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Contents

Monthly Volume 16 Number 2 February 27, 2024

EDITORIAL

- 260 Actuality and underlying mechanisms of systemic immune-inflammation index and geriatric nutritional risk index prognostic value in hepatocellular carcinoma
Tchilikidi KY
- 266 Prognostic impact of preoperative nutritional and immune inflammatory parameters on liver cancer
Bae SU
- 270 Don't forget emergency surgery! Lessons to learn from elective indocyanine green-guided gastrointestinal interventions
Perini D, Martellucci J
- 276 Mutational landscape of TP53 and CDH1 in gastric cancer
Cai HQ, Zhang LY, Fu LM, Xu B, Jiao Y
- 284 Overview of ectopic pancreas
Li CF, Li QR, Bai M, Lv YS, Jiao Y

ORIGINAL ARTICLE

Clinical and Translational Research

- 289 Phospholipase A2 enzymes PLA2G2A and PLA2G2B as potential diagnostic and prognostic biomarkers in cholangiocarcinoma
Qiu C, Xiang YK, Da XB, Zhang HL, Kong XY, Hou NZ, Zhang C, Tian FZ, Yang YL

Case Control Study

- 307 Classification of anatomical morphology of cystic duct and its association with gallstone
Zhu JH, Zhao SL, Kang Q, Zhu Y, Liu LX, Zou H

Retrospective Cohort Study

- 318 Will partial splenic embolization followed by splenectomy increase intraoperative bleeding?
Huang L, Li QL, Yu QS, Peng H, Zhen Z, Shen Y, Zhang Q
- 331 Influence of donor age on liver transplantation outcomes: A multivariate analysis and comparative study
Bezjak M, Stresec I, Kocman B, Jadrijević S, Filipec Kanizaj T, Antonijević M, Dalbelo Bašić B, Mikulić D
- 345 Machine learning-based radiomics score improves prognostic prediction accuracy of stage II/III gastric cancer: A multi-cohort study
Xiang YH, Mou H, Qu B, Sun HR

- 357 Risk stratification in gastric cancer lung metastasis: Utilizing an overall survival nomogram and comparing it with previous staging
Chen ZR, Yang MF, Xie ZY, Wang PA, Zhang L, Huang ZH, Luo Y
- 382 Systemic inflammatory response index is a predictor of prognosis in gastric cancer patients: Retrospective cohort and meta-analysis
Ren JY, Xu M, Niu XD, Ma SX, Jiao YJ, Wang D, Yu M, Cai H
- Retrospective Study**
- 396 Development of a clinical nomogram for prediction of response to neoadjuvant chemotherapy in patients with advanced gastric cancer
Liu B, Xu YJ, Chu FR, Sun G, Zhao GD, Wang SZ
- 409 Laparoscopic left hemihepatectomy guided by indocyanine green fluorescence: A cranial-dorsal approach
Wang XR, Li XJ, Wan DD, Zhang Q, Liu TX, Shen ZW, Tong HX, Li Y, Li JW
- 419 Hemoglobin loss method calculates blood loss during pancreaticoduodenectomy and predicts bleeding-related risk factors
Yu C, Lin YM, Xian GZ
- 429 Short- and long-term outcomes of surgical treatment in patients with intestinal Behcet's disease
Park MY, Yoon YS, Park JH, Lee JL, Yu CS
- 438 Preoperative neutrophil-to-lymphocyte ratio predicts symptomatic anastomotic leakage in elderly colon cancer patients: Multicenter propensity score-matched analysis
Wang CY, Li XL, Ma XL, Yang XF, Liu YY, Yu YJ
- 451 Preoperative blood markers and intra-abdominal infection after colorectal cancer resection
Liu CQ, Yu ZB, Gan JX, Mei TM
- 463 Immune function status of postoperative patients with colon cancer for predicting liver metastasis
Xiong L, Liu FC
- 471 Efficacy of transjugular intrahepatic portosystemic shunts in treating cirrhotic esophageal-gastric variceal bleeding
Hu XG, Dai JJ, Lu J, Li G, Wang JM, Deng Y, Feng R, Lu KP
- 481 Correlation between serum markers and transjugular intrahepatic portosystemic shunt prognosis in patients with cirrhotic ascites
Hu XG, Yang XX, Lu J, Li G, Dai JJ, Wang JM, Deng Y, Feng R
- 491 Development of a new Cox model for predicting long-term survival in hepatitis cirrhosis patients underwent transjugular intrahepatic portosystemic shunts
Lv YF, Zhu B, Meng MM, Wu YF, Dong CB, Zhang Y, Liu BW, You SL, Lv S, Yang YP, Liu FQ
- 503 "Five steps four quadrants" modularized *en bloc* dissection technique for accessing hepatic hilum lymph nodes in laparoscopic pancreaticoduodenectomy
Hu XS, Wang Y, Pan HT, Zhu C, Chen SL, Liu HC, Pang Q, Jin H

