Stent-in-stent through a side hole to prevent biliary metallic stent migration

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Abstract

The covered self-expandable metallic stent (SEMS) has been developed to overcome the problem of tissue ingrowth. However, stent migration is a well-known complication of covered SEMS placement. Use of a double pigtail stent to lock the movement of the SEMS and prevent migration has been advised by many experts. Unfortunately, in our case this technique led to an incidental upward migration of the SEMS. We used APC to create a side hole in the SEMS for plastic stent insertion as stent-in-stent. This led to a successful prevention of stent migration.

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Key words: Metallic stent migration; Distal biliary obstruction

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INTRODUCTION

Self-expandable metallic stent (SEMS) placement is widely accepted for palliative management of patients with unresectable malignant biliary obstruction. However, complications such as tumor ingrowth, overgrowth, food debris, and mucosal hyperplasia can occur. The use of covered SEMS is clearly effective in preventing tumor ingrowth[1-3]. Nevertheless, in two recently published randomized trials of covered versus uncovered metal biliary stents, outcomes such as stent patency were no different between the two stents but the risk of migration was higher with the covered stents[4-5]. Here, we report a case of stent-in-stent insertion through a side hole to prevent migration of a covered self-expandable metallic stent in a patient with distal malignant biliary obstruction.

CASE REPORT

A 35-year-old man presented with obstructive jaundice resulting from metastatic pancreatic cancer. The diagnosis was confirmed by intraductal biopsy. Endoscopic retrograde cholangiopancreatography (ERCP) demonstrated a distal biliary stricture 1.5 cm in length with upstream dilatation. Placement of a 4-cm-long covered SEMS (Wallstent, Boston Scientific, Natick, MA) under conscious sedation was initially performed. Three weeks later, the patient was re-admitted due to acute cholangitis. ERCP demonstrated distal migration of the SEMS (Fi-
Successful removal of the first SEMS was performed using a snare and this was replaced with a new SEMS (Wallstent, Boston Scientific, Natick, MA), 8 cm in length (Figure 1B). Subsequently, placement of a double pigtail 10 Fr 10 cm plastic stent (PS) was attempted as stent-in-stent to prevent migration. However, even with cautious deployment the SEMS was accidentally displaced upwards during PS insertion. Using a rat-toothed forceps we were able to move the stent downwards to the proper position (Figure 1C). Argon plasma coagulation (APC) was then applied to create a side hole at the distal end of the SEMS (Figure 2A) and a PS was inserted through the side hole (Figure 2B). This side hole insertion was helpful in preventing the upward movement of the previously deployed SEMS (Figure 2C). Six months later the patient was doing well and was without clinical sign of biliary obstruction.

**DISCUSSION**

Covered SEMS placement is widely accepted for use in palliative management of patients with unresectable malignant distal biliary obstruction. Although covered stents are designed to overcome tissue ingrowth, failure to embed in the bile duct wall can result in proximal and distal migration, at a reported frequency of 6%-8%.[6-9] Migration of a biliary SEMS may occur proximally or distally after stent insertion and may cause complications such as ulceration, perforation and intestinal obstruction[1-3].

Generally, correct positioning of the SEMS at the initial stent placement is important in preventing migration. Nevertheless, a high shortening ratio of the covered SEMS is thought to favour migration after deployment of the stent[9]. New covered stents, therefore, have been developed for the prevention of stent migration. These include the nitinol SEMS (Wallflex; Boston Scientific, Natick, Massachusetts, USA or Niti-S; Taewoong Medical, Seoul, South Korea) which is flared at the uncovered ends and the fully-covered Zeostent (Zeon Medical Inc., Tokyo, Japan) which has a wavy contour after full expansion[6-7].

Some previous work of expert endoscopists suggested that putting a double pigtail stent as stent-in-stent to lock the movement of the SEMS could prevent migration.[8] However, this technique for preventing biliary stent migration has not been well established. We have reported a case with malignant distal biliary obstruction after covered SEMS placement. In our case, the insertion of a double pigtail stent was perform to lock the movement of the SEMS and thereby prevent its migration. However, due to upward force exerted during PS insertion as stent-in-stent, this technique led to an incidental upward migration of the covered SEMS.

Argon plasma (APC) has been described as a useful tool for trimming the stent or making a hole[9-12]. Studies done on Wallstent, have recommended a power setting of 70-80 W and argon flow of 0.8 L/min. In this case, we used APC to make a side hole in the SEMS for PS insertion without complication. After the force angle of PS insertion was changed, the distal end of double pigtail stent was able to lock the distal end of the SEMS and to prevent upward migration of SEMS during PS placement.

In conclusion, we report a successful technique of stent-in-stent insertion through the side hole to change
an angle of PS insertion for preventing upward covered SEMS migration in a patient with distal malignant biliary obstruction. With this tangential stent insertion, the chance of upward stent migration during deployment should be less.

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