OPIS PRZYPADKU / CASE REPORT
Otrzymano/Submitted: 21.02.2025 • Zaakceptowano/Accepted: 13.06.2025

Mediastinitis and acute respiratory failure following esophageal damage after foreign body aspiration – case report and literature review

Julia Siek
Student Research Group at the Second Department of Anaesthesiology and Intensive Care, Medical University of Lublin

Abstract

The most common cause of esophageal perforation is instrumental procedures performed during endoscopy. The esophagus is home to both commensal microorganisms and those acquired in hospital settings. Any loss of its structural integrity can lead to mediastinitis, an infection that affects the connective tissue and anatomical structures within the mediastinum. Mediastinitis is considered a rare but serious infection with a high potential for complications. Esophageal perforation that results in mediastinitis can cause acute respiratory failure, which may manifest as increasing dyspnea, tachypnea, and cyanosis, particularly noticeable in the lips and distal extremities. In this paper, we present a clinical case of a patient with schizophrenia who experienced esophageal perforation after swallowing a dental prosthesis, which subsequently led to the development of mediastinitis. *Anestezjologia i Ratownictwo 2025; 19: 77-84. doi:10.53139/AIR.20251915*

Keywords: acute respiratory failure, ARF, esophageal rupture, ER, intensive care unit, ICU

Introduction

Acute esophageal rupture is a rare condition (3.1 per 1,000,000 per year) that leads to increased mortality due to accompanying complications such as chemical mediastinitis with mediastinal emphysema, inflammation, and subsequently acute respiratory failure (ARF). The most common causes of esophageal rupture (ER) are instrumental procedures during endoscopy and foreign body ingestion accounts for 12% of cases [1]. The clinical manifestations of esophageal perforations depend on several factors including the etiology of the perforation, the location of the perforation (cervical, intrathoracic, or intra-abdominal), the severity of contamination, injury of nearby mediastinal structures, and the time elapsed from the perforation until treatment [2-4]. In patients with esophageal perforations mortality can reach as high as 36% to 50%.

Early diagnosis and intervention play a vital role in maximizing favorable outcomes for esophageal rupture. Open surgical intervention has traditionally been the standard in the management of esophageal perforation, but in recent years there was a shift toward an endoluminal strategy. Several single-center studies demonstrate a significant decrease of almost 50% in mortality and hospital length of stay when patients present less than 24 hours after perforation [5,6].

Mediastinitis occurs in 1 % of patients after esophageal rupture [7]. Other life-threatening sequellae include ARF. ARF is defined as the inability of the respiratory system to meet the oxygenation, ventilation, or metabolic requirements of the patient.

This study aims to present a case report of a patient following an esophageal rupture, complications including ARF and mediastinitis. Moreover, we did a literature review according to the presented case.

Case report

A 50-year-old patient in very serious condition was admitted to the University Hospital for an esophageal perforation caused by a swallowed denture. Initially, the patient was treated at a regional hospital, where the denture was removed using an endoscopy. Additionally, the patient had a history of paranoid schizophrenia. Initially, the patient was ventilated in the PRVC-SIMV mode (FiO_2 0.5-0.6, TV 500-550 ml, PEEP 5-8 cmH_2O). Analgesic sedation with fentanyl and propofol was implemented (RASS -3 to -4). Subcutaneous emphysema persisted in the neck area. Hemodynamic parameters were monitored using the transpulmonary thermodilution method; the circulatory system required noradrenaline infusion for a longer period of time. Diuresis was spontaneous. Enteral feeding by tube and fluid and electrolyte supplementation were implemented.

In the following days, gradual improvement was observed: reduction of sedation, improvement of ventilation parameters (change of SIMV mode to CPAP/PS), gradual transition to ventilation through a tracheostomy tube, and then passive oxygen therapy. Despite this, episodes of agitation, vomiting, retention of secretions in the respiratory tract and fever occurred periodically. Sedation treatment was modified using dexmedetomidine. A control lung ultrasound revealed persistent fluid in the right pleural cavity and traces of parabasal atelectasis. The postoperative wound required a vacuum system (VAC). Antibiotic therapy (piperacillin/tazobactam) at a dose of 4.5 g intravenously every 6 hours (4 g piperacillin and 0.5 g tazobactam) and antifungal therapy (fluconazole) at a single dose of 800 mg, and later 400 mg intravenously daily were conducted in accordance with the current clinical situation and test results.

