# World Journal of Gastrointestinal Surgery

World J Gastrointest Surg 2024 October 27; 16(10): 3074-3380





Published by Baishideng Publishing Group Inc

WJGS

# World Journal of Gastrointestinal Surgery

# Contents

Monthly Volume 16 Number 10 October 27, 2024

# **EDITORIAL**

3074	Changes over time in treatment for obstructive jaundice	
	Aoki H	
3078	Single incision laparoscopic surgery for hepatocellular carcinoma	
	Karabicak I, Yildirim K, Gursel MF, Malazgirt Z	
3084	Impact of liver metastasis on immunotherapy in gastric carcinoma	
	Chalkoo M, Bhat MY, Wani YH	
3087	Urgent need for prognostic markers for hepatocellular carcinoma in the light of genomic instability and non-coding RNA signatures	
	Velikova T, Gulinac M	
3091	Advancing perioperative optimization in Crohn's disease surgery with machine learning predictions	
	Nardone OM. Castiglione F. Maurea S	

Exploring the landscape of minimally invasive pancreatic surgery: Progress, challenges, and future 3094 directions

Donisi G, Zerbi A

# **ORIGINAL ARTICLE**

#### **Case Control Study**

3104 Three-dimensional printing for preoperative rehearsal and intraoperative navigation during laparoscopic rectal cancer surgery with left colic artery preservation

Zhao ZX, Hu ZJ, Yao RD, Su XY, Zhu S, Sun J, Yao Y

#### **Retrospective Cohort Study**

3114 Local excision of early rectal cancer: A multi-centre experience of transanal endoscopic microsurgery from the United Kingdom

Farid A, Tutton M, Thambi P, Gill T, Khan J

3123 Clinical significance of peri-appendiceal abscess and phlegmon in acute complicated appendicitis patients undergoing emergency appendectomy

Min LQ, Lu J, He HY

Development of a novel difficulty scoring system for laparoscopic liver resection procedure in patients 3133 with intrahepatic duct stones

Luo B, Wu SK, Zhang K, Wang PH, Chen WW, Fu N, Yang ZM, Hao JC



#### Monthly Volume 16 Number 10 October 27, 2024

#### **Retrospective Study**

Serum nutritional predictive biomarkers and risk assessment for anastomotic leakage after laparoscopic 3142 surgery in rectal cancer patients

Shayimu P, Awula M, Wang CY, Jiapaer R, Pan YP, Wu ZM, Chen Y, Zhao ZL

- 3155 Impact of fast-track surgery on perioperative care in patients undergoing hepatobiliary surgery Wang XH, Chen FF, Pan J, Jiang YF, Yao MY, Mao JL, Xu YF
- 3163 Follow-up strategy for early detection of delayed pseudoaneurysms in patients with blunt traumatic spleen injury: A single-center retrospective study

Cho SH, Kim GW, Hwang S, Lim KH

3171 Adjuvant chemotherapy for isolated resectable colorectal lung metastasis: A retrospective study using inverse probability treatment weighting propensity analysis

Gao Z, Wu SK, Zhang SJ, Wang X, Wu YC, Jin X

3185 Recurrence scoring system predicting early recurrence for patients with pancreatic ductal adenocarcinoma undergoing pancreatectomy and portomesenteric vein resection

He H, Zou CF, Jiang YJ, Yang F, Di Y, Li J, Jin C, Fu DL

3202 Effects of postoperative treatment with chemotherapy and cellular immunotherapy on patients with colorectal cancer

Ding ZY, Piao Y, Jiang T, Chen J, Wang YN, Yu HY, Zheng ZD

3211 Postoperative serum tumor markers-based nomogram predicting early recurrence for patients undergoing radical resections of pancreatic ductal adenocarcinoma

He H, Zou CF, Yang F, Di Y, Jin C, Fu DL

3224 Comparison of efficacy and safety of nab-paclitaxel and oxaliplatin + S-1 and standard S-1 and oxaliplatin chemotherapy regimens for treatment of gastric cancer

Wang YC, Feng L, Wang GP, Yu PJ, Guo C, Cai BJ, Song Y, Pan T, Lin BH, Li YD, Xiao JJ

