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Anastomotic Fistula After Upper Gastric Resection for Incarcerated Hiatal Hernia, Successfully Managed via Endoscopic Approach: A Case Report

Zharko Spasovski[1], Maja Avramovska[2], Stefan Krstevski[1], Petar Avramovski[3]*, Kosta Sotiroski[4], Stefan Talev[5], Bozidar Blazevski[6], Vladimir Stojkovski[7], Liljana Todorovska[8], Svetlana Stefanovska[9], Elena Aleksoska[10], Elena Ginovska[11]

[1]Department of Digestive surgery, 8th September City General Hospital, Skopje, North Macedonia
[2]Department of Obstetrics and Gynecology, Clinical Hospital Bitola, University St. Kliment Ohridski, Bitola, North Macedonia
[3]Department of Internal Medicine, Clinical Hospital – Bitola, University St. Kliment Ohridski – Bitola, North Macedonia
[4]Department of Statistics, University St. Kliment Ohridski – Bitola, Faculty of Economics - Prilep, North Macedonia
[5]Department of Surgery, Clinical Hospital – Bitola, North Macedonia
[6]Department of Radiology, 8th September City General Hospital, Skopje, North Macedonia
[7]Department of Pathology, 8th September City General Hospital, Skopje, North Macedonia
[8]Department of Nuclear Medicine, Clinical Hospital, Bitola, North Macedonia
[9]Department of Gastroenterology, Clinical Hospital, Bitola, North Macedonia
[10]Department of Pathology, Clinical Hospital, Bitola, North Macedonia
[11]Department of Emergency Medicine, Clinical Hospital, Bitola, North Macedonia

***Corresponding author:**
Petar Avramovski, MD, PhD
Filip Vtori Makedonski 37/4-26
7000 Bitola, North Macedonia
E-mail: avramovski@gmail.com

ORCID IDs:
Zharko Spasovski, 0009-0007-0439-9185
Maja Avramovska, 0000-0003-1129-1205
Petar Avramovski, 0000-0003-2816-3365
Kosta Sotiroski, 0000-0002-4005-0526
Stefan Talev, 0000-0002-3728-0638
Bozidar Blazevski, 0009-0004-3371-8315
Vladimir Stojkovski, 0009-0007-6646-0789
Liljana Todorovska, 0009-0001-3257-8523
Svetlana Stefanovska, 0009-0004-5934-3267
Elena Aleksoska, 0009-0008-2166-4849
Elena Ginovska, 0009-0004-9419-0024

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Rezumat

Fistulă anastomotică după rezecție gastrică polară superioară pentru hernie hiatală încarcerată, rezolvată cu succes prin abord endoscopic: prezentare de caz

Introducere: Hernia hiatală încarcerată acut, cu perforație gastrică, este o afecțiune rară şi amenințătoare de viață. Tabloul clinic este frecvent atipic, ceea ce poate întârzia diagnosticul şi contribue la mortalitatea ridicată prin mediastinită şi peritonită secundare.
Prezentare de caz: Prezentăm cazul unei paciente în vârstă de 71 de ani, internată inițial pentru suspiciune de sindrom coronarian acut. Apariția melenei, împreună cu aspectele decelate la gastroscopie şi la exemenul computer-tomografic, a evidențiat o hernie hiatală încarcerată, cu gangrenă şi perforație a stomacului proximal. S-a practicat gastrectomie polară superioară în urgență, asociată cu lavaj extins al cavității abdominale şi al mediastinului. Evoluția postoperatorie a fost complicată prin apariția unei fistule gastrocutanate în ziua a 20-a postoperator, rezolvată cu succes prin aplicare endoscopică de clipuri. Pacienta a necesitat 31 de zile de terapie intensivă, fiind externată în stare generală bună.
Concluzii: Cazul subliniază valoarea abordului multidisciplinar şi demonstrează că managementul endoscopic poate constitui o alternativă fezabilă la reintervenția cu risc crescut în fistulele postoperatorii la pacientul septic. Urmărirea la cinci ani a evidențiat o evoluție favorabilă pe termen lung.

Cuvinte cheie: hernie hiatală încarcerată, perforație gastrică, mediastinită, fistulă gastrocutanată

Abstract

Introduction: Acute incarcerated hiatal hernia with gastric perforation is rare and life-threatening condition. The clinical presentation is often atypical, which can delay diagnosis and contribute to high mortality from secondary mediastinitis and peritonitis.