Contrast-enhanced CT scan of the neck and chest revealed changes suggesting a previous rupture of the esophagus. A narrow rim of gas was visible around the upper esophagus (above the level of the aortic arch) and trace amounts of oral contrast medium, as well as thickening of adipose tissue, which indicated an inflammatory reaction of the tissues adjacent to the esophagus. In addition, there was a small amount of free gas in the soft tissues of the base of the neck and nape. In the lower lobes of the lungs, extensive parenchymal densities were visualized, with the nature of inflammatory infiltrates, and a moderate amount of fluid in the pleural cavities (up to 24 mm on the right side and 17 mm on the left). The mediastinal and axillary lymph nodes did not show signs of pathological enlargement. Additionally, heterogeneity of the left thyroid lobe, probably of iatrogenic nature, and a cystic change in the chest wall at the level of the second intercostal space on the left side were described. The changes in the imaging examination correlated with the patient's clinical condition and were the basis for further intensive treatment.

On the sixth day of his stay in the ward, the patient was extubated and mechanical ventilation was terminated. The general condition stabilized. The patient

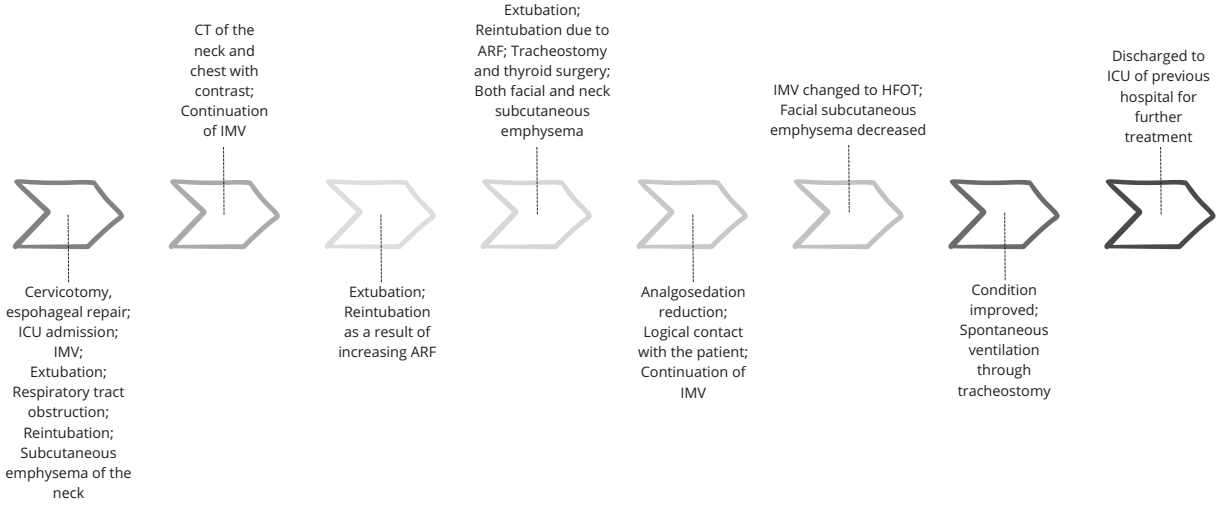

Figure 1. Chronological arrangement of procedures that were performed on the patient in the ICU

Table I. Test results on the day of admission and on the day of discharge

PARAMETER [UNIT]	VALUE ON THE DAY OF ADMISSION	VALUE ON THE DAY OF DISCHARGE
CREATININE [mg/dl]	1.54	0.82
UREA [mg/dl]	41.9	16.1
AMYLASE [IU/l]	242	165
TOTAL BILIRUBIN [mg/dl]	3.35	1.69
CRP [mg/l]	219.6	69.9
LIPASE [IU/l]	129	59
WBC [K/ul]	13.78	12.45
PROCALCITONIN [ng/ml]	13.48	0.98

breathed spontaneously through the tracheostomy tube at FiO_2 0.3, without signs of acute respiratory failure. The circulatory system was efficient. Enteral nutrition was continued. Diuresis was maintained. After stabilization of the clinical condition, the patient was discharged for further treatment at SPZZOZ in Łuków.

Discussion

Mediastinitis is an inflammation of the tissues in the mediastinum, which is the anatomical space in the chest located between the lungs. This area encompasses the heart, major blood vessels (such as the aorta and vena cava), the trachea, the esophagus, lymph nodes, nerves, and various other structures [8]. Mediastinitis is a severe and potentially life-threatening condition that typically arises as a complication of surgical procedures- such as cardiac surgery performed through the sternum- penetrating trauma, or perforation of the esophagus.

