

# Management of empyema of gallbladder with percutaneous cholecysto-duodenal stenting in a case of hilar cholangiocarcinoma treated with common bile duct metallic stenting

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## Abstract

Empyema of the gallbladder develops when the gallbladder neck is obstructed in the presence of infection, preventing pus from draining via the cystic duct. Treatment options include cholecystectomy or, in patients with comorbidities, drainage via percutaneous cholecystostomy, later followed by cholecystectomy. Here, we describe a 59-year-old man who presented with complaints of recurrent hiccups and was found to have cholangiocarcinoma causing obstruction to cystic duct drainage. The patient was managed successfully by percutaneous transhepatic cholecysto-duodenal self-expandable covered metal stent.

**Key words:** Cholecystectomy; empyema; intrahepatic biliary radical dilatation; stent

## Introduction

Empyema of the gallbladder can occur due to obstruction of the cystic duct by a malignant mass such as a cholangiocarcinoma. Here, we describe a 59-year-old man who presented with recurrent hiccups and was found to have cholangiocarcinoma causing obstruction to cystic duct drainage. This patient was managed successfully by percutaneous transhepatic cholecysto-duodenal Self-Expandable Covered Metal Stent (SECMS) insertion.

## Case Report

A 59-year-old man presented with complaints of upper

abdominal pain, pruritus, and jaundice of 2 months duration. On Ultrasonography (USG), bilobar Intrahepatic Biliary Radical Dilatation (IHBRD) with segmental separation of the biliary radicals was noted. Contrast-enhanced Computed Tomography (CT) scan of the abdomen showed bilobar IHBRD, with a block at the level of the hilum but no appreciable mass lesion. Laboratory investigations revealed raised bilirubin level and raised total leukocyte count. The patient underwent three-segment (III, VI, VIII) percutaneous transhepatic biliary drainage. Because of recurrent cholangitis, he was started on intravenous antibiotics (based on culture sensitivity). He developed cholecystitis with raised counts and intractable hiccups; for this, he was reviewed by USG, which showed empyema of the gallbladder. A cholecystostomy was performed. In view of his recurrent cholangitis, we decided against curative tumor resection and planned metallic stenting.

Metallic stenting of segments III, VI, and VIII was done accordingly, and the cholecystostomy tube was removed. After 1 month, the patient presented again with fever and hiccups. A USG revealed empyema of the gallbladder. He again underwent cholecystostomy for relief of the sepsis.

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Due to the inconvenience he experienced, the patient requested for the removal of the cholecystotomy tube. We therefore decided to internalize the biliary drainage. We first tried percutaneous internal biliary drainage through the cystic duct into the common bile duct, but were unable to cannulate through this route.

We then attempted cholecysto-duodenal fistula creation by directly puncturing the gallbladder neck and the adjacent second part of the duodenum (under USG and fluoroscopic guidance). After puncturing [Figure 1] the wall of the gallbladder [using a *Neff*<sup>®</sup> percutaneous access set with a 22-gauge, 15-cm, hydrophilic-coated needle – 15 cm (Cook, Bloomington, USA)] and the second part of the duodenum, we passed a 150-cm, 0.035 hydrophilic-coated angled-tip guidewire (Terumo Europe, Belgium) [Figure 2]. We then exchanged [Figures 3 and 4] the

