

Azygos lobe retrospective evaluation

Suat Konuk¹ , Emine Özşarı¹ 

¹Department of Chest Diseases, Faculty of Medicine, Abant İzzet Baysal University, Bolu, Türkiye

Cite as: Konuk S, Özşarı E. Azygos lobe retrospective evaluation. Northwestern Med J. 2025;5(4):255-258.

ABSTRACT

Aim: The azygos lobe is a well-known anatomical variation of the lung, formed due to the aberrant course of the azygos vein during fetal development. The incidence of the azygos lobe has been reported to be between 0.4% and 1%. This study aims to identify the prevalence of the azygos lobe in a specific patient population, classify its variations, and highlight its importance in differential diagnosis and associated pathologies.

Methods: A retrospective analysis was conducted on 4,549 patients who visited our pulmonology clinic between April 2014 and November 2017. The presence of an azygos lobe was identified through radiological screening.

Results: Among the 4,549 patients screened, 14 cases (0.31%) of azygos lobe were detected, comprising 10 males and four females. The azygos lobe was classified based on the course of the azygos fissure: Type A (lateral to the lung apex) in seven cases (50%), Type B (midline and more vertical) in three cases (21%), and Type C (medial, extending into the mediastinum) in four cases (29%). Additionally, 12 cases (85.7%) were located on the right side, while two cases (14.3%) were on the left.

Conclusions: The azygos lobe is most commonly detected incidentally during imaging for unrelated conditions. Our study emphasizes the importance of recognizing the azygos lobe as a differential diagnosis and investigating potential coexisting pathologies. The findings contribute to existing statistical data on the prevalence and anatomical variations of the azygos lobe.

Keywords: azygos lobe, anatomical variation, differential diagnosis, pulmonary imaging

Corresponding author: Suat Konuk **E-mail:** suatkonukk@windowslive.com

Received: 20.03.2025 **Accepted:** 25.04.2025 **Published:** 26.10.2025

Copyright © 2025 The Author(s). This is an open-access article published by Bolu İzzet Baysal Training and Research Hospital under the terms of the [Creative Commons Attribution License \(CC BY\)](#) which permits unrestricted use, distribution, and reproduction in any medium or format, provided the original work is properly cited.

INTRODUCTION

In normal human anatomy; The right lung is divided into three lobes—lobus superior, medius and inferior—by two fissures, and the left lung is divided into two lobes—lobus superior and inferior—by a single fissure (1). The lungs are divided into lobes by the combination of segments and the oblique and horizontal fissures (2). The most well-known accessory fissure is the azygos fissure. It occurs as a result of the azygos vein passing in front of the lung during the intrauterine period, and the apical or posterior segment of the right upper lobe remaining behind this vein. The azygos vein develops from the posterior cardinal vein. As a result of a part of the upper lobe remaining below and medial to this vein, an accessory lobe resembling a separate lobe is formed due to the pressure of the vein, which is called the azygos lobe. It has been reported to occur at a rate of 0.4-1% during routine examinations (3-5). It is usually asymptomatic and does not require treatment. The aim of this study is to contribute to the literature on the azygos lobe and to draw attention to the diseases that coexist with it.

MATERIALS AND METHODS

Among the 4,549 people who came to the Düzce private pulmonology clinic between April 2014 and November 2017, those with an azygos lobe were detected through retrospective screening. Statistical evaluation of the study was performed using the SPSS 16.0 package and p values <0.05 were considered significant.

Retrospective radiological evaluation was performed with posteroanterior (PA) radiographs in patients older than 18 years. Individuals over the age of 18 who presented to the chest diseases clinic for any reason were included in the study. Those without a chest X-ray were excluded from the study.

RESULTS

Among the 4,549 people who came for chest diseases examination between April 2014 and November 2017, those with an azygos lobe were detected through retrospective screening. Of these, 2,409 were male

and 2,140 were female. An azygos lobe was detected in 10 of the 2,409 male patients and four of the 2,140 female patients.

The appearance of the azygos lobe is classified into three types, depending on the course of the azygos fissure in relation to the lung apex. The trigone is classified as Type A if it is lateral to the apex of the lung, Type B if it is located towards the middle and the fissure is more vertical, and Type C if it is medial and the fissure extends into the mediastinum. In our case series, there were seven patients (50%) with Type A, three patients (21%) with Type B, and four patients (29%) with Type C.

