

## CASE REPORT

# Pulmonary Sequestration in a Middle-Aged Female Presenting As Haemoptysis and Its Surgical Management- A Case Report

Suresh Kumar, Sanjeev Kumar, Adarsh Dandey\*, Pankaj Singh

*Department of General Surgery, King Georges' Medical University Lucknow Uttar Pradesh, India*

*Received: 02<sup>nd</sup> February, 2024; Revised: 10<sup>th</sup> April, 2024; Accepted: 28<sup>th</sup> May, 2024; Available Online: 25<sup>th</sup> June, 2024*

---

### ABSTRACT

Pulmonary sequestration is a rare congenital malformation with an incidence of about 0.15-6.4%. A 42 year old female presented with complaints of haemoptysis with chest pain and breathlessness since last 3 months. She coughs out about 100 mL of blood per day. No history of cough, expectoration, fever and palpitations. On examination, she was tachypnoeic with a respiratory rate of 26, afebrile, tachycardic with pulse rate of 106 beats per minute, and normotensive with a blood pressure of 124/76 mm of Hg. The rest of the physical examination, including the chest examination, was normal. The postoperative period was uneventful and patient was discharged on postoperative day 9. The patient was followed for 4 months after surgery. She was symptom-free after surgery. In a country like India where hemoptysis is almost always thought to be of tubercular origin, a high suspicion index is required to diagnose a rare congenital disorder like pulmonary sequestration.

**Keywords:** Pulmonary sequestration chest injury, Thoracic aorta

Journal of Surgery Archives (2024);

**How to cite this article:** Kumar S, Kumar S, Dandey A, Singh P. Pulmonary Sequestration in a Middle-Aged Female Presenting As Haemoptysis and Its Surgical Management- A Case Report. Journal of Surgery Archives. 2024;2(1):4-6.

**Source of support:** Nil.

**Conflict of interest:** None

---

### INTRODUCTION

Pulmonary sequestration is a rare congenital malformation with an incidence of about 0.15–6.4%.<sup>1</sup> In sequestration, the lung parenchyma receives a separate blood supply from systemic arteries. There are two types of sequestration-intralobar and extra lobar. Their presentation varies according to type such as Extralobar type is usually diagnosed in infancy. In contrast, the intralobar type either presents in early adulthood with repeated pulmonary infection or it might be incidental findings.<sup>2</sup> The sequestration can be treated by surgical excision and now a newer method of angioembolization is coming up.<sup>3</sup> The surgical management options are lobectomy, segmentectomy and simple mass excision.<sup>4</sup> We describe a case of pulmonary sequestration of a 42 year old female with hemoptysis and breathlessness.

#### Case Presentation

A 42 year old female presented with complaints of haemoptysis with chest pain and breathlessness since last 3 months. She coughs out about 100 mL blood per day. No history of cough, expectoration, fever and palpitations. On examination, she was tachypnoeic with respiratory rate of 26, afebrile, tachycardic with pulse rate of 106 beats per minute, normotensive with blood pressure of 124/76 mm of Hg. The rest of the physical examination, including the chest examination, was normal.

#### Investigations

Her complete blood count showed hemoglobin of 10.7 gm%, total leucocyte count of 6000 cells/cubic mm, and platelet count of 1.82 lacs/cubic mm. coagulation profile was within normal limits. Her biochemical profile was normal. Zeil nelson straining of the sputum was negative for mycobacterium tuberculosis.

Chest X-ray was within normal limits.

CECT thorax with CT angiography was done that showed a mixed density area in the posterodorsal segment of the right lower lobe with hypodense and soft tissue density areas, the lesion is seen to be supplied by a branch of descending thoracic aorta arising at D10 vertebral level and area is seen to be draining into right inferior pulmonary vein, suggestive of right side intralobar sequestration (Figure 1).

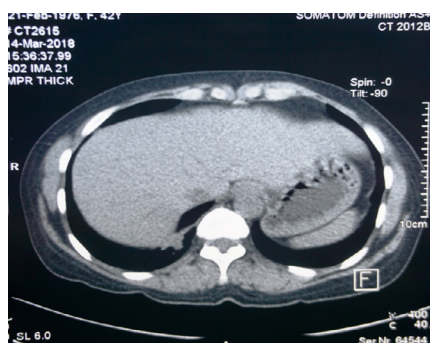
#### Treatment

On the basis of the findings of the CT angiography the diagnosis of right-sided interloper pulmonary sequestration was made and the patient was planned and optimized for surgery.

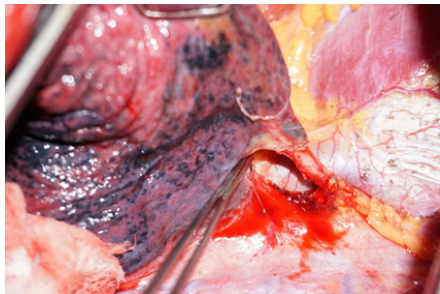
The patient was operated *via* a right poster lateral thoracotomy approach. The sequestered segment was identified, and vessels supplying that segment were identified (Figures 2, 3) and dissected, ligated, and divided using a vascular stapler. Excision of the segment of was done (Figure 4).

