



## **Successful Cystic Duct Stenting in a patient with Gallbladder Perforation and septic shock with Advanced Cirrhosis and Ascites: A Case Report**

<sup>1</sup>Vishwa Bharathi Marri, Department of Medical Gastroenterology, Vydehi Institute of Medical Sciences and Research Centre, Bangalore, India

<sup>2</sup>Praveen Mathew, Department of Medical Gastroenterology, Vydehi Institute of Medical Sciences and Research Centre, Bangalore, India

<sup>3</sup>Prashant Y Kanni, Department of Medical Gastroenterology, Vydehi Institute of Medical Sciences and Research Centre, Bangalore, India

<sup>4</sup>Sidhartha Naidu B, Department of Medical Gastroenterology, Vydehi Institute of Medical Sciences and Research Centre, Bangalore, India

<sup>5</sup>Chandra Babu D, Department of Medical Gastroenterology, Vydehi Institute of Medical Sciences and Research Centre, Bangalore, India

<sup>6</sup>Rakesh R, Department of Surgical Gastroenterology, Vydehi Institute of Medical Sciences and Research Centre, Bangalore, India

**Corresponding Author:** Vishwa Bharathi Marri, Department of Medical Gastroenterology, Vydehi Institute of Medical Sciences and Research Centre, Bangalore, India

**How to citation this article:** Vishwa Bharathi Marri, Praveen Mathew, Prashant Y Kanni, Sidhartha Naidu B, Chandra Babu D, Rakesh R, “Successful Cystic Duct Stenting in a patient with Gallbladder Perforation and septic shock with Advanced Cirrhosis and Ascites: A Case Report”, IJMACR- June - 2025, Volume – 8, Issue - 3, P. No. 188 – 191.

**Open Access Article:** © 2025 Vishwa Bharathi Marri, et al. This is an open access journal and article distributed under the terms of the creative common’s attribution license (<http://creativecommons.org/licenses/by/4.0>). Which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

**Type of Publication:** Case Report

**Conflicts of Interest:** Nil

### **Abstract**

Gall bladder (GB) perforation and sepsis are common yet critical conditions frequently encountered in clinical practice. Acute cholecystitis, whether calculus or a calculous, can lead to GB perforation in 6–12% of cases.<sup>1</sup> The mortality rate of Gall Bladder perforation (GBP) has been reported to be between 12% and 16%.<sup>2</sup> Invasive surgical procedures present significant

challenges, especially in patients with advanced liver disease. In particular, those with Child-Turcotte-Pugh (CTP) Class C cirrhosis face a high mortality rate ranging from 17% to 25% following cholecystectomy for acute cholecystitis. For these high-risk patients, less invasive alternatives such as percutaneous cholecystostomy or endoscopic placement of a lumen-apposing metal stent (LAMS) between the GB and

gastrointestinal lumen are generally preferred due to their relatively greater safety profile.<sup>3</sup>

This case report describes a 55-year-old male with CTP-C cirrhosis and ascites who presented with GBP, peritonitis, and septic shock. Given his critical condition and the presence of ascites, Spy Glass cholangioscopy (SPY)-guided cystic duct stenting and gallbladder drainage were performed as a minimally invasive approach, followed by elective surgery once stabilized. The patient recovered well without significant complications. Although not the first reported case, such SPY-assisted cystic duct stenting for biliary drainage in a cirrhotic patient with ascites and septic shock due to GBP remains a rare and noteworthy therapeutic option in complex clinical scenarios where conventional surgical or percutaneous interventions carry high risks.

**Keywords:** Gall bladder perforation, Decompensated chronic liver disease, Ascites, Spyglass, Gallbladder drainage, Cystic duct stent

## Introduction

GBP typically requires emergency surgery. In hemodynamically stable patients, surgery can be performed promptly. In patients with decompensated chronic liver disease (DCLD) surgery carries a high risk due to the stress response from the underlying liver condition, anaesthesia, and surgical trauma, which can increase the risk of hepatic decompensation and multi-system failure.<sup>4</sup> Due to the significant effects of hepatic synthetic dysfunction and portal hypertension, patients with cirrhosis face an increased risk of mortality following invasive surgical procedures compared to the general healthy population. For patients who are not surgical candidates, management can be achieved via percutaneous drainage or endoscopic placement of a Lumen-Apposing Metal Stent (LAMS).

