

# Azygos Lobe of Right Lung (Lobus Azygos Pulmonis dextri) - A Case Report

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**Abstract:** ***Introduction:** An azygos lobe is a rare anomaly of the lung<sup>(1)</sup>. Its incidence ranges between 0.2% and 1.2% of the population<sup>(2)</sup>. Anatomical knowledge of morphological variations of lobes and fissures are essential for Cardiothoracic surgeons in identifying bronchopulmonary segments and for performing lobectomies and surgical resection of individual segments and for Radiologists interpreting X – rays, CT & MRI scans<sup>(3)</sup>. **Materials and Methods:** The study material comprised of 22 human cadavers, in the Department of Anatomy, Osmania medical college, Koti, Hyderabad over a period of two years. During routine dissection of thorax for undergraduate MBBS 1st Year students, a rare case of Azygos lobe in the apex of right lung was noticed in an elderly male cadaver. Left lung was normal. **Results:** In the present study, a case of Azygos lobe of right lung was found. Out of 44 specimens, 1 specimen showed an azygos lobe in the right lung in apical region. The findings being laterally displaced azygos vein which created a deep pleural fissure into the apical segment of the right upper lobe due to invagination of the azygos vein and pleura, azygos vein crossing from left to right side in posterior mediastinum, in situ lobe was placed postero-medially. Left lung was normal. **Conclusion:** Clinically, the knowledge of azygos lobe anatomy is essential to know the prevalence, morphology<sup>(4)</sup>, and location of the azygos lobe for diagnostic and surgical procedures of the lungs related to mediastinal pathologies, especially to minimize intraoperative vascular injuries, shock, possible thoracotomy, and sometimes the possibility of pulmonary torsion.*

**Keywords:** Azygos vein (AV), Superior venacava (SVC)

## 1. Introduction

The Lungs are pyramid-shaped, paired organs that are connected to the trachea by the right and left bronchi. The Right lung is divided into three lobes superior, middle and inferior by two fissures -an oblique and a horizontal fissure. The Left lung is divided into two lobes superior and inferior by an oblique fissure. An Azygos lobe is a rare normal variant of the right upper lobe of the lung not a true separate lobe<sup>(5)</sup>. It is seen in 0.2 to 1.2% of population. It is twice as common in males than in females. The incidence of azygos lobe of right lung in Anatomic dissections is 1%. In 1877, azygos lobe was first described by Heinrich Wrisberg (Wrisberg, 1778). Various names were assigned to the azygos lobe, "lobe of Wrisberg" (Wrisberg, 1778), "lobe of the azygos vein" (Weston, 1954), "accessory pulmonary lobe of the azygos vein" (Anson and Smith, 1936; Crawford, 1944; Anson et al., 1950), Azygos lobe (Crawford, 1944), Adam's lobe, Vanishing azygos lobe<sup>(6)</sup>

## 2. Materials and Methods

The present study was undertaken on 22 embalmed adult human cadavers irrespective of age, sex used for undergraduate dissection from the Department of Anatomy, Osmania Medical College spanning over a period of 2 years. During routine dissection of thorax, the lungs were removed after the removal of the anterior thoracic wall, noticed a rare case of Azygos lobe of right lung in a male cadaver, a Lobe of Azygos vein.

