BRIEF COMMUNICATION

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# A Unique Use of a Double-Pigtail Plastic Stent: Correction of Kinking of the Common Bile Duct Due to a Metal Stent

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A 72-year-old man with jaundice by ampullary adenocarcinoma was treated at our hospital. For biliary decompression, a transpapillary, fully covered, self-expandable metal stent (FCSEMS) was deployed. Four days later, the patient developed acute cholangitis. Endoscopic carbon dioxide cholangiography revealed kinking of the common bile duct above the proximal end of the FCSEMS. A 7-F double-pigtail plastic stent was therefore placed through the FCSEMS to correct the kink, straightening the common bile duct (CBD) and improving cholangitis. This is the first report of a unique use of a double-pigtail plastic stent to correct CBD kinking. The placement of a double-pigtail plastic stent can correct CBD kinking, without requiring replacement or addition of a FCSEMS, and can lead to cost savings. **(Gut Liver, 2015;9:251-252)**

**Key Words:** Common bile duct neoplasms; Cholangiopancreatography, endoscopic retrograde; Stents; Adverse effects; Cholangitis

## INTRODUCTION

A self-expandable metal stent (SEMS) is an efficient and established tool for solution of biliary obstruction due to both benign and malignant diseases. Meanwhile, there have been some reports regarding adverse events by a SEMS: migration, dislocation, ulceration, perforation of the bowel and so on.[1] We sometimes encounter the case with kinking of the common bile duct (CBD) by a SEMS which is caused by inappropriate length or strong axial force of a SEMS and necessary for appropriate coping, for example, exchange of a SEMS or addition of another SEMS.

A double-pigtail plastic stent is less costly than a SEMS and frequently used for decompression of the bile duct of patients with poor prognosis or undergoing heavy particle radiotherapy or proton therapy. Furthermore, recently, a double-pigtail plastic stent is also feasible for endoscopic ultrasonography-guided[2,3] or transpapillary gallbladder drainage.[2] We present a rare case with ampullary carcinoma treated by a SEMS and additional stenting of a double-pigtail plastic stent for correction of kinking of the CBD.

## CASE REPORT

A 72-year-old man with jaundice was referred to our hospital. A contrast-enhanced computed tomography (CT) scan showed a 15-mm, weakly enhancing mass at the ampulla of Vater (Fig. 1) and dilatation of the bile duct. Esophagogastroduodenoscopy revealed a mass with rough and reddish mucosa at the ampulla (Fig. 2). Biopsy of the mucosa indicated adenocarcinoma. For biliary decompression, a transpapillary, fully covered, self-expandable metal stent (FCSEMS) (10×50 mm Bonastent; Standard Sci-Tech, Seoul, Korea) was deployed. Four days later, the patient developed acute cholangitis. Because stent obstruction or migration was suspected, endoscopic carbon dioxide cholangiography was performed, which revealed kinking of the CBD 1 cm above the proximal end of the FCSEMS (Fig. 3). A 7-F double-pigtail plastic stent (100 mm; Olympus Medical Systems, Tokyo, Japan) was therefore placed through the FCSEMS to correct the kink, straightening the CBD (Fig. 4) and improving cholangitis.

## DISCUSSION

This is the first report of a unique use of a double-pigtail plastic stent to correct CBD kinking. It is reported that placement of a metal stent across the main duodenal papilla can predispose to cholangitis[4] which is mainly caused by food impaction in a stent or reflux of duodenal contents to the bile duct. In this case, however, acute cholangitis was cured after the correction of CBD kinking, which indicates that cholangitis was caused by CBD kinking, not by placing a stent across the ampulla of Vater. CBD kinking can occur by inappropriate placement of a SEMS or a large-bore diameter plastic stent[5] with strong axial force. Nakai *et al*.[6] recommends a new method of SEMS stenting to reduce early stent-related complications including kinking of the bile duct by longer stent placement with the center of the stent located in the center of the biliary stricture. However, the

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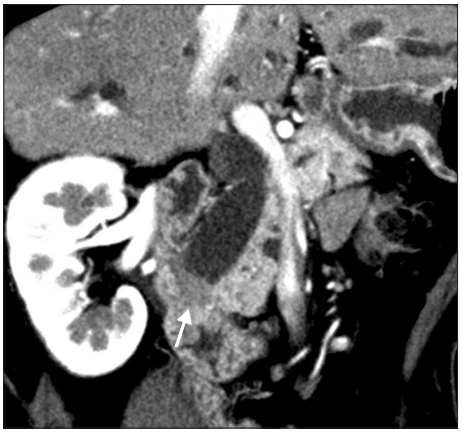

**Fig. 1.** Contrast-enhanced computed tomography scan showing a 15-mm, weakly enhancing mass (arrow) in the ampulla of Vater.

**Fig. 3.** Cholangiographic finding. Endoscopic retrograde cholangiography using carbon dioxide insufflation shows kinking of the common bile duct 1 cm above the proximal end of the metal stent (arrows).

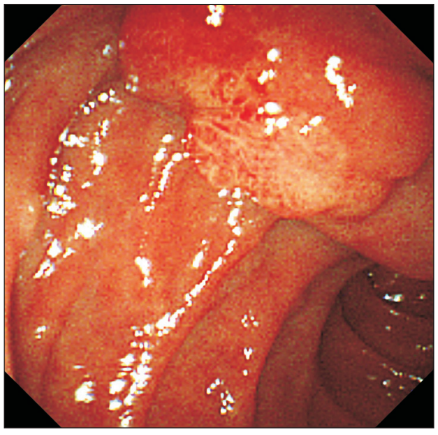

**Fig. 2.** Esophagogastroduodenoscopic finding. A mass with rough and reddish mucosa is located at the ampulla of Vater.

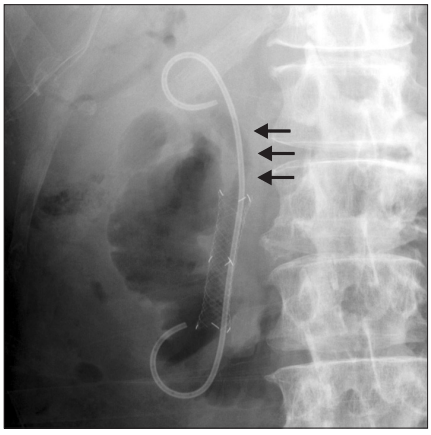

**Fig. 4.** Cholangiographic finding after placement of a 7-F double-pigtail plastic stent. Common bile duct kinking is corrected by placement of the plastic stent (arrows).

new method was impossible in this case, because the site of the biliary stricture was located at the ampulla.

There has been one report by Park *et al*.[7] in which a double-pigtail plastic stent with a FCSEMS was used for anchoring. They focused on the pigtail shape and revealed that it could help to prevent FCSEMS migration. Meanwhile, we expected the correction of CBD kinking from the stent shaft in addition to anchoring. A use of a double-pigtail plastic stent can correct CBD kinking without exchange or addition of another SEMS and can save cost.

## CONFLICTS OF INTEREST

No potential conflict of interest relevant to this article was reported.

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