Case Report: We present the case of a 71-year-old woman initially admitted with suspected acute coronary syndrome. The onset of melena, together with findings on gastroscopy and computed tomography, revealed an incarcerated hiatal hernia with gangrene and perforation of the proximal stomach. Emergency proximal gastrectomy was performed, together with extensive lavage of the abdominal and mediastinal cavities. The postoperative course was complicated by a development of a gastrocutaneous fistula on postoperative day 20, which was successfully managed with endoscopic clip placement. The patient required 31 days of intensive care before being discharged in good general condition.

Conclusion: This case underscores the value of a multidisciplinary approach, demonstrating that endoscopic management can provide a feasible alternative to high-risk reoperation for postoperative fistula in a septic patient. Five-year follow-up showed a favorable long-term outcome.

Keywords: incarcerated hiatal hernia, gastric perforation, mediastinitis, gastrocutaneous fistula

Introduction

A hiatal hernia occurs when the stomach, and occasionally other abdominal organs, protrudes into the thoracic cavity through the esophageal hiatus, typically as a result of increased intra-abdominal pressure (1). Acute incarcerated hiatal hernia is an uncommon but critical surgical emergency requiring prompt diagnosis and intervention (1). Although most hiatal hernias are asymptomatic, para-esophageal variants (Type II–IV) carry an estimated annual risk of about 1% for acute incarceration and strangulation (2). Incarceration compromises gastric blood supply, which can lead to the rapid progression toward gangrene and perforation and, subsequently, to secondary septic mediastinitis; reported mortality rates range from 20% to 54%, particularly when diagnosis and surgical intervention are delayed (3,4).

Clinical diagnosis is often complicated because symptoms can mimic other conditions. Patients frequently present with nonspecific chest pain, dyspnea, and epigastric discomfort, which in the emergency settings can lead to an initial misdiagnosis of acute coronary syndrome or pulmonary embolism (4-6). This diagnostic uncertainty further delays surgical treatment, which is associated with a poorer prognosis (7). Postoperative complications such as anastomotic dehiscence and gastrocutaneous fistulas add to the management challenge, often requiring prolonged intensive care (8). The aim of this paper is to report the successful management of a complex case of perforated hiatal hernia in a 71-year-old female patient.

Case report

A 71-year-old woman was transferred by ambulance from another local hospital because of clinical and radiological signs of acute abdominal distress. Her history revealed that, two days prior to admission to our hospital, she had developed pain in the upper abdomen and retrosternal area, accompanied by nausea, weakness, dyspnea, and tachycardia, prompting her to seek care at the local hospital's emergency department. On physical examinations and Initial assessment of vital signs (pulse rate of 120 beats per minute, blood pressure 135/90 mmHg, respiratory rate of 19 breaths per minute, oxygen saturation of 96% on ambient air and body temperature of 37.1 °C) she was admitted with an initial suspicion of acute coronary syndrome.

Cardiological work-up performed the following day was unremarkable, ruling out acute cardiac involment; however, melena appeared as an additional symptom later that day, raising suspicion of upper gastrointestinal bleeding. Upper gastrointestinal endoscopy was performed promptly. Gastroscopy revealed a large necrotizing mass in the stomach with retained undigested food; given features suggestive of a malignant neoplasm, multiple biopsies were obtained, and the patient was managed conservatively pending further work-up.

The day after admission to the local hospital, she developed generalized abdominal pain. Contrast-enhanced computed tomography (CECT) of the abdomen and pelvis showed an incarcerated hiatal hernia with associated pneumomediastinum, pneumoperitoneum, and free abdominal fluid (*Fig. 1*).

Because of limited surgical capabilities at the local hospital, the patient was transferred to our facility with a diagnosis of acute abdomen. Upon admission, she was promptly resuscitated and prepared for emergency surgery. Laboratory results showed elevated inflammatory markers (WBC = 7.2 × 10^9/L, CRP = 262.0 mg/L) and hematological abnormalities (RBC = 2.94 × 10^{12}/L, Hb = 99 g/L).

Surgical Intervention

The abdominal cavity was assessed through a midline laparotomy. Intraoperatively, a large amount of ascitic fluid was found, together with fibrino-purulent peritonitis and an incarcerated Type III para-esophageal hiatal hernia measuring approximately 10 cm, containing the gastroesophageal junction and part of the stomach. There was no evidence of gastric volvulus; the mechanism appeared to be mechanical incarceration.

