Scalpellum
JOURNAL OF SURGERY & CLINICAL RESEARCH

Case Report

Silent Abdomen, Loud Emergency: a Case Report of Gastric Perforation in Low-Resource Area

Blasius Hugo Auriol[1], **Andre Ferryandri Susantio**[2]
[1]General Practitioner of Karitas Weetabula Hospital, Southwest Sumba, Indonesia;
[2]Department of General Surgery of Karitas Weetabula Hospital, Southwest Sumba, Indonesia:

*Corresponding author: blasiushugo814@email.com

Abstract

Background: Gastric perforation is a serious condition that requires quick diagnosis and treatment. Delays can lead to high death rates. In remote areas with limited resources, managing this condition is especially difficult due to the lack of nearby healthcare, imaging tools, surgery facilities, and patient transport. This case report highlights how gastric perforation can present in such settings and the challenges faced in managing it.

Case Presentation: An 80-year-old man came with severe abdominal pain, shortness of breath, and fever for over four days. He appeared pale, hypotensive, and tachycardic signs of shock. The ABCDE approach showed shallow breathing, weak pulses, and abdominal tenderness. He had a history of epigastric pain, alcohol use, smoking, and frequent PPI use. A chest X-ray showed signs of pneumonia. Lab tests revealed severe anemia, slightly slightly elevated leukocyte count, and elevated kidney markers. He was treated for sepsis (qSOFA 2, CURB-65 score 3) and responded with temporary stability. However, his abdominal pain worsened. An abdominal X-ray showed free air, and emergency surgery confirmed a gastric perforation, which was repaired. By day 11, he improved and was discharged. On follow-up at Karitas Weetabula hospital, he remained clinical recovery.

Conclusion: This case shows how hard it can be to treat serious conditions like gastric perforation in remote areas with limited resources. Without advanced tools, doctors often rely on clinical judgment and experience. Good teamwork, even with few resources, is crucial for quick treatment and better patient outcomes

Keywords: Gastric Perforation, Remote Area, Limited Resource Setting

OPEN ACCESS
Submitted: 16 September 2025
Revised: 25 November 2025
Accepted: 29 April 2026
Published: 30 June 2026

Corresponding author
Blasius Hugo Auriol
blasiushugo814@email.com

Academic editor
Fajri Marindra

Data Availability Statement
All relevant data are within the paper and its Supporting Information files.

Introduction

Gastric perforation represents one of the most dramatic and life-threatening abdominal emergencies, marked by a sudden full-thickness rupture of the stomach wall and the rapid spill of acidic gastric contents into the peritoneal cavity. This cascade swiftly triggers peritonitis, sepsis, and potentially fatal multiorgan failure.[1] Most cases evolve from peptic ulcer disease driven by Helicobacter pylori infection or chronic NSAID use, yet lifestyle factors such as alcohol consumption and smoking further heighten vulnerability.[2] Despite advances in modern surgical care, the mortality associated with

gastric perforation remains alarmingly high. Although this condition is recognized worldwide, its true burden varies considerably across regions. Globally, the incidence of peptic ulcer perforation is estimated at 4–14 cases per 100,000 population annually, underscoring its persistent impact on public health.[3] In Asia, a nationwide Korean study reported an incidence of 4.4 per 100,000 persons per year, with a 30-day mortality of 3.15%—a figure that rises dramatically to nearly 20% among patients older than 80 years.[4] In Indonesia, comprehensive national data are still lacking, but hospital-based findings provide insight into the local burden. A study by Imam et al. identified 45 cases of gastric perforation at Dr. Moewardi General Hospital, Surakarta, within a single year (January–December 2018)[5], highlighting both the ongoing clinical challenges and the urgent need for broader epidemiological surveillance across the country.

In remote and underserved regions, the danger of gastric perforation is magnified. Patients often live far from adequately equipped health centers, face long travel times, and rely on facilities with minimal diagnostic tools and limited surgical capability.[6] Low health literacy, cultural habits involving high-ethanol traditional alcohol, and chronic mucosal irritants further delay both recognition and care-seeking.[7,8,9] As a result, patients frequently arrive at referral hospitals already in severe sepsis or advanced peritonitis—conditions that dramatically worsen outcomes.[10] These realities transform what is already a medical emergency into a race against time in settings where time is hardest to save.

This case report seeks to illuminate how gastric perforation can unfold in such challenging circumstances, showcasing an atypical presentation and the profound barriers faced by clinicians working in remote, resource-limited environments. By highlighting these constraints, we aim to underscore the urgent need for strengthened diagnostic capacity, faster referral pathways, and improved preparedness for surgical emergencies in rural healthcare systems.

