

# The Azygos Lobe: Anesthetic Considerations

A El-Dawlatly, A Al-Dohayan

## Citation

A El-Dawlatly, A Al-Dohayan. *The Azygos Lobe: Anesthetic Considerations*. The Internet Journal of Anesthesiology. 2005 Volume 11 Number 1.

## Abstract

The incidence of azygos lobe vary from 0.4% to 1% with no clinical significance (1). Recently, with the progress in minimally invasive thoracoscopic surgery, azygos lobe identification has become more oftentimes seen during the procedure. In this report we discuss the anesthetic considerations of an azygos lobe in a patient with palmar hyperhidrosis who underwent thoracoscopic sympathectomy.

## CASE REPORT

A 25-year-old male patient with palmar hyperhidrosis was scheduled to undergo right thoracoscopic sympathectomy. The patient was ASA I physical status classification. The body weight was 74kg and height 178cm.

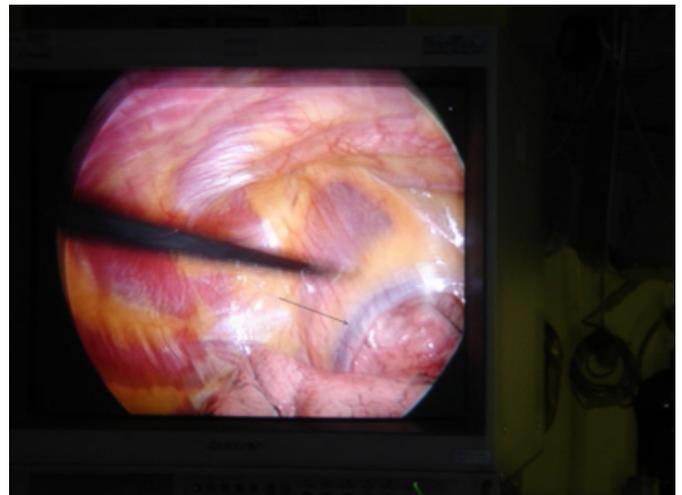
Preoperative laboratory results were within normal ranges. Preoperative chest-x-ray was undertaken as routine but it didn't show azygos fissure. Premedication was achieved with 2mg lorazepam orally 2hr preoperatively. In the operation room routine monitoring was achieved with, ECG lead II, non-invasive blood pressure, pulse oximeter, end-tidal CO<sub>2</sub> and peripheral nerve stimulator. Anesthesia was induced with sufentanil 10ug and propofol 200mg i.v, followed by cisatracurium 8mg to facilitate endotracheal intubation with single-lumen tracheal tube.

Anesthesia was maintained with sevoflurane/O<sub>2</sub>/air and incremental dosages of sufentanil and cisatracurium when required. Verres needle was inserted into right pleural cavity and used for CO<sub>2</sub> insufflation to achieve right lung collapse.

In our practice we have established and described the details of thoracoscopic technique to accomplish lung collapse using different intra-thoracic pressures (2). Through thoracoport the right pleural cavity was visualized and an arch with distended vein was seen. The diagnosis of azygos lobe was made (Figure 1).

## Figure 1

Figure 1: Black arrow pointed at azygos vein.

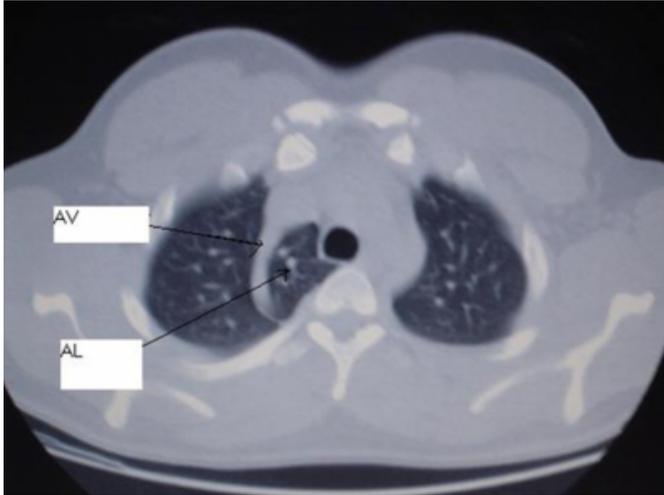


Surgery proceeded and sympathetic chain at D3-4 was clipped. The gas was vented out passively through silastic chest tube and the lung allowed to reexpand gradually under vision till fully inflated. The chest tube then was removed. After cessation of anesthetic gas and reversal of muscle relaxant using atropine 1.2mg/neostigmine 2.5mg i.v, the trachea was extubated after full recovery of neuromuscular junction. The patient has recovered uneventfully.