3239 Risk factors and survival prediction model establishment for prognosis in patients with radical resection of gallbladder cancer

Li XF, Ma TT, Li T

#### **Observational Study**

3253 Surgical and non-surgical risk factors affecting the insufficiency of ileocolic anastomosis after first-time surgery in Crohn's disease patients

Cwaliński J, Lorek F, Mazurkiewicz Ł, Mazurkiewicz M, Lizurej W, Paszkowski J, Cholerzyńska H, Zasada W

3261 Relationship between intracranial pressure and neurocognitive function among older adults after radical resection of rectal cancer

Song B, Li LP, Wang XL, Guo Y, Li J



# Contents

### Monthly Volume 16 Number 10 October 27, 2024

#### **Prospective Study**

3269 Prevention and management of postoperative deep vein thrombosis in lower extremities of patients with gastrointestinal tumor

Shu L, Xia CW, Pang YF

#### **Randomized Controlled Trial**

3277 Clinical evaluation of sintilimab in conjunction with bevacizumab for advanced colorectal cancer with microsatellite stable-type after failure of first-line therapy

Wang L, Diao YZ, Ma XF, Luo YS, Guo QJ, Chen XQ

#### **Clinical and Translational Research**

3288 Structured magnetic resonance imaging and endoanal ultrasound anal fistulas reporting template (SMART): An interdisciplinary Delphi consensus

Sudol-Szopińska I, Garg P, Mellgren A, Spinelli A, Breukink S, Iacobellis F, Kołodziejczak M, Ciesielski P, Jenssen C, SMART Collaborative Group, Santoro GA

# **CASE REPORT**

3301 Formation and rupture of liver hematomas caused by intrahepatic gallbladder perforation: A case report and review of literature

Huang HW, Wang H, Leng C, Mei B

Reassessment of palliative surgery in conversion therapy of previously unresectable hepatocellular 3312 carcinoma: Two case reports and review of literature

Zhu YB, Qin JY, Zhang TT, Zhang WJ, Ling Q

3321 Lung cancer metastasis-induced distal esophageal segmental spasm confirmed by individualized peroral endoscopic myotomy: A case report

Shi H, Chen SY, Xie ZF, Lin LL, Jiang Y

Modified technical protocol for single-port laparoscopic appendectomy using needle-type grasping 3328 forceps for acute simple appendicitis: A case report

Chen Y, Fan ZQ, Fu XA, Zhang XX, Yuan JQ, Guo SG

3334 Massive simultaneous hepatic and renal perivascular epithelioid cell tumor benefitted from surgery and everolimus treatment: A case report

Yang HT, Wang FR, He N, She YH, Du YY, Shi WG, Yang J, Chen G, Zhang SZ, Cui F, Long B, Yu ZY, Zhu JM, Zhang GY

3343 Leukopenia-a rare complication secondary to invasive liver abscess syndrome in a patient with diabetes mellitus: A case report

Niu CY, Yao BT, Tao HY, Peng XG, Zhang QH, Chen Y, Liu L

3350 Acute gastric volvulus combined with pneumatosis coli rupture misdiagnosed as gastric volvulus with perforation: A case report

Zhang Q, Xu XJ, Ma J, Huang HY, Zhang YM



# Contents

World Journal of Gastrointestinal Surgery

# Monthly Volume 16 Number 10 October 27, 2024

#### **LETTER TO THE EDITOR**

3358 Can serious postoperative complications in patients with Crohn's disease be predicted using machine learning?

Zbar AP

3363 Influencing factors and preventive measures of infectious complications after intestinal resection for Crohn's disease

Lv SR, Huang X, Zhou LY, Shi J, Gong CC, Wang MK, Yang JS

3371 Evaluation of preoperative blood markers for predicting intra-abdominal infection during colorectal cancer resection: A commentary on recent findings

Zhang SY, Chen J, Cai N

3374 Differential diagnosis of gastric submucosal masses and external pressure lesions

Na Y, Liu XD, Xu HM

3377 Contributing to the prediction of prognosis for treated hepatocellular carcinoma: Imaging aspects that sculpt the future