Case

An 80-year-old male presented to the emergency department of a rural health facility with dyspnea and persistent fever for more than four days. He also reported diffuse abdominal pain rated 8–9 on the Visual Analog Scale (VAS). The abdominal pain had a sudden onset, progressively worsened, and was non-radiating. Notably, there guarding was absent on examination, a finding that can occur in elderly patients with perforation and may delay recognition of an acute abdomen.

The patient described intermittent epigastric discomfort over the past six months, which he had self-medicated using over-the-counter lansoprazole (approximately 30 mg daily) without any formal medical evaluation. He had a 50-year history of smoking one to two packs per day and reported habitual consumption of locally brewed alcoholic beverages since adolescence. He also regularly chewed a mixture of lime (kapur), betel leaf (sirih), and areca nut (pinang) as part of his daily routine. He denied any previous diagnosis of peptic ulcer disease or gastrointestinal bleeding, though he noted frequent postprandial bloating and early satiety. There was no known use of non-steroidal anti-inflammatory drugs (NSAIDs) or corticosteroids.

Clinical Findings

On physical examination, the patient appeared ill and was in moderate respiratory distress. Vital signs revealed hypotension (BP 90/60 mmHg), tachycardia (HR 132 bpm), fever (38.4°C), and tachypnea (Respiratory rate 31 breaths per minute) with oxygen saturation at 90% on room air. Abdominal examination showed diffuse abdominal pain VAS 8-9, there were no signs of guarding or generalized abdominal tenderness on physical and bowel sounds were present. As part of the initial evaluation, an anteroposterior (AP) chest X-ray was performed, showing findings consistent with pneumonia as part of the initial evaluation in the emergency department an AP chest X-ray, which showed findings consistent with pneumonia. The most significant laboratory result was found are severe anemia (6.9 g/dL), leukocytosis (10,700/mm3), thrombocytopenia (134,000/uL), elevated ureum (184.6 g/dL) and creatinine levels (4.46 g/dL). These abnormalities are highly suggestive of a systemic inflammatory response, possibly due to ongoing sepsis or severe intra-abdominal infection. The combination of severe anemia and thrombocytopenia raises concern for either acute blood loss or consumptive coagulopathy, while the elevated urea and creatinine indicate acute kidney injury, most likely prerenal in origin due to hypovolemia or septic shock. These laboratory results highlight a critical clinical status requiring urgent intervention and comprehensive organ support. He was treated for sepsis and early septic shock; initial resuscitation led to transient clinical improvement.

During hospitalization, the patient continued to experience abdominal pain, which progressively worsened despite supportive treatment. This raised clinical concern, prompting a follow-up evaluation. Further evaluation using a three-position abdominal X-ray (upright, supine, and left lateral decubitus)

demonstrated the presence of free air. This radiographic finding is highly suggestive of a gastrointestinal perforation, warranting urgent surgical consideration.

Diagnostic Assesment

The patient with persistent fever, dyspnea, and diffuse abdominal pain for four days. Vital signs and clinical findings raised suspicion of systemic infection, and the patient scored 2 on the qSOFA scale highly possible sepsis. Laboratory workup revealed leukocytosis, thrombocytopenia, and severe anemia, further supporting a systemic inflammatory response. A chest X-ray demonstrated pulmonary infiltrates suggestive of pneumonia, and CURB-65 scoring was 3 (age >65, elevated urea, Respiratory rate >30), indicating severe community-acquired pneumonia as a possible primary source of infection. This was supported by sputum Gram staining, which identified Gram-positive cocci and bacilli, with positive leukocytes and epithelial cells, consistent with lower respiratory tract infection. During hospitalization on hospital day 2, the patient's abdominal pain worsened. Three-position abdominal X-ray revealed free air under the diaphragm, raising suspicion of a gastrointestinal perforation. This prompted an exploratory laparotomy, which confirmed the presence of a gastric perforation. To assess the patient's surgical risk, the Boey score was applied. The patient had all three risk factors: shock on admission, a history of chronic illness (chronic alcohol use with history reccurent dyspepsia syndrome), and a delay of over 24 hours from symptom onset to surgical intervention, yielding a Boey score of 3. This indicated a high risk of mortality exceeding 50%, highlighting the need for intensive perioperative monitoring and support.