After the hernial sac was released from the hiatus and the incarcerated contents reduced, gangrene was noted in the proximal stomach (cardia, fundus, and proximal body), together with a 3-4 cm perforation at the level of the fundus. Given that the tissue in the distal sections of the stomach - specifically inferior to the incisura angularis on the lesser curvature and inferior to the arcade of the greater curvature (right and left gastroepiploic arteries) - showed no gangrenous or visible vascular changes. The distal stomach - specifically the region inferior to the incisura angularis along the lesser curvature and inferior to the gastroepiploic arcade along the greater curvature - showed no gangrenous changes or evidence of compromised vascularity, with preserved flow in the right gastric and right gastroepiploic arteries. Based on these findings, we opted for proximal gastrectomy with partial resection of the proximal half of the stomach, aiming to preserve the physiological continuity of the digestive tract. Total gastrectomy was considered as an alternative but was felt to carry a higher postoperative risk, given the need for two anastomoses and a non-physiological reconstruction of the digestive pathway.

Proximal gastrectomy was performed, and continuity was restored with an esophagogastric anastomosis using a 29-mm circular stapler. A Heineke-Mikulicz pyloroplasty was then performed (9), made necessary by resection of both vagus nerves - difficult to preserve within gangrenous tissue - and the small remaining gastric segment. This step was intended to increase pyloric volume, improving reservoir capacity and facilitating transit of contents

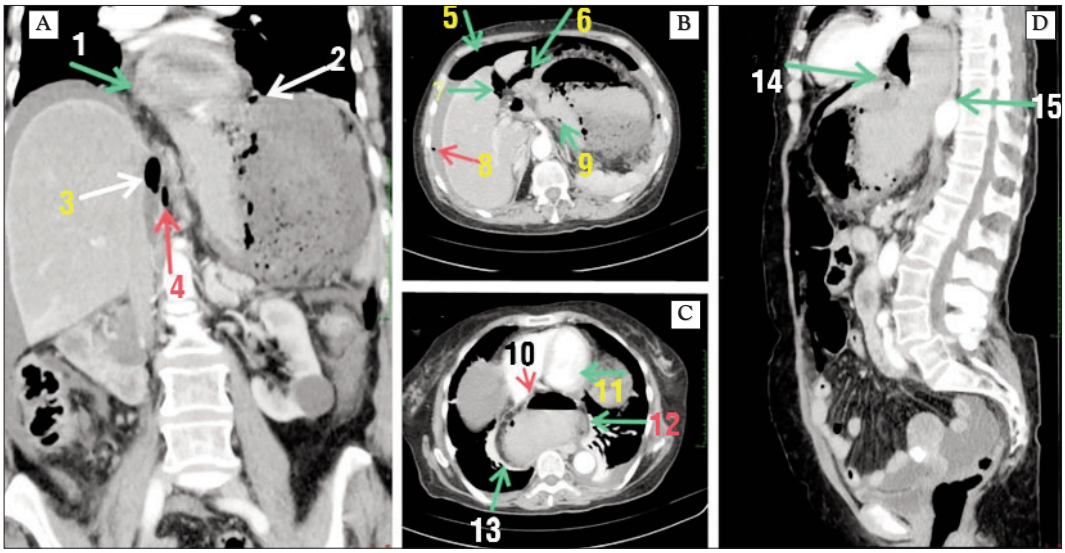

Figure 1. Contrast-enhanced computed tomography of incarcerated hiatal hernia: (A) Frontal view showing intra-abdominal free air and fluid; (B, D) Axial and sagittal views depicting the intrathoracic stomach; (C) Axial view showing abdominal fluid.

Legend: 1, 10, 12, 14. Partial gastric incarceration; 2, 13, 15. Pneumomediastinum; 3–7, 9. Pneumoperitoneum; 8. Pneumoperitoneum with ascites; 11. Cardiac silhouette.

into the duodenum. The hernial sac was then resected (herniectomy), and the mediastinum was thoroughly irrigated using a 50-mL syringe with physiological saline. Hernioplasty was carried out using primary suture repair with four 1-0 Prolene sutures; a composite mesh was not used, given contamination of the field by gangrenous tissue and gastric contents. This restored the hiatal orifice.

The procedure concluded with copious abdominal lavage using saline and placement of four drains. One drain was positioned in the mediastinum, passing transhiatally posterior to the gastroesophageal anastomosis and exiting through the left abdominal wall. A second drain was placed posterior to the anastomosis, passing through the omental bursa and the foramen of Winslow into Morison's pouch, and exiting through the right abdominal wall. The remaining two drains were placed in the pouch of Douglas.

