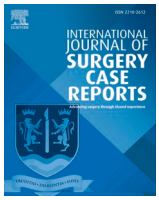
International Journal of Surgery Case Reports 123 (2024) 110243

Contents lists available at ScienceDirect

International Journal of Surgery Case Reports

journal homepage: www.elsevier.com/locate/ijscr



Case report

Post-colonoscopy splenic injury: A case report on diagnostic challenges and treatment strategies

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ARTICLE INFO

Keywords:
Splenic injury
Colonoscopy complications
Conservative management
Surgical intervention
Case report

ABSTRACT

Introduction and importance: Colonoscopy, while generally safe, can rarely lead to severe complications such as splenic injury. This article reports a case of splenic injury post-colonoscopy, highlighting clinical challenges, diagnostic approaches, and treatment strategies. The goal is to raise awareness among healthcare professionals and enhance knowledge on managing such complications.
Case presentation: A 60-year-old woman with chronic constipation underwent a challenging colonoscopy. Twelve hours later, she had acute abdominal pain, bloating, and anemia. Examination revealed tachycardia and a distended abdomen. Urgent CT showed splenic hematoma and hemoperitoneum. Initially managed conservatively with fluids and transfusions, she developed worsening tachycardia and persistent anemia, necessitating emergency laparotomy. Surgery confirmed significant hemoperitoneum and bleeding splenic lesion, leading to splenectomy. She stabilized and was discharged on the fifth postoperative day with antibiotics and vaccinations.
Clinical discussion: Splenic injury, though rare, is a serious complication of colonoscopy, occurring in 0.002 % to 0.033 % of cases. Symptoms include abdominal pain, left shoulder pain, dizziness, and syncope. Prompt diagnosis with contrast-enhanced CT, which identifies 98.5 % of injuries, is crucial. Treatment ranges from conservative management to emergency splenectomy, based on injury severity and patient stability. Non-operative management is often successful in stable patients, while splenectomy may be necessary for those with significant hemodynamic instability. Early recognition and appropriate treatment are essential for favorable outcomes.
Conclusion: Splenic injury is a rare but severe complication of colonoscopy. Early recognition and appropriate management are crucial for positive outcomes. Conservative treatment is often effective, but surgery may be needed for severe cases.

1. Introduction

Colonoscopy is a widely used procedure for diagnosing and treating various gastrointestinal conditions, known for its generally low risk profile [1]. However, despite its relative safety, complications can arise, some of which are rare but potentially severe. One such complication is splenic injury, which, although infrequent, can have serious consequences if not promptly identified and managed. This article presents a case report of splenic injury following colonoscopy, detailing the clinical challenges encountered, diagnostic approaches, and treatment strategies. Through this report, we aim to raise awareness among healthcare professionals and contribute to the body of knowledge on the effective management of post-colonoscopy complications.

This work has been reported in line with the SCARE 2023 criteria [2].

2. Case presentation

A 60-year-old female patient with no notable medical history presented to the emergency department with acute anemia following a colonoscopy. The patient had a history of chronic constipation for three months, which led to the colonoscopy being performed in the gastroenterology department.

The colonoscopy preparation was adequate, but the colonoscopy procedure was difficult. According to the endoscopist's account, the insertion of the endoscope was challenging due to loops in the sigmoid

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https://doi.org/10.1016/j.ijscr.2024.110243
Received 13 August 2024; Received in revised form 30 August 2024; Accepted 4 September 2024

colon. As a result, the physician angulated the endoscope to release the loop in the sigmoid colon and applied traction with the tip of the endoscope hooked at the splenic flexure. Additionally, during insertion at the hepatic flexure, manual pressure was applied above the umbilicus and in the left lower abdomen to prevent stretching of the sigmoid and transverse colon during the push insertion. Despite these difficulties, the colonoscopy was completed, and a 6 mm sessile polyp in the transverse colon was identified and resected.

Twelve hours post-colonoscopy, the patient experienced acute abdominal pain and abdominal bloating unrelieved by passing gas. The symptoms rapidly worsened, prompting the patient to visit the emergency department. On examination, the patient was tachycardic at 100 bpm, with normal blood pressure and stable respiratory and neurological statuses. Abdominal examination revealed a distended abdomen with tenderness, particularly in the left hypochondrium, while the rest of the examination was unremarkable.

Biological tests indicated normochromic microcytic anemia with hemoglobin at 6 g/dL, hematocrit at 19 %, and platelets at 250,000. An urgent contrast-enhanced abdominopelvic CT scan showed a splenic hematoma and moderate hemoperitoneum (Fig. 1).

Initial management included adequate resuscitation with intravenous normal saline and transfusion of three units of packed red blood cells, which stabilized the patient's Hemodynamics (pulse at 80 bpm, blood pressure at 120/60 mmHg) were stable without the need for vasopressors, and the hemoglobin level was 9 g/dL. A non-operative management approach was adopted, involving close clinical and laboratory monitoring.

