

Short Report

Difficult removal of fully covered Self Expandable Metal Stents (SEMS) for benign biliary strictures: The “SEMS in SEMS” technique



Andrea Tringali^{a,*}, Daniel Blero^b, Ivo Boškoski^a, Pietro Familiari^a, Vincenzo Perri^a, Jacques Devière^b, Guido Costamagna^a

^a Digestive Endoscopy Unit, Catholic University, Rome, Italy

^b Department of Gastroenterology, Hepatopancreatology and Digestive Oncology, Erasme Hospital, Université Libre de Bruxelles, Brussels, Belgium

ARTICLE INFO

Article history:

Received 25 November 2013

Accepted 23 February 2014

Available online 22 March 2014

Keywords:

Benign biliary stricture

Self Expandable Metal Stent

Fully covered SEMS

Ingrowth

Overgrowth

Stent migration

ABSTRACT

Background: Removal of biliary Fully Covered Self Expandable Metal Stents can fail due to stent migration and/or hyperplastic ingrowth/overgrowth.

Methods: A case series of 5 patients with benign biliary strictures (2 post-cholecystectomy, 2 following liver transplantation and 1 related to chronic pancreatitis) is reported. The biliary stricture was treated by temporary insertion of Fully Covered Self Expandable Metal Stents. Stent removal failed due to proximal stent migration and/or overgrowth. Metal stent removal was attempted a few weeks after the insertion of another Fully Covered Metal Stent into the first one.

Results: The inner Fully Covered Self Expandable Metal Stent compressed the hyperplastic tissue, leading to the extraction of both the stents in all cases. Two complications were reported as a result of the attempt to stents removal (mild pancreatitis and self-limited haemobilia).

Conclusion: In the present series, the “SEMS in SEMS” technique revealed to be effective when difficulties are encountered during Fully Covered Self Expandable Metal Stents removal.

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1. Introduction

Fully Covered Self Expandable Metal Stents (FC-SEMS) are a promising and attractive alternative to plastic stents, and are becoming more widely used for the treatment of benign biliary strictures (BBS) [1–4]. The major advantage of FC-SEMS over multiple plastic stents, is the possibility to dilate a BBS with 2 procedures only (stent insertion and removal). The major concern of FC-SEMS in benign diseases is their removability. Safety and long-term efficacy of FC-SEMS for the treatment of BBS are under evaluation in clinical trials [5].

In published experiences, some cases of difficult or even impossible FC-SEMS removal are described [1].

Failure in FC-SEMS removal represents a serious problem in patients suffering from a benign disease. In fact, in case of irretrievable FC-SEMS even surgery can be impaired. A safe and reproducible technique to remove a FC-SEMS is advisable and the so

called “SEMS in SEMS” technique can be the solution, as previously described [6–8].

Five cases in which FC-SEMS removal was a challenge are described in the present series.

2. Case series

2.1. Case 1. Chronic pancreatitis related biliary stricture

A 58-year-old man received a 4 cm long, 10 mm diameter, fully covered WallFlex stent (Boston Scientific, Natick Mass) to dilate a chronic pancreatitis-related BBS. Elective endoscopic retrograde cholangiopancreatography (ERCP), 11 months after placement, revealed a proximally migrated stent with the distal end resting right above the sphincterotomy (Supp. Figure S1). At cholangiography the stent was patent without clear signs of ingrowth with suspected hyperplastic overgrowth at the distal end. Removal with a rat-tooth forceps was attempted, but failed because the stent was distally impacted above the sphincterotomy (Fig. 1). A wire was passed alongside the stent and after 10 mm balloon dilation (Supp. Figure S2a) the stent regained its original shape due to the characteristics of the Nitinol meshes. Four 10 French plastic stents were inserted inside the Self Expandable Metal Stent (SEMS) to compress

* Corresponding author at: Digestive Endoscopy Unit, Catholic University, Largo Agostino Gemelli 8, 00168 Rome, Italy. Tel.: +39 06 30156580; fax: +39 06 30156581. E-mail address: andrea.tringali@rm.unicatt.it (A. Tringali).

