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Case Report

Iatrogenic lung hernia, a rare complication of thoracoscopic spinal fusion: A case report and review of literature ☆,☆☆

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ABSTRACT

A *lung hernia* is a rare and potentially severe complication that may occur due to thoracic surgery amongst other etiologies. This case report describes the clinical presentation, imaging findings, and management of a patient who developed an iatrogenic lung hernia after undergoing thoracic fusion surgery at the level of T6-T7. The patient presented with persistent chest pain, shortness of breath, and a nonproductive cough. Initial imaging studies revealed the presence of an abnormality within the pleural space, later confirmed through computed tomography of the chest. This case highlights the importance of considering iatrogenic lung hernia as a potential complication of thoracic fusion surgery and the need for close monitoring and prompt intervention in cases when it occurs.

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Introduction

Pulmonary hernias are rare and can be caused by various underlying conditions, including congenital abnormalities, conditions that cause chest wall weakening, and traumatic or surgical injury. *Iatrogenic lung hernias* are a rare and often underdiagnosed complication that can occur after thoracic surgery. It results from the herniation of lung tissue through a defect in the chest wall created during the surgical procedure symptoms include persistent chest pain, shortness of breath, and cough, which can often be mistaken for other conditions leading to a delay in diagnosis and treatment. This case report aims to emphasize the importance of considering iatrogenic lung hernias as a potential complication in patients with a history of thoracic surgery, to highlight the computed tomogra-

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phy (CT) imaging findings, and to provide insight into the diagnostic and therapeutic approaches that may be necessary in such cases.

Case presentation

Our patient is a 62-year-old female with a medical history of hypertension and chronic obstructive pulmonary disease (COPD). The patient presented with a chief complaint of severe left-sided chest pain associated with elevated blood pressure, cough, and dyspnea. She had been experiencing less severe pain at the exact location for the past month; however, she reports acute worsening in the severity in the last 3 days. She denied any history of trauma to her chest. In the emergency department, patient vitals were significant for a heart rate of 110 beats per minute, 20 respirations per minute, and blood pressure of 150/86. Laboratory results were within normal limits, including a complete blood count and complete metabolic panel (CBC and CMP). The patient's electrocardiogram and high-sensitivity troponins were all normal x3. The patient's pain subsided with the administration of intravenous morphine.

Her social history revealed 60 pack-years of tobacco use. She also had a surgical history of cholecystectomy and a T6-7 left lateral thoracic fusion performed via thoracotomy approximately 2 years before presentation. Physical examination was significant for increased body habitus, which was unremarkable, including a chest exam.

On admission, the patient's chest X-ray was significant for a "left basilar parenchymal opacification," portrayed in Fig. 1. This finding was subtle and due to the lack of clarity, a CT chest with contrast was obtained, which uncovered a 4 × 2 cm lung herniation in the lateral seventh intercostal space. Atelectasis associated with the chest wall defect was the reason for the abnormality in the initial chest X-ray. Figs. 2 and 3 portray the radiological CT findings. These findings both explained the patient's presentation and symptoms. The iatrogenicity of her lung hernia was attributed to the weakened chest wall due to her prior thoracic fusion via thoracotomy.

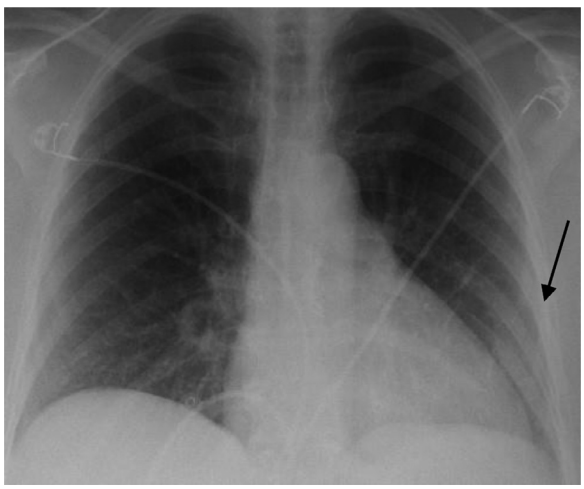

Fig. 1 – Patient's initial anterior-posterior X-ray of chest. Black arrow pointing at parenchymal opacity.

