

Case report

Treating a malignant biliary stricture using the Soehendra stent retriever: overcoming the boundaries

N. Viazis,¹ A. Armonis,¹ S. Tsoris,¹ N. Koumentakis,¹ C. Markoglou,¹ A. Avgerinos^{+1,2}

Management of patients with malignant obstructive jaundice is often challenging for all specialists involved in their care. In cases of unresectable tumors, endoscopic retrograde cholangiopancreatography (ERCP) and percutaneous transhepatic cholangiography (PTC) can be used to palliate the symptoms of biliary obstruction. However, despite successful initial stent placement, tumoral ingrowth may occur, resulting in recurrence of jaundice. Deployment of a new endoprosthesis can be technically problematic, since both tumoral ingrowth and the previously placed stent make attempts for bile duct cannulation troublesome. We report a case of a difficult malignant biliary stricture successfully drained endoscopically, using established, as well as novel techniques.

Case presentation

A 52-year-old man presented with obstructive jaundice, due to a metastatic mass at the level of the hepatic hilum. The origin of the metastatic cancer was the large intestine. The patient has been subjected to percutaneous transhepatic biliary drainage (PTBD) three months ago, at which time a metal stent had been placed into the bile duct. Although adequate decompression was initially achieved, tumoral ingrowth was evident at a CT scan performed a couple of days before the patient's admission (Figure 1).

It was decided to attempt to drain the bile duct endoscopically; however, during endoscopic retrograde cholan-

giopancreatography the distal end of the metal stent was found to protrude approximately 3 cm into the duodenum, rendering the maneuvers for the catheterization of the common bile duct almost impossible (Figure 2). The stent was therefore shortened so as to verge on the level of the papilla, using argon plasma coagulation (APC), at a high power setting (80 watts). Although the meshes of the metallic stent were successfully cut, to our disappointment, we were now unable to advance the standard 0.035 inch Tracer Metro guide-wire (Wilson-Cook Medical Inc.) into the bile duct, because of the tight malignant obstruction. Further attempts to cannulate the common bile duct using the 0.035 inch Tracer Hybrid (Wilson-Cook Medical Inc.), the 0.035 inch straight tip Jagwire (Microvasive, Boston Scientific), the 0.035 inch angle tip Jagwire (Microvasive, Boston Scientific), the 0.025 inch Tracer Metro (Wilson-Cook Medical Inc.) guide-wire failed. We then decided to use a 10 F Soehendra stent retriever (Wilson-Cook Medical Inc.), in order to gain access through the neoplastic mass (Figure 3). By twisting the retriever in a clockwise direction and simultaneously pushing it we were

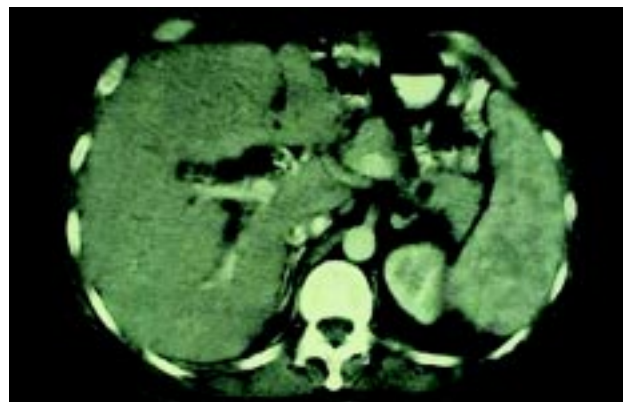


Fig. 1. CT of the abdomen demonstrating tumoral ingrowth through the pre-existing metal stent

^{2nd} Department of Gastroenterology, Evangelismos Hospital¹, Athens and ^{2nd} Department of Medicine Propaedeutic and Research Unit, Attikon University Hospital, Chaidari, Greece²

Author for correspondence:

N.Viazis, Nirridon 59, 175 61 Athens, Greece,
Tel.: +302107201638, Fax: +302107233671,
e-mail: gastroev@otenet.gr