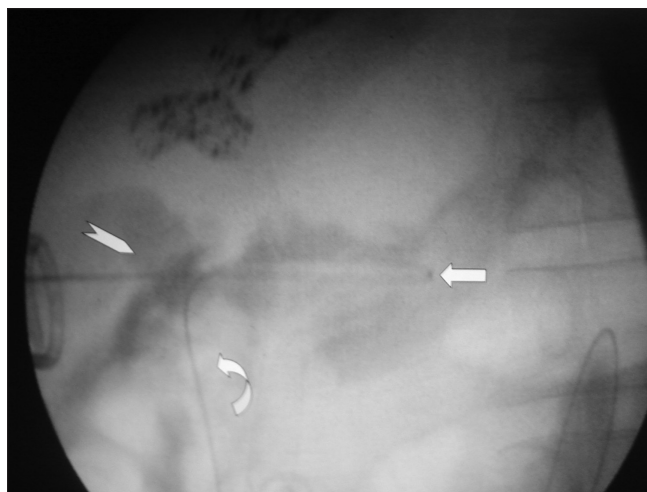
guidewire for a 180-cm, R 3 mm, 0.035 *Amplatz*<sup>®</sup> ultra-stiff guidewire (Cook, Bloomington, USA) using a 40-cm KMP, 0.038 exchange catheter (Cook, Bloomington, USA). Finally, a 40 × 10-mm SECMS (Boston Scientific, USA), having a 5-mm uncovered portion at each end [Figure 5], was deployed with the proximal end in the gallbladder and the distal end in the duodenum. Post procedure, the patient developed mild ascites, but this improved after few days and he was finally discharged. Two months after discharge, the patient continues to be asymptomatic.

## Discussion

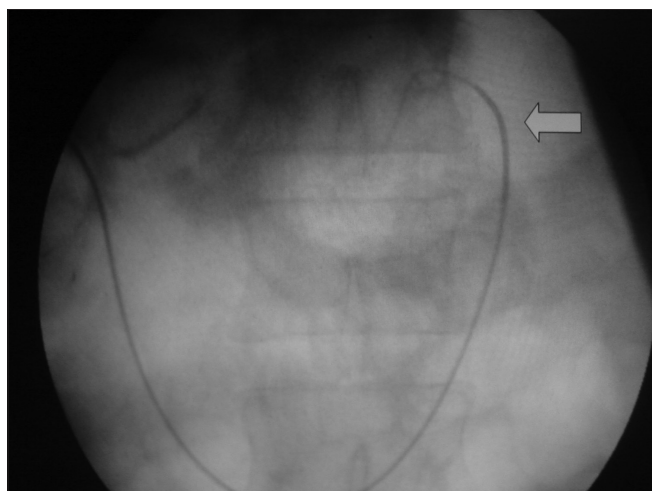
Empyema of the gallbladder is usually managed successfully by operative removal of the gallbladder. In unresectable cases or in patients with comorbid conditions, different methods of treatment have been described, eg,



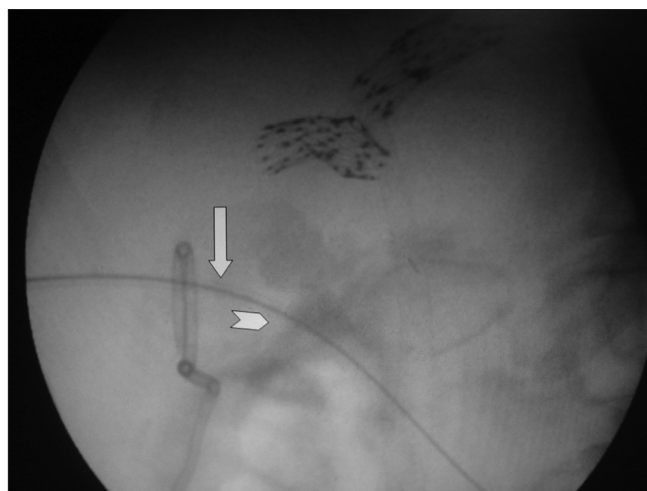
**Figure 1:** Digital subtraction fluoroscopy image shows previously placed metallic stents in the biliary radicals (arrows) and puncture (arrowhead) of the gallbladder wall



**Figure 2:** Digital subtraction fluoroscopy image shows passage of a *Terumo*<sup>®</sup> guidewire (arrow) across the gallbladder (arrowhead) and into the second part of the duodenum (curved arrow)



**Figure 3:** Digital subtraction fluoroscopy image shows the distal end of the stiff guidewire (arrow) at the duodeno-jejunal junction



**Figure 4:** Digital subtraction fluoroscopy image shows passage of a 10-F arterial sheath (arrow) up to the duodenal wall (arrowhead)



