



■ Clinical case

Successful endoscopic ultrasound-guided overstenting biliary drainage through a pre-existing proximal migrated metal biliary stent

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■ Abstract

Biliary endoscopic drainage using metallic self-expanded stents has become a well-established method for palliative treatment of malignant biliary obstruction. However, its occlusion, mainly by tumor overgrowth, is still the main complication without a standard treatment. We here describe a new method of treatment for biliary metallic stent occlusion, through the echo guided biliary drainage. We present a 68-year-old patient with metastatic pancreatic cancer previously treated for jaundice with ERCP and self-expandable metallic stent insertion. Four weeks later, the patient developed jaundice

Keywords:
Biliary tract, endoscopic retrograde cholangiopancreatography, endoscopic biliary endoprosthesis, malignant biliary obstruction, biliary drainage, Brazil.

■ Resumen

El drenaje biliar endoscópico con prótesis metálicas se ha convertido en un método bien establecido para la paliación de la obstrucción biliar de origen maligno. Sin embargo, la oclusión por crecimiento del tumor, continúa siendo la principal complicación y no tiene un tratamiento estándar. Aquí describimos un nuevo método de manejo para la oclusión de una prótesis metálica biliar a través de un drenaje guiado por ultrasonido endoscópico (USE). Presentamos el caso de un hombre de 68 años con cáncer pancreático metastásico tratado en forma paliativa con una endoprótesis metálica auto-expandible mediante

Palabras clave:
Tracto biliar, colangiopancreatografía retrógrada endoscópica, endoprótesis biliar endoscópica, obstrucción maligna biliar, drenaje biliar, Brasil.

and symptoms of gastric outlet obstruction. A new ERCP confirmed obstruction of the second portion of the duodenum, due to diffuse tumor growth. EUS was performed, and the previous metal biliary stent was seen occluded at the distal portion in the common bile duct. A EUS-guided choledochododenostomy was performed and then, an overlapping self-expanding metal enteral stent was placed through the malignant obstruction. There were no early complications and the procedure was also clinically effective in relieving jaundice and gastric outlet obstruction symptoms. If ERCP fails in the management of occluded biliary metallic stents, EUS biliary drain can provide effective biliary decompression and should be considered an alternative to other endoscopic techniques.

colangio-pancreatografía endoscópica (CPE). Una nueva CPE demostró la obstrucción a nivel de la segunda porción duodenal debido al crecimiento tumoral difuso. Se realizó USE mediante el cual se pudo observar la prótesis metálica ocluida en la porción distal del conducto biliar común. Se realizó una colédoco-duodenostomía guiada por USE a través de la cual se sobrepuso una endoprótesis metálica autoexpandible intestinal pasando la obstrucción maligna. No hubo complicaciones tempranas relacionadas con el procedimiento que fue efectivo para aliviar la ictericia y los síntomas de obstrucción gástrica. Si la CPE falla en el manejo de las endoprótesis ocluidas, el drenaje biliar guiado por USE puede descomprimir en forma efectiva y debe ser considerado como alternativa a otras técnicas endoscópicas.

■ Introduction

Endoscopic biliary endoprosthesis has become a well-established method for palliative treatment of malignant biliary obstruction, with an overall success rate of jaundice relieve from 75% to 90%.¹ However, after stent insertion, complications associated with endoscopic biliary drainage range from 7% to 21%. The most common complications include pancreatitis, clogging, migration and tumor overgrowth, resulting in recurrence of jaundice, fever and abdominal pain in up to 20% to 50% of the patients.²

Plastic biliary endoprostheses were originally used to obtain a non-surgical biliary bypass, but complications including occlusion and migration diminished the enthusiasm for their use in malignant biliary tract obstructions.³ Prat and collaborators described that 53% of stents removed from asymptomatic patients after 3 months of insertion were occluded on macroscopic examination.³

Several reports suggest that the large diameter of self-expandable metallic stents could overcome the problem of stent occlusion, lowering the cost of treatment from repeated endoscopic therapy and

hospitalization.^{4,5} Unfortunately, metallic biliary stents have been shown to occlude after a median interval of nine months, and unlike plastic stents, they usually cannot be extracted.⁶

Tumor overgrowth is the major cause of metallic stent dysfunction, accounting for 64% of cases.⁷ Several methods have been used in the management of the occlusion such as insertion of another stent (overstent) or mechanical cleaning of the inner stent.^{8,9} There is no consensus regarding the optimal management of metallic stent occlusion.^{7,10}

We describe a new method of bridge overstent, through an echo guided choledochoduodenostomy, for the management of a metal biliary stent occluded by tumor overgrowth after proximal migration.

