Cureus
Part of SPRINGER NATURE

Open Access Case Report

Successful Conservative Management of a Contained Intrathoracic Anastomotic Leak After Ivor Lewis Esophagectomy: A Case Report

Stefan S. Guslarevic [1], Igor Nadj [1], Jasna Gacic [1], Matija Miljevic [2], Borislav Toskovic [1]

1. General Surgery, University Hospital Medical Center Bezanijska Kosa, Belgrade, SRB 2. Radiology, University Hospital Medical Center Bezanijska Kosa, Belgrade, SRB

Corresponding author: Stefan S. Guslarevic, stefan.guslarevic@gmail.com

Review began 10/15/2026
Review ended 10/27/2026
Published 10/29/2026

© **Copyright** 2026
Guslarevic et al. This is an open access article distributed under the terms of the Creative Commons Attribution License CC-BY 4.0., which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

DOI: 10.7759/cureus.118808

Abstract

Anastomotic leakage is a potentially life-threatening complication of esophagectomy. Although endoscopic and surgical interventions are frequently required, conservative management may be appropriate in selected patients with small, contained defects and adequate drainage. We report the case of a 73-year-old man who developed an intrathoracic leak following Ivor Lewis esophagectomy for distal esophageal adenocarcinoma. Increased turbid thoracic drain output raised suspicion of leakage on postoperative day (POD) 4. Computed tomography (CT) esophagogastrography on POD 6 demonstrated contrast extravasation near the esophagogastric anastomosis, and upper endoscopy identified an approximately 3-mm defect immediately distal to the anastomosis within the proximal gastric conduit. The patient remained clinically stable, with preserved conduit viability and no diffuse mediastinal contamination. Conservative treatment consisted of continued drainage through the intraoperatively placed thoracic drain, placement of a nasojejunal feeding tube for enteral nutritional support, antimicrobial therapy, and close monitoring. Drain output ceased by POD 12, and endoscopy on POD 14 confirmed closure of the defect. Repeat CT esophagogastrography on POD 15 showed no persistent contrast extravasation. The patient was discharged on POD 23 and remained disease-free at the 12-month follow-up. This case illustrates that conservative management can achieve closure of a small, contained leak in a clinically stable patient when adequate source control is maintained, without therapeutic endoscopic intervention or surgical reintervention.

Categories: General Surgery, Cardiac/Thoracic/Vascular Surgery
Keywords: anastomotic leakage, esophageal adenocarcinoma, intrathoracic leak, ivor lewis esophagectomy, thoracic drainage

Introduction

Anastomotic leakage remains one of the most severe complications following esophagectomy and is associated with substantial postoperative morbidity, prolonged hospitalization, increased healthcare costs, and higher mortality rates [1]. The reported incidence of anastomotic leakage after esophagectomy ranges from 1% to 35%, depending on the surgical technique, location of the anastomosis, and diagnostic criteria used [2]. Intrathoracic leaks are particularly concerning because they may rapidly lead to mediastinitis, pleural contamination, respiratory failure, sepsis, and multiorgan dysfunction [1,2].

According to the Esophagectomy Complications Consensus Group (ECCG), an anastomotic leak is defined as a full-thickness gastrointestinal defect involving the esophagus, anastomosis, staple line, or gastric conduit, irrespective of the method of detection or clinical presentation [3]. Despite advances in surgical techniques, perioperative care, and minimally invasive approaches, anastomotic leakage continues to represent a major therapeutic challenge in esophageal surgery [4].

Management strategies are largely determined by the patient's clinical condition, timing of diagnosis, extent of contamination, defect size, and viability of the gastric conduit. Surgical reintervention is generally reserved for patients with uncontrolled sepsis, conduit necrosis, or failure of conservative and endoscopic treatment [3]. Over the last decade, endoscopic approaches such as self-expanding metal stents (SEMS) and endoscopic vacuum therapy (EVT) have become increasingly important in the management of intrathoracic leaks [5]. However, selected clinically stable patients with small, contained leaks may be successfully treated conservatively with adequate drainage, antibiotic therapy, nutritional support, and close multidisciplinary monitoring, thereby avoiding the potential complications and repeated procedures associated with endoscopic interventions [5,6].

