EJCRIM
European Journal of Case Reports in Internal Medicine

RECURRENT CATAMENIAL HEMOPNEUMOTHORAX CAUSED BY DIAPHRAGMATIC ENDOMETRIOSIS NOT IDENTIFIED BY CHEST X-RAY OR CT SCAN: A CASE REPORT AND LITERATURE REVIEW

Mac The Truong[1,2], Van Dinh Dat[2], Doan Thi Phuong Lan[3], Pham Hoan My[4], Ngo Gia Khanh[2]

[1] Department of Surgery, Hanoi Medical University, Hanoi, Vietnam
[2] Department of Thoracic Surgery, Bach Mai Hospital, Hanoi, Vietnam
[3] Respiratory Center, Bach Mai Hospital, Hanoi, Vietnam
[4] College of Health Sciences, VinUniversity, Hanoi, Vietnam

Corresponding author's e-mail: macthetruong@hmu.edu.vn

Received: 14/09/2026
Accepted: 28/09/2026
Published: 19/10/2026

Conflicts of Interests: The Authors declare no conflict of interest.
Patient Consent: Written informed consent has been obtained from the patient to publish this paper.
This article is licensed under a CC Attribution-NonCommercial-NoDerivatives 4.0 License

How to cite this article: Truong MT, Dat VD, Lan DTP, My PH, Khanh NG. Recurrent catamenial hemopneumothorax caused by diaphragmatic endometriosis not identified by chest X-ray or CT scan: a case report and literature review. EJCRIM 2026;13:doi:10.12890/2026_007519

ABSTRACT

Introduction: Thoracic endometriosis syndrome (TES) is a rare extrapelvic manifestation of endometriosis. Catamenial hemopneumothorax secondary to diaphragmatic endometriosis is particularly uncommon and remains a diagnostic challenge because of its nonspecific clinical and radiological findings. Early recognition of the temporal relationship between thoracic symptoms and menstruation is essential for timely diagnosis and management.

Case description: A 44-year-old woman presented with recurrent right-sided hemopneumothorax occurring within 72 hours of menstruation onset. Chest radiography and computed tomography demonstrated right pleural effusion and pneumothorax but failed to identify the underlying cause. Because of recurrence, video-assisted thoracoscopic surgery (VATS) was performed. Intraoperative findings included approximately 500 ml of old blood in the pleural cavity, multiple dark-red nodules on the right hemidiaphragm, and a 1-cm diaphragmatic defect. The affected diaphragmatic tissue was resected using an endoscopic stapler, followed by diaphragmatic repair and pleurodesis. Histopathological examination confirmed diaphragmatic endometriosis. The postoperative course was uneventful, and no recurrence was observed during a 3-month follow-up period.

Conclusion: Diaphragmatic endometriosis should be considered in women of reproductive age presenting with recurrent hemopneumothorax, particularly when episodes coincide with menstruation. VATS plays a pivotal role in both diagnosis and treatment by enabling direct visualization of diaphragmatic lesions, definitive histopathological confirmation, and simultaneous surgical management.

KEYWORDS

Thoracic endometriosis syndrome, diaphragmatic endometriosis, catamenial hemopneumothorax, video-assisted thoracoscopic surgery

EFIM European Federation of Internal Medicine

Publisher smc media srl

LEARNING POINTS

- Recurrent catamenial hemopneumothorax is an exceedingly rare manifestation of thoracic endometriosis syndrome (TES), necessitating a detailed menstrual history in reproductive-aged women presenting with cyclical thoracic symptoms.
- Conventional chest radiography and computed tomography imaging frequently fail to identify underlying diaphragmatic endometriotic lesions, meaning normal non-invasive imaging cannot exclude TES when clinical suspicion remains high.
- Video-assisted thoracoscopic surgery combined with postoperative hormonal suppression provides the definitive diagnostic and therapeutic strategy to visualize lesions, repair defects, and prevent recurrence.

