



# Cognitive ERCP: decision making during successful retrieval of proximally migrated biliary stent

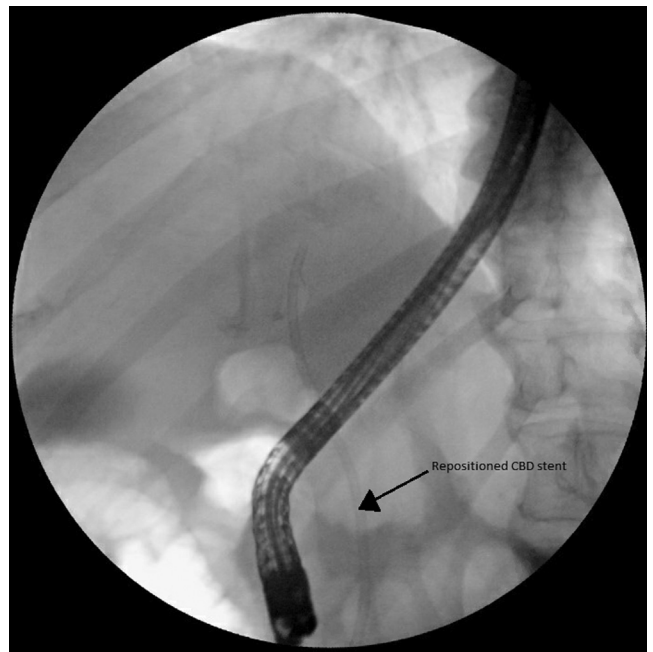
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## CASE PRESENTATION

A 56-year-old man presented with painless jaundice. An outside CT scan reported a pancreatic head mass. The patient underwent ERCP with a 10F plastic biliary stent placement, and an EUS-guided biopsy confirmed the mass to be a pancreatic ductal adenocarcinoma. Subsequent staging CT chest/abdomen scans showed significant migration of the pre-existing plastic biliary stent, which was abutting the liver margin of the left hepatic lobe and the distal end was above the biliary stricture in the area of the hepatic hilum. The patient underwent repeat ERCP that confirmed this and demonstrated high-grade biliary strictures in the common bile and hepatic duct. A guidewire was advanced into the right main hepatic duct. A 6-mm balloon dilation of the strictures was performed. There was a lack of effacement of the waist suggestive of high-grade nature. Then, over a guidewire (0.035-in-long Jagwire, Boston Scientific, Marlborough, MA) direct cholangioscopy was performed and the cholangioscope (SpyGlass DS System; Boston Scientific) was advanced to the common hepatic duct where the migrated stent was lodged and trapped (Fig. 1). Next, after failed attempts with a mini-snare, a mini-forceps was used to successfully grasp the stent (Fig. 2) under direct cholangioscopic view, and gradually retrieve it through both strictures and re-position it across the papilla with the proximal end at the hilum (Figs. 3A and B).



**Figure 1.** ERCP image showing proximally migrated common bile duct stent and introduction of cholangioscope.



**Figure 2.** Migrated stent is repositioned across the papilla with proximal end at hilum.

## DISCUSSION

ERCP is a technically challenging procedure. However, equally if not more important is the cognitive aspect of performing this procedure safely and successfully when indi-

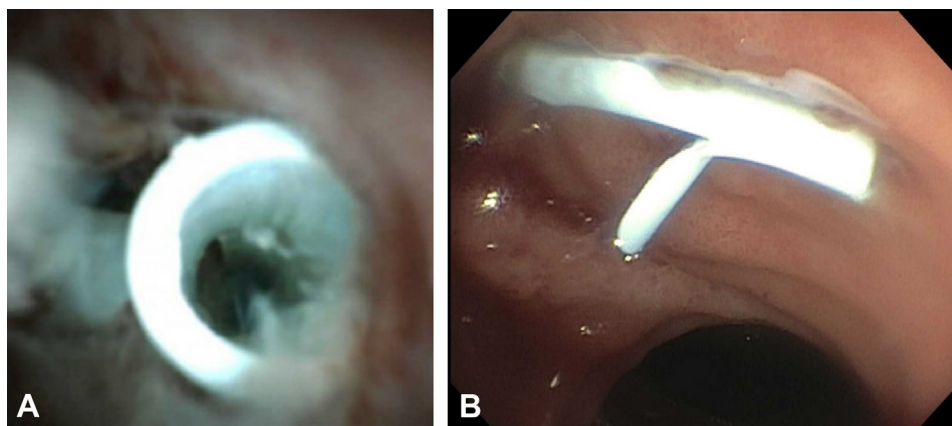
*Abbreviation: SEMS, self-expandable metal stents.*

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**Figure 3.** **A**, Proximal end of migrated common bile duct stent visible through a cholangioscope. **B**, Repositioned stent across ampulla.

cated. Biliary stent migration into the proximal common bile duct is a complication with an incidence rate of 5%.<sup>1</sup> In malignant biliary strictures, stents of larger diameter and shorter length are significantly associated with proximal biliary stent migration.<sup>2</sup> Plastic stents and fully covered self-expandable metal stents (SEMS) are more likely to migrate as compared to uncovered or partially covered SEMS.<sup>3</sup> Numerous techniques to retrieve a proximally migrated stent have been described. Commonly used endoscopic devices include forceps, snares, extraction balloons, baskets, and cholangioscopes.<sup>4</sup> In rare instances, surgical intervention is needed for complicated biliary stent migration.

This interesting case highlights the cognitive aspect of ERCP during a difficult scenario where biliary decompression is needed from multiple biliary strictures and the course is complicated by severe intraductal migration of the biliary stent. Several tools and techniques were considered, taking into account risks associated with the manipulation and further inadvertent migration of the stent leading to liver capsule injury from attempted endoscopic interventions for stent retrieval. Neither placing a new biliary stent distally, nor attempting removal of the migrated stent with usual maneuvers (extraction balloon or basket, biopsy forceps, snare, or dilating alongside the migrated stent) would have resulted in favorable outcomes. Cholangioscopy-guided cannulation, advancement of extraction/dilating balloon, and inflation within the stent to attempt extraction of the migrated stent was also considered. These strategies had the potential to cause further proximal stent migration and liver capsule injury. Advancement of non-wire-guided biopsy forceps under fluoroscopic guidance for stent retrieval could not be performed because of the high-grade nature of distal strictures risking duct injury. The safest maneuver was felt to be dilation of biliary strictures

followed by wire-guided cholangioscopy for direct visualization of the stent and retrieval with mini forceps. Even though there are several tools and techniques available for retrieval of migrated biliary stents, the application of cognitive competence is equally important in the successful and safe outcome of the ERCP<sup>5</sup> (Video 1, available online at [www.giejournal.org](http://www.giejournal.org)).

## DISCLOSURE

*Dr Chahal is a consultant at Medtronic and Boston Scientific. All other authors disclosed no financial relationships.*

## CONSENT

*Informed consent was obtained from the patient for the publication of their information and video imaging.*

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