The preoperative appearance of the incarcerated hiatal hernia and the postoperative reconstruction are shown in *Fig. 2*.

Postoperative Course

Postoperatively, the patient was transferred to the intensive care unit, where her condition remained critical throughout due to peritonitis and mediastinitis. On postoperative day 20, drainage of gastric contents was noted on examination of the surgical wound; on palpation, the abdomen was soft and non-tender, with no signs of peritoneal irritation. Laboratory results showed no further rise in inflammatory markers. An ostomy bag was applied to protect the wound and surrounding skin at the drainage site, collecting approximately 300 mL of fluid over 24 hours.

Abdominal CT revealed a gastrocutaneous fistula measuring 3-4 cm, extending from the gastro-esophageal anastomosis to the most proximal part of the surgical wound. Given the patient's critical condition, low fistula output, and short tract length, repeat surgery was precluded, prompting an attempt at endoscopic intervention. Gastroscopy was performed to access the anastomosis, and a fistulous opening was identified along the anastomotic ring measuring approximately 5-10 mm. Given its small dimensions, the defect was considered amenable to endoscopic management and was successfully closed using a through-the-scope (TTS) clip, the only endoscopic closure device available at our institution. Following this procedure, output from the fistula tract ceased completely. During this period, enteral nutrition was withheld and the patient was maintained on total parenteral nutrition, which adequately met her nutritional requirements.

After 31 days in the intensive care unit, the patient was transferred to the digestive surgery department for further treatment and was subsequently discharged in good general condition. A follow-up contrast-enhanced CT scan was performed three months after the surgery (*Fig. 3*).

Histopathological Findings

The pathohistological findings from the surgical specimen confirm gastric gangrene with the presence of thrombi in the blood vessels, as well as fibrino-purulent peritonitis forming small abscess collections in some areas (*Fig. 4*).

Five-Year Follow-up and Outcome

The patient was followed for five years, with clinical evaluations performed every six months, including abdominal ultrasound and laboratory testing, all of which consistently demonstrated normal findings.

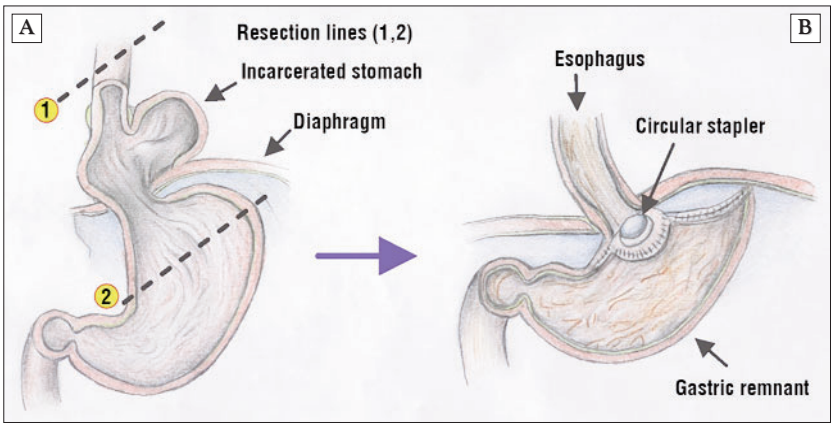

Figure 2. Incarcerated hiatal hernia requiring proximal gastrectomy and esophagogastric anastomosis: **(A)** Preoperative view demonstrating an incarcerated hiatal hernia with herniation of the stomach; **(B)** Postoperative reconstruction following proximal gastrectomy, showing the esophageal stump and gastric remnant connected by an esophagogastric anastomosis using a circular stapling technique.

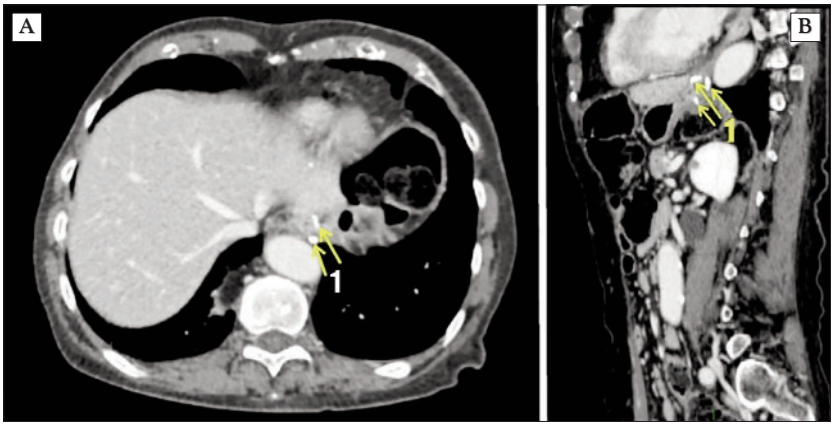

Figure 3. Postoperative contrast-enhanced computed tomography following surgical repair of an incarcerated hiatal hernia. **(A)** Axial and **(B)** sagittal views demonstrating the esophagogastric anastomosis. Arrows (1) indicate the anastomotic staple line.

