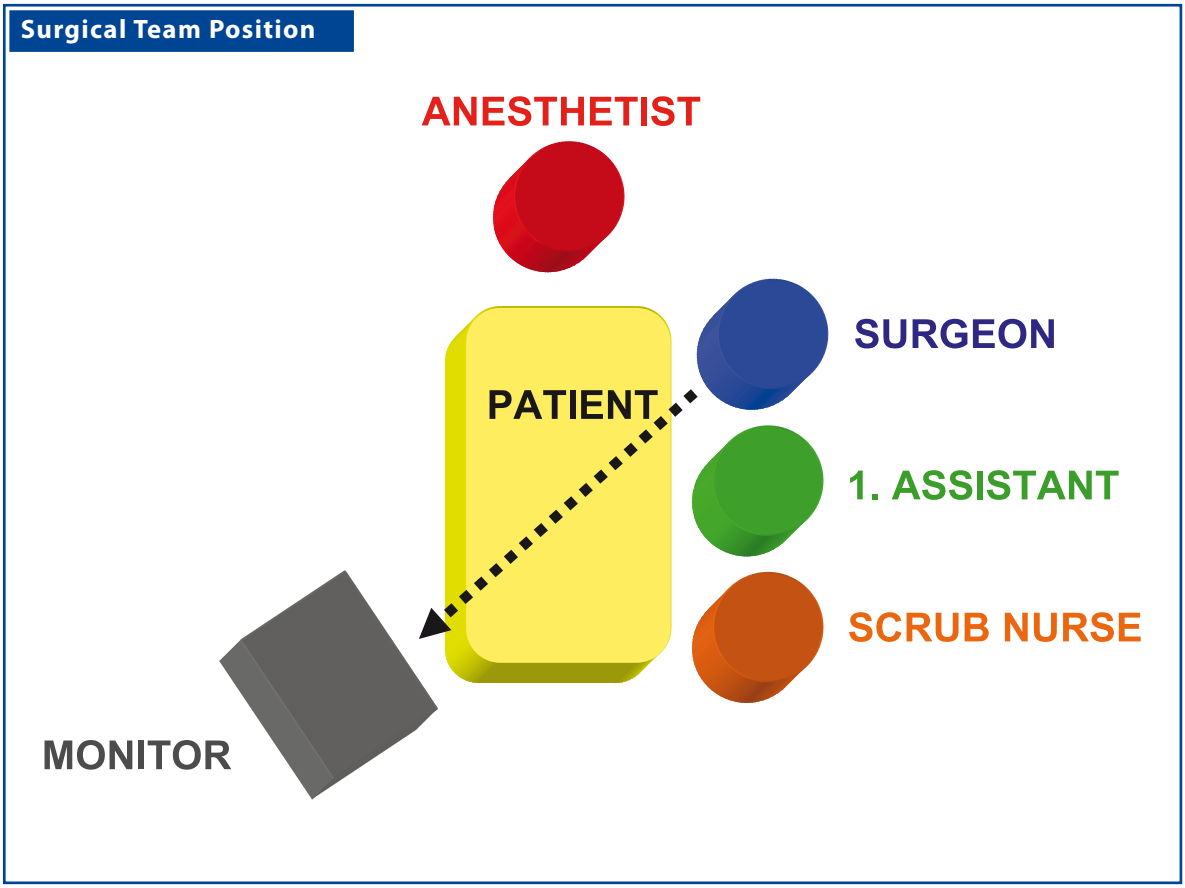
# 14 Resection of Pulmonary Sequestrations