- 511** Efficacy and safety of endoscopic submucosal dissection for early gastric cancer and precancerous lesions in elderly patients

Xu WS, Zhang HY, Jin S, Zhang Q, Liu HD, Wang MT, Zhang B

- 518** Nomogram model including *LATS2* expression was constructed to predict the prognosis of advanced gastric cancer after surgery

Sun N, Tan BB, Li Y

Observational Study

- 529** To explore the pathogenesis of anterior resection syndrome by magnetic resonance imaging rectal defecography

Meng LH, Mo XW, Yang BY, Qin HQ, Song QZ, He XX, Li Q, Wang Z, Mo CL, Yang GH

- 539** Biopsy forceps are useful for measuring esophageal varices *in vitro*

Duan ZH, Zhou SY

SYSTEMATIC REVIEWS

- 546** First experience in laparoscopic surgery in low and middle income countries: A systematic review

Troller R, Bawa J, Baker O, Ashcroft J

- 554** Comparative effectiveness of several adjuvant therapies after hepatectomy for hepatocellular carcinoma patients with microvascular invasion

Pei YX, Su CG, Liao Z, Li WW, Wang ZX, Liu JL

META-ANALYSIS

- 571** Is tumor necrosis factor- α monoclonal therapy with proactive therapeutic drug monitoring optimized for inflammatory bowel disease? Network meta-analysis

Zheng FY, Yang KS, Min WC, Li XZ, Xing Y, Wang S, Zhang YS, Zhao QC

- 585** Poor oral health was associated with higher risk of gastric cancer: Evidence from 1431677 participants

Liu F, Tang SJ, Li ZW, Liu XR, Lv Q, Zhang W, Peng D

CASE REPORT

- 596** Treatment of hemolymphangioma by robotic surgery: A case report

Li TN, Liu YH, Zhao J, Mu H, Cao L

- 601** Postoperative encapsulated hemoperitoneum in a patient with gastric stromal tumor treated by exposed endoscopic full-thickness resection: A case report

Lu HF, Li JJ, Zhu DB, Mao LQ, Xu LF, Yu J, Yao LH

- 609** Early endoscopic management of an infected acute necrotic collection misdiagnosed as a pancreatic pseudocyst: A case report

Zhang HY, He CC

- 616** Percutaneous ultrasound-guided coaxial core needle biopsy for the diagnosis of multiple splenic lesions: A case report
Pu SH, Bao WYG, Jiang ZP, Yang R, Lu Q
- 622** Spilled gallstone mimicking intra-abdominal seeding of gallbladder adenocarcinoma: A case report
Huang CK, Lu RH, Chen CC, Chen PC, Hsu WC, Tsai MJ, Ting CT
- 628** Ileal collision tumor associated with gastrointestinal bleeding: A case report and review of literature
Wu YQ, Wang HY, Shao MM, Xu L, Jiang XY, Guo SJ

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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.*

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Ileal collision tumor associated with gastrointestinal bleeding: A case report and review of literature

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Abstract

BACKGROUND

Collision tumors involving the small intestine, specifically the combination of a hamartomatous tumor and a lipoma, are extremely rare. To our knowledge, no previous case report has described a collision tumor composed of two benign tumors of different origins in the small intestine.