On the second day, the patient developed tachycardia (120 bpm) with stable blood pressure and hemoglobin at 7 g/dL. Given the patient's deteriorating condition and the lack of available embolization options, an emergency laparotomy was performed. Surgical exploration revealed significant hemoperitoneum.

After aspiration of the hemoperitoneum, the spleen was mobilized, revealing an actively bleeding lesion near the splenic flexure, which was adherent to the left colic angle. The splenic pedicle was controlled, and a hemostatic splenectomy was performed (Fig. 2). A Salem sump drain was placed in the splenic bed.

The postoperative course was uneventful. The patient remained hemodynamically stable with hemoglobin at 11 g/dL, and the drain was removed on the fourth postoperative day. She was discharged on the fifth postoperative day with a prescription for Clavulanic acid/amoxicillin (1 g three times daily) and appropriate vaccinations. The six-month follow-up was normal, and the patient was in good health with no complaints.

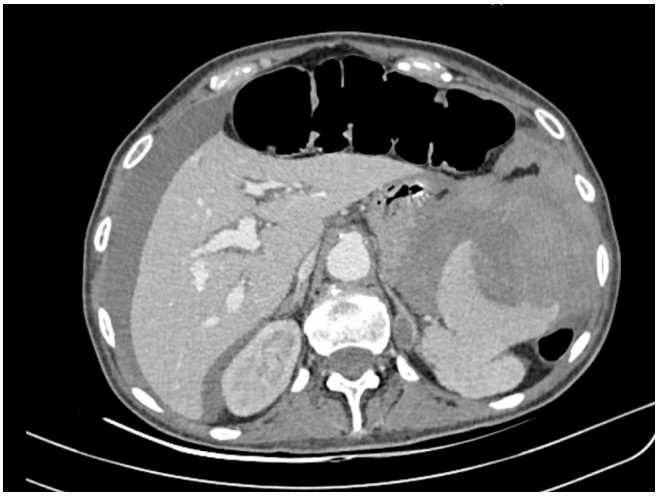

Fig. 1. Axial CT scan showing splenic hematoma and hemoperitoneum.

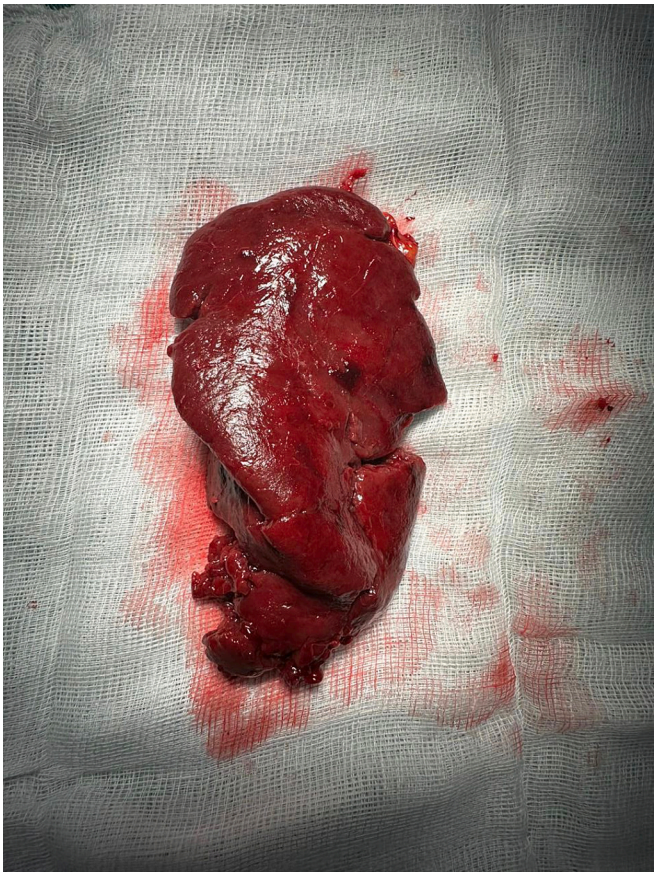

Fig. 2. Splenectomy specimen.

3. Discussion

This case highlights the potential for serious complications such as splenic hematoma and hemoperitoneum following colonoscopy, despite it being a relatively safe procedure. Prompt recognition and appropriate management, including the decision for surgical intervention, are crucial for favorable outcomes.

Splenic injury is a relatively rare complication of colonoscopy, although more than 100 cases have been documented. Its incidence, estimated between 0.002 % and 0.033 %, remains lower than that of other well-known complications such as bowel perforation (0.035 %–0.073 %) and intraluminal bleeding (0.065 %–0.231 %) [1]. However, these estimates may be underreported due to various factors, including reluctance to publish morbidity data and the possibility that many cases go unnoticed [3]. The mortality rate associated with splenic injury following a colonoscopy has been reported to be between 5 % and 10 % [4].