Therapeutic Intervention

Upon arrival at the emergency department, the patient presented with signs of systemic infection, including hypotension, persistent fever, and tachypnea. Initial stabilization focused on fluid resuscitation using isotonic crystalloids (0.9% NaCl), oxygen therapy via nasal cannula at 4 L/min, and empiric intravenous antibiotic administration (cefotaxime 1 gram every 8 hours and azithromycin 500 mg on Nacl 0.9% every 24 hours). Supportive care included paracetamol 500 mg IV for fever, pantoprazole 40 mg IV as needed for diffuse abdominal pain. Foley catheter was inserted for fluid balance monitoring. Laboratory reassessments were done alongside blood cross-matching for transfusion preparation. The worsening abdominal pain after initial treatment and the radiologic detection of free air on abdominal X-ray and BNO three-position imaging highly suggestive of gastrointestinal perforation. An emergency exploratory laparotomy was indicated. The procedure was performed in the main operating theater under general anesthesia with endotracheal intubation. The patient was positioned supine with full monitoring including pulse oximetry, and non-invasive blood pressure. A midline laparotomy incision was made and the abdominal wall was opened layer by layer to access the peritoneal cavity. Upon entering, gastric fluid mixed with food particles was found. Exploration revealed an 8 × 5 cm gastric perforation at the lesser curvature. A partial gastrectomy wasn't performed; the gastric defect was repaired using a modified Cellan-Jones technique with an omental patch. A Stamm feeding jejunostomy was created to provide postoperative nutrition. The abdominal cavity was irrigated with 4 liters of normal saline. The drains were placed in both the abdominal and pelvic cavities. The abdomen was closed in layers. The procedure was completed without immediate complications. During surgery, two units of whole blood cells were prepared for transfusion postoperatively, due to the patient's severe anemia (hemoglobin 6.9 g/dL).

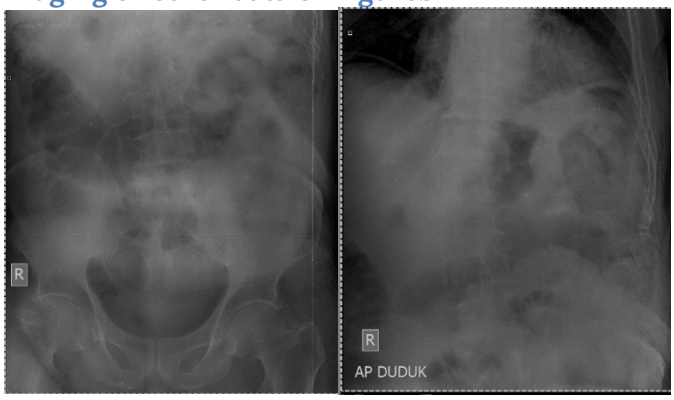
Postoperatively, the patient was monitored in the high-dependency surgical ward. The antibiotic regimen was changed to levofloxacin 750 mg once daily IV and metronidazole 500 mg every 8 hours IV, and pantoprazole 80 mg once daily IV was administered to support gastric mucosal healing. The antibiotic regimen was adjusted to levofloxacin and metronidazole in response to the patient's ongoing clinical deterioration and rising suspicion of an intra-abdominal source of sepsis, for which broader microbial coverage was required. This combination was selected because levofloxacin provides effective Gram-negative coverage while metronidazole targets anaerobic organisms commonly involved in peritonitis secondary to gastric perforation. In addition, formulary limitations at the rural facility restricted access to standard first-line agents such as third-generation cephalosporins or piperacillin–tazobactam, making levofloxacin–metronidazole the most appropriate empiric alternative available. Thus, the switch represented a necessary escalation to ensure adequate antimicrobial coverage under resource-constrained conditions. Pain management included paracetamol 1 gram every 8 hours with renal function monitoring. the patient was placed on nothing per oral (NPO) status and supported with parenteral nutrition (B fluid, Dextrose 5 % and Ringer

Lactate). Enteral feeding was gradually introduced via jejunostomy feeding. Initial feeding began with Dextrose 5% at 20 drops per minute. On postoperative day 3, milk-based formula was started at 25 cc every 4 hours. By day 5, the volume was increased to 50 cc every 4 hours, and further advanced to 100 cc every 4 hours by day 7, as the patient tolerated the feeding well with no signs of intolerance or complications. Feeding tolerance was assessed clinically through regular evaluation of bowel sounds, jejunostomy output and residuals, and the absence of abdominal bloating, nausea, or vomiting; these findings, together with stable output, supported the gradual advancement from normal saline to dextrose solutions and eventually to milk-based nutrition.

Follow-up and Outcome

During the postoperative follow-up, the patient's abdominal pain gradually subsided, and vital signs remained stable throughout the hospital stay. The patient maintained full consciousness, and no new symptoms were observed. Serial evaluations of both surgical drains showed a favorable trend, with output steadily decreasing over the postoperative period, from day 1 approximately 500mL with fluid remaining consistently blood and serous and on day 11 to 50 mL and the fluid remaining consistently serous without any evidence of blood or gastric content, indicating proper healing and absence of postoperative leakage. The patient was discharged on day 11 of hospitalization in stable condition. Follow-up was conducted at the surgical clinic at Karitas Weetabula Hospital, seven days after discharge, during which the patient reported improved overall well-being and no recurrence of abdominal pain. Wound healing was satisfactory, and no postoperative complications were noted at that time.

