

## Endoscopic ultrasound-guided gallbladder drainage after distension with a high density solution (hyaluronic acid)



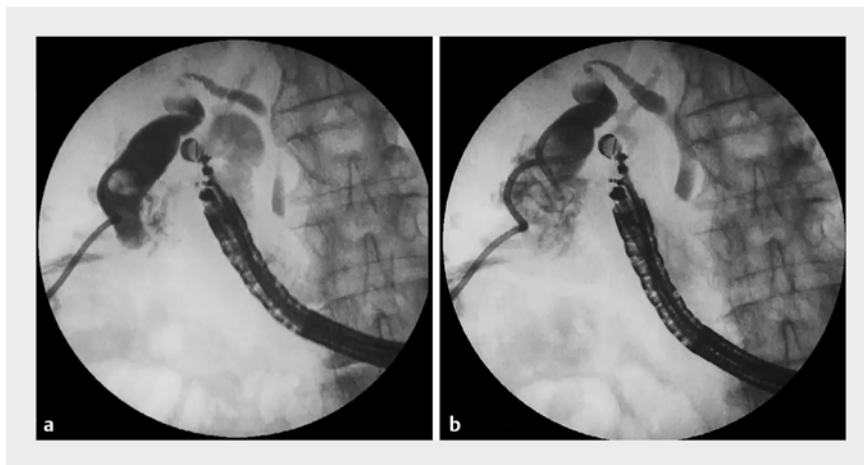
▶ **Video 1** Endoscopic ultrasound-guided gallbladder drainage with a lumen-apposing metal stent after the infusion of hyaluronic acid through a percutaneous catheter.



▶ **Fig. 1** Endoscopic ultrasound image showing a 3×2-cm perivesicular abscess.

After the abscess had been completely emptied with a 19-gauge needle, a contracted gallbladder was identified. Saline and contrast were used to distend the gallbladder through the percutaneous catheter; however, the contrast quickly left the gallbladder through the cystic duct and the small perforation it contained. It was therefore not possible to distend the gallbladder enough to place a LAMS safely (▶ **Fig. 2 a**). A 2% hyaluronic acid solution was then infused through the percutaneous catheter (▶ **Fig. 2 b**), allowing the gallbladder to distend sufficiently to place a 10×10-mm electrocautery-enhanced LAMS (Hot Axios; Boston Scientific, Marlborough, Massachusetts, USA). Finally, a 7-Fr double-pigtail stent was placed through the LAMS. The next day, the percutaneous catheter was removed. The patient improved clinically and was discharged several days later.

Endoscopic ultrasound-guided gallbladder drainage (EUS-GBD) is an effective and safe technique for the treatment of acute cholecystitis in high risk patients [1]. In patients with previous percutaneous cholecystostomy, it is possible to convert the percutaneous drainage to internal transmural drainage using EUS guidance [2]. The percutaneous catheter allows the infusion of contrast to distend the gallbladder and achieve a suitable target. If, however, the cystic duct is patent, the contrast may quickly empty



▶ **Fig. 2** Fluoroscopic images showing: **a** the gallbladder distended with saline and contrast instilled through the percutaneous catheter, and the passage of contrast into the duodenum via the patent cystic duct; **b** the gallbladder distended with hyaluronic acid through the percutaneous catheter.

A 95-year-old woman presented to the emergency department with clinical deterioration and vomiting. An abdominal computed tomography scan showed acute cholecystitis. She was not a candidate for surgery, therefore a percutaneous cholecystostomy was performed. In order to internalize drainage, 3 days

later, the decision was made to convert the percutaneous cholecystostomy to internal transmural gallbladder drainage using a lumen-apposing metal stent (LAMS) (▶ **Video 1**). The gallbladder was initially difficult to visualize owing to the presence of a 3×2-cm perivesicular abscess (▶ **Fig. 1**).

from the gallbladder, preventing adequate distension. In this scenario, the infusion of a viscous solution, in this case hyaluronic acid, can enable distension of the gallbladder by slowing the emptying through the cystic duct. EUS-guided injection of viscous solutions for gallbladder distension may be a helpful technique for EUS-guided gallbladder drainage in such challenging cases.

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## Competing interests

Drs. Aparicio and Berzin are consultants for Boston Scientific. The remaining authors declare that they have no conflict of interest.

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