■ Case report

A 68-year-old man with metastatic pancreatic cancer was previously treated for jaundice with ERCP and self-expandable metallic stent insertion. Four weeks later, the patient developed pruritus, jaundice and symptoms of gastric outlet obstruction that needed suspension of palliative chemotherapy.

A new ERCP was attempted, but endoscopic examination confirmed obstruction of the second part of the duodenum, including the area of the ampulla, due to diffuse tumor growth after proximal migration. EUS was performed, and the previous metal biliary stent was seen in the common bile duct. The option of a EUS-guided biliary drainage (EUSBD) was considered. An informed consent was obtained after discussing the risks, benefits and alternatives with the patient and his family. A EUS-guided choledochoduodenostomy was performed.

A linear array echoendoscope (GF-UCT140, Olympus America, Center Valley, PA, USA) was placed in the duodenal bulb region allowing visualization of a dilated common bile duct and a distal occluded biliary metallic stent (**Figure 1**).

A 19-gauge FNA needle (Wilson-Cook Endoscopy, Winston-Salem, NC, USA) was used to perform a transduodenal puncture of the common bile duct through the proximal end of the biliary stent. Bile was aspirated and a cholangiogram demonstrated good filling of the right and left duct systems with no evidence of a stricture proximal to the puncture site (**Figure 2**). Under fluoroscopy, a 0.035-inch straight guidewire (Jagwire, Boston Scientific Corporation, Natick, MA, USA) was passed into the biliary tree and directed toward the hilum. Choledochoduodenostomy with a 10 mm x 60 mm partially covered self-expanding metal biliary stent (Wallflex®, Boston Scientific Corporation, Natick, MA, USA) was placed over

the guide wire and deployed under fluoroscopy (**Figure 3**). Good bile and contrast efflux was seen (**Figure 4**).

Then, an overlapping self-expanding metal enteral stent 18 mm x 120 mm (Wallflex, Boston Scientific Corporation, Natick, MA, USA) was placed through the malignant obstruction.

There were no early complications and the procedure was also clinically effective in relieving jaundice and gastric outlet obstruction symptoms. Post-procedure CT imaging demonstrated good positioning of the biliary stent and no evidence of a bile leak. The patient subsequently underwent palliative chemotherapy.

■ Discussion

Despite great improvements in imaging and diagnostic techniques, between 80% - 90% of pancreatic cancer patients present with unresectable tumor due to locally advanced or metastatic disease.¹¹ Median survival time without any therapy is 3 to 4 months after diagnosis, and only 20% of all will survive for more than one year.¹² Therefore, palliation of symptoms (major symptoms: obstructive jaundice, duodenal/gastric outlet obstruction,

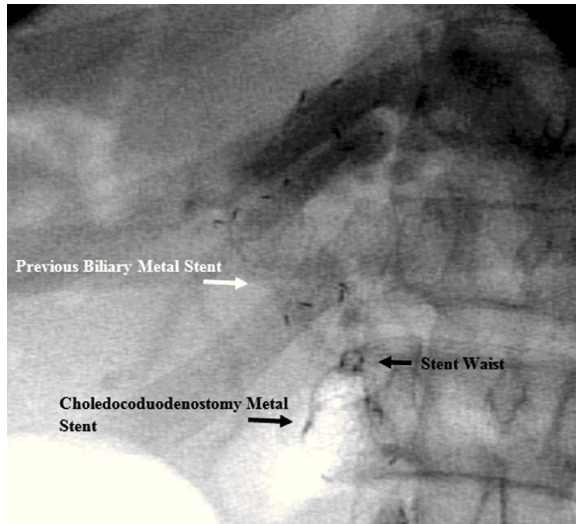
■ **Figure 1.** EUS showing biliary metallic stent occluded at the distal portion and head of the pancreas.