## Case report

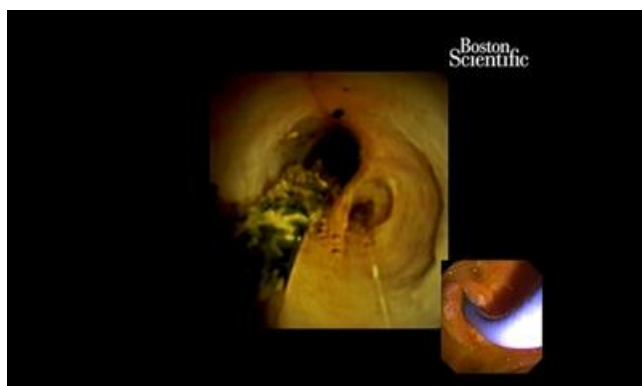
A 55-year-old diabetic male with DCLD, CTP-Class C, Model For End Stage Liver Disease With Sodium (MELD Na )18- Portal hypertension, Grade 2 gastroesophageal varices presented with diffuse abdominal pain and fever. There was no history of melena, haematochezia, or jaundice. Two years ago, he was treated for GB and common bile duct (CBD) stones with CBD stenting but lost to follow-up. On presentation, patient has diffuse abdominal tenderness and decreased bowel sounds. Laboratory tests revealed leucocytosis, normal liver enzymes, and bilirubin levels. Ascitic fluid analysis showed a total cell count of 2000/ $\mu$  L, with 90% neutrophils and 10% lymphocytes, indicative of peritonitis. Ascitic fluid and blood cultures were negative. Abdominal ultrasound showed cholelithiasis, a distended GB with a stone in the neck, gross ascites, and an in-situ CBD stent. The patient received antibiotics but developed hypotension (Blood pressure- 80/60 mmHg) on day 4, with a heart rate of 120/min. He was transferred to the Intensive care unit (ICU) initiated on inotropes, and given non-invasive ventilation due to respiratory distress. A contrast-enhanced CT scan of abdomen revealed GB calculi, a defect in the fundus, pericholecystic fluid, and proximal migration of the CBD stent. Ascitic fluid and blood cultures were negative. He was transferred to the ICU, initiated on inotropes, and given non-invasive ventilation due to respiratory distress.

Given the presence of ascites, sepsis, and hypotension, percutaneous drainage, endoscopic LAMS placement, or surgery were not feasible. The patient and his relatives were informed of the situation, and SPY-guided cystic duct stenting was performed, leaving the previous CBD

stent in place as it was impacted into the wall of the distal CBD.

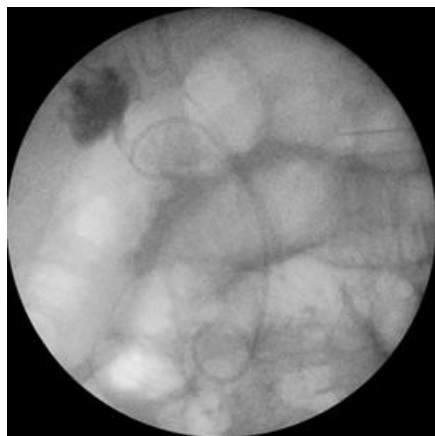
Following the procedure, the patient's clinical condition improved, allowing transfer from the ICU to the ward. Endoscopic variceal band ligation was performed subsequently, and the cystic duct stent was removed 15 days after initial SPY. The patient later underwent laparoscopic peritoneal lavage with debridement. A repeat SPY was performed post-surgery, during which the impacted CBD stent was successfully removed using a balloon sweep. The procedure was uneventful. Diuretic therapy was optimized, and the patient was discharged in stable condition. He remains under regular follow-up.

Figure 1:



SPY image of Cystic duct with impacted CBD stent

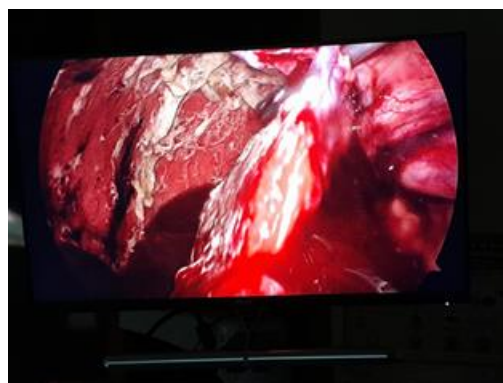
Figure 2:



Fluoroscopic view of cystic duct stent and Impacted CBD stent

## Intra operative images

Figure 3:



## Discussion

In advanced liver disease, gallbladder perforation (GBP) is a serious and potentially life-threatening complication of acute cholecystitis, associated with significantly increased morbidity and mortality. The incidence of gallstone disease in patients with cirrhosis is reported to be as high as 12.8%, indicating a higher prevalence compared to the general population.<sup>5</sup> In acute cholecystitis, progressive gallbladder distension and inflammation may result in vascular compromise, gangrene, necrosis, and ultimately perforation, which can occur as early as two days to several weeks after symptom onset.<sup>6</sup>

Percutaneous gallbladder drainage (GBD) is currently considered a bridging therapy to open or interval laparoscopic cholecystectomy in cases of GBP. However, percutaneous access may not be feasible in patients on anticoagulation or those with significant ascites. Endoscopic ultrasound (EUS)-guided placement of a lumen-apposing metal stent (LAMS) between the gastrointestinal lumen and the gallbladder offers an alternative when percutaneous drainage is contraindicated.<sup>7</sup>

In cases where both conventional surgical procedures and percutaneous interventions pose a high risk, and

endoscopic LAMS placement is not possible—such as in the presence of gross ascites or anatomical limitations—alternative minimally invasive techniques are needed. In this context, Spy Glass cholangioscopy (SPY)-assisted ERCP guided cystic duct stenting can be considered. This approach enabled successful gallbladder drainage and removal of an impacted, internally migrated common bile duct (CBD) stent in a critically ill patient with decompensated cirrhosis and septic shock.

### Conclusion

This case highlights a novel, minimally invasive endoscopic approach for biliary decompression in a high-risk patient with advanced cirrhosis, ascites, and gallbladder perforation, where surgical, percutaneous, and endoscopic LAMS options were limited or contraindicated. SPY-assisted cystic duct stenting proved effective in achieving drainage and facilitated safe removal of the impacted CBD stent, thereby avoiding further hepatic decompensation.

### References

1. G. Patel, A. Jain, R.B. Kumar, N. Singh, T. Karim and R. Mishra, 'Gallbladder Perforation: A Prospective Study of Its Divergent Appearance and Management', *Eurasian Journal of Hepato-Gastroenterology*, vol. 9, Jan–Jun 2019.
2. M.S. Bleszynski, A.K. Bressan, E. Joos et al., 'Acute Care and Emergency General Surgery in Patients with Chronic Liver Disease: How Can We Optimize Perioperative Care? A Review of the Literature', *World Journal of Emergency Surgery*, vol. 13, 2018, p. 32.
3. S.Y. Wang, C.N. Yeh, Y.Y. Jan and M.F. Chen, 'Management of Gallstones and Acute Cholecystitis in Patients with Liver Cirrhosis: What Should We Consider When Performing Surgery?', *Gut and Liver*, vol. 15, 2021, pp. 517–527, <https://doi.org/10.5009/gnl20052> [accessed 19 June 2025].
4. P.G. Northup, L.S. Friedman and P.S. Kamath, 'AGA Clinical Practice Update on Surgical Risk Assessment and Perioperative Management in Cirrhosis: Expert Review', *Clinical Liver Disease (Hoboken)*, vol. 14, no. 4, 6 November 2019, pp. 135–137, <https://doi.org/10.1002/cld.875> [accessed 19 June 2025].
5. N.U. Shirole, S.J. Gupta, D.K. Shah, N.R. Gaikwad, T.H. Sankalecha and H.G. Kothari, 'Cirrhosis of Liver Is a Risk Factor for Gallstone Disease', *International Journal of Research in Medical Sciences*, vol. 5, no. 5, 2017, pp. 2053–2056, <https://doi.org/10.18203/2320-6012.ijrms20171841> [accessed 19 June 2025].
6. Warsinggih, Mudatsir, A. Arsyad and M. Faruk, 'Gallbladder Perforation: A Rare Case Report', *International Journal of Surgery Case Reports*, vol. 104, March 2023, article 107927, <https://doi.org/10.1016/j.ijscr.2023.107927> [accessed 19 June 2025].
7. S. Shayan Irani, K. Sharzehi and U.D. Siddiqui, 'AGA Clinical Practice Update on Role of EUS-Guided Gallbladder Drainage in Acute Cholecystitis: Commentary', *Clinical Gastroenterology and Hepatology*, vol. 21, 2023, pp. 1141–1147.