Mediastinitis can be categorized based on the disease's course, location, and underlying causes.

Clinical Course

The first division is based on the clinical course of the condition, which can be classified as acute or chronic. Acute Mediastinitis: This form has a rapid onset of symptoms and progresses swiftly, often presenting features of sepsis [9]. It is commonly associated with perforation of the esophagus, postoperative complications, or odontogenic infections. Acute mediastinitis requires urgent surgical intervention and antibiotic therapy. Chronic Mediastinitis: In contrast, chronic mediastinitis develops slowly, displaying milder symptoms. This type may result from conditions such as tuberculosis, fungal infections (e.g., histoplasmosis), autoimmune diseases, or chronic infections. Treatment for chronic mediastinitis typically does not require immediate intervention and is often conservative, aimed at addressing the underlying cause [9].

Anatomical Location

The second classification considers the anatomy, specifically the location of the inflammation. According to the classification by Endo et al. (1999) regarding descending necrotizing mediastinitis (DNM), we can distinguish the following types [10]:

- Type I: Inflammation localized to the upper mediastinum (above the trachea bifurcation).
- Type IIA: Inflammation affecting the anterior part of the lower mediastinum.
- Type IIB: Inflammation involving both the anterior and posterior parts of the lower mediastinum.

This anatomical classification is crucial for planning surgical access strategies, whether through the neck, sternum, or thoracotomy.

Aetiological Factors

Another way to classify mediastinitis is by its aetiology (underlying cause). This leads to four subcategories:

1. Postoperative mediastinitis (often following median sternotomy).
2. Descending necrotizing mediastinitis.
3. Inflammation due to esophageal perforation.
4. Inflammation resulting from infectious diseases.

Additionally, a pathomorphological division can be made, which includes purulent mediastinitis, necrotizing mediastinitis, and fibrosing mediastinitis [11].

The aetiology of mediastinitis is varied and depends on whether it is acute or chronic. For acute

mediastinitis, the most common cause is the perforation of the esophagus, which can occur spontaneously (for example, in Boerhaave's syndrome) or be iatrogenic, resulting from diagnostic or therapeutic procedures in the gastrointestinal tract [12]. Another significant cause is descending necrotizing mediastinitis, which can arise from infections in the neck and oral cavity, such as peritonsillar abscesses, Ludwig's angina, or odontogenic infections [12]. Acute mediastinitis can also be caused by chest injuries and postoperative complications, particularly after cardiac surgery, where an infected sternal wound can lead to a deep infection in the mediastinum [13]. Chronic mediastinitis is predominantly associated with tuberculosis and fungal infections, including histoplasmosis and aspergillosis, especially in patients with compromised immune systems [13]. Additionally, idiopathic fibrosing mediastinitis should be considered; this condition may stem from radiotherapy or autoimmune processes related to IgG4-dependent inflammation [14]. Chronic inflammation due to actinomycosis, viral infections, or secondary infections associated with neoplastic diseases or immunosuppression occurs less frequently [15]. The complexity of the aetiology of mediastinitis necessitates an interdisciplinary approach and timely diagnosis to improve outcomes.

The symptoms of mediastinitis can vary based on its form, location, and the speed at which the inflammatory process develops. In the acute form of the disease, patients often experience rapid systemic symptoms, including high fever, chills, significant weakness, tachycardia, and signs of septic shock [15]. Severe chest pain is common, often radiating to the neck, shoulders, or back, and it may worsen during swallowing, coughing, or deep breathing [16]. Other symptoms can include shortness of breath, difficulty swallowing (dysphagia), hoarseness, or changes in voice tone, which may indicate involvement of the laryngeal nerves. If the condition has an esophageal origin, patients might also experience odynophagia (painful swallowing), gastrointestinal bleeding, or the escape of food from a surgical drainage site. In cases where inflammation spreads from the neck, symptoms may include neck swelling, pain upon palpation, and redness or skin tension [17]. Radiological findings such as mediastinal widening, gas in the mediastinal space, pleural effusion, or pneumomediastinum can aid in confirming the diagnosis [17]. In chronic forms of inflammation, such as fibrosing mediastinitis, the symptoms are usually less severe. Here, symptoms may include chronic dyspnea (shortness of breath), cough, superior vena cava syndrome, or cardiac arrhythmias due to compression of anatomical structures [17]. Because the symptoms can be nonspecific, diagnosing mediastinitis requires careful clinical assessment and prompt imaging studies [18].