Lindner C



# Contents

Monthly Volume 16 Number 10 October 27, 2024

# **ABOUT COVER**

Editorial Board Member of World Journal of Gastrointestinal Surgery, Michele Ammendola, MD, Research Associate, Surgical Oncologist, Science of Health Department, Digestive Surgery Unit, University of "Magna Graecia" Medical School, Catanzaro 88100, Italy. michele.ammendola@unicz.it

# **AIMS AND SCOPE**

The primary aim of World Journal of Gastrointestinal Surgery (WJGS, World J Gastrointest Surg) is to provide scholars and readers from various fields of gastrointestinal surgery with a platform to publish high-quality basic and clinical research articles and communicate their research findings online.

WJGS mainly publishes articles reporting research results and findings obtained in the field of gastrointestinal surgery and covering a wide range of topics including biliary tract surgical procedures, biliopancreatic diversion, colectomy, esophagectomy, esophagostomy, pancreas transplantation, and pancreatectomy, etc.

# **INDEXING/ABSTRACTING**

The WJGS is now abstracted and indexed in Science Citation Index Expanded (SCIE, also known as SciSearch®), Current Contents/Clinical Medicine, Journal Citation Reports/Science Edition, PubMed, PubMed Central, Reference Citation Analysis, China Science and Technology Journal Database, and Superstar Journals Database. The 2024 Edition of Journal Citation Reports<sup>®</sup> cites the 2023 journal impact factor (JIF) for WJGS as 1.8; JIF without journal self cites: 1.7; 5-year JIF: 1.9; JIF Rank: 126/292 in surgery; JIF Quartile: Q2; and 5-year JIF Quartile: Q3.

# **RESPONSIBLE EDITORS FOR THIS ISSUE**

Production Editor: Zi-Hang Xu; Production Department Director: Xiang Li; Cover Editor: Jia-Ru Fan.

NAME OF JOURNAL	INSTRUCTIONS TO AUTHORS
World Journal of Gastrointestinal Surgery	https://www.wignet.com/bpg/gerinfo/204
ISSN	GUIDELINES FOR ETHICS DOCUMENTS
ISSN 1948-9366 (online)	https://www.wjgnet.com/bpg/GerInfo/287
LAUNCH DATE	GUIDELINES FOR NON-NATIVE SPEAKERS OF ENGLISH
November 30, 2009	https://www.wignet.com/bpg/gerinfo/240
FREQUENCY	PUBLICATION ETHICS
Monthly	https://www.wjgnet.com/bpg/GerInfo/288
EDITORS-IN-CHIEF	PUBLICATION MISCONDUCT
Peter Schemmer	https://www.wjgnet.com/bpg/gerinfo/208
EDITORIAL BOARD MEMBERS	ARTICLE PROCESSING CHARGE
https://www.wjgnet.com/1948-9366/editorialboard.htm	https://www.wignet.com/bpg/gerinfo/242
PUBLICATION DATE	STEPS FOR SUBMITTING MANUSCRIPTS
October 27, 2024	https://www.wjgnet.com/bpg/GerInfo/239
COPYRIGHT	ONLINE SUBMISSION
© 2024 Baishideng Publishing Group Inc	https://www.f6publishing.com

© 2024 Baishideng Publishing Group Inc. All rights reserved. 7041 Koll Center Parkway, Suite 160, Pleasanton, CA 94566, USA E-mail: office@baishideng.com https://www.wjgnet.com



S WÜ

# World Journal of Gastrointestinal Surgery

Submit a Manuscript: https://www.f6publishing.com

World J Gastrointest Surg 2024 October 27; 16(10): 3350-3357

DOI: 10.4240/wjgs.v16.i10.3350

ISSN 1948-9366 (online)

CASE REPORT

# Acute gastric volvulus combined with pneumatosis coli rupture misdiagnosed as gastric volvulus with perforation: A case report

Qi Zhang, Xiu-Juan Xu, Jun Ma, Hai-Ying Huang, Ya-Ming Zhang

Specialty type: Gastroenterology and hepatology

Provenance and peer review: Unsolicited article; Externally peer reviewed.