We present a case of a patient with an intrathoracic anastomotic leak following Ivor Lewis esophagectomy who was successfully managed conservatively without the need for endoscopic or surgical reintervention.

Case Presentation

A 73-year-old male was referred to the Department of Gastroenterology with severe iron-deficiency anemia,

progressive dysphagia, nausea, vomiting, generalized weakness, and fatigue. The patient reported intermittent dysphagia and an unintentional weight loss of approximately 15 kg over the preceding year. He sought medical attention following worsening dysphagia, frequent vomiting, and the detection of anemia on laboratory testing. His medical history was notable for arterial hypertension and benign prostatic hyperplasia. He also reported intermittent episodes of hematemesis and melena. Preoperatively, his height was 180 cm and weight was 77 kg, corresponding to a body mass index (BMI) of 23.8 kg/m².

Esophagogastroduodenoscopy revealed an ulceroinfiltrative, circumferential lesion involving the distal esophagus and gastric cardia. Histopathological evaluation of multiple biopsy specimens confirmed invasive, ulcerated adenocarcinoma of the distal esophagus. Chest and abdominal computed tomography imaging demonstrated a 6-cm circumferential thickening of the distal esophagus and cardia, with no radiologic evidence of distant metastatic disease. Tumor marker analysis indicated mild elevation of carbohydrate antigen 19-9 (CA 19-9), while remaining parameters were within reference ranges.

Following evaluation by a multidisciplinary oncology board, surgical resection was indicated, necessitated by the resectable nature of the tumor in conjunction with the patient's history of upper gastrointestinal hemorrhage and symptomatic anemia. Following preoperative optimization, an open Ivor Lewis esophagectomy was performed via a right thoracotomy, considering the large tumor size and near-complete luminal obstruction. An intrathoracic, end-to-side esophagogastric anastomosis was constructed using a 25-mm circular stapler, in accordance with our institution's established surgical practice for open procedures. A 30-French (Fr) thoracic drain was positioned in the posterior mediastinum under active suction, posterior to the esophagogastric anastomosis.

The immediate postoperative course was unremarkable. The patient remained hemodynamically stable, without respiratory compromise or pyrexia, and required neither vasopressor support nor extended mechanical ventilation. Serial chest radiographs demonstrated no pleural effusion or other pathological findings. Laboratory investigations indicated only a mild postoperative systemic inflammatory response, and output from both abdominal and thoracic drains was minimal and serous.

On postoperative day (POD) 4, thoracic drain output increased to approximately 300 mL of turbid fluid, initially suspected to represent retained serohemorrhagic fluid due to possible partial drain obstruction, given the relatively low drainage output during the preceding days. Despite an increase in inflammatory markers, the patient remained clinically stable without signs of deterioration. During the afternoon ward round on POD 5, the drainage characteristics raised suspicion of gastric content. Consequently, CT esophagogastrography was performed on POD 6, revealing contrast extravasation near the esophagogastric anastomosis and radiological findings consistent with right-sided hypostatic pneumonia (Figure *1*).