Imaging or other data on figures



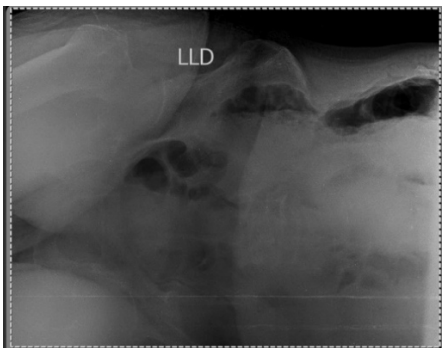


Figure 1. Abdominal Three Position X-ray Evaluation (Upright abdominal X-ray demonstrated free subdiaphragmatic air, while the left-lateral decubitus view showed a distinct radiolucent crescent outlining the lateral liver edge and rising between the liver and the right abdominal wall, findings highly suggestive of a gastrointestinal perforation)

Figure 2. An emergency exploratory laparotomy was performed, revealing a gastric perforation at lesser curvature of the stomach.

Figure 3. The gastric perforation was repaired using the modified Cellan-Jones technique with an omental patch.

Figure 4. A Stamm feeding jejunostomy was created to provide postoperative nutrition.

Lab result

Table 1. Initial ED Lab Result

	Value	Standard Unit
Hemoglobin	6.9	g/dl
MCH	30	pg
MCV	94.7	ll
MCHC	34.9	%
Limfosit Count	0.41	Cell/ml
Neutrofil Count	9.91	Cell/ml
Monosit	4.2	%
Limfosit	3.8	%
Neutrofil	91.9	%
Eosinofil	0	%
Basofil	0.1	%
Hematocrit	19.9	%
Platelet	134.000	uL
Eritrosit	2.10	Million
Leukosit	10.700	/mmm3
Blood Type	O	
Rhesus	Positive	
Non-Fasting Blood Sugar	131	mg/dl
Ureum	184	mg/dl
Creatinin	4.46	mg/dl
Electrolyte		
Natrium	147.8	mmq/L
Clorida	121.3	mmq/L
Kalium	5.24	mmq/L

Table 2. Post resuscitace Lab Result

	Value	Standard Unit
Hemoglobin	8.2	g/dl
MCH	31.8	pg
MCV	90.3	fl
MCHC	35.3	%
Limfosit Count	0.29	Cell/ml
Neutrofil Count	7.18	Cell/ml
Monosit	3.7	%
Limfosit	3.8	%
Neutrofil	92.4	%
Eosinofil	0	%
Basofil	0.1	%
Hematocrit	23.2	%
Platelet	152.000	uL
Eritrosit	2.57	Million
Leukosit	7.700	/mmm3
Ureum	184	mg/dl
Creatinin	4.46	mg/dl

Table 3. Post Operation Lab Result

	Value	Standard Unit
Hemoglobin	6.8	g/dl
MCH	31.5	pg
MCV	89.0	fl
MCHC	35.4	%
Limfosit Count	0.47	Cell/ml
Neutrofil Count	4.99	Cell/ml
Monosit	3.8	%
Limfosit	8.1	%
Neutrofil	86.5	%
Eosinofil	1.5	%
Basofil	0.1	%
Hematocrit	19.3	%
Platelet	130.000	uL
Eritrosit	2.17	Million
Leukosit	5.700	/mmm3
Albumin	2.1	g/dl
Electrolyte		
Natrium	140.3	mmq/L
Clorida	112.3	mmq/L
Kalium	5.15	mmq/L

Discussion

This case illustrates how gastric perforation in elderly patients may present with atypical clinical features, hindering prompt diagnosis. Rather than the classic triad of sudden severe epigastric pain, abdominal rigidity, and peritonitis, the patient exhibited dyspnea, persistent fever, and only mild abdominal tenderness. The lack of guarding or rebound tenderness—despite a large perforation—

underscores how advanced age, sepsis, chronic anemia, pneumonia, and renal impairment can blunt normal physiological responses to intra-abdominal emergencies. Such presentations increase the likelihood of clinicians attributing symptoms to non-surgical causes, emphasizing the need for a high index of suspicion for gastrointestinal emergencies in elderly patients with comorbidities that may obscure the underlying severity of their condition.

