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Case Report

Percutaneous transhepatic access to allow per-oral enteric stent insertion for malignant duodenal obstruction following failed endoscopic attempt

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ABSTRACT

The treatment options for malignant gastric outlet obstruction include antegrade stent placement or surgical bypass, the latter being associated with a higher level of morbidity and therefore often reserved for cases in which stenting is not technically possible. Antegrade stent placement can be endoscopic, fluoroscopic or a combination. We report a case in which standard antegrade attempts at stenting failed, but where it was possible to use a retrograde approach via the biliary tree to facilitate technically and clinically successful stent placement.

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Keywords: Duodenal; Obstruction; Retrograde; Stent; Transhepatic

Introduction

Gastric outlet obstruction due to malignancy is commonly treated by antegrade duodenal stent insertion using endoscopy, fluoroscopy or a combined approach. Surgical bypass is an alternative, but is a more invasive procedure and may be technically challenging in the presence of peritoneal metastasis. We describe a case where it was possible to use a percutaneous transhepatic approach to retrogradely cross a malignant duodenal stricture and allow successful enteric stent placement after a failed endoscopic attempt.

Case Report

A 68-year-old previously fit and well female patient was admitted to hospital with vomiting, abdominal pain and jaundice. Computed tomography (CT) abdomen demonstrated inflammatory changes adjacent to the gallbladder suggestive of cholecystitis. She underwent open partial cholecystectomy and gallstones removal. Histology of the surgically resected gallbladder demonstrated only inflammatory changes. Post operatively she remained unwell with continued vomiting and deranged liver biochemistry. A further abdominal CT obtained two months after the initial admission showed a complex mass at the porta hepatis obstruct-

ing the common bile duct and second part of the duodenum with multiple nodules in the omentum. Biopsy of an omental deposit was performed under ultrasound guidance and histology demonstrated poorly differentiated adenocarcinoma likely of gastrointestinal origin.

Percutaneous transhepatic biliary drainage was performed to relieve the patient's jaundice. Using local anaesthesia and under ultrasound and fluoroscopic guidance, an 8 French drainage catheter (Flexima; Boston Scientific, Alajuela, Costa Rica) was successfully placed in the biliary system via a right sided approach. At this point the patient was transferred to our centre for further treatment to alleviate the gastric outflow obstruction and commence cytotoxic chemotherapy for her malignancy.

Unfortunately, an initial endoscopic attempt to insert a duodenal stent failed as there were difficulties in identifying the true duodenal lumen due to extensive ulceration. The patient was then referred for internalisation of the external biliary drain. Following discussion with the patient and clinical team, plans were made to attempt radiological duodenal stent placement as the patient was reluctant to undergo further surgery. Informed consent was obtained.

The existing biliary drain was removed over a wire and a 6 French sheath (Brite Tip; Cordis, Hialeah, FL, USA) was inserted. The biliary stricture was crossed using a hydrophilic guidewire

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Fig. 1. Angioplasty balloon predilating the duodenal stenosis prior to stent placement. The guidewire extends from the intrahepatic biliary tree across the biliary and duodenal stenoses.

Fig. 2. Post deployment of the duodenal stent.

(Radifocus; Terumo, Tokyo, Japan) and a 4 French C2 cobra catheter (Cordis). Following this a 6 French braided sheath (Destination Sheath; Terumo) was passed to the level of the duodenal stricture. Initial attempts to cross the stricture were hampered by marked peristalsis, in view of this 20 mg hyoscine butylbromide was given intravenously. It was then possible to introduce a guidewire into the stomach via the transhepatic access. A 0.035-inch snare (Expro Elite; Vascular Solutions, Galway, Ireland) was passed orogastrically through a 5 French multipurpose catheter (Cordis) to retrieve a 500 cm wire introduced through the biliary system (Wallstent Super-Stiff Guidewire; Boston Scientific, Natick, MA, USA) which was then pulled out through the mouth. An 8 mm angioplasty balloon (Wanda; Boston Scientific, Natick) was used to dilate the duodenal stricture (Fig. 1) prior to placement of a 12 cm $\times$ 22 mm duodenal stent (Wallflex; Boston Scientific, Natick) introduced via the mouth (Fig. 2). Crossing the duodenal stricture was straightforward following the administration of hyoscine butylbromide and the cannulation time was less than 10 minutes.

Cholangiography demonstrated a fistula from the common bile duct into the duodenum and in view of this a covered 80 mm $\times$ 10 mm stent was inserted across the stricture and was extended into the duodenum with a further 40 mm $\times$ 10 mm stent (Niti-S Biliary Covered Stents; TaeWoong Medical, Gimpo, Korea), both stents were dilated with a 6 mm balloon (Wanda) (Fig. 3). The biliary tract was plugged with a Hunter biopsy sealing device (Vascular Solutions).

At 8 weeks post procedure the patient had commenced cytotoxic chemotherapy. Her bilirubin level had returned to normal and there were no symptoms of gastric outflow obstruction.

Discussion

The commonest cause of gastric outflow obstruction is malignant disease, often a complication of advanced hepatobiliary or gastric malignancy.¹ Endoscopic stenting in these patients is an established palliative procedure which produces good clinical results and is associated with favourable outcomes in terms of clinical success and decreased morbidity compared with surgical bypass.^{2,3} Conventionally, when antegrade stenting has not

Fig. 3. Completion cholangiogram following deployment and dilatation of the biliary stents.

been possible, surgery is considered as an alternative. However, in the case described above it was possible to gain access into the duodenum via the biliary system due to co-existing biliary obstruction and thus avoiding the morbidity associated with a more invasive procedure. This procedure was made possible by the combined biliary and duodenal obstruction, without the associated biliary dilatation this procedure would be considerably more challenging.

Miller et al⁴ has recently reviewed the outcome of the patients who underwent radiological self-expanding metallic stents insertion for palliating malignant gastric outlet obstruction, comparing the transoral and percutaneous transgastric approach. With the transgastric approach the stent delivery system is inserted via a radiologically placed gastrostomy. They reported no statistical differences in the technical and clinical success between the transoral and transgastric approach. Transhepatic access to facilitate enteric stenting has previously been used to treat malignant af-

ferent loop obstruction following pancreaticoduodenectomy as an alternative to surgery.⁵⁻⁷ In these cases there is no endoscopic alternative. These procedures also require the enteric stent to be introduced through the transhepatic tract, therefore necessitating a 11 to 12 French access through the liver. It was possible to avoid this in our case by passing the wire through the mouth to minimise the size of the transhepatic access. It was possible for us to avoid major surgery and successfully palliate both the patient's obstructive jaundice and gastric outflow obstruction. The successful procedure has allowed the patient to undergo further therapy for her underlying malignancy. This technique should be considered in similar patients where endoscopic stenting has failed or is not technically possible as a minimally invasive alternative to bypass surgery.

Conflicts of Interest

No potential conflict of interest relevant to this article was reported.

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