TECHNIQUE/CASE REPORT

Self-expandable Metal Stent Placement Combining Double Balloon Endoscopy with a Percutaneous Approach in a Roux-en-Y Hepaticojejunostomy

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Abstract
The use of the double balloon endoscope for ERCP in patients with surgically altered anatomy has shown to be safe and feasible. This technique permits a variety of diagnostic and therapeutic possibilities. A case is presented of a 38-year old male, admitted with jaundice, 8 months after surgery for a malignant liver tumour with construction of a Roux-en-Y hepaticojejunostomy. A stenosis at the site of the biliodigestive anastomosis was diagnosed. Combining double balloon endoscopy with a percutaneous approach in a rendezvous procedure, it was possible to place a self-expandable biliary metal stent. This is the first report of a successful placement of a metallic stent using this technique.

Keywords
Double balloon enteroscopy – ERCP – stent – Roux-en-Y reconstruction

Introduction
Endoscopic retrograde cholangiopancreatography (ERCP) in patients with surgically altered anatomy, such as those with a bilio-digestive anastomosis with Roux-en-Y reconstruction, is a serious challenge for the endoscopist. The procedure can sometimes be performed with conventional endoscopes but often the distance from mouth to the bypassed small bowel limb is too long to be traversed by the endoscope. The introduction of double balloon endoscopy (DBE) has allowed easy access into the small bowel. The use of this scope for ERCP in patients with altered anatomy has been shown to be safe and feasible with the potential to perform diagnostic and therapeutic interventions [1]. Procedures such as balloon dilation, biliary plastic stent placement, biliary stone extraction and pancreatic duct interventions have all shown to be technically possible [1]. In selected cases, DBE combined with a percutaneous rendezvous technique may be helpful, as illustrated by the following case.

Case report
A 38-year-old male underwent an extended left hemihepatectomy with hepaticojejunostomy and a Roux-en-Y reconstruction because of a large symptomatic liver tumour. Postoperatively, the patient developed a biloma which was drained percutaneously. Histopathological examination of the liver tumour showed poorly differentiated carcinoma. The primary tumour was unknown. Chemotherapy was not given. Eight months later, he presented with jaundice and fatigue. A chest X-ray showed pulmonary metastases. Magnetic resonance cholangiopancreatigraphy revealed dilated biliary branches and a stenotic hepaticojejunostomy. With the aim of obtaining internal biliary drainage for palliation, subsequent percutaneous transhepatic cholangiography and drainage (PTCD) was performed. This confirmed the stenosis at the site of the bilio-digestive anastomosis. Unfortunately, stent placement through the hepaticojejunostomy was not possible because of difficulties in determining the correct route to reach the jejunum. A temporary external biliary drain was therefore inserted. Next, a DBE procedure was performed, again with the aim of obtaining internal biliary drainage. Although access into the Roux-limb was obtained during this procedure, no entry into the biliary system was achieved. Therefore, a third procedure was scheduled under fluoroscopy, combining DBE with a percutaneous approach in a rendezvous technique.

Technique
A therapeutic double balloon enteroscope (EN-450T5, Fujinon) was used. This endoscope has a working length of 200 cm and a 2.8 mm diameter working channel and a 12-mm-diameter overtube with a length of 140 cm. The patient
was under conscious sedation using midazolam and pethidine, and in the supine position. In DBE, alternately inflating and deflating of the two balloons and straightening the endoscope with the overtube achieves a stepwise progression of the enteroscope throughout the small intestine. The endoscope was passed beyond the ligament of Treitz, as the jejunojejunostomy was located another 50 cm downstream in the small bowel. At this point, the appropriate limb (the Roux limb) was identified and entered. After positioning the endoscope near the hepaticejunostomy (Fig. 1), the anatomical hepatobiliary situation became apparent (Fig. 2). There was a sharp angle between the small Roux limb and the biliary tree which explained why biliary access had not been acquired on the previous occasion. Again, biliary access could not be obtained from the endoscopic route. Therefore, a 0.035” diameter Terumo guidewire was percutaneously placed through the external drain, into the jejunum. The guidewire was then tightly grasped by a snare through the endoscope. The external percutaneous drain was then replaced by a 7 Fr sheath. Balloon dilation was performed through this sheath of the stenotic tract followed by percutaneous insertion of an uncovered 6 mm/4 cm Luminexx® self-expandable metallic nitinol stent (Figs. 3 and 4), immediately providing bile flow into the jejunum. In the days following the procedure, the external biliary drain could be clamped and ultimately removed. The jaundice gradually disappeared. The patient is now relatively well with a follow-up of six months.

Discussion

The value of DBE for biliary interventions in patients with altered anatomical configurations has been shown unequivocally [1]. After various surgical reconstruction procedures, diagnostic and therapeutic balloon-assisted endoscopic interventions have shown to be feasible and safe (reviewed in ref. 1). Postsurgical conditions amenable for balloon-assisted ERCP include patients with a pylorus-preserving pancreaticoduodenectomy, a classical Whipple resection, a total gastrectomy with a Roux-en-Y reconstruction, a hepaticejunostomy with Roux-en-Y reconstruction, gastric bypass surgery and patients with a partial gastrectomy with Bill gastro-jejunostomy, in whom ERCP with conventional endoscopes have failed. In practically all patients reported, access into the targeted limb was obtained. However, entry into the native papilla, biliodigestive or pancreaticodigestive anastomosis was not always possible [1]. Nevertheless, a diagnosis can usually be made in the majority of patients, based on findings of either direct visualization of the papilla or biliodigestive anastomosis or cholangiography. Therapeutic interventions
like balloon dilation, biliary plastic stent placement, biliary stone extraction and pancreatic duct interventions have shown to be technically possible. The risk of complications using balloon-assisted enteroscopy for ERCP appears to be considerably lower than that of percutaneous transhepatic biliary interventions [2].

Apart from the double balloon endoscope, the ERCP procedure has also shown to be technically possible with the Olympus single balloon endoscope, although published experience is limited to 6 patients [3, 4].

Combining DBE with a percutaneous approach through rendezvous technique has recently been described in two liver transplant patients [5, 6]. In both these patients, a stenotic bilio-digestive anastomosis was treated by balloon dilatation.

Our paper represents the first report of successful placement of a self-expandable metallic stent using the rendezvous approach. Our case illustrates the gradual disappearance of barriers for endoscopic biliary interventions in patients with altered upper gastrointestinal tract anatomy. In conclusion, balloon-assisted ERCP should be considered in patients with suspected biliary or pancreatic disease and surgically altered anatomy.

References