Upper digestive endoscopies were done once a year during this five-year period. According to the patient's history, the only complaint was an occasional burning and heat sensation after eating a large amount of food from time to time; the patient denied any difficulty swallowing. Gastroscopy findings showed grade I gastroesophageal reflux, which completely resolved with conservative treatment using proton pump inhibitors. Out of the five follow-up gastroscopies performed, no recurrence of hiatal hernia was observed. Body weight and nutritional status remained stable, with no evidence of deficiencies throughout the follow-up period. The patient adapted well to the recommended dietary regimen, adhering closely to a pattern of small, frequent meals.

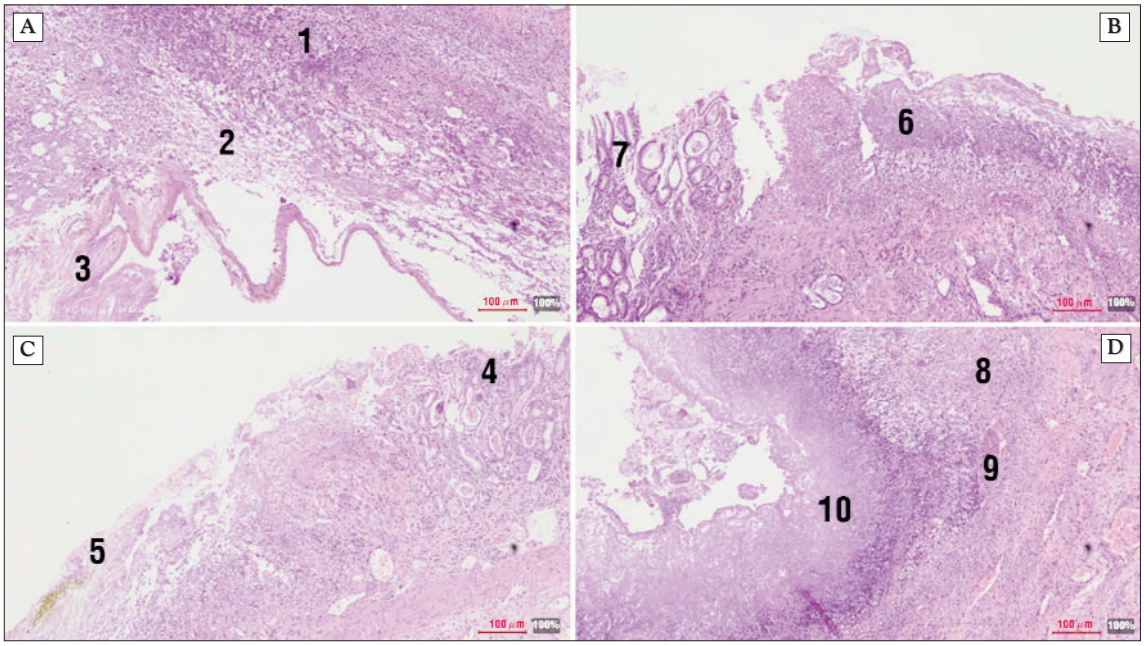

Figure 4. Proximal gastrectomy specimen: (A) Gangrenous change of the gastric wall; (B) Fibrinopurulent exudation on the serosa; (C, D) Ulceration and necrosis of the gastric mucosa and submucosa, with a fibrin thrombus in a submucosal blood vessel (D).

Legend: 1. Necrosis with gangrene of the muscularis propria; 2. Necrosis with gangrene of the subserosa; 3. Fibrinopurulent exudation on the serosa; 4. Erosive mucosal changes, continuous with the ulcer base; 5. Ulceration covered by a fibrinonecrotic crust-like membrane; 6. Erosive mucosal changes; 7. Mucosal ulceration covered by a fibrinonecrotic membrane; 8. Mucosal ulceration covered by a fibrinonecrotic crust-like membrane; 9. Necrosis of a portion of the submucosa; 10. Fresh fibrin thrombus in the lumen of a blood vessel. [Hematoxylin and eosin (H&E) stain; original magnification ×5].