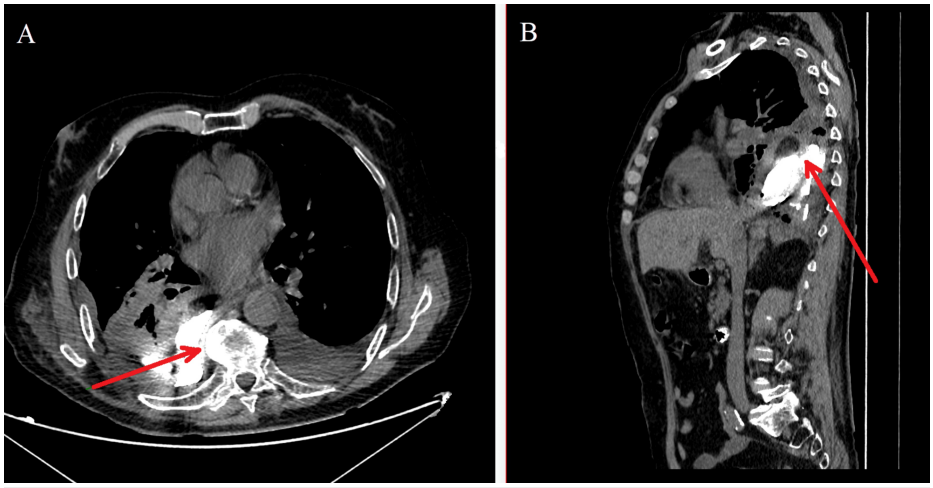


FIGURE 1: Computed Tomography (CT) Esophagogastrography Demonstrating Contrast Extravasation Near the Esophagogastric Anastomosis

Computed tomography (CT) esophagogastrography performed on postoperative day 6. (A) Axial and (B) sagittal views demonstrating contrast extravasation near the esophagogastric anastomosis, indicated by red arrows.

Subsequent upper endoscopy identified a fistulous orifice, approximately 3 mm in diameter, located immediately distal to the anastomosis within the proximal gastric conduit (Figure *2*). During the same procedure, a nasojejunal feeding tube was placed to provide enteral nutritional support.



FIGURE 2: Endoscopic Identification of the Fistulous Defect Following Ivor Lewis Esophagectomy

Upper gastrointestinal endoscopy demonstrating an approximately 3-mm fistulous opening immediately distal to the esophagogastric anastomosis, within the proximal gastric conduit. The black arrow indicates the fistulous defect.

Given the limited defect size, absence of diffuse mediastinal contamination, preserved gastric conduit viability, and the patient's hemodynamic stability, a conservative management strategy was maintained. Enteral nutritional support was provided via a nasojejunal feeding tube. Continuous active thoracic drainage was maintained, in conjunction with intensive respiratory physiotherapy and combined enteral and parenteral nutritional support.

Although the patient remained hemodynamically stable and was afebrile for most of the postoperative course, he experienced generalized weakness and malaise, accompanied by elevated inflammatory markers and radiological findings consistent with right-sided pneumonia and pleural effusion. Biochemical analysis of the thoracic drainage fluid indicated the presence of biliogastric contents, while microbiological examination identified multidrug-resistant Pseudomonas aeruginosa and vancomycin-resistant Enterococcus (VRE). Considering the documented intrathoracic leak, associated clinical and radiological findings, and risk of a potentially life-threatening mediastinal infection, the previously administered antimicrobial therapy was escalated from ceftriaxone to intravenous colistin and linezolid on POD 6, guided by antimicrobial susceptibility results. This decision was made following multidisciplinary assessment involving an anesthesiologist, a clinical pharmacologist, and a surgeon. The patient remained under intensive care monitoring, including daily assessment of renal function through serum urea and creatinine measurements.

Serial monitoring of inflammatory markers and thoracic drainage output is summarized in Table *1*. C-reactive protein (CRP) peaked at 190 mg/L on POD 4, followed by an overall downward trend with intermittent fluctuations.

POD	CRP (mg/L)	WBC (×10⁹/L)	Thoracic drainage (mL/24 h)
1	12.1	15.69	50
2	142.3	10.84	50
3	168.5	16.53	100
4	190.0	14.65	300
5	184.6	11.60	300
6	169.0	9.87	50
7	162.5	8.58	300
8	142.6	9.30	300
9	140.9	10.12	350
10	97.4	12.54	350
11	121.0	14.11	250
12	121.5	15.91	0
13	123.4	16.67	0
14	33.9	14.64	-
15	55.8	12.01	-
16	62.9	11.24	-
17	53.5	10.67	-
18	48.2	8.98	-
19	31.7	7.35	-

TABLE 1: Postoperative Inflammatory Markers and Thoracic Drainage Output During Conservative Management

POD: postoperative day; CRP: C-reactive protein; WBC: white blood cell count; -: not applicable following drain removal. Intravenous colistin was initiated on POD 6. Thoracic drainage ceased on POD 12, and the drain was removed on POD 14 following endoscopic confirmation of fistula closure. Institutional reference ranges: CRP ≤5.0 mg/L; WBC 4.0-10.0 × 10⁹/L.