INTRODUCTION

Thoracic endometriosis syndrome (TES) is a rare form of extrapelvic endometriosis characterized by the presence of functional endometrial tissue within the thoracic cavity, involving the pleura, lung parenchyma, airways, or diaphragm[1]. Clinical manifestations include catamenial pneumothorax, haemothorax, hemopneumothorax, haemoptysis, and pulmonary nodules occurring in temporal association with menstruation[1]. Among these manifestations, catamenial pneumothorax is the most common, accounting for approximately 70–80% of reported cases, whereas catamenial hemopneumothorax remains exceedingly rare[2].

Several theories have been proposed to explain the pathogenesis of TES, including retrograde menstruation with transdiaphragmatic migration of endometrial tissue, coelomic metaplasia, and lymphatic or hematogenous dissemination[1]. The predominance of right-sided thoracic involvement has been attributed to the clockwise circulation of peritoneal fluid and the barrier effect of the falciform ligament. Despite advances in imaging techniques, the diagnosis of diaphragmatic endometriosis remains challenging because radiological findings are often nonspecific and diaphragmatic lesions may be overlooked on routine chest computed tomography[2].

Video-assisted thoracoscopic surgery (VATS) plays a pivotal role in both diagnosis and treatment by allowing direct visualization of thoracic lesions, histopathological confirmation, and simultaneous surgical management[3]. However, reports of recurrent catamenial hemopneumothorax caused by histologically confirmed diaphragmatic endometriosis remain limited in the literature[2]. We report a 44-year-old woman presenting with recurrent right-sided catamenial hemopneumothorax in whom VATS revealed multiple diaphragmatic lesions and a diaphragmatic defect, with subsequent histopathological confirmation of diaphragmatic endometriosis. This case highlights the importance of recognizing the relationship between thoracic symptoms and menstruation and underscores the diagnostic and therapeutic value of VATS in patients with suspected TES.

CASE DESCRIPTION

A 44-year-old woman presented with recurrent right-sided hemopneumothorax. Her medical history was notable for infertility requiring in vitro fertilization and a previous caesarean section. She reported irregular menstrual cycles and severe dysmenorrhea but had no history of smoking, chronic lung disease, thoracic trauma, or previous thoracic surgery. She had no known history of pelvic endometriosis. Two months before the current admission, she was treated for a right-sided hemopneumothorax. Chest tube drainage yielded approximately 500 ml of bloody pleural fluid. Bronchoscopy, pleural fluid cytology, and investigations for infectious causes, including tuberculosis, were unremarkable. No definitive etiology was identified at that time.

The patient was readmitted with progressive right-sided chest pain and dyspnoea that developed on the second day of menstruation. Upon further review of her medical history, both episodes of hemopneumothorax were found to have occurred within the first 72 hours of menstrual onset. Physical examination revealed decreased breath sounds over the right hemithorax, while vital signs remained stable.

Laboratory investigations demonstrated a hemoglobin level of 113 g/l and a haematocrit of 34.8%. Chest radiography and computed tomography revealed a right-sided pneumothorax associated with pleural effusion, without evidence of pulmonary parenchymal lesions or an identifiable cause of the recurrent hemopneumothorax *(Fig. 1)*.

Given the recurrence of the condition and the absence of a clear etiology despite previous investigations, VATS was undertaken for both diagnostic and therapeutic purposes.

Thoracoscopic exploration revealed approximately 500 ml of old blood within the pleural cavity and partial adhesions between the right lower lobe and the chest wall. After evacuation of the retained blood and adhesiolysis, multiple dark-red nodules measuring approximately 5 mm in diameter were identified on the central tendon of the right hemidiaphragm. In addition, a diaphragmatic defect measuring approximately 1 cm was observed within the affected area *(Fig. 2)*. These findings were highly suggestive of diaphragmatic endometriosis in the context of recurrent catamenial hemopneumothorax.