Discussion and Conclusion

The main challenge in this case was distinguishing between an acute cardiac condition (acute coronary syndrome, myocardial infarction) and acute abdominal pathology (1,4,5). As reported in the literature, large incarcerated hiatal hernias can cause direct compression of the left atrium or irritation of the vagus nerve, resulting in tachycardia, chest pain, and dyspnea (10). In patients with chronic heart failure, a hiatal hernia may precipitate acute decompensation through compression of the left ventricle, and large hernias have also been associated with angina-like chest pain or, occasionally, acute pulmonary edema due to compression of the pulmonary veins (11). In our patient, the initial focus on cardiac investigations led to a brief delay in reaching the definitive diagnosis, a pattern that has been described previously with such "masked" presentations.

The mechanism of perforation in paraesophageal hernias is most often related to acute gastric volvulus or mechanical incarceration within the diaphragmatic defect, which impairs venous drainage and leads to gastric wall edema and progressive arterial ischemia culminating in transmural necrosis (12-14). Under these conditions, perforation within the hernial sac allows gastric contents to spread rapidly into the mediastinum. Secondary mediastinitis is among the most severe complications encountered in surgical practice, with reported mortality frequently exceeding 20-40% despite aggressive treatment (12,15).

In this clinical setting, urgent proximal gastrectomy was considered the most appropriate approach to remove the septic focus and achieve source control. The postoperative course was further complicated by a gastrocutaneous fistula on postoperative day 20, reflecting the patient's poor general condition and impaired tissue healing after peritonitis. Rather than proceeding to high-risk reoperation, we opted for a minimally invasive endoscopic approach. Endoscopic clip placement achieved complete closure of the anastomotic defect, stopping the gastric leak and allowing the anastomosis to heal without further surgical intervention. This approach has been described as a reasonable option for selected postoperative anastomotic leaks and other gastrointestinal tract defects (16,17). The prolonged period of intensive care (31 days), which included aggressive nutritional support and close monitoring, likely contributed to successful fistula closure and the patient's overall recovery (18).

Five-year follow-up showed a favorable long-term outcome, with the patient maintaining good quality of life despite the extent of the surgery and the severity of the postoperative complications. Consistent with previous reports, appropriate postoperative medical management, including proton pump inhibitor therapy, vitamin supplementation, and regular follow-up, appears to play an important role in preserving functional recovery and long-term quality of life (19, 20). This case illustrates the value of early recognition and interdisciplinary management in severe paraesophageal hernia. Large hiatal hernias can mimic acute cardiac symptoms, which risks delaying diagnosis. Progression of incarceration to ischemic tissue necrosis and mediastinitis mandates emergency surgical intervention to control the acute septic complications, despite the substantial associated perioperative risk. Postoperative complications involving digestive anastomoses remain a recognized possibility in such cases.

As this case suggests, the long-term success of the surgical outcome depended in part on close collaboration with an experienced gastroenterology team capable of timely, non-surgical endoscopic management of the anastomotic fistula. Our five-year follow-up suggests that, even after extensive surgery, severe septic complications, and a complex anastomotic leak, a favorable functional outcome and preserved quality of life remain achievable.

In the present case, early surgical intervention, advanced endoscopic management, appropriate nutritional support, and structured long-term surveillance appeared feasible and may have contributed to successful recovery and sustained long-term functional status.

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Authors' Contributions

Conceptualization: Z.S., M.A., S.K., P.A., L.T.; Clinical management and surgical treatment: Z.S., S.K.; Data curation: Z.S., M.A., P.A., K.S., S.T., B.B., V.S., L.T., S.S., E.A, E.G.; Writing – original draft preparation: Z.S., M.A., P.A., S.T., B.B., V.S., S.S., E.A., E.G.; Writing – review and editing: All authors; Supervision: M.A., S.K., P.A., K.S., L.T., S.S., E.A., E.G.; All authors have read and agreed to the published version of the manuscript.

Conflicts of Interest

The authors declare no conflicts of interest.

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Ethical Approval and/or Institutional Review Board (IRB) Approval

Ethical approval was not required for this single case report according to institutional policies. Written informed consent for publication was obtained from the patient.

Consent to Participate

Written informed consent was obtained from the patient for participation in this case report. Written informed consent for publication of this case report and the accompanying clinical images was obtained from the patient. The signed consent form is available upon request from the corresponding author.

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