**Figure 5:** Digital subtraction fluoroscopy image shows the cholecysto-duodenal stent (arrow) with passage of contrast instilled into the gallbladder lumen (arrowhead) into the duodenal loop (curved arrow) across the self-expandable, covered metal stent

percutaneous transhepatic cholecysto-duodenal stent (with passage through the cystic duct into the duodenum)<sup>[1]</sup> or endoscopically placed stents, either transpapillary,<sup>[2,3]</sup> across a pre-existing cholecysto-duodenal fistula,<sup>[4]</sup> or across a fistula created endoscopically between the antrum of the stomach and the gallbladder.<sup>[5-8]</sup>

We were unable to find any references in the literature describing the percutaneous creation of a fistula between the gallbladder and the second part of the duodenum, which we successfully performed in our patient. We first negotiated the guidewire across the cystic duct into the duodenum, but were unable to achieve access into the common bile duct (due to obstruction by the cholangiocarcinoma). Our patient had recurrent episodes of hiccups that had been successfully managed on the first occasion by cholecystostomy. We wanted to achieve internal drainage, and therefore attempted to create a cholecysto-duodenal fistula between the gallbladder and the adjoining second part of the duodenum, followed by deployment of SECMS.

As the cystic plexus of the nerve supplying the gallbladder has branches from the phrenic nerve, we assumed that the cause of the recurrent hiccups was empyema of the gallbladder and that successful management of the empyema would provide relief. In an earlier report,<sup>[1]</sup> a ureteric stent has been used for the management of empyema of the gallbladder. It is our firm belief that

percutaneously placed SECMS is appropriate for this purpose as it has good long-term patency rate and less probability of displacement as compared to endoscopically placed plastic stents.<sup>[9]</sup> In our patient, metallic stents had been initially deployed in the intrahepatic biliary radicals, and the common bile duct and endoscopic transpapillary drainage of the cystic duct was not possible. Therefore, we attempted the creation of a cholecysto-duodenal fistula via the percutaneous route.

We hope that no further intervention will be required in this patient, but, if necessary, the stent could be exchanged either via a percutaneous route or via a combined approach.

## References

1. Gatenby P, Flook M, Spalding D, Tait P. Percutaneous transhepatic cholecystoduodenal stent for empyema of the gallbladder. *Br J Radiol* 2009;82:108-10.
2. Baron TH, Farnell MB, Leroy AJ. Endoscopic transpapillary gallbladder drainage for closure of calculus gallbladder perforation and cholecystoduodenal fistula. *Gastrointest Endosc* 2002;56:753-5.
3. Demarquay JF, Dumas R, Philippon A, Zanalidi H, Carolibosc FH, Hostier P, *et al.* Acute cholecystitis with gallbladder perforation treated by transpapillary endoscopic drainage. *Gastroenterol Clin Biol* 1996;20:608-9.
4. Lim MS, Davaraj B, Kandasami P. Endoscopic drainage of empyema of the gallbladder through a concurrent cholecystoduodenal fistula. *Asian J Surg* 2006;29:55-7.
5. Takasawa O, Fujita N, Noda Y, Kobayashi G, Ito K, Horaguchi J, *et al.* Endosonography guided gallbladder drainage for acute cholecystitis following covered metal stent deployment. *Dig Endosc* 2009;21:43-7.
6. Boron TH, Topazian MD. Endoscopic transduodenal drainage of the gallbladder. Implications for endoluminal treatment of gallbladder disease. *Gastrointest Endosc* 2007;65:735-7.
7. Kwan V, Eisendrath P, Antaki F, Le Moine O, Deviere J. EUS-guided cholecystenterostomy. *Gastrointest Endosc* 2007;66:582-6.
8. Lee SS, Park do H, Hwang CY, Ahn CS, Lee TY, Seo DW, *et al.* EUS guided transmural cholecystostomy as rescue management for acute cholecystitis in elderly or high risk patients. A prospective feasibility study. *Gastrointest Endosc* 2007;66:1008-12.
9. Sung JJ, Chung SC, Tsui CP, Co AL, Li AK. Omitting side holes in biliary stents do not improve drainage of the obstructed biliary system: A prospective randomized trial. *Gastrointest Endosc* 1994;40:321-5.

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