## 3. Results

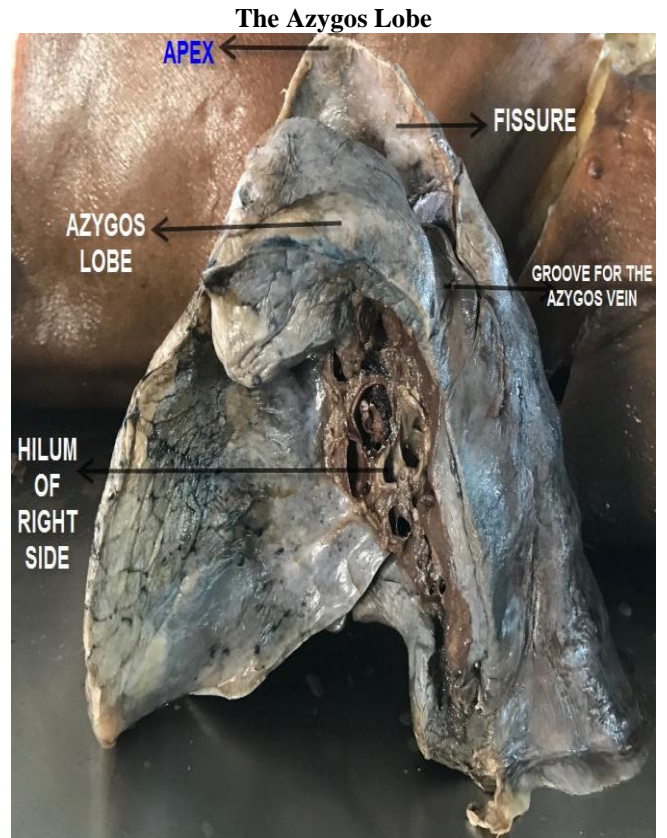
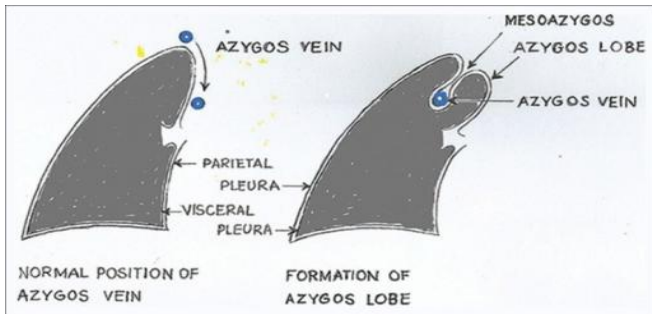
The azygos lobe forms when the azygos vein fails to migrate over the apex of the lung during foetal life<sup>(7)</sup>. Instead, it

courses through the lung, dragging along with it the parietal and visceral pleura. The four layers of pleura -azygos fissure. The bit of lung tissue separated from the rest of the lung - azygos lobe.