Peer-review model: Single blind

Peer-review report's classification Scientific Quality: Grade B Novelty: Grade B Creativity or Innovation: Grade B

Scientific Significance: Grade B

P-Reviewer: Wakatsuki T

Received: July 8, 2024 Revised: August 22, 2024 Accepted: August 29, 2024 Published online: October 27, 2024 Processing time: 82 Days and 1 Hours



Qi Zhang, Jun Ma, Ya-Ming Zhang, Department of General Surgery, Anqing Municipal Hospital, Anqing 246000, Anhui Province, China

Xiu-Juan Xu, Department of Critical Medicine, Anging Municipal Hospital, Anging 246000, Anhui Province, China

Hai-Ying Huang, Department of Gastroenterology, Anqing Municipal Hospital, Anqing 246000, Anhui Province, China

Co-first authors: Qi Zhang and Xiu-Juan Xu.

Corresponding author: Ya-Ming Zhang, Doctor, MD, PhD, Chief Physician, Professor, Department of General Surgery, Anqing Municipal Hospital, No. 352 Renmin Road, Anqing 246000, Anhui Province, China. zhangyaming2014@163.com

# Abstract

#### BACKGROUND

Acute gastric volvulus represents a rare form of surgical acute abdomen, which makes it difficult to establish an early diagnosis. As the disease progresses, it can lead to gastric ischemia, necrosis, and other serious complications.

#### CASE SUMMARY

This paper reports a 67-year-old female patient with a history of abdominal distension and retching for 1 day. After admission, a prompt and thorough examination was performed to confirm the diagnosis of acute gastric volvulus. Notably, the patient had free air in the abdominal cavity. The first consideration was gastric volvulus with gastric perforation, but the patient had no complaints, such as abdominal pain or signs of peritoneal irritation in the abdomen, and imaging examination revealed no abdominal pelvic effusion. Following endoscopic reduction, the abdominal organs, such as the stomach and spleen, returned to their normal anatomical positions, and the free intraperitoneal air disappeared, suggesting a rare case of acute gastric torsion. The source of free air within the abdominal cavity warrants careful consideration and discussion. Combined with the findings from computed tomography, these findings are hypothesized to be associated with the rupture of colonic air cysts.

#### **CONCLUSION**

Patients with gastric torsion combined with free gas in the abdominal cavity should consider nongastrointestinal perforation factors to avoid misdiagnosis.



WJGS https://www.wjgnet.com

Key Words: Acute gastric volvulus; Free intraperitoneal air; Endoscopic therapy; Pneumatosis intestinalis cyst; Case report

©The Author(s) 2024. Published by Baishideng Publishing Group Inc. All rights reserved.

Core Tip: In this case, a 67-year-old female was admitted to the hospital due to abdominal distension and pain. The initial diagnosis was acute gastric torsion accompanied by free gas in the abdominal cavity. This makes it easy for us to determine the presence of gastric perforation. However, the patient's physical examination and abdominal computed tomography (CT) scan did not support the diagnosis of gastric perforation. After endoscopic reduction of gastric torsion, we found that the patient also had a colonic gas cyst after reexamination via CT. This is a rare case that has not been reported before.

Citation: Zhang Q, Xu XJ, Ma J, Huang HY, Zhang YM. Acute gastric volvulus combined with pneumatosis coli rupture misdiagnosed as gastric volvulus with perforation: A case report. World J Gastrointest Surg 2024; 16(10): 3350-3357 URL: https://www.wjgnet.com/1948-9366/full/v16/i10/3350.htm DOI: https://dx.doi.org/10.4240/wjgs.v16.i10.3350

# INTRODUCTION

Gastric torsion is a rare form of surgical acute abdomen with a difficult diagnosis, especially when patients are accompanied by free gas in the abdominal cavity, which can cause difficulties for clinical doctors. We need to accurately identify the source of free gas in the abdominal cavity and quickly decide the next treatment method.

# CASE PRESENTATION

#### Chief complaints

A 67-year-old female was admitted with a complaint of abdominal distension for 1 day.

#### History of present illness

The patient had sudden epigastric distension and pain 1 day prior, accompanied by nausea and retching, no hematemesis or melena, reduced anal exhaust, defecation once during the disease, and no relief from abdominal distension after fasting.