The involved diaphragmatic tissue was resected using an endoscopic stapling device. The staple line was reinforced with continuous 2-0 polypropylene sutures. Mechanical

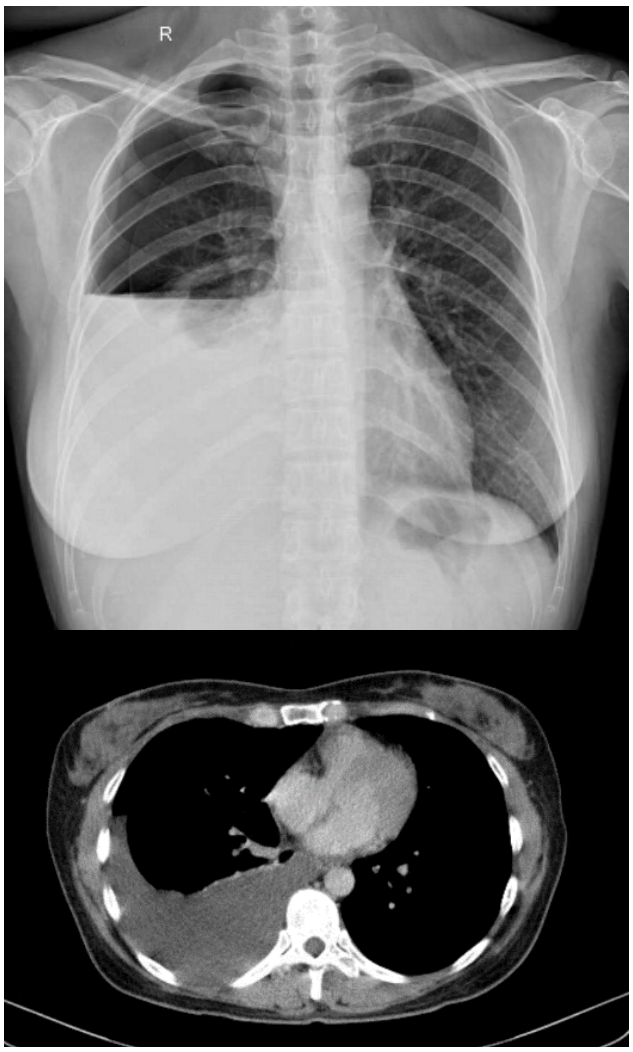


Figure 1. Chest radiograph and computed tomography image showing right-sided hemopneumothorax.

pleurodesis was subsequently performed by parietal pleurectomy to reduce the risk of recurrence *(Fig. 3)*.

Histopathological examination demonstrated endometrial glands and stroma within the diaphragmatic tissue, confirming the diagnosis of diaphragmatic endometriosis *(Fig. 4)*.

The postoperative course was uneventful. Chest radiography confirmed complete lung re-expansion, and the chest tube was removed according to the clinical course. The patient was discharged on postoperative day 5 in stable condition. Postoperatively, she received intramuscular medroxyprogesterone acetate (Depo-Provera®) at a dose of 150 mg every 2 months. At 1- and 3-month follow-up visits, she remained asymptomatic with no evidence of recurrence on clinical or radiological evaluation.

DISCUSSION

TES is an uncommon manifestation of extrapelvic endometriosis and represents the most frequent site of endometriosis outside the abdominopelvic cavity[4]. Catamenial pneumothorax accounts for the majority of TES cases, whereas catamenial hemopneumothorax is considerably less common[4]. The present case is noteworthy because the patient experienced recurrent right-sided hemopneumothorax associated with menstruation and was ultimately diagnosed with histologically confirmed diaphragmatic endometriosis.

Several mechanisms have been proposed to explain thoracic endometriosis. The most widely accepted theory is retrograde menstruation, whereby endometrial tissue reaches the peritoneal cavity through the fallopian tubes and subsequently migrates to the thoracic cavity through congenital or acquired diaphragmatic defects[5]. This theory may explain the marked predominance of right-sided disease, which has been attributed to the clockwise circulation of peritoneal fluid and the protective barrier effect of the falciform ligament. In our patient, the presence of multiple diaphragmatic lesions and a diaphragmatic defect on the right hemidiaphragm strongly supports this pathogenetic mechanism.