Surgical treatment is crucial for severe and progressive forms of mediastinitis, particularly in acute cases, where quick intervention can be vital for the patient's survival. The choice of surgical method depends on the location and extent of the inflammation, and both open and minimally invasive techniques can be employed [18]. The traditional approach is thoracotomy, which provides wide access to the mediastinum. This method allows for the effective evacuation of abscesses and necrotic tissue, as well as the drainage of the mediastinal cavity [19]. In cases of descending necrotizing mediastinitis, multiple surgical approaches may be necessary, such as combining cervical cervicotomy with lateral thoracotomy. This technique enables thorough cleaning of the mediastinal space from both the neck and the chest [20]. In recent years, minimally invasive techniques like video-assisted thoracoscopic surgery (VATS) have gained popularity. These methods allow for the precise removal of inflammatory material and drainage with reduced trauma to the patient. Additionally, in cases of post-traumatic or post-operative infections linked to the sternum (such as those following sternotomy), surgical interventions may include wound revision, resection of the infected sternum, and reconstructive techniques using muscle flaps, such as the pectoralis major muscle flap [21]. The choice of the appropriate surgical method relies on the patient's overall condition, the progression of the inflammatory process, and the expertise and availability of the surgical team. Successful surgical management of mediastinitis requires close interdisciplinary collaboration, which includes intensive antibiotic therapy and systemic support [22].

Mediastinitis is a rare but potentially life-threatening condition, with its incidence varying based on factors such as the cause, geographical location, and the availability of modern diagnostic and therapeutic methods [23]. The most common type is postoperative mediastinitis, particularly seen after cardiac surgery involving median sternotomy; its incidence is estimated to range from 0.25% to 5% of all sternotomies. Patients with diabetes, obesity, or chronic renal failure

are at an increased risk for developing this condition [24]. Another less common form, known as descending necrotizing mediastinitis, is associated with high mortality rates, reaching 40-50%, especially when diagnosis and treatment are delayed. In developed countries, cases of mediastinitis linked to esophageal infections (such as iatrogenic perforations) are increasingly being diagnosed due to advancements in imaging techniques, potentially improving treatment outcomes [25]. Despite its low overall incidence, mediastinitis necessitates a high level of clinical vigilance due to its rapid progression and the risk of life-threatening complications. In Poland, data from 2009 to 2016 indicate an average annual incidence of mediastinitis at 4.8 cases per million inhabitants (95% Confidence Interval: 4.3-5.3), accounting for approximately 9.7% of all hospitalizations for lung and mediastinal abscesses [25]. Globally, postoperative mediastinitis occurs with a frequency of 0.25% to 5%, with most cardiac surgery centers reporting rates below 2% [25]. Even with advancements in surgical techniques and antibiotic prophylaxis, the mortality associated with this form of mediastinitis remains significant, ranging from 2% to 8%, and can rise to 14% in patients with concurrent chronic illnesses [25]. Descending necrotizing mediastinitis, which often results from neck and oral infections, constitutes about 2-5% of deep neck infections and is marked by a high mortality rate that varies across studies, ranging from 19% to 47%, depending on the cause and the timeliness of treatment [25]. Chronic forms of mediastinitis, such as fibrosing mediastinitis, are rare and typically occur in regions endemic to fungi like Histoplasma capsulatum. In the United States, it is estimated that several hundred individuals are living with this chronic condition [26].

Mediastinitis, particularly in its acute form, is associated with a high risk of severe complications that can significantly worsen the prognosis. The most commonly observed complications include generalized sepsis, septic shock, and multi-organ failure. The spread of infection may result in abscess formation within the mediastinum and chest, as well as the involvement of nearby structures. This can affect the pleura (leading to empyema), pericardium (potentially resulting in purulent pericarditis), trachea, or large mediastinal vessels, increasing the risk of hemorrhage or vascular fistulas. In patients who have undergone sternotomy, there is a risk of sternum destabilization, tissue necrosis, and the possible need for resection and reconstruction using muscle flaps. In cases of chronic mediastinitis, particularly those of a fibrosing nature, there may be compression of mediastinal structures such as the superior vena cava, bronchi, or esophagus [26]. This can lead to superior vena cava syndrome, dyspnea, dysphagia, and progressive respiratory failure. Additionally, the long-term progression of the disease can result in the formation of cutaneous-mediastinal fistulas and adhesions, complicating future surgical interventions. Given the severity of these complications, mediastinitis requires intensive treatment and close clinical monitoring [27].

