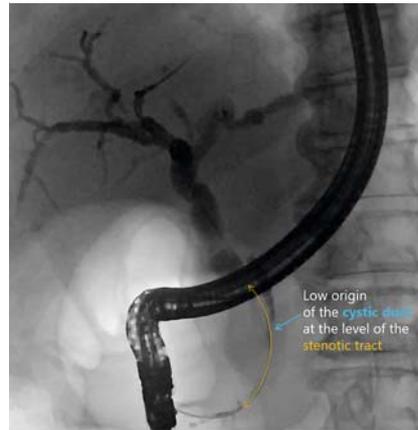


Endoscopic ultrasound-guided gallbladder drainage after real-time assessment of cystic duct exclusion following biliary placement of an uncovered metal

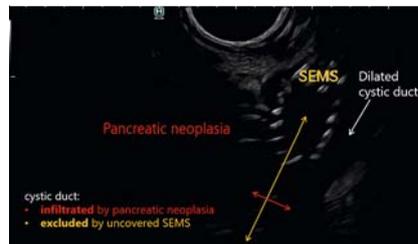
An 80-year-old patient was admitted because of abdominal pain, vomiting, recent-onset diabetes, and weight loss. Computed tomography (CT) and endoscopic ultrasound (EUS) allowed diagnosis of a 5-cm adenocarcinoma of the pancreatic head, with liver metastasis and obstructive jaundice. Endoscopic retrograde cholangiopancreatography (ERCP) was performed with a 4-cm partially covered self-expanding metal stent (SEMS). Due to persistent discomfort and pain, ultrasonography was performed and showed gallbladder hydrops.

Replacement of the partially covered SEMS with an uncovered SEMS was planned. An initial EUS confirmed an 11-cm-long hydropic gallbladder. The partially covered stent was removed without any bile flow. Contrast injection depicted a slightly dilated cystic duct originating in the center of the stenosis (► **Fig. 1**). A 4-cm uncovered SEMS was placed, after which the cystic duct was no longer contrast-injectable or cannulable.

During the same procedure a new EUS was performed that showed a persistently hydropic gallbladder without any sign of bile flow, demonstrating cystic duct exclusion by the SEMS with clearly visible neoplastic infiltration (► **Fig. 2**). EUS-guided gallbladder drainage with a small-caliber (8 mm) electrocautery-enhanced lumen-apposing metal stent (LAMS) was decided upon, and this resulted in complete emptying of the gallbladder (► **Video 1**; ► **Fig. 3**, ► **Fig. 4**). Postprocedural follow-up was uneventful and the patient was discharged 2 days later. Restaging CT at 30 days showed a patent LAMS without any complication (► **Fig. 5**).



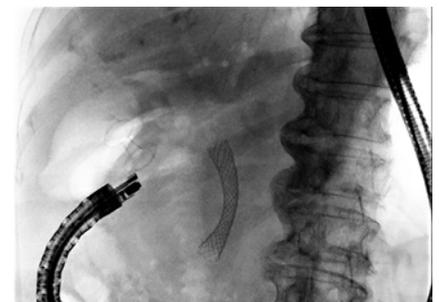
► **Fig. 1** Contrast injection showing stenosis of the common bile duct and a dilated cystic duct originating in the middle of the stenotic tract.



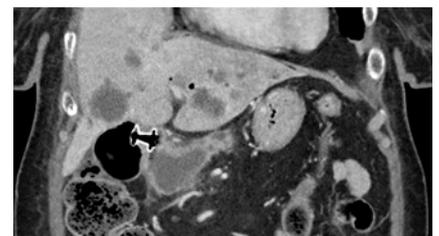
► **Fig. 2** Endoscopic ultrasound showing a dilated cystic duct (white arrow) due to compression by the self-expanding metal stent (SEMS; yellow arrow) and infiltration by pancreatic neoplasia (red arrow).



► **Fig. 3** Thickened bile flowing from the released lumen-apposing metal stent (LAMS).

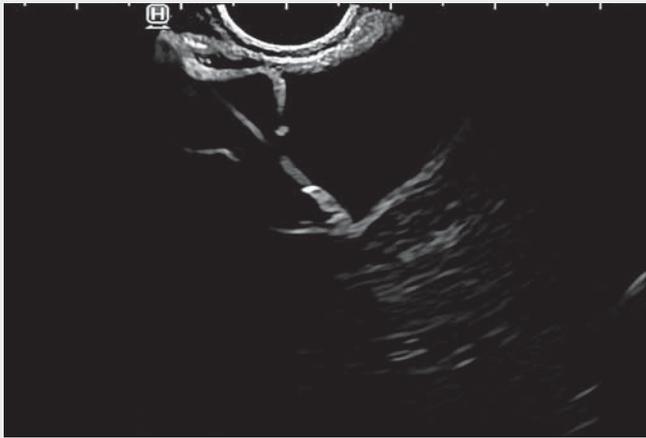


► **Fig. 4** Fluoroscopic image of the LAMS creating the cholecystoduodenostomy, as suggested by an air film inside the collapsed gallbladder. Uncovered SEMS in place with aerobilia.



► **Fig. 5** Restaging computed tomography at 30 days showing a patent LAMS and an air-filled gallbladder without complications.

EUS-guided gallbladder drainage is the modality of choice for relief of cholecystitis in patients unfit for surgery [1]. Obstructive cholecystitis may complicate around 15% of SEMS placements [2]. Its occurrence seems unrelated to whether the SEMS is covered or uncovered [3], and to be favored by neoplastic infiltration of the cystic duct [2,4]. Although



Video 1 Endoscopic ultrasound-guided drainage of a hydroptic gallbladder after real-time assessment of functional exclusion of the cystic duct caused by neoplastic infiltration of the cystic duct and worsened by placement of an uncovered self-expanding biliary metal stent.

a randomized trial. *Gastrointest Endosc* 2019; 90: 602–612.e4. doi:10.1016/j.gie.2019.06.032

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EUS-guided drainage has been proposed for use in this scenario, it has been described only after development of acute cholecystitis [2]. We report for the first time a real-time assessment of cystic duct exclusion after SEMS placement, which was unchanged after the partially covered SEMS was replaced by an uncovered SEMS, and was finally relieved by placement of an 8-mm LAMS during the same procedure.

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Competing interests

The authors declare that they have no conflict of interest.

The authors

Giuseppe Vanella, **Matteo Tacelli**, **Maria Chiara Petrone**, **Paolo Giorgio Arcidiacono**
Pancreatobiliary Endoscopy and Endosonography Division, Pancreas Translational and Clinical Research Center, IRCCS San Raffaele Scientific Institute, Milan, Italy

Corresponding author

Paolo Giorgio Arcidiacono, MD
Pancreatobiliary Endoscopy and EUS Division, Pancreas Translational and Clinical Research Center, San Raffaele Scientific Institute, Via Olgettina 60, 20132 Milan, Italy
arcidiacono.paologio@hsr.it

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