The diagnosis of diaphragmatic endometriosis remains challenging because clinical manifestations are often nonspecific and imaging findings may be subtle or absent[3]. In many patients, chest radiography and computed tomography reveal only secondary findings such as pneumothorax or pleural effusion without identifying

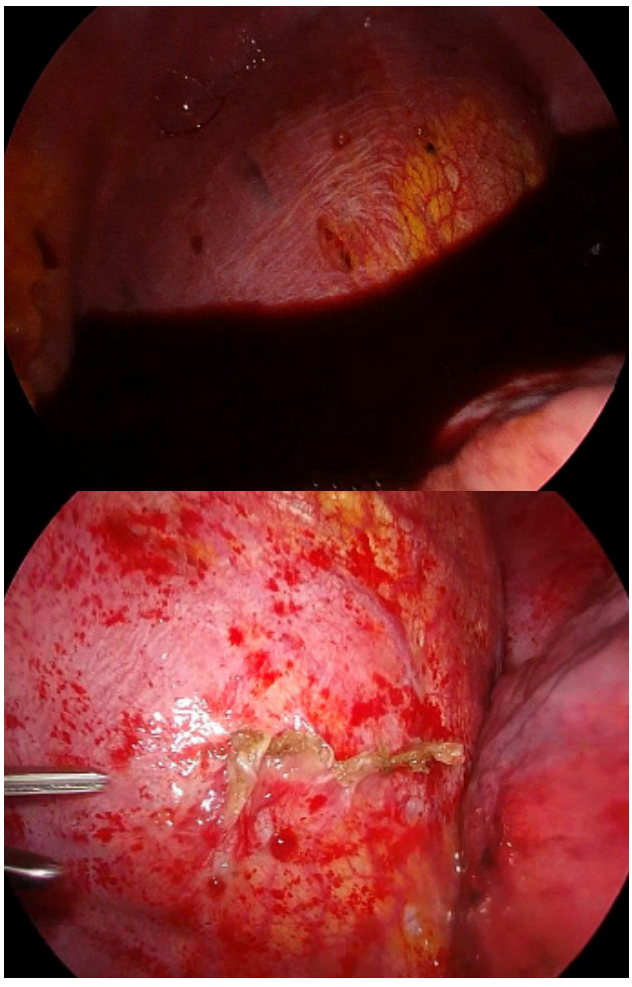


Figure 2. Thoracoscopic appearance of diaphragmatic endometriosis showing multiple dark-red diaphragmatic lesions and a diaphragmatic defect.

