



A rare cause of acute abdomen: Ileal perforation due to biliary stent migration

Husnu Sevik¹
Oguzhan Tekin²
Ishak Yildiz³
Mert Gungor⁴
Coskun Cakir³

1. Iğdır Dr. Nevruz Erez State Hospital,
Department of General Surgery

2. Ağır Training and Research Hospital,
Department of General Surgery

3. Istanbul Training and Research Hospital,
Department of General Surgery

4. Giresun University Faculty of Medicine,
Department of General Surgery

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Corresponding Author: Husnu Sevik,
Iğdır Dr. Nevruz Erez State Hospital,
Department of General Surgery
Iğdır / Türkiye

Email: drhusnusevik@gmail.com

Abstract

We present a case of a migrated biliary stent that resulted in ileal perforation. An 85-year-old male presented to the emergency department with severe right lower quadrant abdominal pain, nausea, and vomiting lasting 24 hours. Two months earlier, he had undergone an endoscopic retrograde cholangiopancreatography (ERCP) for primary choledocholithiasis, during which a sphincterotomy was performed, and a 10 Fr, 10 cm plastic biliary stent was placed in the common bile duct. On admission, physical examination revealed tenderness in the right lower quadrant. Abdominal computed tomography demonstrated an extra-luminal biliary stent, along with localized free air and fluid in the right lower quadrant. The patient underwent emergency surgery. While bowel perforation due to stent migration is a rare complication in patients presenting with abdominal pain following ERCP, it should always be considered as a potential diagnosis.

Keywords: Biliary stents; intestinal perforation; stent migration

Introduction

The most commonly used method for treating obstructive jaundice caused by choledocholithiasis is therapeutic ERCP. The endoscopic transpapillary stenting method, first described in 1979, allows for the placement of a plastic stent in the common bile duct when necessary [1].

Endoscopic biliary stent placement is utilized for the management of both benign and malignant obstructive jaundice. Complication rates associated with endobiliary stents range from 8-10%, with a mortality rate of less than 1% [2]. The most common complications include stent occlusion and cholangitis [1, 2, 4, 5]. Other possible complications include cholecystitis, bleeding, duodenal perforation, pancreatitis, stent breakage, and stent migration.

Stent migration, reported in 5-10% of cases, may be distal or proximal [3, 6, 7]. While most migrated stents are naturally excreted, they can

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occasionally result in severe complications, including bowel perforation, intra-abdominal abscess, and ileus [3]. Proximal migration, where the stent moves deeper into the bile duct, can lead to biliary obstruction. Although challenging, such cases can typically be resolved endoscopically using tools like forceps, snares, or balloons.

In early distal migration, where the stent moves downward, repositioning via endoscopic intervention is often feasible. However, endoscopic management is generally limited to early or accessible cases. In most other instances, the stent may pass naturally through the intestinal tract, facilitated by bowel wall elasticity and contractions.

This report presents a rare case of stent migration resulting in intestinal perforation. While uncommon, intestinal perforation due to biliary stent migration should be considered a potential diagnosis in patients presenting with abdominal pain following biliary stent placement.

Case Presentation

An 85-year-old male presented to the emergency department with severe right lower quadrant abdominal pain, nausea, and vomiting lasting 24 hours. His medical history included an open appendectomy performed ten years ago, as well as diabetes, hypertension, cerebrovascular disease with mild sequelae, and benign prostatic hyperplasia. Two months prior, he had undergone an ERCP for primary choledocholithiasis, during which sphincterotomy was performed and a 10 Fr, 10 cm plastic biliary stent was placed in the common bile duct.

On admission, the patient exhibited tenderness in the right lower quadrant. He was normotensive with a blood pressure of 110/70 mmHg, a heart rate of 80 bpm, and was afebrile. Laboratory evaluation revealed no significant abnormalities in biochemical parameters, including normal bilirubin and liver function tests. His white blood cell count was slightly elevated at $12.57 \times 10^3/\mu\text{L}$.

Initial diagnostic imaging included an upright plain abdominal radiograph, which revealed a biliary stent in the right lower quadrant and air-fluid levels in the small bowel (Figure 1). Abdominal CT further identified an extra-luminal biliary stent accompanied by localized free air and fluid between the ileal loops in the right lower quadrant (Figure 2). Based on these findings, the patient was taken to the operating room for emergency

surgery.



Figure 1: Abdominal radiography image at the time of admission to the emergency department.



Figure 2: CT scan of plastic biliary stent perforating ileum.

Intraoperatively, dense adhesions resulting from the previous appendectomy were noted, causing the ileal loops to adhere to each other. The biliary stent had perforated the ileal wall approximately 60 cm proximal to the ileocecal valve and was lodged in the anterior abdominal wall (Figure 3). The proximal bowel loops were edematous and dilated; however, there was no evidence of diffuse intra-abdominal peritonitis.



Figure 3: Intraoperative image after midline laparotomy

The biliary stent was successfully removed (Figure 4), and the perforation site was debrided and repaired using a double-layer closure technique. The adhesions were

carefully separated.



Figure 4: Biliary stent removed from ileum.

Postoperatively, the patient experienced an uneventful recovery. Oral intake was gradually advanced, and he was discharged on the fifth postoperative day with appropriate recommendations.

Discussion

It has been reported that intestinal perforation due to stent migration most commonly occurs with plastic stents, with the duodenum being the most frequent site of perforation [8]. In contrast, complications are rare with soft pigtail stents [9]. The incidence of distal bowel perforations beyond the ligament of Treitz is relatively low [10]. The risk of intestinal perforation from stent migration, which carries a mortality rate of 10.3%, is higher in patients with diverticular disease, adhesions, or hernias [6, 8, 10, 11]. Surgical stent removal is typically the primary treatment; however, endoscopic removal and mucosal repair have been successful in selected cases [8].

Given the potentially severe consequences of stent migration, biliary stenting should be reserved for cases where it is absolutely necessary. In elderly patients, especially those with risk factors, soft pigtail stents may be preferred over plastic biliary stents. Close monitoring of these patients is essential, and stents should be removed as early as possible to minimize complications.

Disclosures

Conflicts of interest

Authors have no conflicts of interest or financial ties to disclose.

Patient consent

Written informed consent was obtained from the patient.

Author contribution

Tekin O, Yildiz I, and Cakir C carried out the operation. Gungor M helped draft the manuscript. Sevik H collected all preoperative, perioperative, and postoperative data and wrote the manuscript.

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