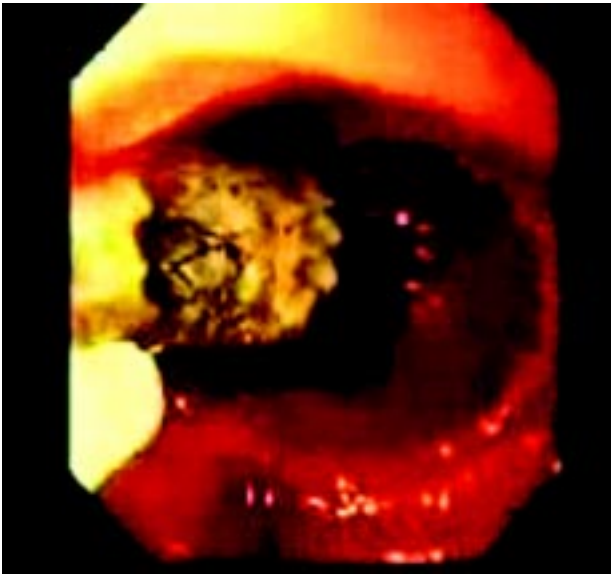


Fig. 2. Metal stent protruding into the duodenum

finally able to traverse the stricture and achieve cannulation of the common bile duct. Although the Soehendra stent retriever was not introduced over a guide-wire, the progress of its tip was monitored fluoroscopically and proper advancement was ensured by following the route of the existing metal stent. After successful catheterization, we were able to advance the 0.035 inch straight tip Jagwire (Microvasive, Boston Scientific) guide-wire through the malignant stricture (Figure 4), which was dilated using a

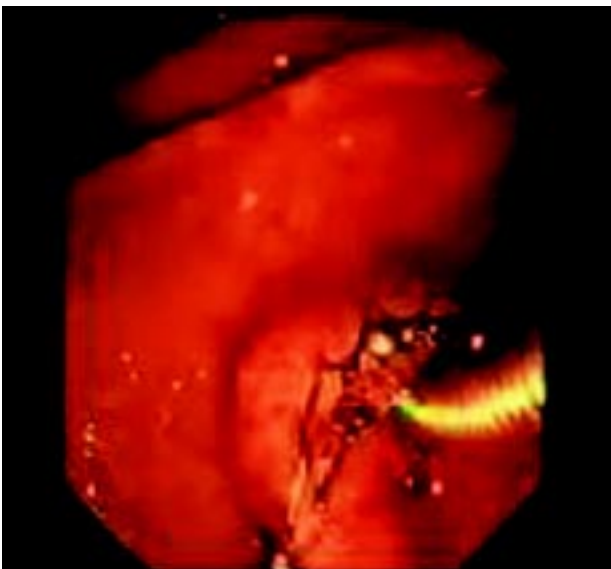


Fig. 3. Using the Soehendra stent retriever to achieve cannulation of the common bile duct

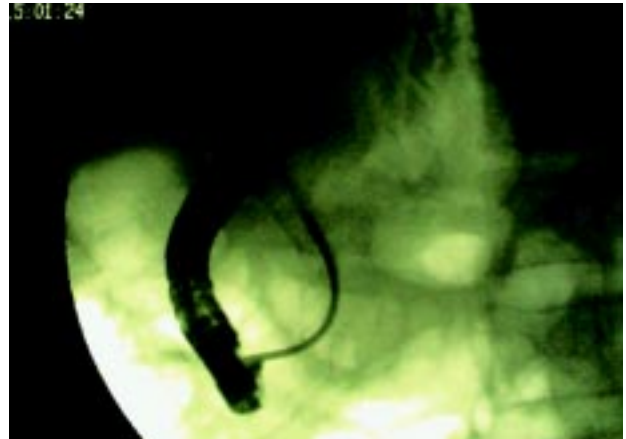


Fig. 4. Advancement of a guide-wire through the malignant stricture, after successful catheterization, using the soehendra stent retriever

10 F Soehendra biliary dilation catheter (Wilson-Cook Medical Inc.). Finally a new endoprosthesis (8.5 F / 10 cm Cotton-Leung Biliary Stent, Wilson-Cook Medical Inc.) was placed into the common bile duct, ensuring adequate drainage (Figure 5). Following the above mentioned procedure, the patient's jaundice resolved.

DISCUSSION

Placement of metal stents to relieve malignant bil-

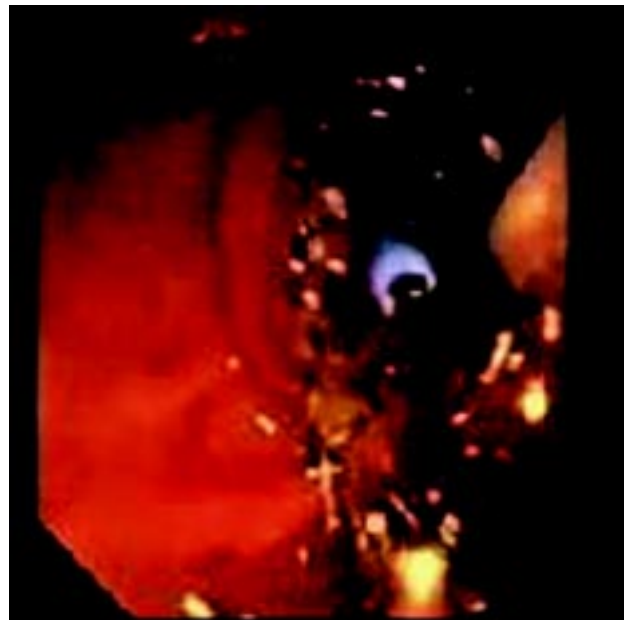


Fig. 5. Adequate drainage of the malignant stricture, after successful placement of a new endoprosthesis

iliary obstruction can be accomplished via the percutaneous or the endoscopic route¹. However, tumoral ingrowth through the wires of a metal stent, previously deployed within the bile duct lumen, can result in recurrence of jaundice. Attempts to negotiate a second plastic or metal endoprosthesis into the common bile duct may be difficult or impossible, because of the tight stricture and the previously placed stent.