CASE SUMMARY

Here, we present the case of an 82-year-old woman who presented with hemorrhagic shock and was found to have a mass measuring approximately 50 mm × 32 mm × 30 mm in the terminal ileum. Based on computed tomography scan findings, the mass was initially suspected to be a lipoma. A subsequent colonoscopy revealed a pedunculated submucosal elevation consisting of two distinct parts with a visible demarcation line. A biopsy of the upper portion suggested a juvenile polyp (JP). Owing to the patient's advanced age, multiple comorbidities, and poor surgical tolerance, a modified endoscopic submucosal dissection was performed. Histopathological examination of the excised mucosal mass revealed a lipoma at the base and a JP at the top, demonstrating evidence of rupture and associated bleeding. The patient's overall health remained satisfactory, with no recurrence of hematochezia during the six-month follow-up period.

CONCLUSION

This case report provides new evidence for the understanding of gastrointestinal collision tumors, emphasizing their diverse clinical presentations and histopathological characteristics. It also offers diagnostic and therapeutic insights as well as

an approach for managing benign collision tumors.

Key Words: Collision tumor; Gastrointestinal bleeding; Hamartomatous tumor; Lipoma; Modified endoscopic submucosal dissection; Case report

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Core Tip: Small intestinal collision tumors, specifically those comprising hamartomatous tumors with lipomas, are rare. Most available literature on gastrointestinal collision tumors describes cases with malignant tumor components, and most of these patients are treated surgically. In this report, we present a rare case in which a collision tumor composed of two benign tumors of different origins in the small intestine was accidentally discovered because of hemorrhage-induced hypovolemic shock. Considering the patient's advanced age, multiple comorbidities, and poor surgical tolerance, we performed a modified endoscopic submucosal dissection procedure. This case demonstrates an approach for managing benign collision tumors in the small intestine.

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INTRODUCTION

Juvenile polyps (JPs) are commonly classified as hamartomatous polyps and are frequently implicated as a cause of hematochezia. They are typically found in the rectum and sigmoid colon but have been rarely documented in the small intestine[1-3]. Collision tumors, a subtype of mixed tumors, have two distinct components[4]. They are relatively uncommon in pathology, with reported occurrences in various locations, such as the skull, gastroesophageal junction, rectum, and uterus[5]. Small intestinal collision tumors are most frequently observed in the ampulla of Vater[6-9], while documented cases of ileal collision tumors are exceptionally rare[10]. To date, no prior reports have been found on collision tumors predominantly involving JPs that present as hemorrhages. In this report, we present a unique case of hemorrhagic shock in a patient with a collision tumor composed of a JP and lipoma in the small intestine, which was successfully managed using a modified endoscopic submucosal dissection (ESD) technique.

CASE PRESENTATION

Chief complaints

An 82-year-old woman presented with a one-day history of dark red bloody diarrhea.

History of present illness

The symptoms appeared one day prior to presentation, with the patient experiencing 10 episodes of dark red bloody diarrhea. She reported feeling dizzy and fatigued but denied experiencing any abdominal pain or bloating.

History of past illness

The patient had a medical history of hypertension, atrial fibrillation, and chronic heart failure (NYHA Classification IV). The patient was administered oral dabigatran anticoagulation therapy.

Personal and family history

She had no family history of gastrointestinal tumors or psychological or genetic disorders.

Physical examination

Upon admission, the patient appeared apathetic. Physical examination revealed a hypotensive state with a blood pressure of 79/45 mmHg, heart rate of 142 beats/min, and normal body temperature.

