

# Novel Use of an Endoscopic Suturing Device to Repair a Cholecystoduodenal Fistula

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## CASE REPORT

A 50-year-old woman with a history of uncomplicated Crohn's disease presented for esophagogastroduodenoscopy (EGD) for evaluation of acute epigastric pain, nausea, and bilious vomiting. EGD revealed retained food in the stomach and what appeared to be a large, approximately 2-cm obstructing gallstone in the duodenal bulb (Figure 1). After multiple instruments failed to retrieve the gallstone, a needle knife was utilized to break the gallstone into pieces that were then retrieved using a Roth net. After removal of the gallstone, a suspected cholecystoduodenal fistula was seen. An emergent computed tomography of the abdomen confirmed a fistulous tract between the gallbladder and duodenum (Figure 2). Endoscopic retrograde cholangiopancreatography (ERCP) demonstrated contrast extravasating from the gallbladder into the duodenum. Biliary sphincterotomy was performed with the placement of a 10 Fr x 5 cm plastic biliary stent in the common bile duct. An additional stone that was impacted within the cholecystoduodenal fistula was removed successfully using a stone-extracting balloon (Figure 3). An endoscopic suturing device was utilized to place one endoscopic suture, resulting in complete closure of the fistula (Figure 4). The patient subsequently underwent uncomplicated, open cholecystectomy with no fistula seen during surgery.



**Figure 1.** EGD showing an obstructing gallstone in the duodenal bulb.



**Figure 2.** Coronal computed tomography showing a fistulous tract between the gallbladder and the duodenum.

ACG Case Rep J 2017;4:e121. doi:10.14309/crj.2017.121. Published online: November 22, 2017.

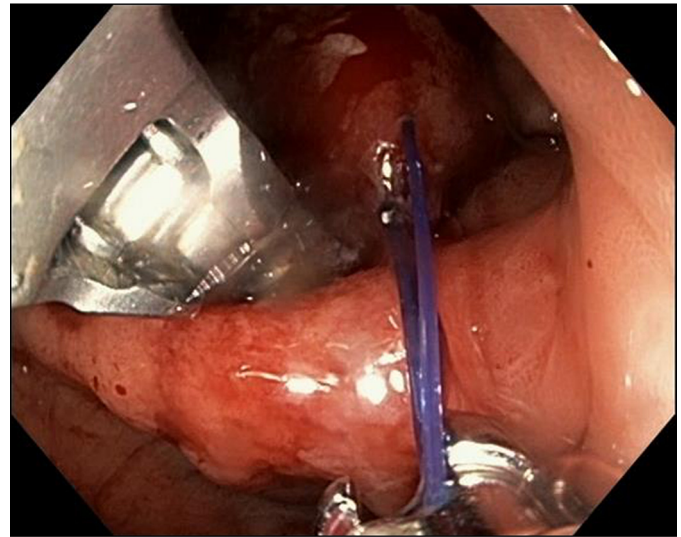
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**Figure 3.** An additional stone impacted within the cholecystoduodenal fistula.



**Figure 4.** Endoscopic suturing device closing the cholecystoduodenal fistula with one suture.

Compared to gallstone ileus, which causes obstruction near the terminal ileum, Bouveret syndrome is a rare presentation of gastric outlet obstruction occurring proximally at the duodenal bulb.<sup>1</sup> Diagnosis is based on the clinical manifestations, existence of pneumobilia on imaging, visualization of lithiasis, and demonstration of duodenal obstruction.<sup>2</sup> Treatment has traditionally been surgical with enterolithotomy, usually by laparotomy or laparoscopy; closure of the fistula; and finally cholecystectomy.<sup>3</sup> Many cases of successful endoscopic management for Bouveret syndrome have been described involving removal of the gallstone, mechanical lithotripsy, electrohydraulic lithotripsy, extracorporeal shockwave lithotripsy, and duodenal stenting.<sup>4</sup> Our case demonstrates the successful endoscopic retrieval of the obstructing gallstone and the use of a biliary stent to reduce pressure in the cholecystoduodenal fistulous tract. Furthermore, we show a unique approach to cholecystoduodenal fistula closure using an endoscopic suturing device. Endoscopic suturing devices have been available for more than a decade now and have been used for perforation closure, stent fixation, fistula closure from surgical complications, peroral endoscopic myotomy mucosotomy closure, postbariatric surgery endoscopic stoma reduction, and primary endoscopic obesity surgery.<sup>5</sup>

## DISCLOSURES

Author contributions: S. Shah-Khan and H. Vallabh wrote and edited the manuscript. J. Cardinal edited the manuscript. J. Nasr edited the manuscript and is the article guarantor.

Financial disclosure: None to report.

Informed consent was obtained for this case report.

Received May 10, 2017; Accepted September 28, 2017

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