The development of mediastinitis is influenced by various risk factors, both internal and iatrogenic. The key predisposing factors include surgical procedures involving the chest, particularly sternotomy. This procedure carries the risk of infection in the sternal sutures and surrounding tissues, potentially allowing pathogens to enter the mediastinal space [27]. Other significant contributors to mediastinitis include penetrating injuries and perforations of the esophagus, which may occur due to endoscopic interventions or spontaneous ruptures, such as in Boerhaave's syndrome [28]. Additionally, neoplastic diseases affecting the esophagus that infiltrate structures in the mediastinum also heighten the risk of infection. Patients with compromised immune systems, such as those who have undergone organ transplants, individuals on immunosuppressive therapy, and diabetics, are at a greater risk [29]. Infections present in the oral cavity, as well as throat and neck infections, can spread to the mediastinum in a descending manner, further increasing the risk [30]. Improper perioperative management- particularly the failure to administer adequate antibiotic therapy and maintain wound hygiene- also raises the likelihood of infection [31]. Considering these factors is crucial when selecting patients for surgical procedures and during their postoperative care to identify and prevent the onset of mediastinitis early.

The presented case demonstrated successful treatment of a patient with an esophageal rupture and mediastinitis. Although this condition is relatively rare, it has a high mortality rate. Early diagnosis is the most critical factor in recognizing an esophageal rupture. However, computed tomography confirmed the diagnosis in only 38.7% of cases [32]. Other techniques, such as endoscopy and contrast esophagogram, identified esophageal rupture in 37.4% and 36.6% of patients, respectively [32]. Therefore, clinical symp-

toms play a crucial role in helping physicians make an accurate diagnosis.

Esophageal rupture can present various signs and symptoms, including sharp, severe chest pain that may radiate to the back or shoulder. Other symptoms can include nausea, vomiting, and shortness of breath. Typically, the patient may also exhibit subcutaneous emphysema along with pain and vomiting, known as the Mackler triad. However, chest pain is present in only 70% of esophageal rupture cases. In most clinical scenarios, the thoracic portion of the esophagus is injured (76%) [32]. In our case, the patient swallowed a denture, causing a rupture in the cervical esophagus, which occurs in up to 15.2% of cases [33].

The timing of surgical intervention is a crucial factor. In our case, definitive surgery was performed three days after the injury, which is a relatively long period following the rupture. Literature suggests that the esophagus should be treated within 24 hours of perforation. After 48 hours, the mortality rate may rise to 60% [33]. Currently, endoscopic repair of the esophageal perforation is the most common technique, with success rates ranging from 59% to 83% [33].

In our patient, the surgeons opted for a cervicotomy and sutured the esophageal perforation, which remains the gold standard of care for this condition. However, a multivariate analysis indicated that intraoperative steroids may help protect against acute respiratory failure. In cases of mediastinitis, broad-spectrum antibiotics, including antifungal agents, are necessary.

Acute mediastinitis arises from a breach of the wall's integrity, either through direct injury or as a result of an infectious process. Most cases are caused by gram-positive bacteria, particularly Staphylococcus aureus, coagulase-negative staphylococci, and streptococci, which account for 60% to 80% of instances [33]. Other pathogens, including gram-negative bacteria and occasionally fungi, can also cause mediastinitis.

Typical complications of mediastinitis include pericarditis, pneumonia, sepsis, obstructed airways, severe bleeding or hemoptysis, cor pulmonale, and multiorgan failure. In our patient, airway obstruction and pneumonia were present, but we did not observe cardiac instability or arrhythmias, which are often noted in similar cases. The treatment for mediastinitis includes broad-spectrum antibiotics and surgical intervention. We continued a 7-day antibiotic regimen with piperacillin/tazobactam and added antifungal therapy using fluconazole, resulting in clinical improvement and reduced pro-inflammatory parameters.

Conclusions

Esophageal perforation is a rare but life-threatening condition that can arise from various causes. Quick diagnosis and treatment are crucial. The standard approach to treatment typically involves surgical intervention and the use of broad-spectrum antibiotics. A significant complication associated with esophageal rupture in our patient is mediastinitis, which can lead to extended respiratory failure and longer hospital stays.