Later in the ward, CT scan of the lung was done and revealed clear azygos fissure and lobe (Figure 2).

**Figure 2**

Figure 2: Azygos vein (AV), azygos lobe (AL).



**DISCUSSION**

Anesthesia for thoracoscopic sympathetic surgery is challenging to anesthesiologists. In one study we have compared endotracheal versus endobronchial anesthesia where best oxygenation and operating conditions was achieved with endotracheal anesthesia using single-lumen tube and capnothorax (3). In another report we have studied hemodynamic changes due to capnothorax. Although decreased cardiac parameters were detected but they were of no clinical significance (4). Further on our series of reports on thoracoscopic sympathectomy, although decreased dynamic lung compliance was shown in one study during capnothorax, but again it was with no clinical significance (5). Among all of our published series, we didn't have single case of azygos lobe seen. The present report is the first case report in our series where azygos lobe was seen. In a recent case report Moon et al, described a case of azygos lobe where surgery has to be cancelled for the fear of intraoperative bleeding (6). In our case surgery has proceeded though not diagnosed preoperatively and progressed without bleeding or thoracotomy uneventfully.

Another case was reported in the literature of preoperatively diagnosed azygos lobe. This anomaly poses a significant risk during the procedure of Endoscopic thoracic sympathectomy. A chest X ray was useful in detecting this anomaly and alerting the surgeon to potential problems (7). The anatomical basis of azygos lobe, is a failure of normal migration of the azygos vein from the chest wall to its usual position in the tracheo-bronchial angle so that the invaginated visceral and parietal pleural layers persist to

form a fissure (8). In our case and during lungre-inflation at the end of surgery we have noticed that unless gradual release of CO2 gas with subsequent gradual re-inflation of the lung with small tidal volume performed, the azygos lobe could be in danger of incarceration by the azygos venous arch. In one questionnaire, rarely pulmonary torsion reported to occur spontaneously in an azygos lobe (9).

In conclusion, though rare finding, azygos lobe carries certain considerations of importance to the anesthesiologist. Besides bleeding and possible thoracotomy, of interest is the possibility of pulmonary torsion. However, we do recommend gradual withdrawal of the gas with subsequent gradual re-inflation of the collapsed lung with small tidal volumes.

**CORRESPONDENCE TO**

A.El-Dawlatly  
Riyadh 11461  
P.O.Box 2925  
Kingdom Saudia Arabia

**References**

1. Boyden EA. The distribution of bronchi in gross abnormalities of the right upper lobe, particularly lobes subdivided by the azygos vein and those containing pre-arterial bronchi. *Radiology* 1952;58:797-807.
2. Eldawlatly A. Anesthesia for Transthoracic Endoscopic Sympathectomy. An overview. *Middle East J of Anesthesiology* 2002; 16(5): 485-491.
3. Eldawlatly A, Aldohayan A, Riyadh W, Thallaj A, Delvi B and Alsaud S Thoracoscopic Sympathectomy: endobronchial vs endotracheal anaesthesia with intrathoracic CO2 insufflation. *J of Anesthesia* 2002; 16(1): 13-16.
4. Eldawlatly A, Aldohayan A, Samarkandi A.H, Algahdam F and Atef S. Right vs left side thoracoscopic sympathectomy: Effects of CO2 insufflation on Hemodynamics. *Annales Chirurgie Gynecologie* 2001;90:206-8.
5. Eldawlatly A, Al-Dohayan A, Abdel-Meguid M.E, Turkistani A, Alotaiby W and Mansour E. Variations in dynamic lung compliance during Endoscopic thoracic sympathectomy with CO2 insufflation. *Clin Auton Res* 2003, 13 (Suppl 1): 1/94-1/97.
6. Moon S.W, Yoon J.S, Jo K.H, Wang Y.P and Park H.J. Thoracoscopic sympathetic clamping in a patient with an azygos fissure. *Surg Laparosc Endosc Percutan Tech* 2005;15:110-11.
7. Sieunarine K, May J, White G.H, Harris J.P. Anomalous azygos vein: a potential danger during Endoscopic thoracic sympathectomy. *Austra Newze J Surg* 1997;67:578-9.
8. Sadikot R.T, Cowen M.E and Arnold A.G. Spontaneous pneumothorax in a patient with an azygos lobe. *Thorax* 1997;52:579-80.
9. Wong P.S and Goldstraw P. Pulmonary torsion: a questionnaire survey and a survey of the literature. *Ann Thorac Surg* 1992;54:286-88.

**Author Information**

**Abdelazeem A. El-Dawlatly, M.D.**

Associate Professor, Department of Anesthesia, College of Medicine, King Saud University

**Abdullah Al-Dohayan, FRCS**

Professor, Department of Surgery, College of Medicine, King Saud University