#### History of past illness

No history of hypertension or diabetes, gastritis or gastric ulcer, or abdominal surgery.

#### Personal and family history

No family history of any genetic disease.

#### Physical examination

The left upper quadrant was distended, the gastric type was palpable, there was no tenderness or rebound tenderness in the abdomen, there were no signs of peritoneal irritation, and there were 3 bowel sounds/min.

#### Laboratory examinations

Routine blood tests, C-reactive protein levels, liver function tests, and renal function tests were all within the normal range.

#### Imaging examinations

Abdominal computed tomography (CT) revealed acute gastric dilatation, with the lower edge of the stomach extending to the plane of the anterior superior iliac spine. The antrum was located in the anterosuperior cardia, and the spleen had shifted to the upper margin of the pancreas. Free air was noted within the abdominal cavity, and there was no effusion in the abdominal cavity or pelvic cavity. The placed gastric tube bypassed the gastric body through the posterior aspect of the stomach (Figure 1).

Emergency gastroscopy revealed deformity of the gastric lumen, accumulation of a large amount of food debris, patchy mucosal congestion, and ulceration in the gastric body, and it was difficult to identify the angle and antrum along the gastric body (Figure 2).

Gastrointestinal meglumine diatrizoate contrast examination revealed crescent-shaped free air under the diaphragm, an inflated and dilated gastric lumen, and high fluid levels. The cardia was displaced to the lower left, the gastric angle was not visualized, and the greater and lesser curvatures were indistinct. Partial entry of the contrast agent into the



Roishidene® WJGS https://www.wjgnet.com



Figure 1 Abdominal computed tomography scan upon admission. A: Free intraperitoneal air without fluid collection (purple arrow) and a markedly dilated gastric lumen with fluid collection (blue arrow); B: The lower gastric margin reaching the level of the anterior superior iliac spine (yellow arrow); C: Spleen displacement to the upper pancreatic margin (orange arrow) and free intraperitoneal air (purple arrow); D: The gastric tube entering the gastric body from left to right through the posterior aspect of the stomach (green arrow).

duodenum was observed, and the shape of the duodenal bulb was normal (Figure 3).

### **FINAL DIAGNOSIS**

The final diagnosis was gastric torsion combined with a ruptured colonic gas cyst.

# TREATMENT

On the basis of the patient's medical history, physical examination, and imaging examination findings, a diagnosis of acute gastric volvulus with free air in the abdominal cavity was established. The presence of free air in the abdominal cavity of the patient influenced treatment decision-making. Surgical exploration or laparoscopic exploration was considered the first choice for treatment, but considering the absence of the peritoneal irritation sign, lack of effusion on the abdominal and pelvic CT, and insufficient evidence of gastric perforation, we first performed endoscopic reduction after communicating with the family members of the patient.

The patient underwent gastroscopy again, and the antrum and pylorus were the same as those in the first gastroscopy. We changed the patient's position to the right lateral decubitus position after removing the gastric effusion and food debris. After repeated inflation, the antrum was successfully observed, and weentered the duodenum. Complete exploration of the entire gastric cavity revealed scattered ulcers predominantly in the gastric body; the antrum, pylorus, and duodenal mucosa appeared smooth, with no evidence of neoplasms (Figure 4).

Zaishidena® WJGS https://www.wjgnet.com

October 27, 2024 Volume 16 Issue 10



Figure 2 Gastroscopic examination upon admission. A: Shows distortion of the gastric wall and deformation of the gastric lumen (blue arrows); B: Shows multiple scattered superficial ulcers in the gastric body (purple arrows).



Figure 3 Upper gastrointestinal imaging examination upon admission. A: Shows the anterior view of upper gastrointestinal radiography, the contrast agent is limited, and the gastric lumen is not completely visualized; B: The posterior view of upper gastrointestinal radiography, the gastric lumen is dilated with pneumatosis, and the greater and lesser curvature sides cannot be distinguished.