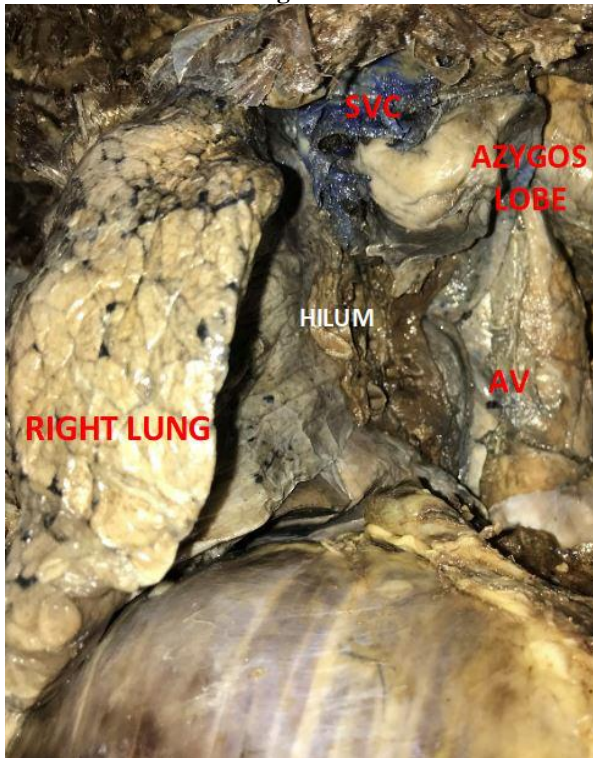
## 4. Discussion

It is not a true lobe, but a separated portion of the superior lobe that lacks its own bronchi, arteries or veins<sup>(8)</sup>. In the present study 1 such case of right lung with extra fissure were present, with which the lungs were divided into 4 lobes instead of 3 lobes which was identified as an azygos lobe. Some of the previous studies also report the presence of accessory lobes of lungs. It is usually an incidental finding on chest X-ray or computed tomography<sup>(9)</sup>. They can also be confused with certain clinical conditions such as linear atelectasis (empty azygos fissure), pulmonary nodule, loculated effusions in the fissure, pleural scars or walls of bullae<sup>(10)</sup>. It is not associated with any morbidity but can cause technical problems in thoracoscopic procedures<sup>(11)</sup>. Awareness of this is useful for surgeons to avoid excessive bleeding during pulmonary lobectomy. Radiographically it appears as a fine convex line which begins at the right apex and curves downwards and inwards towards the mediastinum to end just below the level of the first costal cartilage in a dense comma-shaped shadow<sup>(12)</sup>. (George Bray, 1932). The two folds of pleura form the mesoazygos, where it assumes a characteristic teardrop shape, a fissure visible on 0.4% of chest radiographs and 1.2% of high-resolution computed tomography (CT) studies. The mesoazygos indents the right upper lobe, thereby creating the accessory (azygos) fissure, which is similar in shape to an inverted comma; the fissure delineates the azygos lobe, located superomedially. Laterally the pleural folds of the mesoazygos separate before reaching the chest wall,

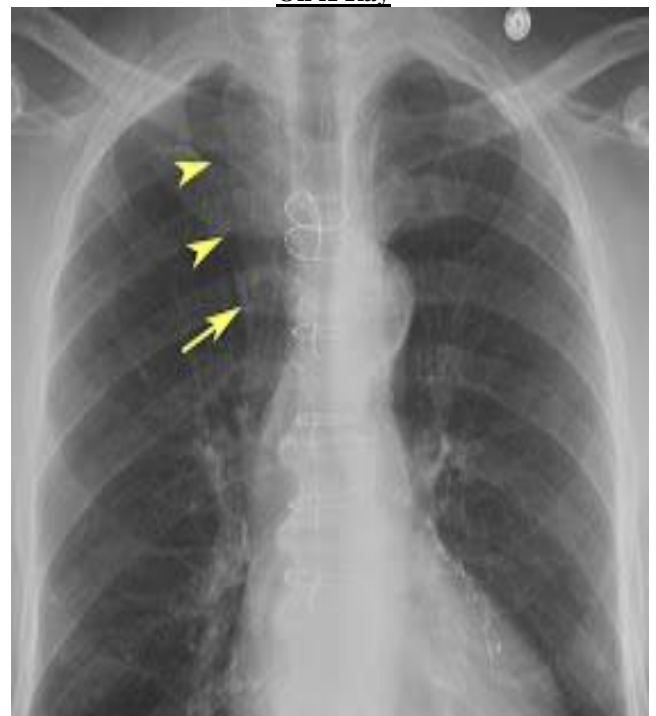
medially resulting in a radiopaque triangular area and the trachea bronchial angle appears empty.