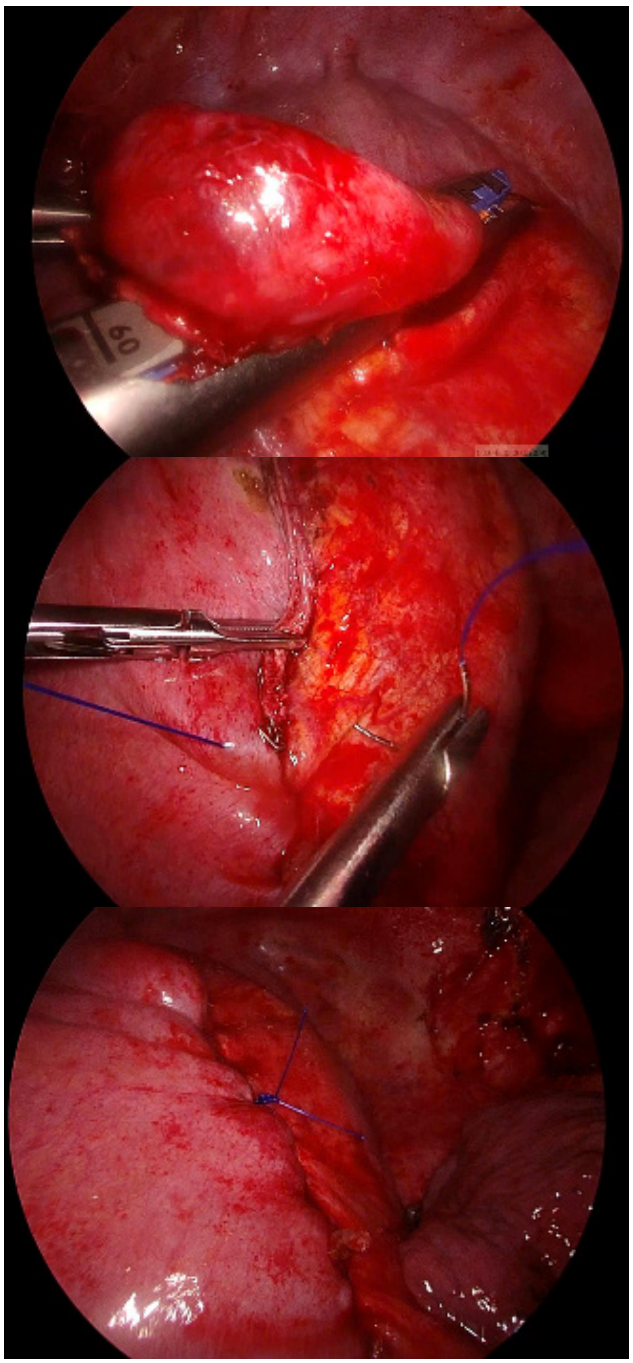


Figure 3. Surgical management of the diaphragmatic lesions by stapled resection followed by reinforcement of the staple line with continuous 2-0 polypropylene sutures.

the underlying lesion. Although magnetic resonance imaging may improve the detection of diaphragmatic involvement, its sensitivity remains limited[1]. In the present case, neither chest radiography nor computed tomography demonstrated the diaphragmatic lesions that were subsequently identified during thoracoscopic exploration.

Video-assisted thoracoscopic surgery is currently considered the cornerstone of both diagnosis and treatment in patients with suspected thoracic endometriosis. VATS enables direct visualization of pleural and diaphragmatic lesions, facilitates histopathological confirmation, and allows definitive surgical management during the same procedure[3]. In our patient, thoracoscopy revealed characteristic dark-red diaphragmatic nodules and a diaphragmatic defect that had not been detected on preoperative imaging. Surgical resection of the affected diaphragmatic tissue, repair of the diaphragmatic defect, and pleurodesis were performed to reduce the risk of recurrence.

Postoperative hormonal therapy is frequently recommended because microscopic endometriotic foci may persist despite apparently complete surgical resection. Combined surgical and hormonal treatment has been associated with lower recurrence rates compared with either modality alone[1]. Accordingly, our patient received postoperative medroxyprogesterone acetate and remained free of recurrence during the follow-up period.

A comparison of our patient with previously published reports is presented in *Table 1*[1,6-10]. Several findings in the present case are consistent with the characteristic features of TES described in the literature. First, the disease occurred in a woman of reproductive age and manifested as recurrent right-sided thoracic symptoms temporally related to menstruation. Similar right-sided predominance has been consistently reported in previous studies and is thought to result from preferential transdiaphragmatic migration of endometrial tissue through the right hemidiaphragm.

Second, diaphragmatic involvement was a prominent finding in our patient. Thoracoscopic exploration revealed multiple dark-red nodules and a diaphragmatic defect measuring approximately 1 cm. Comparable diaphragmatic abnormalities, including endometriotic implants, fenestrations, and diaphragmatic defects, have been reported in several published cases. These observations further support the hypothesis that diaphragmatic lesions play a central role in the pathogenesis of TES.

Third, our case highlights the limitations of conventional imaging. Despite recurrent episodes of hemopneumothorax, neither chest radiography nor computed tomography scan identified the underlying diaphragmatic pathology. This finding is consistent