Conflict of interest
None

ORCID
Julia Siek 0000-0002-9634-0047

Correspondence address
Julia Siek
Studenckie Koło Naukowe przy II Klinice Anestezjologii i Intensywnej Terapii Uniwersytet Medyczny w Lublinie
ul. Staszica 16 (SPSK Nr 1); 20-081 Lublin
☎ (+48 81) 532 27 13
siekjj@gmail.com

References

1. Panneerselvam K, Samuel R, Sealock RJ. Esophageal Perforation Successfully Treated With EVT. ACG Case Rep J. 2022;9(1):e00711. doi: 10.14309/crj.0000000000000711.
2. Milosavljevic T, Popovic D, Zec S, et al. Accuracy and Pitfalls in the Assessment of Early Gastrointestinal Lesions. Dig Dis. 2019;37(5):364-373. doi: 10.1159/000495849.
3. Kupeli M, Dogan A. Successful Treatment of a Late Diagnosed Esophageal Perforation with Mediastinitis and Pericardial Abscess. J Coll Physicians Surg Pak. 2018;28(12):972-3. doi: 10.29271/jcpsp.2018.12.972.

4. Watkins JR, Farivar AS. Endoluminal Therapies for Esophageal Perforations and Leaks. Thorac Surg Clin. 2018;28(4):541-54. doi: 10.1016/j.thorsurg.2018.07.002.
5. Onat S, Ulku R, Cigdem KM, et al. Factors affecting the outcome of surgically treated non-iatrogenic traumatic cervical esophageal perforation: 28 years experience at a single center. J Cardiothorac Surg. 2010;5(1):46. doi: 10.1186/1749-8090-5-46.
6. Chen Y, Jia Y, Peng Z, et al. Successful Management of Esophageal Perforation by Intraoperative Microscopy and Esophagoscopic Assistance: A Case Report. Ear Nose Throat J. 2022;101(8):526-531. doi: 10.1177/01455613221091083.
7. Eroğlu A, Aydın Y, Yılmaz Ö. Minimally invasive management of esophageal perforation. Turk Gogus Kalp Damar Cerrahisi Derg. 2018;26(3):496-503. doi: 10.5606/tgkdc.dergisi.2018.15354.
8. Sdralis EIK, Petousis S, Rashid F, et al. Epidemiology, diagnosis, and management of esophageal perforations: systematic review. Dis Esophagus. 2017;30:1-6. doi: 10.1093/dote/dox013.
9. Manoharan D, Srivastava DN, Madhusudhan KS. Spontaneous Rupture of an Esophageal Mucocele Into the Airway. ACG Case Rep J. 2019;6(12):e00285. doi: 10.14309/crj.0000000000000285.
10. Kaman L, Iqbal J, Kundil B, Kochhar R. Management of Esophageal Perforation in Adults. Gastroenterology Res. 2010;3(6):235-44. doi: 10.4021/gr263w.
11. El-Sourani N. Esophageal perforation: diagnosis, management and decision-making - a retrospective tertiary centre study. Turk J Surg. 2021;37(4):342-6. doi: 10.47717/turkjsurg.2021.5289.
12. Cho SB, Lee WS, Joo YE, et al. Therapeutic options for iatrogenic colon perforation: feasibility of endoscopic clip closure and predictors of the need for early surgery. Surg Endosc. 2012;26(2):473-9. doi: 10.1007/s00464-011-1903-y.
13. Magdeburg R, Collet P, Post S, Kaehler G. Endoclipping of iatrogenic colonic perforation to avoid surgery. Surg Endosc 2008;22(6):1500-4. doi: 10.1007/s00464-007-9682-1.
14. Driver CN, Laporta ML, Bergese SD, et al. Frequency and Temporal Distribution of Postoperative Respiratory Depressive Events. Anesth Analg. 2021;132(5):1206-14. doi: 10.1213/ANE.0000000000005478.
15. Borsuk-De Moor A, Sysiak-Sławecka J, Rypulak E, et al. Nonstationary pharmacokinetics of caspofungin in ICU patients. Antimicrob Agents Chemother. 2020;64(9):1-13. doi: 10.1128/AAC.00345-20.
16. Piwowarczyk P, Kutnik P, Potręć-Studzińska B, et al. Hemoadsorption in isolated conjugated hyperbilirubinemia after extracorporeal membrane oxygenation support. Cholestasis of sepsis: A case report and review of the literature on differential causes of jaundice in ICU patient. Int J Artif Organs. 2019;42(5):263-8. doi: 10.1177/0391398819834012.