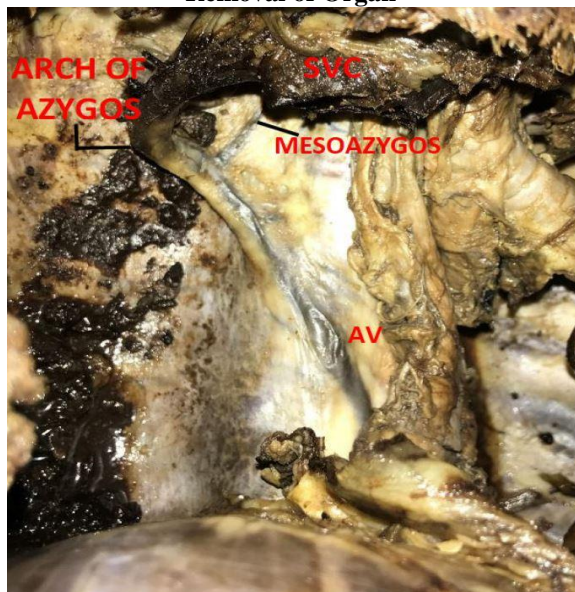
**Lung in-situ**



**On X Ray**

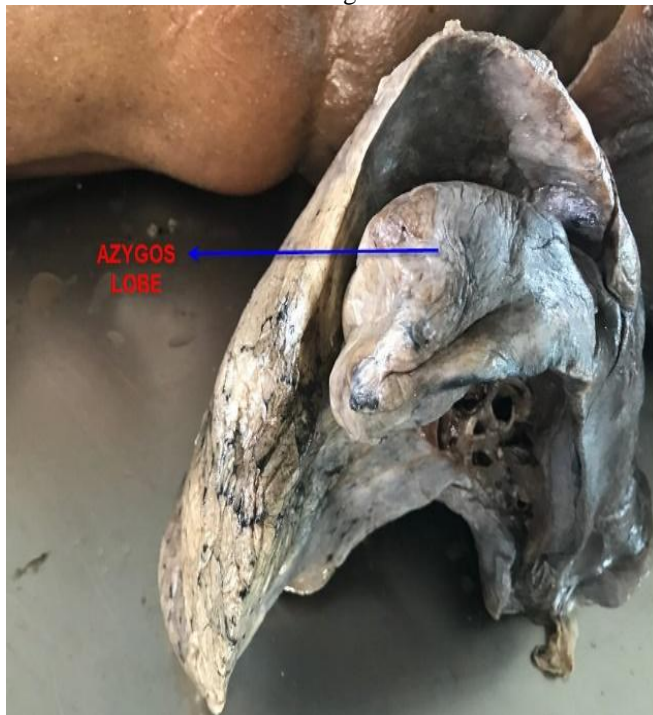


**Course of Azygos Vein in Posterior Mediastinum after Removal of Organ**

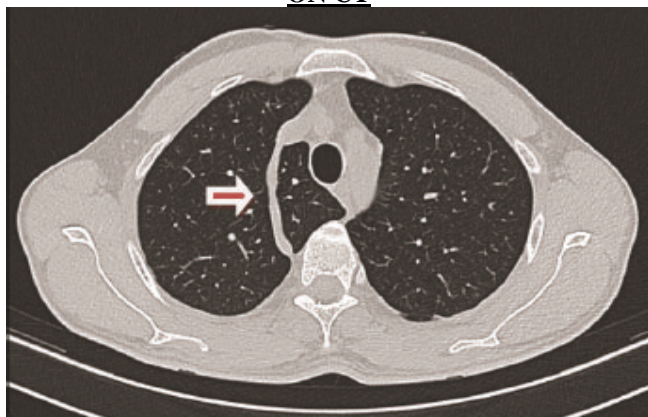




### Presence of Azygos Lobe in the Apical Region of Right Lung



ON CT



### 5. Conclusion

In this present study, percentage of azygos lobe is 9%. Clinically, the knowledge of azygos lobe anatomy is important for essential for diagnostic and surgical procedures of the lungs related to mediastinal pathologies, especially to minimize intraoperative vascular injuries, shock, possible thoracotomy, and sometimes the possibility of pulmonary torsion. Radiologists for interpreting X-rays, CT & MRI scans. It can also help to explain various radiological appearances of lobar anatomy of the lungs and the position of the interlobar fluid. For Cardiothoracic surgeons in Identifying bronchopulmonary segments for performing lobectomies and segmentectomies Partial obstruction of the thoracoscopic view during a bilateral sympathectomy, Difficulty in reflecting the pleura during primary repair of the oesophageal atresia in paediatric patients. Phrenic nerve injury when it is coursing within the azygos fissure.<sup>(13)</sup> Spontaneous pneumothorax to avoid post-operative complications like air leakage.<sup>(14)</sup>

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