# OUTCOME AND FOLLOW-UP

#### Outcome

After endoscopic reduction, the patient's abdominal signs were observed. The patient had no abdominal pain, and her abdominal distension substantially improved. The patient was treated with proton pump inhibitors and asked to fast for 1 day. Abdominal-enhanced CT was reexamined on the second day after endoscopic treatment. Upon reexamination *via* CT, the stomach and spleen returned to normal positions, the shape of the stomach was normal, the free air in the abdominal cavity disappeared, and there was no effusion in the abdominal cavity or pelvic cavity. There were no mass lesions in the gastric wall, spleen, or pancreas. Moreover, we found segmented scattered cystic air areas in the colon of the patient after medical images were reviewed carefully (Figure 5). The patient was on a liquid diet, transitioned to a normal



Figure 4 Reexamination via gastroscopy. A: Shows that the mucosa of the gastric wall is flat after reduction, and the antrum and pylorus can be observed (blue arrows); B: Shows that the duodenum is morphologically normal (white arrows).

diet without abdominal discomfort, and was discharged uneventfully.

#### Follow-up

At the 6-month follow-up, the patient had a normal diet and reported no abdominal pain or distension and normal anus exhaust and regular bowel movements.

#### DISCUSSION

Gastric volvulus refers to the abnormal rotation of the entire stomach or a part of the stomach around an axis > 180°, resulting in a closed-loop obstruction. This is a rare, life-threatening disease. Berti first reported this phenomenon during the autopsy of a 61-year-old woman in 1866 and revealed that the peak age of onset was 40-60 years, with cases also reported in infants younger than 1 year. It mainly presents as acute or chronic recurrent gastrointestinal obstruction, and severe cases can progress to gastric strangulation, necrosis, perforation, and hypovolemic shock[1].

Acute gastric volvulus is characterized by the sudden onset of severe epigastric pain, accompanied by upper abdomen distension and a soft, flat lower abdomen. Additional symptoms may include dyspnea, vomiting, and aggravation of symptoms after meals. To facilitate diagnosis, Borchardt proposed the triad of gastric volvulus in 1904: (1) Severe epigastric pain and distension; (2) Vomiting, which in turn results in severe retching; and (3) Difficulty in gastric tube insertion, which is observed in up to 70% of patients with acute gastric volvulus[2]. Subsequently, Carter further proposed 3 auxiliary diagnostic criteria: (1) Abdominal signs may not be obvious if there is a diaphragmatic defect where the stomach enters the thoracic cavity or if there is severe diaphragmatic distention; (2) Chest radiography reveals cystic inflated organ shadows in the thoracic cavity or upper abdomen; and (3) Clinical manifestations of upper gastrointestinal obstruction[3].

In this case, the patient had a history of abdominal distension and pain, vomiting, and other accompanying symptoms. The physical examination revealed a palpable distended gastric area, and the clinical symptoms were consistent with the clinical manifestations of gastric volvulus. Imaging studies, including abdominal CT, gastrointestinal radiography, and gastroscopy, revealed a distorted and distended gastric shape. The antrum and pylorus could not be visualized endoscopically, with the antrum located in the anterosuperior cardia, which is consistent with the imaging diagnosis of gastric volvulus. Upon prompt and definitive diagnosis, decisions on treatment modalities for gastric volvulus are needed, and options include endoscopic therapy and surgical exploration. Endoscopic reduction therapy can be used for patients with acute and chronic gastric volvulus, and numerous successful treatments have been reported in the literature. Emergency surgery is another approach for treating acute gastric volvulus and involves relieving the volvulus, identifying the underlying cause, and preventing recurrence. Surgical methods include diaphragmatic repair, gastrodesis, *etc.* Laparoscopic exploration can also be considered[4-6].