The diagnostic process was further complicated by the resource-limited environment of Nusa Tenggara Timur (NTT), where key investigations such as CT imaging, arterial blood gas analysis, and histopathology were unavailable. In this context, clinicians were forced to depend heavily on clinical judgment and the limited tools at hand, with a plain abdominal X-ray—simple yet invaluable—becoming the crucial investigation that hinted at perforation. These limitations underscore the realities faced in remote regions, where delayed patient presentation, geographic isolation, and shortages of trained healthcare personnel significantly impede timely diagnosis. With the patient's clinical condition deteriorating and diagnostic certainty constrained, exploratory laparotomy became the most definitive and lifesaving intervention. Intraoperatively, an 8 × 5 cm perforation at the lesser curvature was identified and repaired using the modified Cellan-Jones technique with an omental patch, a practical choice that balanced surgical effectiveness with the constraints of a rural operating environment.

Postoperative care required an equally adaptive approach to ensure safe recovery in the absence of advanced monitoring or nutritional resources. Broad-spectrum antibiotics and blood transfusions were essential for treating sepsis and correcting severe anemia, while a jejunostomy feeding tube enabled early enteral nutrition when oral intake was contraindicated. Feeding tolerance was assessed clinically through serial monitoring of bowel sounds, jejunostomy output, residuals, and absence of abdominal bloating—criteria that guided a gradual progression from saline to dextrose solutions and ultimately to milk-based feeds. Daily evaluations of surgical drains, which steadily decreased to less than 100 mL of clear serous fluid by postoperative day eleven, provided critical reassurance of healing in the absence of imaging modalities such as CT scans. This case highlights how consistent clinical observation, careful prioritization, and adaptive use of limited resources can collectively support successful postoperative recovery in remote, underserved healthcare settings.

Gastric perforation is a surgical emergency that can arise in any region and under various healthcare settings. This case underscores the specific challenges faced in remote areas, where delays in immediate surgical intervention can result in postponed treatment and a worse prognosis. Nusa Tenggara Timur (NTT) illustrates these challenges, as it faces significant logistical barriers. The combination of geographic isolation, limited access to healthcare facilities, a shortage of trained medical personnel, and inadequate infrastructure can severely affect patient outcomes, particularly in time-sensitive emergencies like gastric perforation.[9] In their study, Lee et al. emphasized that patients experiencing gastrointestinal emergencies should receive definitive management within the first 16 hours of symptom onset, since early intervention is linked to a better prognosis. However, they also noted that achieving favorable outcomes depends on several contributing factors, including the patient's baseline condition, comorbidities, and the quality and timeliness of the available medical care. [14] Furthermore, cultural and traditional practices in NTT complicate the clinical landscape. The habitual consumption of high-alcohol-content local beverages, along with the traditional chewing of pinang and kapur sirih, is known to irritate the gastrointestinal mucosa and may contribute to an increased risk of gastric ulceration and eventual perforation.[1,7,8]

The complexity of this case lies in the patient's atypical presentation, which deviated from the classic clinical features typically associated with gastric perforation. In a study conducted by Abdihamid et al. on gastric perforation, the most frequently reported typical symptoms included sharp epigastric pain, observed in approximately 82% of cases. Furthermore, signs of peritonitis, such as abdominal tenderness and distension, were noted in 80.4% of patients, while nausea and vomiting were reported in approximately 60% of cases. These findings highlight the classical clinical presentation of gastric perforation, although variations may still occur depending on the patient's age, comorbidities, and timing of presentation [15]. Instead of the typical signs of peritonitis, the patient presented with dyspnea, fever, and an absence of abdominal rigidity or rebound tenderness, potentially leading clinicians to overlook gastrointestinal perforation as the initial diagnosis. This atypical manifestation necessitated further diagnostic evaluation to establish the correct etiology. Additionally, the patient was on elderly age group and had multiple underlying chronic conditions, including shock, pneumonia, severe anemia, and impaired renal

function, all of which may have masked or altered the clinical picture, further complicating timely diagnosis. These comorbidities not only affected the patient's overall physiological response but also delayed the recognition of the underlying surgical emergency, emphasizing the importance of a high index of suspicion and comprehensive assessment, especially in elderly patients with multiple systemic illnesses.16 The appearance of atypical symptoms in this patient may be explained by several hypotheses. One possibility is that the gastric perforation developed chronically, a presentation often associated with gastric carcinoma rather than peptic ulcer disease. In such cases, clinical deterioration may be less dramatic, especially when malignancy is present, as cancer may invade surrounding tissues or metastasize to distant organs, with the lungs being one of the most common sites.[17] This could explain the respiratory symptoms observed in this patient. Unfortunately, no characteristic features of metastatic lesions were observed on the patient's chest X-ray, which weakens the plausibility of the hypothesis that the respiratory symptoms were due to pulmonary metastases from a possible gastric malignancy. A definitive biopsy was not performed due to a lack of facilities, which could have helped differentiate whether the underlying cause of the perforation was a chronic peptic ulcer, the most common etiology, or a malignant process. Furthermore, arterial blood gas (ABG) analysis could have offered valuable insights into acid-base imbalances, whether of metabolic or respiratory origin, thereby further clarifying the patient's clinical presentation. However, such advanced diagnostic tools were unavailable at the remote district hospital. Additionally, if a biopsy had been performed, the subsequent results would have needed to be shipped out of Sumba, incurring costs that were unfeasible to cover. This situation reflects the ongoing challenges of managing complex medical cases in resource-limited settings. The patient's last follow-up occurred during a routine check-up at the clinic, after which regular follow-ups were discontinued.

