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Case Report

Superior mesenteric artery (SMA) cover stent migration in a patient with SMA-duodenal fistula

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Abstract

Superior mesenteric artery (SMA)–duodenal fistula is a rare and potentially life-threatening condition. We report the case of a 61-year-old male who presented with sudden-onset abdominal pain, accompanied by nausea and vomiting. Computed tomography (CT) imaging revealed both acute calculous cholecystitis and a thrombosed SMA. A covered stent, previously inserted four years ago for a ruptured SMA aneurysm associated with a duodenal fistula, was found to have migrated into the ileocecal junction. The cholecystitis was treated with an open cholecystectomy. A follow-up abdominal X-ray at four weeks showed no evidence of the migrated stent, suggesting spontaneous evacuation. This case demonstrates a rare sequence of complications following endovascular stent insertion, including migration, thrombosis, and eventual loss of the stent. Clinicians should remain vigilant for these events in patients with a history of SMA stenting.

Keywords: Case report, general surgery, superior mesenteric artery, stent migration, duodenal fistula, vascular surgery

INTRODUCTION

Fistulas are abnormal communications between two epithelialised surfaces. Superior mesenteric artery (SMA)–enteric fistulas are rare, with limited case reports in the literature. Autopsy studies estimate the incidence of primary aortoenteric fistulas, including SMA–duodenal variants, to be between 0.04% and 0.07% [1]. The most common causes include trauma, infection, congenital vascular anomalies, or ruptured aneurysms [2].

Stent migration is a recognised but rare complication of endovascular repair. Although often asymptomatic, it can present acutely with vascular or gastrointestinal complications. The aim of this case report is to describe an unusual clinical course involving late stent migration from the SMA into the intestinal tract, accompanied by SMA thrombosis and spontaneous stent evacuation.

CASE REPORT

A 61-year-old male presented with acute onset abdominal pain, nausea, and vomiting. His surgical history included open repairs for incisional hernias six and eight years ago, and a laparotomy for bowel perforation seven years ago. Four years earlier, he had undergone endovascular stent graft placement in the SMA for a ruptured SMA aneurysm with associated duodenal fistula. The other pertinent comorbidities included atrial fibrillation on anticoagulation, unprovoked pulmonary embolism, and a 60-pack-year smoking history.

Computed tomography (CT) and ultrasound imaging confirmed acute calculous cholecystitis. Additionally, the CT demonstrated a thrombosed SMA, and the previously placed covered stent was visualised in the ileocecal junction (Figure 1). Historical imaging from four years ago (Figure 2A) confirmed the original SMA–duodenal fistula, and follow-up angiography one year after stent insertion showed the stent in situ and patent (Figure 2B). The presenting CT also demonstrated absence of the stent within the SMA lumen and thrombosis of the vessel (Figure 2C), consistent with stent migration. The patient underwent open

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cholecystectomy without complications. A follow-up abdominal X-ray performed four weeks later showed no evidence of the stent (Figures 3A and 3B), suggesting spontaneous passage.

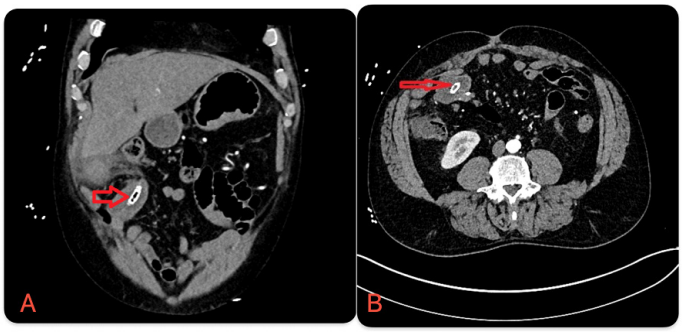

Figure 1. Both red anows are pointing to the stent at the iliocecal junction; **A.** This is a coronal view of the portal phase computed tomography; **B.** This is an axial view of the same computed tomography (CT)