Lutz Stroedter

## 14.1 Operation Room Setup

**Surgical Team Position**



## 14.2 Patient Positioning

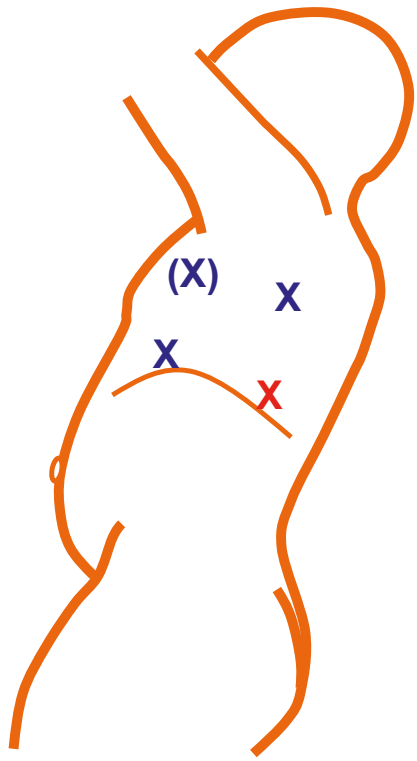
The patient is placed in a formal lateral decubitus position. The arm is elevated to move the scapula upward.

## 14.3 Special Instruments

- Endoscopic clips
- Endoscopic stapler
- Specimen retrieval bag (10 mm port)

## 14.4 Location of Access Points

**Port Placement Sites**




Optic port 5 mm

Work port (5 / 10 mm)*

*Port size depends on the age of the patient

## 14.5 Indications

1. The resection of pulmonary sequestrations should be performed within the first year of life (when detected) because of the complications due to risk of infection.
2. Intralobar sequestrations (ILS) have a 9-fold higher risk of infection than extralobar sequestrations (ELS).
3. Most of the ELS lesions are diagnosed coincidentally during imaging investigations for surgery or for associated congenital anomalies.

## 14.6 Contraindications

1. General contraindications to Video-Assisted Thoracoscopic Surgery (VATS)
2. Since ELS patients have associated anomalies more frequently than ILS patients; the severity of these anomalies may be relative contraindications to VATS in ELS patients.

## 14.7 Preoperative Considerations

1. It is difficult to distinguish an ILS from ELS using plain films. However, ILS lesions tend to be heterogeneous and are not well defined. ELS masses are usually observed as solid, well defined, and retrocardiac.
2. Computed tomography (CT) with contrast or magnetic resonance angiography (MRA) provide valuable information. The arterial supply and venous drainage both should be outlined because of the unpredictability of vascular connections.
3. Upper gastrointestinal contrast examination may be useful if communication with the gastrointestinal tract is in question.

## 14.8 Technical Notes

1. ELS account for 25% of cases and have their own pleural covering. No tissue separation from lung is required.
2. ILS are surrounded by normal lung tissue and require endoscopic staplers utilization for surgical resection.
3. Both ELS and ILS receive their blood supply from anomalous systemic arteries, usually arising from the descending aorta.
4. Venous drainage is usually by the pulmonary veins for ILS and by the systemic venous system for ELS.
5. Multiple supply arteries are found in 15% of sequestrations; 73% originating from the abdominal aorta and 18% from the thoracic aorta.

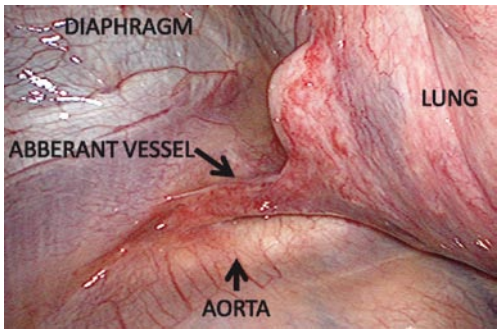
## 14.9 Procedure Variations

1. The systemic artery can be ligated using three absorbable sutures and intracorporeal suturing.
2. Use of LigaSure™ (Valleylab, Boulder, CO, USA) for abberant vessels up to 7mm in diameter.
3. In ILS, lobectomy or wedge resection can be performed using bipolar cautery or harmonic scalpel.