---

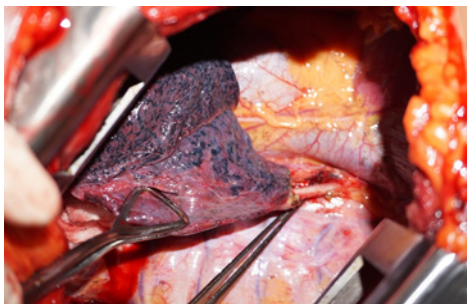
\*Author for Correspondence: [adarshdandey@gmail.com](mailto:adarshdandey@gmail.com)



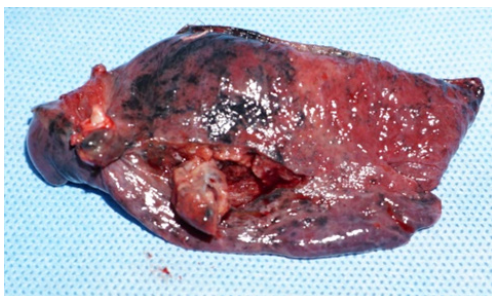
**Figure 1:** CECT showing arterial supply from thoracic aorta



**Figure 2:** Vascular pedicle of sequestered segment



**Figure 3:** sequestered segment with vascular pedicle



**Figure 4:** Excised sequestered segment of lung

### Outcome and follow-up

The postoperative period was uneventful and the patient was discharged on postoperative day 9.

The patient was followed for 4 months after surgery. She was symptom-free after surgery.

### DISCUSSION

Pulmonary sequestration is a rare congenital malformation of unknown etiology. In this condition, the part of lung receives

blood supply from the systemic circulation and does not have any communication with the airway system.<sup>5,6</sup> The most common source of blood supply to the sequestered lung is from thoracic aorta (75% cases) as was in our case, the abdominal aorta is the second most common source. Blood supply can also arise from other smaller arteries but they are much less common.<sup>7</sup>

Our case's peculiarities are first diagnosed in a 42 year old female. Most of the cases of intralobar sequestration are diagnosed in early adulthood. Secondly, sequestration was present in the right lung. Literature reports that it to be 2 times more common on the left lung. The first presentation of the disease occurred before age 10 in 37. 2% of cases, while in 15.5% of the cases, the disease remained asymptomatic and was discovered by chance. Our case also has a peculiar presentation, the patient presented with hemoptysis, breathlessness and chest pain. The most common presentation of intralobar sequestration is cough with expectoration and recurrent pneumonia.<sup>7</sup>

There are two types of pulmonary sequestration, *i.e.*, interloper and intralobar. Among them, intralobar sequestration is most common, found in about 83.9% of all lung sequestration.<sup>8</sup> In intralobar sequestration, the sequestered part shares common visceral pleura with the parent lobe. In interloper sequestration, the sequestered part has its independent visceral pleural cover over it.

The sequestration should be removed whenever it is diagnosed. The best treatment for pulmonary sequestration, especially for intralobar type like segmentectomy, was done in our patient. It is Pulmonary sequestration has conventionally been treated by surgical removal of the sequestered lobe of lung. Some patients have reported embolization as a safe alternative to surgery.<sup>9</sup>

### CONCLUSION

In a country like India where haemoptysis is almost always thought to be of tubercular origin, a high index of suspicion is required for diagnosing a rare congenital disorder like pulmonary sequestration.

### LEARNING POINTS

- In developing countries like India, where tuberculosis is very common, a high index of suspicion is required for the diagnosis of sequestration of lung.
- Normal chest X-ray and bronchoscopy do not rule out the diagnosis of lung sequestration.
- CT angiography is an investigation of choice for the diagnosis of sequestration of lung.
- Before going for surgery, identify all the arterial supply and venous drainage of the sequestered portion of the lung to minimize the bleeding during surgery.

### REFERENCES

1. Loscertales J, Congregado M, Arroyo A, Jimenez-Merchan R, Giron JC, et al. (2003) Treatment of pulmonary sequestration by Video-Assisted Thoracic Surgery (VATS). *Surg Endosc* 17: 1323.

2. Au VW, Chan JK, Chan FL (1999) Pulmonary sequestration diagnosed by contrast enhanced three-dimensional MR angiography. *Br J Radiol* 72: 709- 711.
3. K. S. Madhusudhan, C. J. Das, R. Dutta, A. Kumar, and A. S. Bhalla, "Endovascular embolization of pulmonary sequestration in an adult," *Journal of Vascular and Interventional Radiology*, vol. 20, no. 12, pp. 1640–1642, 2009
4. Gao SG, Cheng GY, Sun KL, He J (2007) [Diagnosis and surgical treatment of pulmonary sequestration]. *Zhonghua Yi Xue Za Zhi* 87: 1616-1617.
5. Pikwer A, Gyllstedt E, Lillo-Gil R, et al. Pulmonary sequestration: a review of 8 cases treated with lobectomy. *Scand J Surg*. 2006; 95:190–4.
6. Reuben Grech, Grima Marius, Warren Scicluna, et al. Bilateral intralobar pulmonary sequestration. *Malta Med J* 2009; 21:30–3.
7. Savic B, Birtel F, Tholen W, et al. Lung sequestration: report of seven cases and review of 540 published cases. *Thorax* 1979; 34:96–101.
8. Y. Wei and F. Li, "Pulmonary sequestration: a retrospective analysis of 2625 cases in China," *European Journal of Cardio-Thoracic surgery*, vol. 40, no. 1, pp. e39–e42, 2011.
9. Tokel K, Boyvat F, Varan B. Coil embolization of pulmonary sequestration in two infants. *AJR Am J Roentgenol* 2000; 175:993–5.