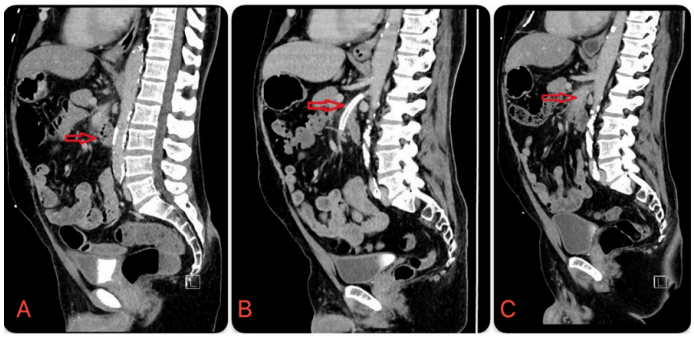

Figure 2. Serial computed tomography (CT) images demonstrating the clinical progression over four years; **A.** Initial CT scan performed four years ago, prior to stent insertion, demonstrating a fistulous connection between the superior mesenteric artery (SMA) and the third part of the duodenum (red arrow); **B.** Follow-up CT angiogram performed three years ago, showing a patent covered stent in situ within the SMA (red arrow); **C.** CT angiogram obtained at the time of emergency department presentation with acute abdominal pain; The image shows thrombosis of the SMA, with no stent visible in the vessel lumen, indicating stent migration (red arrow)

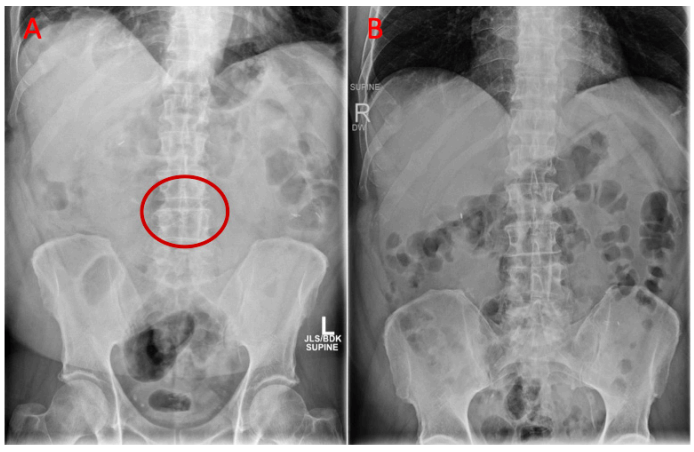

Figure 3. Two erect abdominal X-rays; **A.** This initial abdominal X-ray at the time of the presentation; The stent is faintly visible and highlighted by a red circle; **B.** Follow-up X-ray taken four weeks later; No radiopaque stent is visible, consistent with spontaneous passage

DISCUSSION

This case describes a rare clinical sequence: endovascular stenting of an SMA–duodenal fistula followed by delayed stent migration, SMA thrombosis, and spontaneous stent loss. While stent migration is a recognised complication of endovascular repair, it is rarely reported in the context of SMA aneurysms and associated enteric fistulas [3].

To date, only six published cases have described SMA–duodenal fistulas [2,3-8], and only one previously reported stent migration into the duodenum [3]. In our case, the original fistula involved the third part of the duodenum and was secondary to a ruptured SMA aneurysm. Endovascular repair with a covered stent was used to control the bleeding. One possible explanation for the delayed stent migration and subsequent SMA thrombosis is persistent patency of the fistula tract, allowing the stent to dislodge into the bowel lumen. Once displaced, the vessel thrombosed in the absence of intraluminal support.

Although acute cholecystitis is the most likely cause of abdominal pain in this age group [4], this case highlights the importance of considering delayed vascular complications in patients with a history of endovascular intervention. The patient did not require retrieval of the migrated stent, and conservative follow-up was sufficient.

CONCLUSION

This case describes a rare clinical sequence: endovascular stenting of an SMA–duodenal fistula followed by delayed stent migration, SMA thrombosis, and spontaneous stent loss. While stent migration is a recognised complication of endovascular repair, it is rarely reported in the context of SMA aneurysms and associated enteric fistulas [3].

Patient Consent for Publication: Informed consent was obtained from the patient for the use of their data in this study.

Data Sharing Statement: The data that support the findings of this study are available from the corresponding author upon reasonable request.

Author Contributions: All authors contributed equally to the article.

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