Laboratory examinations

Laboratory analysis revealed decreased levels of red blood cells and hemoglobin (8.5 g/dL), along with an elevated ultrasensitive C-reactive protein level of 17.61 mg/L. Coagulation parameters were found to be abnormal, including a prolonged prothrombin time of 18.9 s, activated partial thromboplastin time of 51.4 s, reduced prothrombin activity of 51%, increased international normalized ratio of 1.55, and a fibrinogen level of 4.6 g/L. The patient's serum potassium

level was 3.05 mmol/L, and hepatic and renal functions were within the normal range.

Imaging examinations

Ultrasound examination revealed a well-defined hypoechoic mass measuring 50 mm × 32 mm × 30 mm at the terminal ileum of the right lower abdomen, suggesting a possible lipoma. Contrast-enhanced computed tomography confirmed the presence of a lipoma with partial intestinal invagination into the ascending colon, indicating the possibility of intestinal intussusception (Figure 1).

Further diagnostic work-up

The preliminary clinical diagnosis was hemorrhagic shock. Anticoagulant medication was temporarily discontinued. As the hemoglobin level did not meet the clinical transfusion threshold, she received a comprehensive treatment approach that included fluid resuscitation, combination therapy with proton pump inhibitors and somatostatin to promote hemostasis, correction of coagulation abnormalities, and provision of nutritional support. Subsequent colonoscopy revealed a submucosal elevation 6 cm from the ileocecal valve consisting of two distinct parts with clear demarcation and varying texture upon palpation (softer at the base) (Figure 2). Narrow-band imaging indicated a type II opening (stellate) of the glandular portion at the top of the lesion and a type I opening (consistent with the surrounding mucosa) at the lower end. A specimen was obtained from the upper surface of the lesion for biopsy, and histopathological results indicated a diagnosis consistent with JP.

FINAL DIAGNOSIS

Based on the patient's medical history and pathological examination, the final diagnosis was determined to be a collision tumor consisting of a hamartomatous tumor with a concurrent lipoma in the small intestine

TREATMENT

Because of persistent bloody stools and the exclusion of other potential sources of gastrointestinal bleeding through procedures, such as gastroscopy, a multidisciplinary team consultation (MDT) considered the possibility of mechanical stimulation-induced bleeding from a collision tumor located 6 cm away from the ileocecal valve. Considering the patient's advanced age and multiple comorbidities, which rendered her unsuitable for surgery, the recommended treatment approach was ESD. Following informed consent, a modified ESD procedure was successfully performed with the assistance of a snare device for *en bloc* resection. This ensured complete removal of the lesion measuring approximately 60 mm × 40 mm, with no significant adverse events (Figure 3).

OUTCOME AND FOLLOW-UP

Histopathological examination of the endoscopic biopsy specimen confirmed the presence of a collision tumor (lipoma combined with JP) exhibiting signs of angiodysplasia and surface bleeding (Figure 4). The patient recovered smoothly following surgery, with no recurrence of bloody stools. Three days after the operation, the patient's hemoglobin level increased by 10 g/L, and she did not report any other concerns. Throughout the six-month follow-up period, the patient's overall health remained satisfactory and there were no instances of hematochezia recurrence.

DISCUSSION

This case was accidentally discovered because of hemorrhage-induced hypovolemic shock. To our knowledge, this is the first reported case of a collision tumor comprising two benign tumors of different origins in the small intestine. JPs belong to the category of hamartomatous polyps, which are more common in children and account for over 90% of pediatric polyps, but are relatively rare in adults[11,12]. JPs usually presents with nonspecific signs and symptoms, including abdominal pain, bloody stools, prolapse, and diarrhea[13]. Because of the highly vascular nature, gastrointestinal bleeding is a common symptom associated with JPs[14]. Previous studies have reported more common collisions between serrated polyps and traditional adenomas[15] and rare collision tumors formed by inflammatory fibroid polyps with adenocarcinoma or gastrointestinal stromal tumors[16,17]. Notably, no cases of collision tumors of the small bowel associated with JPs have been reported.

