

Biliary Stent Migration with Duodenal Perforation

Stent Nedenli Duodenal Perforasyon

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Abstract

Intestinal perforation from a migrated biliary stent is a known complication of endoscopic biliary stent placement. We present a case of stent migration and resultant duodenal perforation after stent placement for a malignant biliary stricture in a 52-year-old woman. We review the current literature on the diagnosis and management of stent migration and intestinal perforation after endoscopic stent placement for biliary strictures. A plain abdominal radiograph is necessary for early diagnosis of biliary stent migration. If a stent becomes lodged in the gastrointestinal tract, endoscopic or operative extraction of the stent is necessary to prevent subsequent intestinal perforation and peritonitis. Intestinal perforation secondary to biliary stent dislocation should be considered in all patients presenting with fever and abdominal pain after biliary stent insertion. Any abnormality that prevents stent migration through the intestinal tract such as gastroenterostomy, abdominal wall hernia, extensive adhesions or colonic diverticula may be a contraindication for insertion of a plastic biliary stent because of increased perforation risk.

Keywords: Biliary stent, Migration, Bowel perforation

Özet

Bilier traktın endoskopik internal drenajı, benign ve malign darlıkların tedavisinde sık kullanılan bir yöntemdir. Bilier stentin distale migrasyonu hastaların %6' sında görülürken, literatürde stent migrasyonuna sekonder sadece birkaç barsak perforasyonu rapor edilmiştir ki bu komplikasyon nadir görülmekle birlikte ciddi geç dönem komplikasyonlarındandır. Bu yayında, bilier stent yer değişimi nedeniyle gelişen duodenal perforasyon olgusundan yola çıkılarak stent yer değişimi sonrası intestinal perforasyon gelişen hastalarda etiyojisi, tanısı ve tedavinin tartışılması amaçlandı. Sarılık yakınması ile başvuran 52 yaşındaki bayan hastaya ERCP de mid-koledokal tam obstrüksiyonu olduğu için drenaj sağlamak amacıyla bir adet 8. 5 F plastik stent yerleştirildi. Bu işlemde iki hafta sonra laparotomi uygulandı ve pankreatik seröz kistadenom, koledokta tümöral kitle ve hepatik metastazlar saptandı. Palyatif cerrahinin 4 gün sonrasında hastada ateş ve karın ağrısı gelişti. Direk karın grafisinde, stentin yer değişimi olduğu görüldü. Hastaya acil laparotomi uygulandı. Stentin duodenumu perforasyonu gözlemlendi. Stent çıkarıldı ve duodenumun yaralanan bölgesi primer onarıldı. Postoperatif beşinci günde, perkutan transhepatik yöntemle metal stent yerleştirildi. Safra yollarına stent yerleştirilmesi sonrası, karın yakınmaları olan hastalarda, stent yer değişimi ve intestinal perforasyon akla gelmeli ve direkt grafiler ile stent yeri kontrol edilmelidir.

Anahtar Kelimeler: Bilier stent, Migrasyon, Barsak perforasyonu

Introduction

Endoscopic internal drainage of the biliary tract is widely used for benign or malignant biliary obstruction as a temporary or definitive treatment. Distal biliary stent migration has been reported in up to 6% of patients, and resultant bowel perforations are noted in several case reports [1]. In most cases of stent migration, stents likely pass spontaneously in the stool [2]. This report addresses duodenal perforation caused by a migrated biliary stent and discusses the etiology, diagnosis and treatment of bowel perforations caused by a migrating biliary stent.

Case Report

A 52-year-old woman presented with a history of jaundice for two weeks. Her past medical history was significant for a right total hip replacement. On admission to our department, the patient was icteric. The remainder of the physical examination was normal. Laboratory examination gave the following results:

hematocrit, 33%; white blood cell count, 7000/cm³; platelets, 255,000/cm³; sodium, 144 mEq/L; potassium, 4.4 mEq/L; blood urea nitrogen, 13 mg/dl; creatinine, 0.5 mg/dl; glucose 115 mg/dl; amylase 28 IU/L; total bilirubin 7.3 mg/dl; aspartate aminotransferase, 166 IU/L; alanine aminotransferase, 205 IU/L; alkaline phosphatase (AP), 1295 IU/L; lactate dehydrogenase, 498 IU/L; and albumin, 3.1 g/dl. Small pancreatic cysts with pancreatic canal connection and intrahepatic biliary duct dilatation were detected by abdominal ultrasonography and computerized tomography. Endoscopic retrograde cholangiopancreatography (ERCP) showed mid-choledocal complete obstruction, probably due to an extrahepatic cholangiocarcinoma, and endoscopic sphincterotomy and internal biliary drainage were performed using an 8.5 French/10 cm plastic stent.