The treatment plan was developed after consulting with the patient's family, with a preference for endoscopic reduction therapy. However, emergency surgical exploration could have been performed if the condition of the patient deteriorated. During the endoscopic procedure, the patient's body position was adjusted to promote the reduction of the stomach's size and volume by gravity and gastric cavity inflation in the right lateral decubitus position. Abdominal massage was used to assist in endoscopic treatment. Throughout the procedure, the gastric cavity returned to a normal microscopic state, and the morphology of the antrum and duodenum was observed without any complications. The patient did not report abdominal pain, and there were no signs of peritonitis in the abdomen. On the second day after



wJGS https://www.wjgnet.com



Figure 5 Abdominal enhanced computed tomography examination. A: Shows the disappearance of free air in the abdominal cavity (purple arrows), improvement of gastric dilatation, normal gastric morphology (blue arrows), and return of the spleen to a normal anatomical position (orange arrows); B: Shows no thickened mass in the gastric wall (blue arrows) and normal pancreatic morphology (green arrows); C-F: Multiple cases of subserosal pneumatosis in the colon (orange arrows) with intact continuity of the bowel wall (white arrows).

treatment, enhanced abdominal CT revealed that the shape of the stomach returned to normal, with the surrounding organs reverting to their normal anatomical position. No space-occupying lesions were observed in the gastric wall, and there were no defects in the diaphragm.

Another concern in this case is the source of free air in the patient's peritoneal cavity. The most common source of free air in the abdominal cavity is perforation of hollow organs in the abdominal cavity. Typically, patients present with acute manifestations of peritonitis, including signs of peritoneal irritation[7]. The diagnosis of gastric volvulus was confirmed. The first considered diagnosis was gastric volvulus accompanied by gastric perforation, suggesting the need for emergency surgical exploration. Endoscopic treatment could not be selected at this time. However, the patient presented with abdominal distension without accompanying abdominal pain or signs of peritoneal irritation throughout the disease course. Furthermore, abdominal CT revealed the absence of effusion in the abdominal and pelvic regions. Endoscopic examination and imaging examinations revealed intact integrity of the gastric wall, providing insufficient evidence to support a diagnosis of gastrointestinal perforation. These findings collectively guided the decision to proceed with endoscopic treatment. Certainly, the presence of free air in the abdominal cavity also has a nongastrointestinal perforation source, including abdominal infection caused by aerogenic bacteria, uterine perforation, and iatrogenic interventions[8,9]. Given that the patient exhibited no imaging findings indicative of abdominal infection and denied recent

Baishideng® WJGS | https://www.wjgnet.com

iatrogenic procedures such as abdominal paracentesis, the abovementioned sources were not considered likely causes for the presence of free air in the abdominal cavity. On review of the abdominal CT after endoscopic treatment, multiple segmental subserosal pneumatoses were observed in the colon, suggesting the possibility of intestinal pneumoceles, which mostly present with unexplained free abdominal air without clinical manifestations of hollow organ perforation. We speculate that the patient's imaging features of free air in the abdominal cavity may be attributed to increased abdominal pressure leading to the rupture of an intestinal pneumatocele during an episode of gastric volvulus[10].

To summarize the diagnosis and treatment process of this case, the patient had no previous history of abdominal surgery or other factors, the cause of the gastric volvulus was considered to be primary gastric volvulus, and the exact cause of the volvulus remained unclear. Following successful endoscopic treatment and a favorable outcome during the 6-month follow-up period, with the patient exhibiting normal eating habits and no recurrence of symptoms, additional laparoscopic exploration, gastric fixation, and other surgical methods were not deemed necessary.

### CONCLUSION

Acute gastric dilatation represents a rare but surgical acute abdomen, necessitating early diagnosis and treatment, with some cases requiring emergency surgical treatment and some cases successfully managed through endoscopic treatment. The presence of free air in the abdominal cavity is commonly associated with the perforation of hollow organs of the abdominal cavity, but it can also arise from nondigestive tract perforations, and intestinal air cysts are rare. When both diseases cooccur, they pose a challenge for clinicians in making treatment decisions and require clinicians to be good at differential diagnosis.

# FOOTNOTES

Author contributions: Zhang Q and Huang HY completed the surgery; Zhang YM and Ma J revised the article; Zhang Q and Xu XJ wrote the manuscript. All authors have read and approved the final manuscript. Zhang Q and Xu XJ contributed equally to this work as co-first authors.

**Informed consent statement:** Written informed consent was obtained from the patient to publish this paper.

Conflict-of-interest statement: The authors declare having no conflicts of interest.

CARE Checklist (2016) statement: The authors have read the CARE Checklist (2016), and the manuscript was prepared and revised according to the CARE Checklist (2016).

