Single-step endoscopic ultrasound-guided gastroenterostomy and ERCP in patient with Roux-en-Y hepaticojejunostomy after right lobe hepatectomy

Since endoscopic ultrasound-guided gastroenterostomy (EUS-GE) with a lumen-apposing metal stent was introduced first in an animal model in 2012 [1], and then in humans in 2015 [2], this technique has become more and more promising; it is now used in many expert centers around the world [3] to treat gastric outlet obstruction and to perform endoscopic retrograde cholangiopancreatography (ERCP) in patients with surgically altered anatomy.

A 32-year-old woman with a history of right hepatectomy for a Klatskin IIIb cholangiocarcinoma (pT4N1pM1), with Roux-en-Y hepaticojejunostomy and incomplete chemotherapy, was referred to our center for sepsis with cholestasis and cytolyis. CT scan revealed a dilated intrahepatic bile duct and dilated afferent jejunal limb in contact with carcinoid lymph node metastasis (Fig. 1, Video 1). After multidisciplinary discussion, we decided to perform an endoscopic ultrasound-directed transgastric ERCP (EDGE) in one single session. First, under sonographic guidance in the stomach, a 10-cm dilated jejunal limb was seen, and a 15-mm Hot Axios stent system (Boston Scientific, New York, USA) was deployed to form a gastroenterostomy. Then we dilated the anastomosis with a 12-mm balloon to facilitate the passage into the jejunal limb of a conventional gastroscope. Next, the biliary anastomotic orifice was located and cannulated with a sphincterotome. Some small dilation of the orifice was achieved through repeated passing of the sphincterotome (Fig. 2, Fig. 3). In this way we achieved good emptying of the bile duct without the need for biliary stenting at the end of the procedure (Fig. 4). No related adverse event occurred after the procedure. The patient was discharged home 24 h later.

Fig. 1 CT scan revealed a dilated intrahepatic bile duct and dilated afferent jejunal limb in contact with carcinoid lymph node metastasis.

Fig. 2 a–c Fluoroscopic images: a cholangiogram through gastroenterostomy orifice; b balloon dilation of gastroenterostomy orifice; c wireguide cannulation of intrahepatic bile duct with conventional gastroscope.
with significant clinical improvement and continued oral antibiotics.

EDGE was initially reported in 2015 as a two-stage procedure to minimize the risk of stent dislodgment [4], and was not then recommended for urgent cases. In this report, we wish to demonstrate its feasibility and safety as a single-step procedure. Moreover, despite the high cost of the Hot Axios system, in a comparison with other current alternative strategies for Roux-en-Y anastomosis, EDGE was shown to be the most cost-effective [5]. Thus, shortening the procedure into a single session should reduce even further the cost of patient management.

**Competing interests**

The authors declare that they have no conflict of interest.

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