

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.

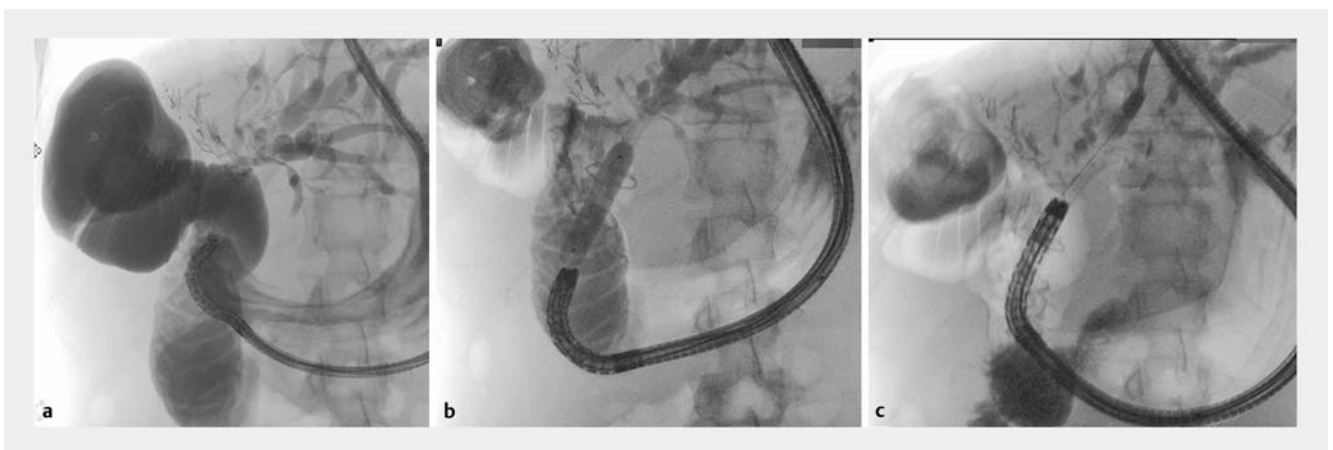
A 32-year-old woman with a history of right hepatectomy for a Klatskin IIIb cholangiocarcinoma (pT4N1pM1), with Roux-en-Y hepaticojejunostomy and incomplete chemotherapy, was referred to our center for sepsis with cholestasis and cytotoxicity. CT scan revealed a dilated intrahepatic bile duct and dilated 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 di-



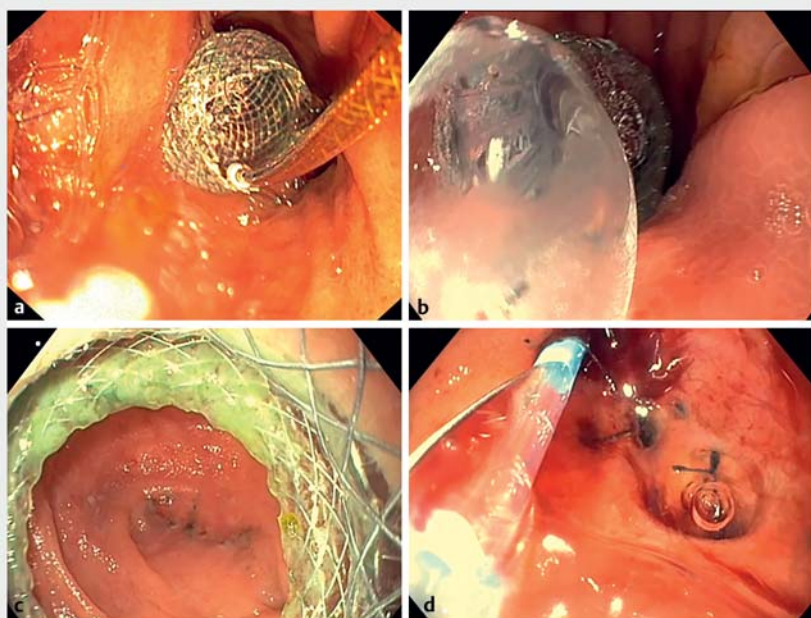
►Fig. 1 CT scan revealed a dilated intrahepatic bile duct and dilated afferent jejunal limb in contact with carcinoid lymph node metastasis.

lated 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 pas-

sing 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. 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.



► **Fig. 3 a–d** Endoscopic images: **a** endoscopic ultrasound-guided gastroenterostomy; **b** balloon dilation of gastroenterostomy orifice; **c** afferent jejunal limb with hepaticojejunal anastomosis orifice; **d** ERCP with conventional gastroscope.



► **Fig. 4** No bile duct dilation; Axios stent in place.

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 pro-

cedure. 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.

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Competing interests

The authors declare that they have no conflict of interest.

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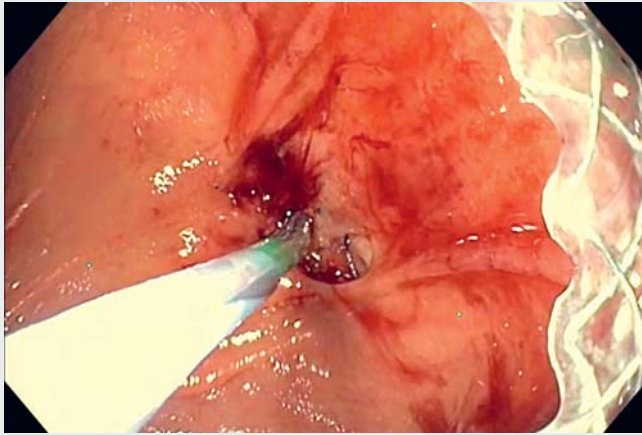
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Video 1 Single-step endoscopic ultrasound-guided gastroenterostomy and ERCP in patient with Roux-en-Y hepaticojejunostomy.

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