In remote settings, establishing a diagnosis becomes a form of clinical experienced dependent, where healthcare providers are challenged to work creatively with limited and basic diagnostic tools. Clinicians must rely on their judgment and resourcefulness to determine the most appropriate course of management. In this case, the plain abdominal X-ray proved to be a valuable investigation, guiding the decision-making process despite its inherent limitations. Although X-ray imaging can provide crucial initial clues, it lacks the sensitivity and specificity of gold-standard modalities such as computed tomography (CT) scans.[18] The three-position abdominal radiograph—comprising supine, erect, and left-lateral decubitus views—offers variable diagnostic performance in detecting free intraperitoneal air, with reported sensitivities ranging from 50–85% and specificity around 74–84%. The decubitus view provides the highest yield, with detection rates approaching 98% in some studies. Consequently, in the absence of advanced imaging, exploratory laparotomy remains the most definitive diagnostic and therapeutic approach in rural hospitals. In contrast, in well-equipped healthcare systems, CT scanning plays a vital role in the early identification of perforation, helping determine whether a patient may benefit from minimally invasive laparoscopic management.[19,20] In settings where advanced imaging, such as a CT scan, is not available, point-of-care ultrasound (POCUS) can be crucial for the early detection of free intraperitoneal air and guide urgent decision-making. Recent work, even in 2025, has reinforced that ultrasound can reliably reveal pneumoperitoneum through signs such as an “enhanced peritoneal-stripe sign,” reverberation or “comet-tail” artifacts, and acoustic shadowing caused by air–soft tissue interfaces. In some studies, ultrasound demonstrated a sensitivity of around 88–95% and a specificity of roughly 82–100% for detecting intraperitoneal free air, often outperforming plain radiography in sensitivity. However, its diagnostic accuracy remains operator-dependent, and a negative ultrasound does not exclude perforation, particularly when free air volume is small or air is localized in atypical sites. Nonetheless, in emergency abdominal cases, plain abdominal X-rays remain a valuable diagnostic tool due to their simplicity, speed, and high specificity, especially in detecting gastrointestinal perforations. In practice, open laparotomy is often preferred for life-saving purposes, as it offers greater operative exposure and allows for extensive manipulation in damage control surgery. However, with ongoing advancements in minimally invasive techniques, laparoscopic approaches may emerge as a viable alternative in the future.

In this case, a large gastric perforation measuring 8x5 cm was found at the lesser curvature of the stomach. Surgical repair was performed using the modified Cellan-Jones technique combined with an omental patch. This method was selected due to the size and location of the perforation and the limited surgical resources available in the remote hospital setting. The technique allows for effective closure of large defects using a simple and rapid approach,

making it well-suited for emergencies in resource-limited environments.[21,22] Compared to more complex procedures like gastrectomy, it minimizes operative time and physiological stress, while still providing adequate reinforcement. Despite some limitation, such as a less definitive solution for underlying pathology the modified Cellan-Jones technique with omental patch offered a practical, life-saving option in this context.[23,24]

After definitive surgical management to address the source of the gastric perforation, the next equally complex challenge was achieving clinical stabilization by addressing the patient's underlying chronic conditions and comorbidities. The administration of broad-spectrum antibiotics and blood transfusions played a vital role in controlling infection and correcting severe anemia, Hemoglobin levels demonstrated a gradual upward trend following transfusion, increasing from the preoperative nadir to progressively higher values over subsequent days, reflecting both adequate replacement and improving physiological status. In terms of antibiotic stewardship, blood cultures were obtained prior to the escalation of antimicrobial therapy to ensure appropriate pathogen-directed treatment. Although initial management required broad-spectrum coverage due to the patient's septic presentation and limited diagnostic capabilities, therapy was subsequently reassessed once culture results were available, allowing clinicians to refine antibiotic selection and minimize unnecessary exposure. [25] In this case, a jejunostomy feeding tube was placed to ensure postoperative nutritional support, recognizing that oral intake would need to be withheld during the early recovery phase.[26] Based on clinical evaluation, the patient's Boey score of 3 indicated a high-risk prognosis, further emphasizing the need for a gradual and controlled nutritional strategy. A period of fasting was required to promote gastric rest and prevent further complications, while nutrition via the jejunostomy aimed to support tissue repair and immune recovery. Nutritional support is essential in promoting postoperative wound healing and systemic recovery, especially in high-risk patients.[27,28] However, in remote healthcare settings, options for parenteral or advanced nutritional supplementation are extremely limited, posing an additional challenge in maintaining optimal postoperative care. This highlights the critical need for practical, adaptable nutritional plans in resource-constrained environments to enhance recovery outcomes.