Throughout the subsequent postoperative period, the patient remained clinically stable and was afebrile for most of the time, with occasional episodes of low-grade fever, while inflammatory markers showed an overall downward trend and thoracic drain output gradually decreased. By POD 12, thoracic drainage had ceased completely. Follow-up upper endoscopy performed on POD 14 demonstrated complete closure of the fistula, with fibrin deposition at the former leak site (Figure *3*).

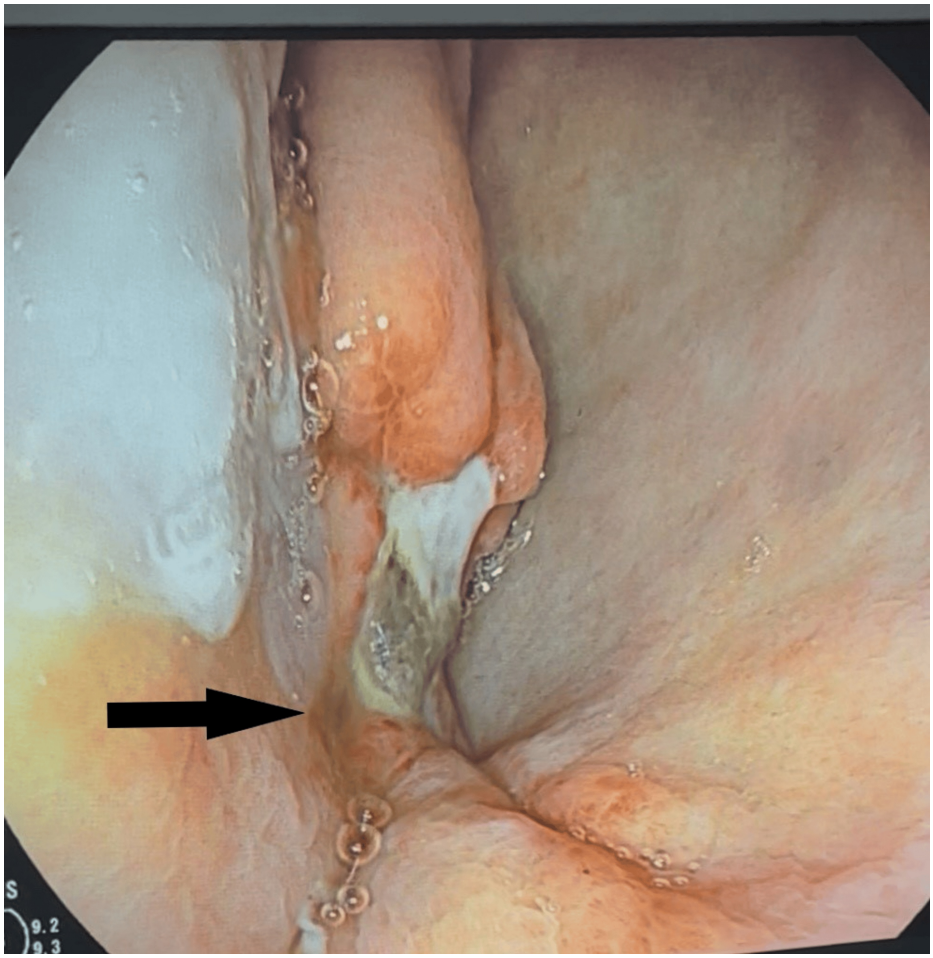


FIGURE 3: Follow-Up Endoscopy Demonstrating Closure of the Fistulous Defect

Follow-up upper gastrointestinal endoscopy performed on postoperative day 14 demonstrated complete closure of the previously identified fistulous defect, with fibrin deposition at the former leak site. The black arrow indicates the site of the healed defect.

The thoracic drain was removed immediately after upper endoscopy, following two days without drainage output. Repeat CT esophagogastrography with oral contrast on POD 15 showed no persistent contrast extravasation and substantial improvement in the pulmonary findings (Figure *4*). Oral intake was gradually reintroduced.