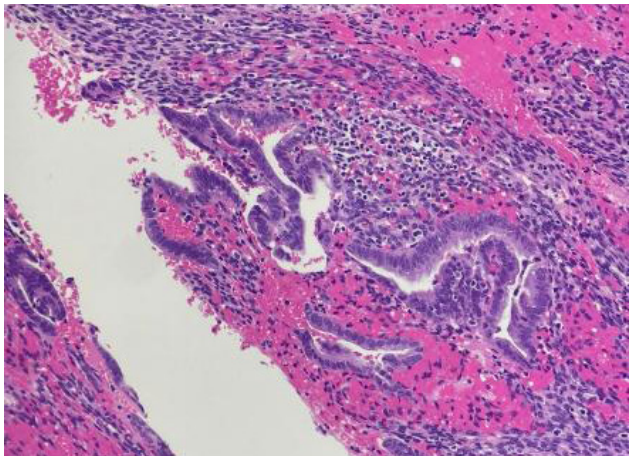


Figure 4. Histopathological examination demonstrating endometrial glands and stroma within the diaphragmatic tissue, confirming diaphragmatic endometriosis.

Author (Year)	Age (years)	Presentation	Side	Diaphragmatic findings	Surgical management	Hormonal therapy	Follow-up	Recurrence
Nezhat et al.[1]	NR	Diaphragmatic endometriosis	Right predominant	Diaphragmatic endometriotic lesions	Combined thoracoscopy/ laparoscopy	Yes	NR	NR
Aissa S et al.[6]	42	Catamenial pneumothorax	Right	Multiple diaphragmatic fenestrations	VATS diaphragmatic resection and pleural abrasion	GnRH agonist	20 months	No
Bobbio et al.[7]	NR	Thoracic endometriosis syndrome other than pneumothorax	Predominantly right	Variable diaphragmatic lesions	VATS-based treatment	Variable	NR	NR
Dong et al.[8]	43	Recurrent catamenial pneumothorax	Right	Multiple diaphragmatic defects	Uniportal VATS, diaphragmatic lesion excision	Yes	NR	NR
Ganesan et al.[9]	NR	Recurrent catamenial pneumothorax	Right	Diaphragmatic endometriosis	Surgical treatment	NR	NR	NR
Respir Med Case Rep[10]	NR	Catamenial pneumothorax	Right	Histologically confirmed diaphragmatic endometriosis	Surgical resection	Hormonal therapy	4 years	No
Present case	44	Recurrent catamenial hemopneumothorax	Right	Multiple dark-red nodules and 1-cm diaphragmatic defect	VATS diaphragmatic resection, repair, and pleurodesis	Medroxyprogesterone acetate	3 months	No

Table 1. *Selected published reports of thoracic endometriosis with diaphragmatic involvement.*
Abbreviations: NR, not reported; VATS, video-assisted thoracoscopic surgery; GnRH, gonadotropin-releasing hormone.

with previous reports demonstrating that radiological investigations frequently reveal only secondary manifestations such as pneumothorax or pleural effusion, whereas definitive diagnosis often requires surgical exploration.

A notable feature of the present report is the occurrence of recurrent catamenial hemopneumothorax rather than isolated pneumothorax. Most published cases of TES involve catamenial pneumothorax, whereas hemopneumothorax remains substantially less common. The coexistence of pleural bleeding and pneumothorax in our patient may reflect both diaphragmatic tissue disruption and cyclic haemorrhage from ectopic endometrial implants.

In agreement with current recommendations, our patient underwent VATS with resection of the affected diaphragmatic tissue, repair of the diaphragmatic defect, and pleurodesis. Histopathological examination confirmed the diagnosis of diaphragmatic endometriosis. Similar surgical strategies have been reported in the literature and are generally associated with favourable outcomes, particularly when combined with postoperative hormonal suppression.

Although the follow-up period in our case was limited to 3 months, no recurrence was observed. Longer follow-up will be necessary to determine the durability of treatment because recurrence may occur months or years after surgery. Nevertheless, the favourable early outcome observed in our patient supports the role of combined surgical and hormonal management for patients with TES.

This case emphasizes the importance of obtaining a detailed menstrual history in women of reproductive age presenting with recurrent spontaneous pneumothorax, haemothorax, or hemopneumothorax. Recognition of the temporal relationship between thoracic symptoms and menstruation may provide a crucial diagnostic clue. When conventional investigations fail to identify the underlying cause, VATS should be considered because it offers both definitive diagnosis and effective treatment.