In our study, the azygos lobe was settled on the right side in 12 patients (85.7%) and on the left side in two patients (14.3%). Figure 1 shows the azygos lobe and fissure on the PA chest radiograph, and Figure 2



Figure 1. Azygos lobe and fissure on the PA chest radiograph.

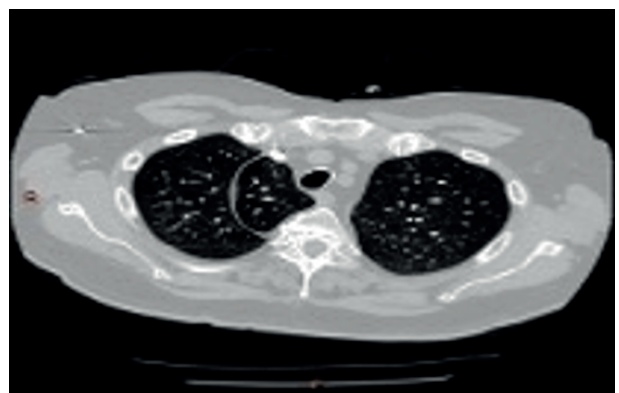


Figure 2. Azygos lobe and fissure on the thorax CT.

shows them on the thorax computed tomography (CT). Sequestration was observed on one patient's chest X-ray, and one patient had coexisting lung cancer, which was treated. The average age of the individuals included in the study was 48.6 ± 3.5 years. It is important to identify diseases concomitant with the azygos lobe, as these conditions should not be overlooked.

DISCUSSION

The azygos lobe is a rare anatomical variation that can cause significant morphological changes in the upper mediastinum (6). It occurs as a result of inadequate migration of the azygos vein from the thoracic wall to its normal position, the tracheobronchial corner. The azygos lobe may be located behind the superior vena cava and trachea, and may contact the medial wall of the descending aorta and esophagus. It is generally seen twice as often in men (7,8). In our study, 10 out of 14 patients (71%) were male. The azygos lobe is often located on the right (9,10). In our study, 12 cases (85.7%) were on the right and two cases (14.3%) were on the left.

The azygos lobe is seen in 1% of cadaver samples, 0.4% in chest radiography, and 1.2% in high-resolution computed tomography (3-5,11). Diagnosis is usually made by chest radiography (11). Computed tomography can also be used in selected cases for further examination and differential diagnosis (12). As in our case, on the chest X-ray there is a convex line connected to the azygos fissure, a triangular-shaped area (trigone) connected to the extrapleural tissue on the fissure, and a teardrop appearance connected to the azygos vein at the bottom (13).

The appearance of the azygos lobe depends on the course of the azygos fissure in relation to the lung apex. It is classified in three ways: Type A, when the trigone is lateral to the lung apex; Type B, when it is located toward the middle and the fissure is more vertical; and Type C, when it is medial and the fissure extends into the mediastinum (14).

Although it does not represent a pathological condition on its own in practice, the azygos lobe requires attention due to possible accompanying pathological events.

Although rare, the azygos lobe may be accompanied by pathologies such as fissures, tumors (small cell lung cancer), extrapulmonary sequestration, pneumothorax, bullous changes, vascular anomalies, and situs inversus totalis (15). In our study, one patient had extralobar sequestration, and another had lung cancer and was treated accordingly. Monaco et al. reported surgical treatment of a case in which they detected an azygos lobe with pneumothorax (16). The most important thing to consider in surgical interventions for lesions located in the azygos lobe is the risk of damaging the azygos vein while dissecting the azygos lobe (17). Gentle caudal traction of the azygos lobe is important in preventing this complication. The bronchus of the lobe usually branches from the upper lobe apical segment bronchus, but it has also been observed to arise from the main bronchus. Therefore, these anatomical variations should be taken into consideration during bronchial division (18). The azygos lobe is usually identified incidentally during imaging performed for other reasons. Accurate identification is important as the azygos lobe can mimic other lung pathologies and may cause technical challenges during surgery (19). In our study, no such findings were observed.

CONCLUSION

In most cases, the azygos lobe is detected incidentally during examinations for other reasons, as in our study. Our findings reveal that the azygos lobe should not be overlooked in differential diagnoses and emphasize the importance of investigating additional pathologies.

Ethical approval

This study has been approved by the Sakarya University Non-Interventional Research Ethics Committee (approval date 09.02.2017, number 71522473/050.10.04/33). Written informed consent was obtained from the participants.