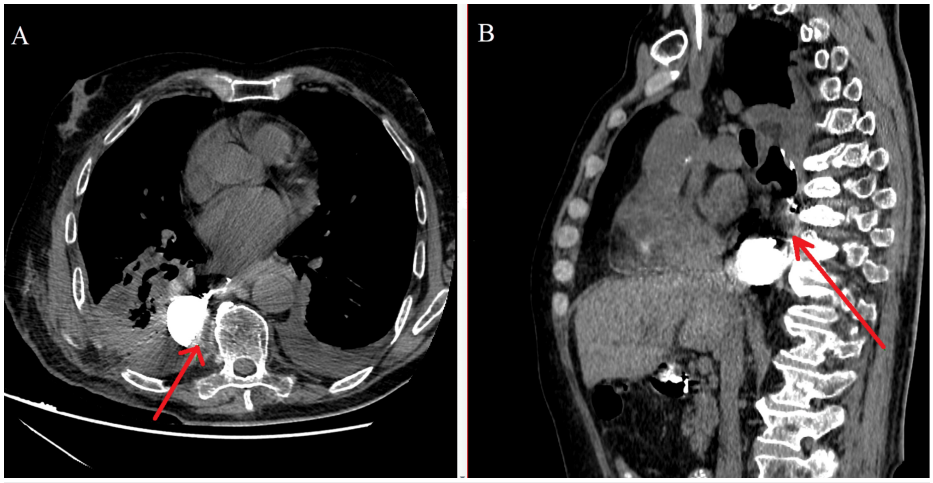


FIGURE 4: Follow-Up Computed Tomography (CT) Esophagogastrography Demonstrating Resolution of Contrast Extravasation

Follow-up computed tomography (CT) esophagogastrography with oral contrast performed on postoperative day 15. (A) Axial and (B) sagittal views demonstrate normal passage of oral contrast medium through the gastric conduit, without persistent contrast extravasation at the previously identified leak site (red arrows).

The patient was discharged on POD 23 in a stable general condition. Final histopathological examination confirmed poorly differentiated adenocarcinoma of the cardia and distal esophagus. Postoperatively, the patient received adjuvant systemic therapy. At the 12-month follow-up, the patient remained disease-free. Surveillance endoscopy conducted eight months postoperatively demonstrated no evidence of recurrent malignancy, with only mild esophagitis observed.

Discussion

Anastomotic leakage following Ivor Lewis esophagectomy remains one of the most challenging complications in upper gastrointestinal surgery [1]. Intrathoracic leaks are associated with particularly high morbidity because contamination of the mediastinum and pleural cavity may rapidly progress to severe sepsis, respiratory failure, and multiorgan dysfunction [6,7]. Consequently, early diagnosis and prompt initiation of treatment are critical determinants of patient outcome [8].

In the present case, the leak was diagnosed relatively early, on POD 6, using a combination of contrast-enhanced CT esophagogastrography and upper endoscopy. Importantly, despite radiologic confirmation of leakage, the patient remained clinically stable throughout the postoperative course, without hemodynamic deterioration, diffuse mediastinitis, or evidence of gastric conduit ischemia. The fistulous defect was small and well contained, while mediastinal contamination was effectively controlled by the thoracic drain placed intraoperatively. This clinical profile strongly favored a nonoperative approach. Indeed, contemporary literature suggests that conservative management, incorporating active drainage and nutritional support, is a viable strategy for stable patients with contained leaks [4]. Furthermore, prophylactic intraoperative drain placement has been shown to facilitate both the timely identification of such complications and their subsequent resolution [9].

Given the small defect size, preserved gastric conduit viability, adequate drainage, and the patient's clinical stability, conservative management was selected. As the leak resolved without therapeutic endoscopic intervention or surgical reintervention, it was classified as ECCG Type I [3]. In recent years, endoscopic modalities such as the placement of SEMS and EVT have become central components of treatment algorithms for intrathoracic defects [5]. SEMS allows for the immediate sealing of the orifice and facilitates early enteral nutrition, yet it carries inherent risks including stent migration, pressure-induced necrosis, and potential hemorrhage [10,11]. Conversely, EVT has shown high success rates by simultaneously controlling contamination and promoting the formation of granulation tissue, although it requires multiple endoscopic procedures for sponge replacement [5].

