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CASE REPORT

Unusual penetration of plastic biliary stent in a large ampullary carcinoma: A case report

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Abstract

Endoscopic biliary stenting is a well-established treatment of choice for many obstructive biliary disorders. Commonly used plastic endoprostheses have a higher risk of clogging and dislocation. Distal stent migration is an infrequent complication. Duodenum is the most common site of a migrated biliary stent. Intestinal perforation can occur during the initial insertion or endoscopic or percutaneous manipulation, or as a late consequence of stent placement. A 52-year-old male who presented with obstructive jaundice underwent endoscopic retrograde cholangiopancreatography (ERCP) with plastic stent placement. However, jaundice did not improve and he then underwent ERCP which revealed the plastic stent penetrating the ampullary tumor into the duodenal wall causing malfunction of the stent. A new plastic stent was inserted and the patient underwent Whipple's operation. He is currently doing well after the operation.

Key words: Complication; Endoscopic retrograde cholangiopancreatography; Penetration; Perforation

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INTRODUCTION

Over the last two decades; after reporting the first use of a plastic stent in 1980 for a malignant biliary obstruction of the distal common bile duct[1], endoscopic biliary drainage is now a well-established treatment of choice for many biliary disorders. Today, a variety of plastic stents of different shapes, sizes and length are available in the market[2,3]. Commonly used plastic endoprostheses are less expensive, but have a higher risk of clogging and dislocation[4].

The main problem with plastic stents is stent malfunction leading to recurrent jaundice and cholangitis after weeks or months requiring stent exchange in 30% to 60% of patients[5]. To avoid stent migration, the biliary stent should be placed across the sphincter of Oddi[6]. Distal stent migration is an infrequent late complication, but occurs in up to 6% of cases[7,8]. The majority of stents pass through the intestinal system without any problems. However, if the stent gets stuck in the bowel then it should be removed; endoscopic retrieval is often possible and surgical intervention is rarely necessary[9,10]. The duodenum is the most common site of a migrated

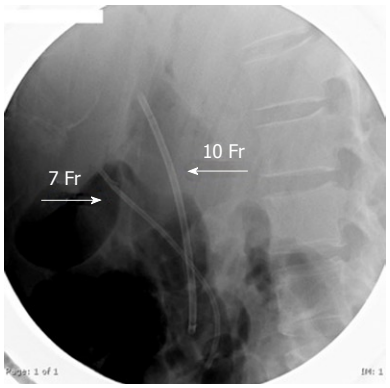

Figure 1 Fluoroscopic image after placement of a new 10 Fr plastic stent in the common bile duct with the previous 7 Fr plastic stent penetrating the duodenum.

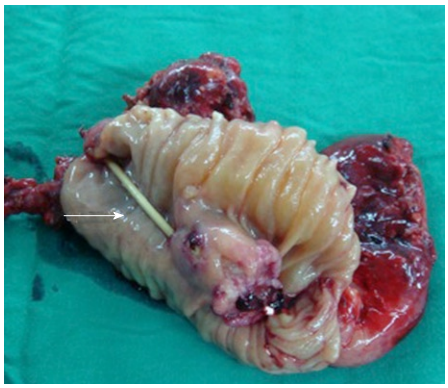

Figure 2 Operative specimen (Whipple's operation) showed the plastic stent was not inside the common bile duct (white arrow). It penetrated the ampullary mass into the duodenum.

biliary stent[11-14]. However, complications such as perforations and fistulisations in the rest of the small intestine[15] and colon are also seen.

In the recent literature, most (92%) cases of intestinal perforation were in the duodenum after endoscopic or percutaneous placement of a biliary stent[16-19]. These were due to various mechanisms; firstly, the stent may have been placed incorrectly, and the mechanical force exerted by the tip of the plastic stent against the duodenal mucosa can lead to necrosis of the wall over time. Secondly, inflexibility or a stent of incorrect length may lead to pressure necrosis[20,21].

CASE REPORT

We report here on a 52-year-old male who presented with fever and jaundice. His liver function tests were TB/DB: 7.3/6.2, Albumin/Globulin: 3.6/3.6, SGOT/SGPT: 119/214, Alkaline phosphatase: 621. An abdominal computed tomography scan showed marked dilatation of the common bile duct (CBD) with gallstone. He underwent endoscopic retrograde cholangiopancreatography (ERCP) which revealed a large ulceroproliferative mass at the ampulla. A plastic stent (7 Fr. 10 cm: Amsterdam type) was placed over the guidewire. Multiple biopsies were performed at the ampulla and histopathological results showed adenocarcinoma. Two weeks later, his jaundice had not improved. ERCP was performed again. After the duodenal scope was introduced, penetration of the previous stent in the ampullary mass into the duodenal lumen was seen. Cannulation of the CBD through the ampulla opening where the tip of the previous plastic stent was found was attempted, but failed. Precut sphincterotomy using a needle knife at the duodenal wall (fistulotomy technique) was performed. Finally the guidewire could be passed into the CBD over the sphincterotome catheter. A new plastic stent (10 Fr. 10 cm: Amsterdam type) was placed into the CBD (Figure 1). Good run off of infected bile and contrast media was seen. One month later, the patient underwent Robotic-assisted Whipple's operation (Figure 2). There were no post-operative complications. He was discharged from the hospital two weeks after surgery. He is currently doing well.

DISCUSSION

Plastic stent occlusion due to tumor overgrowth or bile clogging the lumen is the most common (54%) problem seen with endoprostheses following ERCP[18]. Although it is seen in about 6% of cases; migration of the stent is one of the most important problems[2,7]. When distal migration occurs, the majority of stents pass through the intestinal system without any problem. However, if a stent gets stuck in the bowel then it should be removed. Generally, removal is done endoscopically and surgical intervention is rarely necessary[8,9].

Intestinal perforation can occur during initial insertion, manipulation or as a late consequence of biliary stent placement. In the recent literature, most cases of intestinal perforation (92%) were in the duodenum after endoscopic or percutaneous placement of a biliary stent[4,15-17]. The incidence of small bowel perforation following ERCP is 0.08%-0.57%[19,20]. In 1999, Howard *et al*[21] classified perforations after ERCP into 3 groups; guidewire-related, periampullary- or postsphincterotomy-related and scope-induced perforations in which periampullary-related were the most common. In 2000, Stapfer *et al*[22] classified ERCP-related perforations, in descending order of severity, into four types: Type Ⅰ: lateral or medial wall duodenal perforation, Type Ⅱ: peri-Vaterian injuries, Type Ⅲ: distal bile duct injuries related to wire/basket instrumentation and Type Ⅳ: retroperitoneal air alone.

In our patient, following insertion of the first plastic stent into the CBD there was lateral penetration of the stent just proximal to the ampulla; which was due, in our opinion, to the tumor mass effect on the stent pushing it into the second part of the duodenum. During the second ERCP after accessing the first portion of the duodenum we noted the previous stent, and thought that distal migration had occurred. When we proceeded

towards the ampulla we observed the distal part of the stent coming out of the ampulla. We failed to cannulate the CBD using a standard technique. Therefore, using the precut fistulotomy technique a new 10 Fr. plastic stent was placed and good bile flow was observed. In this case report we wanted to share this atypical complication of ERCP and plastic stent placement.

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