In our case the excessive length of the existing metal stent, which was protruding into the duodenum, was rendering the maneuvers for the catheterization of the common bile duct almost impossible. In order to overcome this obstacle, we successfully cut the meshes of the stent, using argon plasma coagulation, at a high power setting. Although not commonly utilized for this purpose, APC has been used in three cases to shorten previously placed biliary metallic stents, so as to treat stent-induced duodenal ulceration and allow placement of a plastic stent after occlusion^{2,3}.

Traditional endoscopic management of a biliary stricture requires passage of a guide-wire through the narrowed region, followed by placement of a stent, after either rigid or balloon dilation. In our patient advancement of a guide-wire into the common bile duct was not possible, due to the tight malignant stricture. We therefore used a 10 F Soehendra stent retriever, in order to gain access through the neoplastic mass. Although this instrument is not designed as a dilator, it has been demonstrated that it can function well in this capacity. Van Someren et al, used a 11.5 F Soehendra stent retriever to successfully drain 18 of 19 patients with malignant hilar strictures, that only allowed passage of a 0.021 inch guidewire⁴. Similarly, Silverman and Svilka used this technique to endoscopically access and stent the left intrahepatic duct, by creating a fenestration through a Wall-stent, previously placed in the right intrahepatic ducts⁵. Following the first report of successful dilation of a difficult benign pancreatic stricture, by Baron and Morgan⁶, Brand et al have reported their experience of dilating 32 patients with biliary or pancreatic duct strictures, using a 7 F Soehendra retriever, which was inserted over a Terumo wire⁷. Another report, by Ziebert and DiSario, of 8 patients with refractory pancreatic strictures concluded that advancement of a stent retriever over a guide-wire is an effective dilating technique⁸. Finally, the ASGE Technology Committee has recently stated that a wire-guided screw-tipped retriever can be used to auger through high-grade pancreaticobiliary stenoses⁹.

Our case is the first to describe advancement of the Soehendra stent retriever through a tight malignant bil-

iliary stricture, without the use of a guide-wire. Although it could be argued that such a maneuver may lead to serious adverse events, the pre-existing metal stent aided the proper progression of the retriever, which was advanced under fluoroscopic control. At the point where all our attempts to achieve cannulation of the common bile duct, using several types of guide-wires, failed, it was decided to proceed with this technique, which proved to be safe and effective in gaining access through the neoplastic mass.

This report should serve as a description of two potentially helpful techniques, used in combination to gain access into the common bile duct, in patients with malignant biliary stenoses: use of the argon plasma coagulator to shorten previously placed metal prostheses and use of the Soehendra stent retriever to traverse tight strictures, even without the use of a guide-wire. Management of patients with malignant obstructive jaundice is indeed challenging and often problematic; Endoscopists should not be easily defeated by the difficulties encountered in their attempt to drain high-grade stenoses, since these may be overcome by employing a synthesis of instruments and techniques.

REFERENCES

1. Freeman M, Sielaff T. A modern approach to malignant hilar biliary obstruction. *Rev. Gastroenterol. Disord.* 2003;3:187-201.
2. Demarquay J, Dumas R, Peten E, Rampal E. Argon plasma endoscopic section of biliary metallic prostheses. *Endoscopy* 2001;33:289-290.
3. Vargo J. Clinical applications of the argon plasma coagulator. *Gastrointest. Endosc.* 2004;59:81-88.
4. VanSomeren N, Benson M, Glynn M, Ashraf W, Swain P. A novel technique for dilating difficult malignant biliary strictures during therapeutic ERCP. *Gastrointest. Endosc.* 1996;43:495-498.
5. Silverman W, Slivka A. New technique for bilateral metal mesh stent insertion to treat hilar cholangiocarcinoma. *Gastrointest. Endosc.* 1996;43:61-63.
6. Baron T, Morgan D. Dilation of a difficult benign pancreatic duct stricture using the Soehendra stent extractor. *Gastrointest. Endosc.* 1997;46:178-180.
7. Brand B, Thonke F, Obytz S, Binmoeller K, Rathod V, Seitz U, Bohnacker S, Jackle S, Soehendra N. Stent retriever for dilation of pancreatic and bile duct strictures. *Endoscopy* 1999;31:142-145.
8. Ziebert J, DiSario J. Dilation of refractory pancreatic duct strictures: the turn of the screw. *Gastrointest. Endosc.* 1999;49:632-635.
9. ASGE Technology status evaluation report. Tools for endoscopic stricture dilation. *Gastrointest. Endosc.* 2004;59:753-760.