In this case, postoperative evaluation was conducted across several key aspects to assess the patient's recovery. The clinical aspect included monitoring the patient's symptoms and vital signs, which remained stable throughout the postoperative period. The laboratory aspect involved basic yet essential blood tests such as complete blood count, electrolyte levels, renal function tests, and serum albumin, providing insight into the patient's internal status and overall response to treatment. Additionally, particular attention was given to the surgical drains placed during the procedure, which served as an important indicator of healing progress and potential complications. Drain output was evaluated daily, focusing on volume, consistency, and color of the fluid. By postoperative day eleven, the drain output had decreased to less than 100 cc per day, consisting of clear serous fluid without signs of blood or gastric content, suggesting good postoperative healing. Routine monitoring of drain output represents a simple yet effective approach that can be applied even in resource-limited or remote settings, allowing for timely recognition of complications or signs of recovery.[29,30] This form of regular assessment plays a crucial role in determining the success of surgical intervention, and may serve as an early indicator of surgical failure, guiding decisions for further management if necessary.

Conclusion

This case exemplifies the urgent necessity for timely clinical judgment, flexible surgical strategies, and tailored postoperative care in the management of gastric perforation, particularly in remote and resource-constrained areas such as Southwest Sumba. The ongoing prevalence of digestive emergencies, coupled with the acute shortage of specialized healthcare professionals in digestive subspecialties, presents a formidable challenge to patient care in these settings. To address this pressing issue effectively, it is essential to bolster human resources through the strategic deployment of subspecialists and the enhancement of healthcare facilities. Furthermore, adopting a comprehensive, multidisciplinary approach is paramount to improving patient outcomes and markedly reducing complications among high-risk populations.

Ethics approval

This case report was conducted in accordance with written informed consent was obtained from the patient's family for the use of clinical data and relevant images for academic publication.

Acknowledgments

The authors would like to express their gratitude to the patient's family for their cooperation and consent to publish this case. We also thank the medical and nursing staff of Karitas Weetabula Hospital for their support in the management of the patient.

Competing interests

All the authors declare that there are no conflicts of interest.

Funding

This study received no external funding.

Underlying data

Derived data supporting the findings of this study are available from the corresponding author on request.