To the best of our knowledge, reports of histologically confirmed diaphragmatic endometriosis presenting as recurrent catamenial hemopneumothorax remain extremely limited in the literature. Further studies are needed to better define the optimal diagnostic and therapeutic strategies for this uncommon condition.

Taken together, the findings of the present case and the reviewed literature suggest that diaphragmatic inspection should be considered mandatory during thoracoscopic evaluation of women presenting with recurrent catamenial pneumothorax, haemothorax, or hemopneumothorax.

The present report has several limitations. First, the

follow-up duration was limited to 3 months, precluding assessment of long-term recurrence. Second, magnetic resonance imaging was not performed preoperatively. Finally, this is a single-case report, and the findings may not be generalizable to all patients with TES.

CONCLUSION

Recurrent catamenial hemopneumothorax should prompt consideration of TES, particularly in women of reproductive age with right-sided disease. Because imaging findings may be inconclusive, VATS remains the diagnostic and therapeutic cornerstone, allowing identification and treatment of diaphragmatic endometriosis. Early recognition and multidisciplinary management may help reduce diagnostic delay and improve clinical outcomes.

REFERENCES

1. Nezhat C, Nicoll LM, Bhagan L, Huang JQ, Bosev D, Hajhosseini B, et al. Endometriosis of the Diaphragm: Four Cases Treated with a Combination of Laparoscopy and Thoracoscopy. J Minim Invasive Gynecol. 2009;16(5):573–80. doi:10.1016/j.jmig.2009.06.012.
2. Korom S, Canyurt H, Missbach A, Schneiter D, Kurrer MO, Haller U, et al. Catamenial pneumothorax revisited: Clinical approach and systematic review of the literature. J Thorac Cardiovasc Surg. 2004;128(4):502–8. doi:10.1016/j.jtcvs.2004.04.039.
3. McKee DC, Mansour T, Wasson MN. Thoracic and diaphragmatic endometriosis: an overview of diagnosis and surgical treatment. Curr Opin Obstet Gynecol. 2022;34(4):204–9. doi:10.1097/GCO.0000000000000792.
4. Ciriaco P, Muriana P, Carretta A, Ottolina J, Candiani M, Negri G. Catamenial Pneumothorax as the First Expression of Thoracic Endometriosis Syndrome and Pelvic Endometriosis. J Clin Med. 2022;11(5):1200. doi:10.3390/jcm11051200.
5. Joseph J, Sahn SA. Thoracic endometriosis syndrome: new observations from an analysis of 110 cases. Am J Med. 1996;100(2):164–70. doi:10.1016/s0002-9343(97)89454-5.
6. Aissa S, Benzarti W, Alimi F, Gargouri I, Salem HB, Aissa A, et al. Catamenial pneumothorax revealing diaphragmatic endometriosis: a case report and revue of literature. Pan Afr Med J. 2017;27:112. doi:10.11604/pamj.2017.27.112.8007.
7. Bobbio A, Canny E, Lupo AM, Lococo F, Legras A, Magdeleinat P, et al. Thoracic Endometriosis Syndrome Other Than Pneumothorax: Clinical and Pathological Findings. Ann Thorac Surg. 2017;104(6):1865–71. doi:10.1016/j.athoracsur.2017.06.049.
8. Dong B, Wu CL, Sheng Y liang, Wu B, Ye GC, Liu YF, et al. Catamenial pneumothorax with bubbling up on the diaphragmatic defects: a case report. BMC Womens Health. 2021;21:167. doi:10.1186/s12905-021-01318-0.
9. Ganesan PR, Kang D, Khan Z, Milteer HB. Diaphragmatic Endometriosis Presenting as Recurrent Catamenial Pneumothorax: A Case Report. Cureus. 15(9):e45179. doi:10.7759/cureus.45179.
10. Koh E, Nakazawa T, Nakajima Y. Catamenial pneumothorax with histologically proven diaphragmatic endometriosis successfully managed by combined surgical resection and hormonal therapy: A four-year recurrence-free case. Respir Med Case Rep. 2025;58:102323. doi:10.1016/j.rmcr.2025.102323.