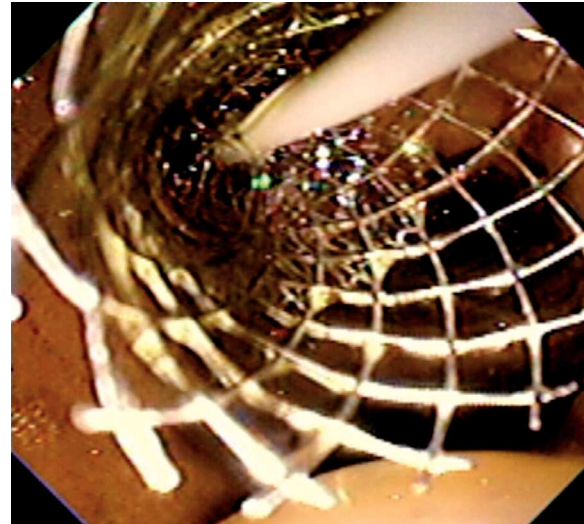
■ **Figure 2.** EUS guided puncture and cholangiogram demonstrating distal obstruction of the common bile duct.



■ **Figure 3.** Radiologic image demonstrating proximal migration of prior biliary metal stent (white arrow) and the metal stent placed to create the choledochoduodenostomy fistula (black arrow) and also its waist because of the passage through the previous stent.



■ **Figure 4.** Biliary metallic stent in the duodenum lumen after EUS-guided choledochoduodenostomy.



tumor-associated pain) remains the most important component in the management of pancreatic tumors.¹³⁻¹⁵

For advanced disease, because of its efficacy and low short-term morbidity and mortality, endoscopic stenting of the common bile duct may be considered as a first-line treatment in the case of incurable pancreatic cancer and jaundice.^{16,17} The use of self-expandable metallic stents in malignant biliary obstructions reduced the number of complications associated to the endoscopic treatment, and patients with a longer survival rate may therefore have a more pronounced benefit compared to the surgical biliary bypass.¹⁸

However, recurrent obstructive jaundice, caused especially by tumor overgrowth, continues to be the major drawback in the use of endoprostheses, with no optimal management for this complication.⁷ If duodenal obstruction is not apparent at the time of clinically significant biliary obstruction, isolated biliary stenting is usually performed. When patient subsequently develops a duodenal obstruction due to tumor growth, an enteral stent can be placed, even if the ampulla is covered, as biliary stents can be placed through the mesh of

the duodenal stent.¹⁹ Argon plasma coagulation can also be used to create a larger fenestration at the site of the ampulla to improve biliary access.²⁰

EUSBD has emerged as an alternate intervention with many advantages over PTBD and technical success rate of 80% to 90% through two drainage approaches reported performing fistulization by means of: 1) transduodenal via the common bile duct and 2) transgastric via a left hepatic duct.²¹⁻²⁴ In the case presented here, when a second ERCP failed due to duodenal and biliary stent occlusion, EUSBD was successfully performed through the transduodenal echoguided method as bridge overstent model. After this procedure, a duodenal metallic stent was placed, in order to relief the duodenal obstruction. The first case performed in Latin America was reported in 2007 and presented to the readers the first description of use of the partially covered metal stent to perform hepatico-gastrostomy.²⁵

The EUS-guided transduodenal technique in this case permitted to prevent clogging and tumor ingrowth and/or overgrowth, because it creates a fistula far from the obstructing tumor. This is an option of biliary drainage after occlusion of a

previous biliary metallic stent and duodenal obstruction. However the management of occluded biliary metallic stents by tumor overgrowth still controversial.⁷

Conclusion

If ERCP fails in the management of occluded biliary metallic stents, even in the presence of a pre-existing duodenal wall stent, EUSBD can provide effective biliary decompression and should be considered an alternative to other endoscopic techniques.

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