References

1. K. Søreide, Gastroduodenal perforations, Acute Care Surgery and Trauma. 2018: F4651:95–103.
2. E. P. Weledji. An overview of gastroduodenal perforation. Front Surg. 2020:7: 573901.
3. K. T. Chung and V. G. Shelat. Perforated peptic ulcer - an update. World J Gastrointest Surg. 2017:9(1):1
4. S. J. Bae *et al.* Incidence and short-term mortality from perforated peptic ulcer in Korea: A population-based study. J Epidemiol. 2012:22(6):508–516.
5. I. H. Zaini and Ida Bagus Budhi. Profile of patients with gaster perforation at Dr. Moewardi General Hospital Surakarta in the period of january-december 2018. Bioscientia Medicina : Journal of Biomedicine and Translational Research. 2021:5(3):624-626.
6. G. Bose, A. Ray, S. N. Ali, and K. Ishore. Profile of gastroduodenal perforation patients admitted in a rural tertiary care hospital: An observational cross-sectional study, Journal of West African College of Surgeons. 2024:14(3):289–294.
7. I. Rambu Rima, A. Weynand Nusawakan, A. Mauren Pariama, Budaya sirih pinang di sumba dan kejadian anemia pada wanita usia subur. Kristen Satya Wacana. 2023.
8. A. W. Djuma, N. A. Yudhaswara, and S. P. Dardeau. Relation between alcohol consumption and impaired liver Function. Jurnal Info Kesehatan. 2020:18(2):163–170.
9. F. W. Nalle, M. D. Pangastuti, and Y. R. S. S. S. B. Utami. Analysis of determinant factors of life expectation age in East Nusa Tenggara province. Jurnal Ilmiah Akuntansi dan Keuangan. 2022:4(10),
10. A. P. Rahvy, and A. Gani. Inpatient care utilization after JKN : A study case in East Nusa Tenggara. Indonesian Journal of Health Administration. 2024:12(1): 120–128.
11. R. D. McHenry *et al.* Geographic isolation, rurality, and outcomes after critical illness: A retrospective cohort study of emergency admissions to critical care units in Scotland 2010-2021. Br J Anaesth, Jun. 2025.
12. K. Nurul Hikmah B, H. Rahman, A. Puspitasari. Membandingkan ketimpangan ketersediaan tenaga kesehatan puskesmas di wilayah timur. Journal Kesehatan Masyarakat. 2020.
13. V. T. Daniel, J. T. Wiseman, J. Flahive, and H. P. Santry. Predictors of mortality in the elderly after open repair for perforated peptic ulcer disease. J Surg Res. 2017:215:108.
14. J. Lee and C. Iim. Time-to-surgery paradigms: Wait time and surgical outcomes in critically Ill patients who underwent emergency surgery for gastrointestinal perforation. BMC Surg, vol. 24, no. 1, pp. 1–8, Dec. 2024.
15. A. M. Ali, A. N. Mohamed, Y. G. Mohamed, and S. İ. Keleşoğlu. Clinical presentation and surgical management of perforated peptic ulcer in a tertiary hospital in Mogadishu, Somalia: a 5-year retrospective study, World J Emerg Surg, vol. 17, no. 1, p. 23, Dec. 2022.
16. F. Rosa *et al.* Gastric emergencies in older adults: not always the same old story! A tertiary care emergency department observational cohort study, BMJ Open. 2022:12(1):56981.
17. K. Wang, A. Thida, G. Seong, and E. Chiu. Perforated gastric cancer: A case report and literature review. Cureus. 2024:15(1):51767.
18. A. Tarasconi *et al.* Perforated and bleeding peptic ulcer: WSES guidelines," World Journal of Emergency Surgery 2020. Jan. 2020:15(1):1-24.
19. A. Soeratman and A. Putranto. The use of laparoscopy in treatment of perforated peptic ulcer: A literature review. The New Ropanasuri : Journal of Surgery. 2020:5(2):30-32.
20. Mirton, Pasihulilzan, and H. R. Ashan. Performed laparoscopic surgery for gastric perforation: case report. Journal of Society Medicine. 2024:3(6):161-164.
21. T. Odisho, A. A. Shahait, J. Sharza, and A. A. Ali. Outcomes of laparoscopic modified Cellan-Jones repair versus open repair for perforated peptic ulcer at a community hospital. Surg Endosc. 2022:37(1):715.
22. T. Patil, A. K. Dalal, U. R. Dalal, M. Bindra, S. Aggarwal, and T. Jain. Comparative study on Cellan-Jones repair and modified Graham Patch repair (Omentoplasty) in the surgical management of perforated duodenal ulcer. J Adv Med Med Res. 2024:36(12):182-189.
23. C. Zhu *et al.* Omental patch versus gastric resection for perforated gastric ulcer: Systematic review and meta-analysis for an unresolved debate. Am J Surg. 2021:221(5):935:941.
24. B. K. Arora, R. Arora, and A. Arora. Modified Graham's repair for peptic ulcer perforation: reassessment study. International Surgery Journal. 2017:4(5):1667.
25. M. S. Khalifa, M. A. Hamed, and A. M. M. Elhefny. Management of perforated large/giant peptic ulcers: a comparative prospective study between omental plug, duodenal exclusion, and jejunal serosal patch. Egyptian J Surgery. 2021:40:663-672.
26. M. Carmon *et al.* Feeding jejunostomy for post-operative nutritional support, Clinical Nutrition. 1991:10(5):289-301.
27. I. Hashim *et al.* Spontaneous gastric perforation: is it really common?. Annals of Pediatric Surgery. 2021:17(1):1-5.

28. M. Yuan *et al.* Jejunostomy feeding plus oral feeding versus intravenous nutrition plus oral feeding after esophageal cancer resection: a comparative retrospective cohort study. J Thorac Dis. 2024:16(7):4543-4552.
29. S. Abdelaziem, M. S. Hashish, A. N. Suliman, and D. Sargsyan. Laparoscopic repair of perforated duodenal ulcer (Series of 50 Cases), Surg Sci. 2015:6(2):80-90.
30. N. Agarwal, N. K. Malviya, N. Gupta, I. Singh, and S. Gupta. Triple tube drainage for 'difficult' gastroduodenal perforations: A prospective study. World J Gastrointest Surg, 2017:9(1):19-24.