17. Onichimowski D, Będźkowska A, Ziółkowski H, et al. Population pharmacokinetics of standard-dose meropenem in critically ill patients on continuous renal replacement therapy: a prospective observational trial. Pharmacol Rep. 2020;72(3):719-29. doi: 10.1007/s43440-020-00104-3.
18. Fernández AL, Adrio B, Martínez Cereijo JM, et al. Clinical study of an outbreak of postoperative mediastinitis caused by Serratia marcescens in adult cardiac surgery. Interact Cardiovasc Thorac Surg. 2020;30(4):523-7. doi: 10.1093/icvts/ivz312.
19. Cho IS, Lee MH, Cho J. Rare case of postoperative mediastinitis following thyroidectomy. Korean J Clin Oncol. 2021;17(1):52-5. doi: 10.14216/kjco.21009.
20. Pastene B, Cassir N, Tankel J, et al. Mediastinitis in the intensive care unit patient: a narrative review. Clin Microbiol Infect. 2020 Jan;26(1):26-34. doi: 10.1016/j.cmi.2019.07.005.
21. Kappus S, King O. Mediastinitis. 2024 Jul 7. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2025 Jan.
22. Dong S, Dai X, Jiang Y, Zheng J. Idiopathic fibrous mediastinitis with refractory pleural effusion: a case report and literature review. J Int Med Res. 2021;49(8):3000605211040264. doi: 10.1177/03000605211040264.
23. Guo J, Lin L, Zhou H, Yang W, Shi S. Descending necrotizing mediastinitis caused by Streptococcus constellatus: A case report and review of the literature. Medicine (Baltimore). 2023;102(14):e33458. doi: 10.1097/MD.0000000000033458.
24. Tanaka S, Takizawa H, Yoshiike F, Hirai K. Multiple Tracheobronchial Diverticula Presenting with Mediastinitis. Intern Med. 2023;62(2):309-10. doi: 10.2169/internalmedicine.9769-22.
25. Garin A, Chassagnon G, Tual A, Revel MP. CT features of fibrosing mediastinitis. Diagn Interv Imaging. 2021;102(12):759-62. doi: 10.1016/j.diii.2021.05.013.
26. Nwia SM, Huebner CD, Nguyen JB. Descending necrotizing mediastinitis secondary to retropharyngeal abscess. J Radiol Case Rep. 2023;17(8):21-8. doi: 10.3941/jrcr.v17i8.5095.
27. Lozano Ros M, Rodríguez Rodríguez ML. Imaging of IgG4-related fibrosing mediastinitis. Radiologia (Engl Ed). 2021 Nov-Dec;63(6):531-3. doi: 10.1016/j.rxeng.2020.06.003.
28. Kobayashi Y, Ishiguro T, Takaku Y, et al. Clinical Features of Fibrosing Mediastinitis in Japanese Patients: Two Case Reports and a Literature Review. Intern Med. 2021;60(23):3765-72. doi: 10.2169/internalmedicine.5737-20.
29. Koliakos E, Kalogiannis E, Gussago S, Christodoulou M. Severe mediastinitis caused by an infected bronchogenic cyst. BMJ Case Rep. 2023;16(1):e253099. doi: 10.1136/bcr-2022-253099.
30. Ayvaci BM, Gökdağ E. A rare case: Descending necrotizing mediastinitis. Turk J Emerg Med. 2022;22(4):230-2. doi: 10.4103/2452-2473.357345.
31. Lazar HL. Commentary: Eliminating mediastinitis in Veterans Affairs patients-the American Association for Thoracic Surgery guidelines

to the rescue. J Thorac Cardiovasc Surg. 2021 Oct;162(4):1133-5. doi: 10.1016/j.jtcvs.2020.03.082.

32. Makhdoum A, Rushani D, Yanagawa B. Commentary: Mediastinitis postcoronary artery bypass grafting: From awfully simple to simply awful. J Thorac Cardiovasc Surg. 2021;162(4):1131-2. doi: 10.1016/j.jtcvs.2020.03.066.
33. Dumani S, Puca E, Likaj E, et al. Multidrug-Resistant Acinetobacter baumannii mediastinitis. J Infect Dev Ctries. 2024;18(7):1132-4. doi: 10.3855/jidc.18929.