In our patient, despite the current trend toward aggressive endoscopic intervention, neither EVT nor SEMS placement was considered mandatory [12]. The defect was remarkably small (3 mm), the patient remained hemodynamically stable, and contamination was already effectively controlled via the intraoperatively placed thoracic drain. Introducing additional endoscopic interventions in such a stable clinical setting could have exposed the patient to unnecessary procedural risks without a clear incremental benefit. For patients with localized collections and preserved gastric conduit viability, conservative management remains a valid

and safe therapeutic option [1,13].

The interpretation of positive thoracic drain cultures requires careful consideration, as bacterial colonization cannot be reliably distinguished from invasive infection on microbiological findings alone. In our patient, the documented intrathoracic leak, associated inflammatory response, and radiological findings raised concern for a clinically significant mediastinal infection. Therefore, antimicrobial therapy was escalated following multidisciplinary assessment and susceptibility testing. Given the potential nephrotoxicity of colistin, renal function was monitored daily throughout treatment [14].

Adequate drainage was likely a key factor in the successful closure of the leak. The well-positioned thoracic drain facilitated continuous evacuation of leaked contents, limiting mediastinal contamination [15]. In our patient, the drain was maintained under continuous suction at -15 to -20 cm H_2O. Comparable negative pressure has been evaluated following open Ivor Lewis esophagectomy, although evidence regarding its effects on the healing of an existing anastomotic leak remains limited [16]. Importantly, drainage volume alone does not constitute an established threshold for mandatory endoscopic intervention. Treatment escalation should instead be guided by clinical deterioration, inadequate drainage, progression of contamination, or compromised gastric conduit viability [15]. In our patient, clinical stability, effective drainage, and the contained nature of the defect supported continued conservative management.

At the same time, conservative management should not be interpreted as universally applicable. Delayed diagnosis, inadequate drainage, extensive mediastinal contamination, progressive respiratory failure, or signs of conduit necrosis remain clear indications for escalation toward endoscopic or surgical management [10,17]. Appropriate patient selection therefore remains the cornerstone of successful nonoperative treatment.

Conclusions

This case suggests that conservative management may be a feasible treatment option in carefully selected patients with small, contained intrathoracic anastomotic leaks following Ivor Lewis esophagectomy, provided that adequate drainage and close multidisciplinary monitoring are maintained. Individualized treatment remains essential in determining the optimal therapeutic approach.

In our case, effective source control was facilitated by a large-bore, well-positioned 30-Fr thoracic drain that remained patent throughout treatment. In the absence of adequate drainage, escalation to endoscopic or surgical intervention might have been required. This case highlights the potential importance of reliable thoracic drainage in the conservative management of selected intrathoracic anastomotic leaks.

Additional Information

Author Contributions

All authors have reviewed the final version to be published and agreed to be accountable for all aspects of the work.

Concept and design: Stefan S. Guslarevic, Matija Miljevic, Borislav Toskovic

Acquisition, analysis, or interpretation of data: Stefan S. Guslarevic, Igor Nadj, Jasna Gacic

Drafting of the manuscript: Stefan S. Guslarevic, Matija Miljevic

Critical review of the manuscript for important intellectual content: Igor Nadj, Jasna Gacic, Borislav Toskovic

Supervision: Borislav Toskovic

Disclosures

Human subjects: Informed consent for treatment and open access publication was obtained or waived by all participants in this study. **Conflicts of interest:** In compliance with the ICMJE uniform disclosure form, all authors declare the following: **Payment/services info:** All authors have declared that no financial support was received from any organization for the submitted work. **Financial relationships:** All authors have declared that they have no financial relationships at present or within the previous three years with any organizations that might have an interest in the submitted work. **Other relationships:** All authors have declared that there are no other relationships or activities that could appear to have influenced the submitted work.