Author contribution

Concept: SK; Design: SK; Data Collection or Processing: SK; Analysis or Interpretation: SK, EÖ; Literature Search: SK; Writing: SK, EÖ. All authors reviewed the results and approved the final version of the article.

Source of funding

The authors declare the study received no funding.

Conflict of interest

The authors declare that there is no conflict of interest.

REFERENCES

1. Kılıç C, Kocabıyık N, Yalçın B, Kırıcı Y, Yazar F, Ozan H. Accessory fissures of the lungs. *Med J SDU*. 2009; 13(3): 12-6.
2. Meenakshi S, Manjunath KY, Balasubramanyam V. Morphological variations of the lung fissures and lobes. *Indian J Chest Dis Allied Sci*. 2004; 46(3): 179-82.
3. BOYDEN EA. The distribution of bronchi in gross anomalies of the right upper lobe particularly lobes subdivided by the azygos vein and those containing pre-eparterial bronchi. *Radiology*. 1952; 58(6): 797-807. [\[Crossref\]](#)
4. Ariyürek OM, Gülsün M, Demirkazık FB. Accessory fissures of the lung: evaluation by high-resolution computed tomography. *Eur Radiol*. 2001; 11(12): 2449-53. [\[Crossref\]](#)
5. Aziz A, Ashizawa K, Nagaoki K, Hayashi K. High resolution CT anatomy of the pulmonary fissures. *J Thorac Imaging*. 2004; 19(3): 186-91. [\[Crossref\]](#)
6. Etter LE. Variations in the position of the azygos septum and its incidence in 50,000 roentgen examinations. *Am J Roentgenol Radium Ther*. 1947; 58(6): 726-9.
7. Postmus PE, Kerstjens JM, Breed A, vd Jagt E. A family with lobus venae azygos. *Chest*. 1986; 90(2): 298-9. [\[Crossref\]](#)
8. Fisher MS. Re: Adam's lobe. *Radiology*. 1985; 154(2): 547. [\[Crossref\]](#)
9. Takasugi JE, Godwin JD. Left azygos lobe. *Radiology*. 1989; 171(1): 133-4. [\[Crossref\]](#)
10. Kobayashi T, Satoh K, Kawase Y, et al. Bronchial and vascular supply in azygos lobe of inflated fixed lung: a case study. *Radiat Med*. 1995; 13(1): 31-3.
11. Mata J, Cáceres J, Alegret X, Coscojuela P, De Marcos JA. Imaging of the azygos lobe: normal anatomy and variations. *AJR Am J Roentgenol*. 1991; 156(5): 931-7. [\[Crossref\]](#)
12. Kauffman P, Wolosker N, de Campos JRM, Yazbek G, Jatene FB. Azygos lobe: a difficulty in video-assisted thoracic sympathectomy. *Ann Thorac Surg*. 2010; 89(6): e57-9. [\[Crossref\]](#)
13. Karre PR, Cooper GB. The azygos lobe and vein: interesting and typical clinical image. *BMJ Case Rep*. 2011; 2011: bcr0520114266. [\[Crossref\]](#)
14. Stibbe EP. The Accessory Pulmonary Lobe of the Vena Azygos. *J Anat*. 1919; 53(Pt 4): 305-14.
15. Gürkök S, Gözübüyük A, Yücel O, Çaylak H, Dakak M. Bullous azygos lobe: case report. *Türk Gogus Kalp Damar Cerrahisi Derg*. 2007; 15(2): 168-9.
16. Monaco M, Barone M, Barresi P, Carditello A, Pavia R, Mondello B. Azygos lobe and spontaneous pneumothorax. *G Chir*. 2000; 21(11-12): 457-8.
17. Fukuhara S, Montgomery M, Reyes A. Robot-assisted azygos lobectomy for adenocarcinoma arising in an azygos lobe. *Interact Cardiovasc Thorac Surg*. 2013; 16(5): 715-7. [\[Crossref\]](#)
18. Sadikot RT, Cowen ME, Arnold AG. Spontaneous pneumothorax in a patient with an azygos lobe. *Thorax*. 1997; 52(6): 579-80; discussion 575-6. [\[Crossref\]](#)
19. Cáceres J, Mata JM, Andreu J. The azygos lobe: normal variants that may simulate disease. *Eur J Radiol*. 1998; 27(1): 15-20. [\[Crossref\]](#)