Compared to solitary JPs, lipomas are not rare in the gastrointestinal tract, with an incidence ranging from 0.035% to 4.4%[18]. Among them, the colon accounts for 65%-75%, followed by the small intestine (20%-25%), stomach, and esophagus. As the second most common benign tumor of the small intestine, lipomas are typically located in the ileum (50%) and rarely in the jejunum[19]. Symptomatically, lipomas in the small intestine mainly present as abdominal pain, followed by nausea and vomiting. Approximately 33.3% of patients may experience gastrointestinal bleeding due to lipoma ulceration. Other symptoms include anemia, abdominal distention, constipation, and unintentional weight loss

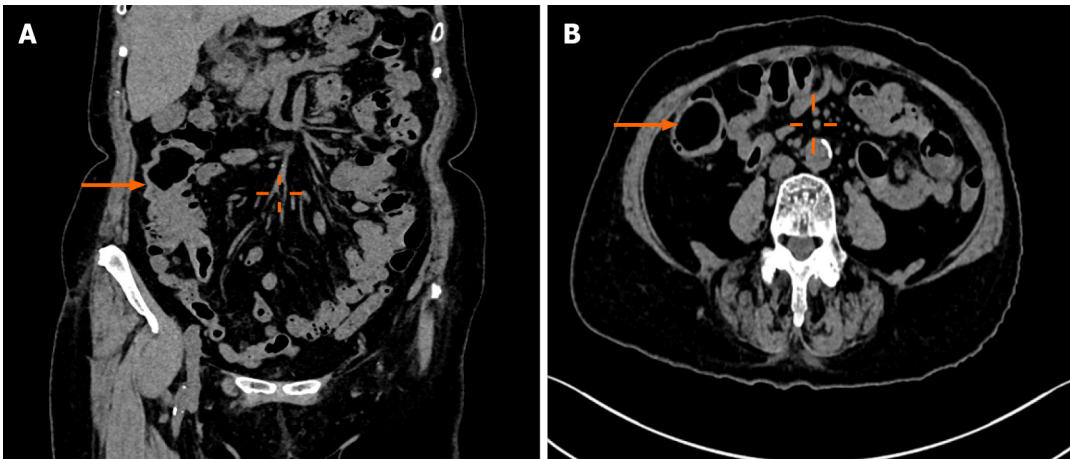


Figure 1 Contrast-enhanced computed tomography of the abdomen. A: Partial invagination of the ascending colon suggests intussusception (orange arrow); B: The mass at the terminal ileum (orange arrow).



Figure 2 Colonoscopy examination. Submucosal elevation 6 cm from the ileocecal valve consists of two distinct parts with a clearly visible demarcation line.

[20]. Furthermore, disruption of the epithelial covering of the surface of lipomas may also contribute to bleeding. The definition of atypical lipomas was proposed by Snover[21], and later, Virgilio *et al*[22] classified “atypical” lipomas into three types based on malignant changes in the covering epithelium and suggested that in atypical lipomas, mucosal ischemia and inflammatory reactions may lead to mucosal hyperplasia and the development of hyperplastic polyps, as well as the proliferation and adenomatous transformation of the overlying mucosa. Sporadic cases of lipomas have been reported to exhibit proliferative and ulcerative epithelium[23-26].

In clinical practice, both lipomas and JPs can result in the occurrence of hematochezia. However, in the present case of identified submucosal elevation, the top portion was pathologically confirmed to be JP, which led to the patient’s current episode of hematochezia. Therefore, we speculate that, in this case, the occurrence of a small intestinal lipoma may have preceded the development of a hamartomatous polyp with an overlay of epithelium on its surface due to frictional irritation. This may have led to the formation of a collision tumor, ultimately resulting in the rupture and bleeding of the top portion of the JP.