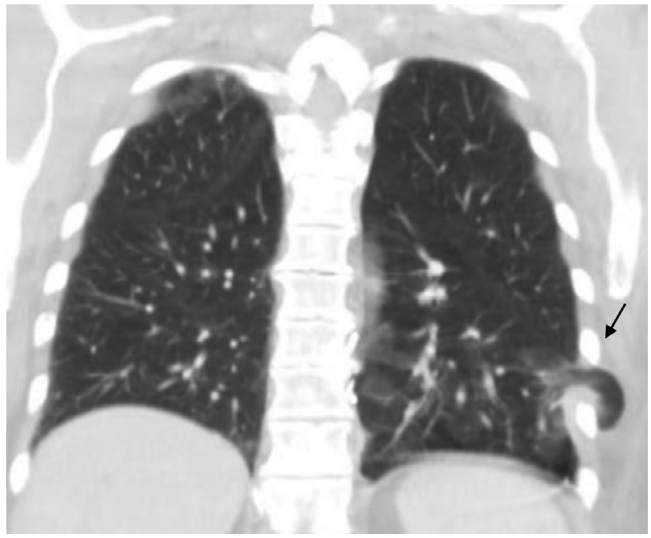

Fig. 2 – Patient's CT scan of chest with contrast, coronal view. Black arrow pointing at lung herniation.

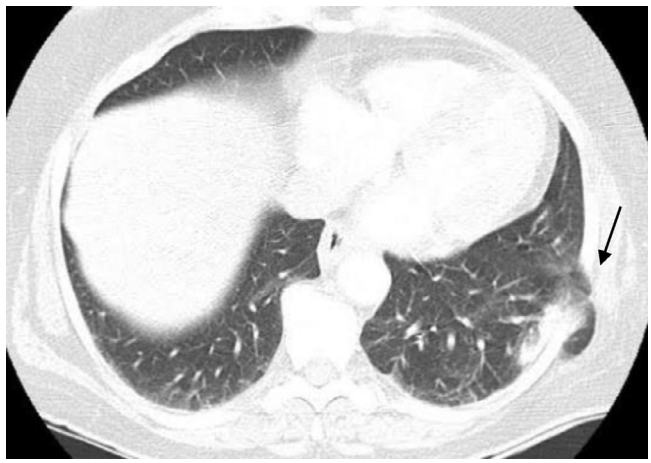

Fig. 3 – Patient's CT scan of chest with contrast, axial view. Black arrow pointing at lung herniation.

Our patient was informed and counseled on the diagnosis and proposed management. Given the nonacute nature of her lung herniation, symptomatic improvement, and lack of critical signs such as hemoptysis or respiratory failure, the patient was referred to cardiothoracic surgery for outpatient surgical intervention.

Discussion

There are very few cases reported of lung hernias as they are a rare occurrence, Mirza et al. [1] published that less than 300 cases exist in the literature. Although it is suspected that the incidence may be higher than reported, given that some patients may have no symptoms. Consequently, there needs to

be more evidence-based guidance for effective management. Iatrogenic lung hernia is a rare but potentially severe complication of thoracic surgery. The herniation of lung tissue occurs through a defect in the chest wall created during the surgical procedure [2]. Diagnosing iatrogenic lung hernia can be challenging, as persistent chest pain, shortness of breath, and coughing are nonspecific and may be mistaken for other conditions, such as in our patient. Early recognition and prompt treatment are essential to prevent serious complications, such as bronchial obstruction, infection, or lung strangulation [3].

The diagnosis of iatrogenic lung hernia is typically made through imaging studies, such as chest X-ray, CT scan, or magnetic resonance imaging (MRI). CT scans are particularly useful in detecting small hernias and assessing the extent of the hernia, while MRI may be more useful in evaluating soft tissue injuries [3]. In some cases, surgical intervention may be necessary to confirm the diagnosis and repair the hernia. The current system used for the classification of lung hernias was first proposed in 1845 and divides lung herniations by location (cervical, thoracic, or diaphragmatic) as well as etiology, either congenital or acquired, later subdivided into traumatic, post-surgical, spontaneous, or pathological [4].

The management of pulmonary hernias depends on the hernia's underlying cause, size, location, and the patient's overall health. In some cases, nonsurgical management may be appropriate, such as observation or medical management of the underlying condition. However, surgical intervention may be necessary if the hernia is causing permanent symptoms or is at risk of becoming complicated. Surgical management is also indicated to control extreme pain or if the herniation leads to infection [5]. Hemoptysis and respiratory failure are common signs that indicate the need for urgent surgical intervention. Although possible, incarceration and infarction are uncommon, given the lung's elasticity. If the patient is asymptomatic, management is somewhat controversial, with the traditional method being observation but more recent trends favoring a more aggressive approach to prevent complications [4].

Conclusion

In conclusion, we have presented an interesting case and imaging of a patient with an iatrogenic lung hernia secondary to spinal fusion via thoracotomy. Although rare, it is a potentially severe complication of thoracic surgery. Early recognition and prompt assessment for treatment are essential to prevent severe complications and to ensure a successful outcome. Imaging studies, such as CT scans and MRI, play a critical role in diagnosing iatrogenic lung hernia, and surgical repair is the primary mode of treatment. Future studies are needed better to understand this condition's risk factors and incidence and improve diagnostic and therapeutic approaches.

Patient consent

Informed consent was obtained from the patient prior to publication, ensuring their understanding and agreement to share their clinical information. We are grateful for their consent, which allows us to contribute valuable research while respecting their privacy.

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