References

1. Triantafyllou A, Mela E, Theodoropoulos C, et al.: Addressing anastomotic leak after esophagectomy:

insights from a specialized unit. J Clin Med. 2025, 14: 10.3390/jcm14113694

2. Zhang CC, Liesenfeld L, Klotz R, et al.: Feasibility, effectiveness, and safety of endoscopic vacuum therapy for intrathoracic anastomotic leakage following transthoracic esophageal resection. BMC Gastroenterol. 2021, 21:72. 10.1186/s12876-021-01651-6
3. Bartella I, Brunner S, Schiffmann LM, et al.: Clinical utility and applicability of the Esophagus Complication Consensus Group (ECCG) classification of anastomotic leakage following hybrid Ivor-Lewis esophagectomy. Langenbecks Arch Surg. 2023, 408:258. 10.1007/s00423-023-03001-4
4. Ortigão R, Pereira B, Silva R, et al.: Anastomotic leaks following esophagectomy for esophageal and gastroesophageal junction cancer: the key is the multidisciplinary management. GE Port J Gastroenterol. 2023, 30:38-48. 10.1159/000520562
5. Scognamiglio P, Reeh M, Melling N, et al.: Management of intra-thoracic anastomotic leakages after esophagectomy: updated systematic review and meta-analysis of endoscopic vacuum therapy versus stenting. BMC Surg. 2022, 22:309. 10.1186/s12893-022-01764-z
6. Yin Q, Zhou S, Song Y, Xun X, Liu N, Liu L: Treatment of intrathoracic anastomotic leak after esophagectomy with the sump drainage tube. J Cardiothorac Surg. 2021, 16:46. 10.1186/s13019-021-01429-7
7. Wang H, Zhang Y, Zhang Y, et al.: Practice of cervical end-esophageal exteriorization in patients with severe intrathoracic anastomotic leakage after esophagectomy. J Int Med Res. 2018, 46:5090-8. 10.1177/0300060518790405
8. Liesenfeld LF, Sauer P, Diener MK, et al.: Prognostic value of inflammatory markers for detecting anastomotic leakage after esophageal resection. BMC Surg. 2020, 20:324. 10.1186/s12893-020-00995-2
9. Schaheen L, Blackmon SH, Nason KS: Optimal approach to the management of intrathoracic esophageal leak following esophagectomy: a systematic review. Am J Surg. 2014, 208:536-43. 10.1016/j.amjsurg.2014.05.011
10. Dell'Anna G, Fanti L, Fanizza J, et al.: VAC-stent in the treatment of post-esophagectomy anastomotic leaks: a new "kid on the block" who marries the best of old techniques—a review. J Clin Med. 2024, 13:10.3390/jcm13133805
11. Grimminger PP, Goense L, Gockel I, et al.: Diagnosis, assessment, and management of surgical complications following esophagectomy. Ann N Y Acad Sci. 2018, 1434:254-73. 10.1111/nyas.13920
12. Heilani MW, Teubner D, Haist T, et al.: Closing the gap: endoscopic treatment of esophageal anastomotic leakage-a retrospective cohort study. Surg Endosc. 2025, 39:5643-53. 10.1007/s00464-025-11904-0
13. Potenza I, Tamburini N, Dolci G, et al.: The combined use of endoluminal stents and over-the-scope clips for the management of post-esophageal surgery leaks. J Laparoendosc Adv Surg Tech A. 2026, 36:55-60. 10.1177/10926429251400992
14. Miller JM, Binnicker MJ, Campbell S, et al.: Guide to utilization of the Microbiology Laboratory for Diagnosis of Infectious Diseases: 2024 update by the Infectious Diseases Society of America (IDSA) and the American Society for Microbiology (ASM). Clin Infect Dis. 2024, 10.1093/cid/ciae104
15. Verstegen MH, Bouwense SA, van Workum F, Ten Broek R, Siersema PD, Rovers M, Rosman C: Management of intrathoracic and cervical anastomotic leakage after esophagectomy for esophageal cancer: a systematic review. World J Emerg Surg. 2019, 14:17. 10.1186/s13017-019-0235-4
16. Bull A, Pucher PH, Lagergren J, Gossage JA: Chest drainage after oesophageal resection: a systematic review . Dis Esophagus. 2022, 35:10.1093/dote/doab069
17. Murray W, Davey MG, Robb W, Donlon NE: Management of esophageal anastomotic leaks, a systematic review and network meta-analysis. Dis Esophagus. 2024, 37: 10.1093/dote/doae019