In the treatment of collision tumors, as reported in existing literature, most cases involving gastrointestinal collision tumors contain malignant tumor components. Therefore, surgery is the primary treatment for most patients, and some patients may opt for adjuvant or neoadjuvant therapy[5]. However, in cases in which two benign tumors are combined, the treatment options for lipomas and JPs include surgery, laparoscopy, and endoscopy. Previously, the European Society of Gastrointestinal Endoscopy did not recommend the routine use of ESD for duodenal or small bowel lesions, mainly because of its higher incidence of perforation (15% to 37.5%) than that of EMR[27].

Notably, in recent years, there have been increasing number of cases of ESD for the treatment of small intestinal lesions. Morimoto reported the successful peeling of a giant (5 cm) ileal lipoma using endoscopic unroofing and submucosal dissection[28]. Noda *et al*[29] and Muramoto *et al*[30] separately reported cases of ESD for lipomas measuring approximately 4 cm in the terminal ileum. Farkas *et al*[20] summarized different treatment strategies in 147 cases and found that although traditional surgery remains the main choice, endoscopic and laparoscopic techniques have great potential for future use in reducing the use of invasive surgeries, as there were no statistically significant differences in hospitalization time and lipoma size among the different treatment strategy choices. Furthermore, Chen *et al*[31] recently reported two cases of balloon-assisted ESD for deep intestinal lipomas that showed good clinical feasibility. Considering that the location of collision tumor (terminal ileum), the higher surgical risk for an elderly patient with comorbidities and

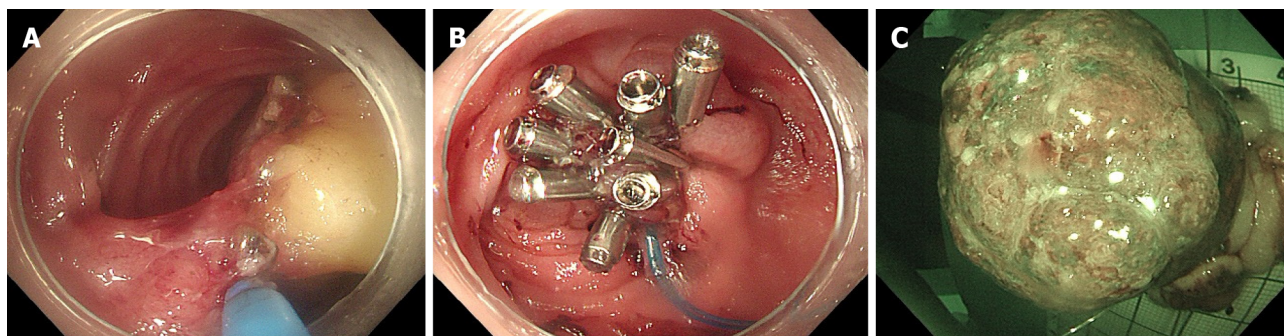


Figure 3 Modified endoscopic submucosal dissection procedure. A: Endoscopic images showing the process of endoscopic submucosal dissection (ESD) for the tumor; B: Endoscopic images showing the purse-string suture closure of the excised tumor site after ESD; C: The resected mass.



Figure 4 Histopathological examination. A: Microscopic examination revealed a benign collision tumor (lipoma combined with juvenile polyp); B: The signs of angiodysplasia and bleeding on the surface of the lesion (orange arrow).

the feasibility of a successful colonic endoscopic resection[32], our MDT unanimously approved the use of ESD for treatment. We successfully performed ESD to remove a large collision tumor without any postoperative adverse events, providing a new case reference for ESD treatment of small intestinal tumors.

CONCLUSION

This report presents an exceptionally rare case of a collision tumor consisting of a combination of lipomas and hamartomatous polyps. The patient presented with hematochezia and hemorrhagic shock caused by bleeding from an apical JP located in the terminal ileum. This case provides novel insights into the clinical manifestations and histopathological patterns of collision tumors while also offering valuable diagnostic and therapeutic considerations for managing benign collision tumors.

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