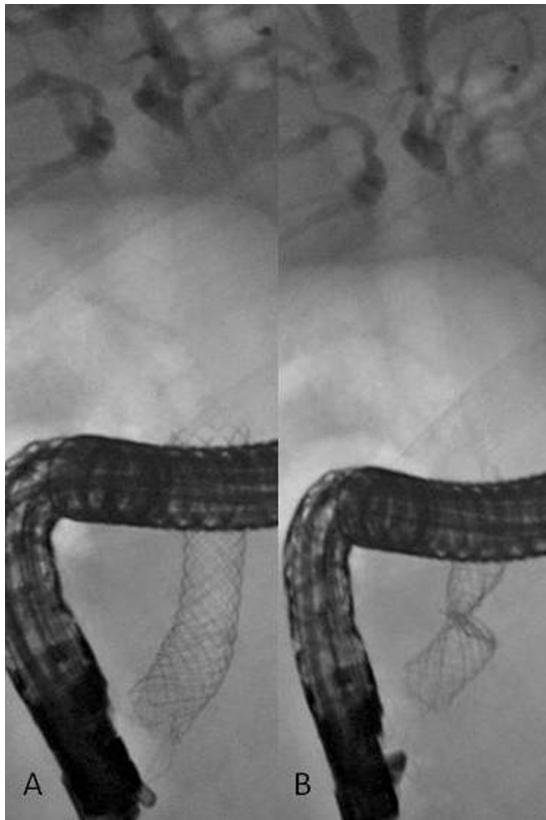


Fig. 1. The retrieval loop of the WallFlex stent was grasped with a rat-tooth forceps (A). The stent deformed “like an accordion” (B).

the hyperplastic tissue and induce its ischaemia and necrosis (Supp. Figure S2b). After 2 months, the plastic stents were extracted, but a second attempt at FC-SEMS removal failed. Therefore, another 6 cm long, 10 mm diameter, fully covered WallFlex was inserted into the first one (Fig. 2). Two months later, a third attempt at FC-SEMS removal succeeded using a rat-tooth forceps, and both the WallFlex stents were extracted (Fig. 3).

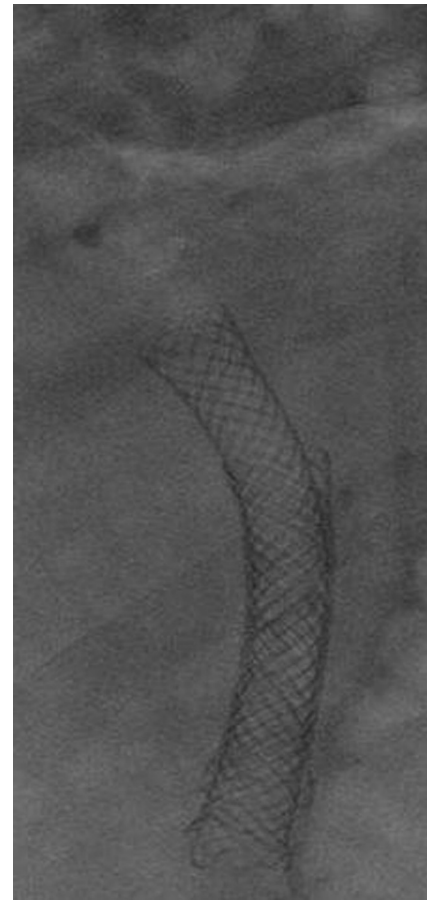


Fig. 2. A 6 cm long fully covered WallFlex stent is inserted into the 4 cm irretrievable stent.

2.2. Cases 2–3. Post-operative biliary stricture

A 62-year-old lady developed a post-operative (PO) biliary stricture following open cholecystectomy. A 4 cm long, 10 mm diameter fully covered WallFlex was placed. Eleven months later, ERCP



Fig. 3. The 2 fully covered WallFlex stent after removal. The outer stent (A) appears damaged due to the repeated attempts at removal with intact covering. The inner stent (B) is intact after 2 months.

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