Two weeks after the biliary drainage procedure, we performed a laparotomy with the goal of curative resection of the tumors. During the operation, pancreatic serous cystadenomas and an extrahepatic biliary tumor with hepatic metastasis were identified. We performed the following procedures: cholecystectomy to prevent cholecystitis, hepatic and choledocal biopsy (pathology of both specimens confirmed the diagnosis of cholangiocarcinoma), and gastroenterostomy to prevent future duodenal obstruction by the tumor. Twenty-one days after stent placement and four days after the laparotomy, the patient experienced fever and severe abdominal pain. Her temperature was 103°F. Her abdomen was rigid and tender to palpation in the right upper and lower quadrants, and her bowel sounds were hypoactive. An abdominal plain radiograph showed a biliary stent in the mid-abdomen and no free intraperitoneal gas (Fig. 1).

The patient underwent emergency laparotomy. The biliary catheter had perforated the antimesenteric surface of the transverse part of duodenum (Fig. 2). The biliary stent was removed, and the enterotomy was closed primarily. Internal drainage of the biliary system was performed with a metallic wall stent by the percutaneous transhepatic method on the fifth postoperative day. Endoscopic drainage was not attempted because of the risk of dehiscence of the repaired duodenal wall. The patient developed right lower lobe pneumonia, and she was treated with antimicrobial therapy. She was later discharged from the hospital without any morbidity.

Discussion

Malignant biliary obstruction can be treated by surgery, percutaneous transhepatic drainage or placement of a plastic or metallic stent inserted endoscopically or percutaneously. Biliary bypass surgery is effective. Surgical drainage can create a large biliary intestinal anastomosis, which has the advantage of allowing additional preventive or therapeutic gastrojejunostomy in palliative treatment of malignant biliary obstruction. However, surgery involves considerable mortality and morbidity, and anastomotic strictures or tumor invasion may occur [3-5]. Advancements in endoscopic techniques led to more frequent successful retrograde drainage via plastic endoprotheses [6]. Avoidance of the transhepatic approach reduced the incidence of immediate



Fig. 1 — Abdominal radiograph showing the biliary stent in the mid-abdomen.

infections and bleeding complications [5,6]. As the endoscopic retrograde drainage technique is increasing in popularity, the reports of complications have risen, including cases of cholangitis, cholecystitis, duodenal perforation, bleeding, stent occlusion, fracture of stent and stent migration [7-9]. Stent migration is not an uncommon complication and occurs in either the proximal or distal direction. Distal stent migration has been observed in up to 6% of inserted bile duct stents [1,9]. The only identified risk factor for migration of stents out of the common bile duct is papillary stenosis, as reported by Johanson et al. [1]. Stent migration may have been caused by manipulation of the operative field and previous sphincterotomy in our patient.

Intestinal perforation is a rare but serious late complication of distal migration of a biliary stent. Most reported cases of intestinal perforation are from migrating biliary stents that cause duodenal perforation, likely because the duodenum is fixed [10]. If the stent migrates beyond the Treitz ligament, perforation of the small bowel or colon may occur. The probable etiology of these perforations is extrinsic fixation of the bowel wall. Another cause of duodenal perforation in our patient might be that the gastroenterostomy prevented progression of the stent through the intestines. Abdominal wall hernias and adhesions are also known to cause fixation of the bowel wall and adherence of the stents. Colon perforations due to migrating biliary stents may occur in areas that present obstruction to normal elimination of foreign bodies, such as colonic diverticula or strictures.

Abdominal plain radiographs reveal stent position and migration. If a stent is not observed to move through the bowel lumen



Fig. 2 — Intraoperative photograph showing perforation of the duodenum by the biliary stent.

on serial plain radiographs, extraction endoscopy or laparotomy is necessary to prevent bowel perforation. Abdominal wall hernias, extensive adhesions or colonic diverticula may be contraindications for placement of a plastic biliary stent because of the increased perforation risk. Although uncommon, intestinal perforation secondary to biliary stent dislocation should be considered in all patients presenting with fever and abdominal pain after biliary stent insertion.

Conflict interest statement The authors declare that they have no conflict of interest to the publication of this article.

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