## 14.10 Thoracoscopic Resection of Intralobar Sequestrations

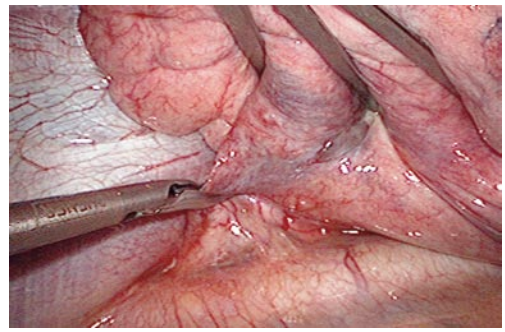
Please see Figs. 1–6.

**Figure 14.1**



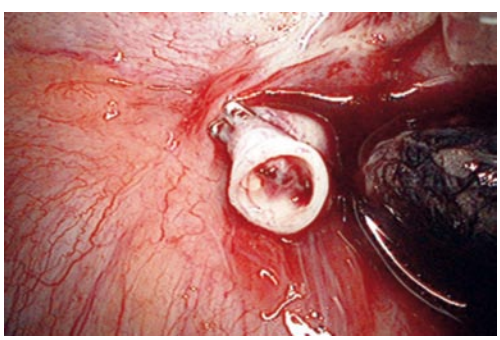

View of the left thoracic cavity showing the aberrant vessel as it enters the thorax through the diaphragm to provide vascular supply to the sequestration

**Figure 14.2**



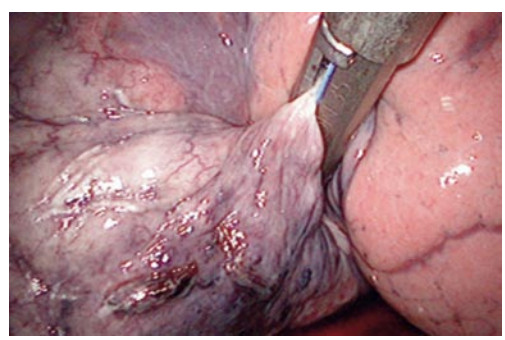
The lung is retracted using a retractor and the vessel feeding the ILS is carefully clamped using blunt forceps to confirm blanching of the sequestration

**Figure 14.3**



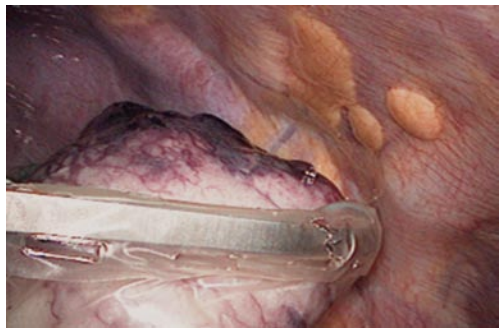
The feeding vessel is clipped twice centrally and once peripherally using endoscopic titanium clips and dissected. The disruption of vascular supply leads to visible demarcation of the ILS from the normal lung tissue

**Figure 14.4**



The endoscopic stapler is used to resect the sequestration from the normal lung tissue at the plane of demarcation. Multiple staplers may be required depending on the size of the sequester

**Figure 14.5**



A specimen retrieval bag is used to retrieve the sequestration. The port incision is enlarged to extract the specimen out of the thoracic cavity

**Figure 14.6**


View of the ILS specimen resected using endoscopic staplers, along with the clipped supplying vessel (*arrow*)

## Recommended Literature

1. Albanese CT, Sydorak AM, Tsao K, Lee H (2003) Thoracoscopic lobectomy for prenatally diagnosed lung lesions. J Pediatr Surg 38:553–555
2. de Lagausie P, Bonnard A, Berrebi D, Petit P, Dorgeret S, Guys JM (2005) Video-assisted thoracoscopic surgery for pulmonary sequestration in children. Ann Thorac Surg 80:1266–1269
3. Rothenberg SS (2008) First decade's experience with thoracoscopic lobectomy in infants and children. J Pediatr Surg 43:40–44