The most common symptoms are abdominal pain (46.1 %), left shoulder pain (40.91 %), dizziness (7.79 %), and syncope (5.19 %) [5,6]. In our patient's case, the abdominal pain was localized in the left upper quadrant, accompanied by tachycardia (100 bpm). The frequently observed biological abnormalities were anemia and leukocytosis [7]. Our patient had hemoglobin levels of 6 g/dL and a hematocrit of 19 %.

Endoscopists and other healthcare professionals should be particularly vigilant for splenic injuries, especially when there is pain in the upper left quadrant and hemodynamic instability.

The mechanism of splenic rupture after endoscopy is not fully understood, although several theories exist. The most common explanation suggests that excessive traction on the splenocolic ligament during colon navigation with the endoscope can lead to the detachment of the splenic capsule from the spleen, causing avulsion and laceration [8]. Other

theories propose anatomical variations in the splenocolic ligament, such as a smaller ligament, which might increase the likelihood of splenic rupture. Additionally, excessive external pressure on the left upper quadrant during the procedure can result in blunt trauma [9]. Previous abdominal surgeries or infections that increase adhesions and limit splenic mobility also place the patient at a higher risk for splenic rupture [10].

The splenic injury in our case was likely due to external abdominal pressure and endoscopic traction. Difficult insertion of the endoscope, complicated by loops in the sigmoid and transverse colon, led the physician to angulate the endoscope and apply traction at the splenic flexure, possibly straining the spleen through the splenocolic ligament.

Contrast-enhanced CT is the recommended examination for diagnosing splenic trauma [11]. It is widely available in most hospitals and provides a rapid and accurate diagnosis of lesions. Additionally, it can detect other complications related to colonoscopy, such as perforation, which may present with similar symptoms.

According to a recent study, contrast-enhanced CT was able to diagnose 98.5 % of splenic injuries [4]. It also provides an objective assessment of the severity of splenic lesions and the extent of hemorrhage. Additionally, focused assessment with ultrasound for trauma is useful for detecting hemorrhagic ascites [12].

Treatment for splenic injuries depends on their severity and includes options such as emergency splenectomy, interventional radiology (e.g., splenic artery embolization), and conservative management. Studies have shown that splenectomy is often required for patients with hemodynamic instability and constitutes about 70 % of treatments for this condition [13]. However, there has been a growing preference for conservative management and splenic artery embolization, which aim to preserve splenic function [5]. Non-operative management has demonstrated success rates ranging from 70 % to 90 % [14], and is generally suitable for patients who are hemodynamically stable. Those with normal blood pressure and hemoglobin levels, a low-grade splenic injury, and minimal hemoperitoneum typically benefit from a conservative approach [15]. This includes maintaining hemodynamic stability through saline infusion and blood transfusions, coupled with close monitoring. Previous research indicates that hemodynamic stability is the most critical factor in deciding whether to pursue operative treatment, irrespective of splenic injury grade or changes in hemoglobin levels [4,16].

4. Conclusion

Splenic injury is a rare but serious complication following colonoscopy that can present significant clinical challenges. This case report underscores the importance of early recognition and appropriate management to achieve favorable outcomes. Despite its low incidence, the potential for severe complications requires close attention to symptoms such as abdominal pain and hemodynamic instability. Conservative management with close monitoring has proven effective in many cases, although surgical intervention may be necessary for more severe injuries. This case highlights the need for heightened awareness and prompt action to ensure optimal care in such scenarios.

Ethical approval

Ethical approval is not applicable/waived at our institution.

Funding sources

This research did not receive funding from any specific grant provided by public, commercial, or not-for-profit organizations.

Author contribution

Med Dheker Touati and Fahd Khefacha contributed to manuscript writing and editing, and data collection.

Ahmed Bouzid and Med Raouf Ben Othmane contributed to data analysis.

Anis Belhadj and Ahmed Saidani contributed to conceptualization and supervision.

All authors have read and approved the final manuscript.

Guarantor

Dr. Med Dheker Touati.

Registration of research studies

N/A.

Declaration of competing interest

No conflicts of interest.

Data availability

The data supporting this case report are available upon request from the corresponding author.

Acknowledgements

Not applicable.

Patient consent

Written informed consent was obtained from the patient for the publication of this case report and its accompanying images. A copy of the written consent is available for the Editor-in-Chief of this journal to review upon request.

Grant information

The author(s) declared that no grants were involved in supporting this work.

Provenance and peer review

Not commissioned, externally peer-reviewed.

Declaration of generative AI in scientific writing

AI tools were not used for the elaboration of the manuscript.

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