**Open-Access:** This article is an open-access article that was selected by an in-house editor and fully peer-reviewed by external reviewers. It is distributed in accordance with the Creative Commons Attribution NonCommercial (CC BY-NC 4.0) license, which permits others to distribute, remix, adapt, build upon this work non-commercially, and license their derivative works on different terms, provided the original work is properly cited and the use is non-commercial. See: https://creativecommons.org/Licenses/by-nc/4.0/

Country of origin: China

**ORCID** number: Qi Zhang 0009-0001-0675-8248; Jun Ma 0000-0003-2547-8257; Ya-Ming Zhang 0000-0002-7020-7379.

S-Editor: Ou XL L-Editor: A P-Editor: Wang WB

# REFERENCES

- Lopez PP, Megha R. Gastric Volvulus. 2022 Nov 7. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2024 Jan- [PMID: 1 299396631
- 2 Karande TP, Oak SN, Karmarkar SJ, Kulkarni BK, Deshmukh SS. Gastric volvulus in childhood. J Postgrad Med 1997; 43: 46-47 [PMID: 10740719
- 3 Carter R, Brewer LA 3rd, Hinshaw DB. Acute gastric volvulus. A study of 25 cases. Am J Surg 1980; 140: 99-106 [PMID: 7396092 DOI: 10.1016/0002-9610(80)90424-9
- Omata J, Utsunomiya K, Kajiwara Y, Takahata R, Miyasaka N, Sugasawa H, Sakamoto N, Yamagishi Y, Fukumura M, Kitagawa D, Konno 4 M, Okusa Y, Murayama M. Acute gastric volvulus associated with wandering spleen in an adult treated laparoscopically after endoscopic reduction: a case report. Surg Case Rep 2016; 2: 47 [PMID: 27221130 DOI: 10.1186/s40792-016-0175-0]
- Cantone N, Gulia C, Miele V, Trinci M, Briganti V. Wandering Spleen and Organoaxial Gastrie Volvulus after Morgagni Hernia Repair: A 5 Case Report and Review of the Literature. Case Rep Surg 2016; 2016: 6450765 [PMID: 27703832 DOI: 10.1155/2016/6450765]
- El-Magd EA, Elgeidie A, Abbas A, Elmahdy Y, LotfyAbulazm I, Hamed H. Laparoscopic approach in the management of diaphragmatic 6 eventration in adults: gastrointestinal surgical perspective. Updates Surg 2024; 76: 555-563 [PMID: 37847484 DOI: 10.1007/s13304-023-01665-7]



- Hoshino N, Endo H, Hida K, Kumamaru H, Hasegawa H, Ishigame T, Kitagawa Y, Kakeji Y, Miyata H, Sakai Y. Laparoscopic Surgery for 7 Acute Diffuse Peritonitis Due to Gastrointestinal Perforation: A Nationwide Epidemiologic Study Using the National Clinical Database. Ann Gastroenterol Surg 2022; 6: 430-444 [PMID: 35634193 DOI: 10.1002/ags3.12533]
- De Waele J, Lipman J, Sakr Y, Marshall JC, Vanhems P, Barrera Groba C, Leone M, Vincent JL; EPIC II Investigators. Abdominal infections 8 in the intensive care unit: characteristics, treatment and determinants of outcome. BMC Infect Dis 2014; 14: 420 [PMID: 25074742 DOI: 10.1186/1471-2334-14-420]
- Friedrich K, Nüssle S, Rehlen T, Stremmel W, Mischnik A, Eisenbach C. Microbiology and resistance in first episodes of spontaneous 9 bacterial peritonitis: implications for management and prognosis. J Gastroenterol Hepatol 2016; 31: 1191-1195 [PMID: 26676553 DOI: 10.1111/jgh.13266]
- Im J, Anjum F. Pneumatosis Intestinalis. 2023 Apr 27. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2024 Jan-10 [PMID: 33232051]





# Published by Baishideng Publishing Group Inc 7041 Koll Center Parkway, Suite 160, Pleasanton, CA 94566, USA Telephone: +1-925-3991568 E-mail: office@baishideng.com Help Desk: https://www.f6publishing.com/helpdesk https://www.wjgnet.com

