Triple biliary drainage: adding a third direction

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Hepatic abscess formation is secondary to ascending biliary infections,[1] peritoneal contamination by bowel contents, or hematogenous spread from the portal or systemic circulation. The mainstays of treatment are antimicrobials based on needle aspirates and percutaneous drainage. Surgical drainage is warranted for patients who fail to respond to conventional management or have an abscess that is not accessible by interventional radiology.[1] Surgical management includes laparoscopic or open laparotomy.[1] Liver abscesses can occur in segment 2 or 3, which are in close proximity to the stomach and readily available to therapeutic interventions by EUS.[2]

Initial attempts at endoscopic drainage were by ERCP.[3] This means of drainage is only successful if the abscess is contiguous with the biliary tree.[1] The advances in EUS have allowed for improvements in cystgastrostomy, choledochoduodenostomy, and transluminal gallbladder drainage. The technique of using EUS-guided hepaticogastrostomy was first reported in 2003.[4] There have been significant advances in both technique and available equipment.[5]

A review of 7 cases in 2014[1] presented the infections, techniques, accessories, endoprostheses, limitations, and adverse events reported with EUS-guided liver abscess drainage. Case series have shown high rates of technical success and are comparable to percutaneous drainage in selected patients.[2] Case reports have been published of EUS-guided hepaticogastrostomy with lumen-apposing metal stents.[6] There are now some data on outcomes of a long partially covered metal stent used for a hepaticogastrostomy.[7] Technical success rates (100%) and clinical success rates (94%) were high, but so were adverse events with an adverse event occurring in 25% of patients.[7] It is unclear what the long-term prognosis is of patients with indwelling stents and how outcomes compare with standard percutaneous drainage.

This is a video case report of a 63-year-old man with hepatic cysts and a metastatic pancreatic cancer diagnosis (Video 1, available online at www.videogie.org). Intraoperative biopsy at diagnostic laparoscopic surgery confirmed hepatic metastasis. He had an indwelling 10-mm × 6-cm uncovered biliary metal stent. He presented with fever, severe abdominal pain, hypotension, and increased liver enzymes after a course of palliative chemotherapy. A CT scan a month prior showed a 10- × 10-cm cystic lesion in the liver. A CT scan on admission showed gallbladder wall thickening suggestive of cholecystitis, an enlarged cyst, and pneumobilia suggestive of stent patency. The liver cyst enlarged to 13.7 × 10.7 cm (Fig. 1).

To manage his complex presentation, an ERCP was performed with placement of a 7F, 7-cm plastic stent through the uncovered metal biliary stent, which had a mild distal occlusion. We then proceeded with EUS because we were not convinced that the biliary obstruction was the only source of sepsis. The EUS confirmed changes of cholecystitis and a 12-mm gallstone. A 15-mm cautery-enhanced lumen-apposing metal stent was deployed into the gallbladder. Given the rapid expansion of the liver cyst on CT scan, EUS aspiration of the hepatic cyst was performed to ensure this was not secondarily infected. When frank pus was aspirated from the cyst (now an abscess), we performed EUS-guided transgastric abscess drainage with a 10-mm × 10-cm fully covered biliary metal stent for internal drainage. This completed the triple drainage: bile duct, gallbladder, and the liver abscess (Fig. 2).

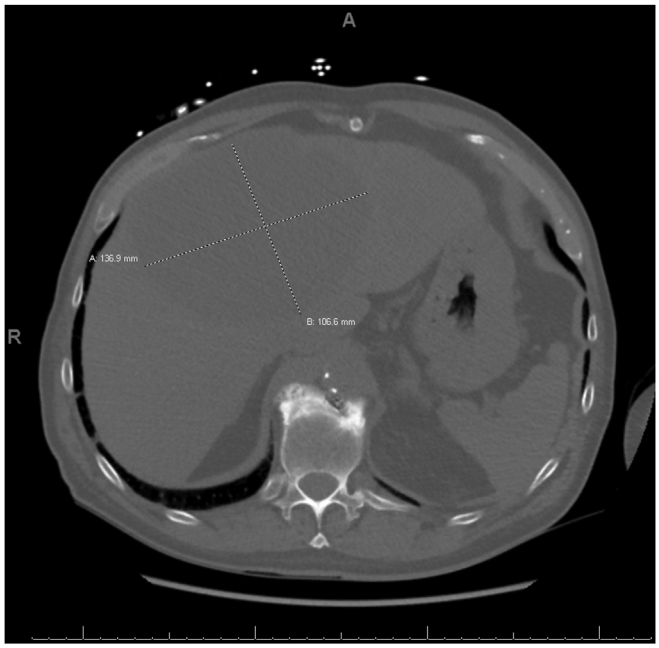

Figure 1. CT scan findings of a large intrahepatic liver cyst.

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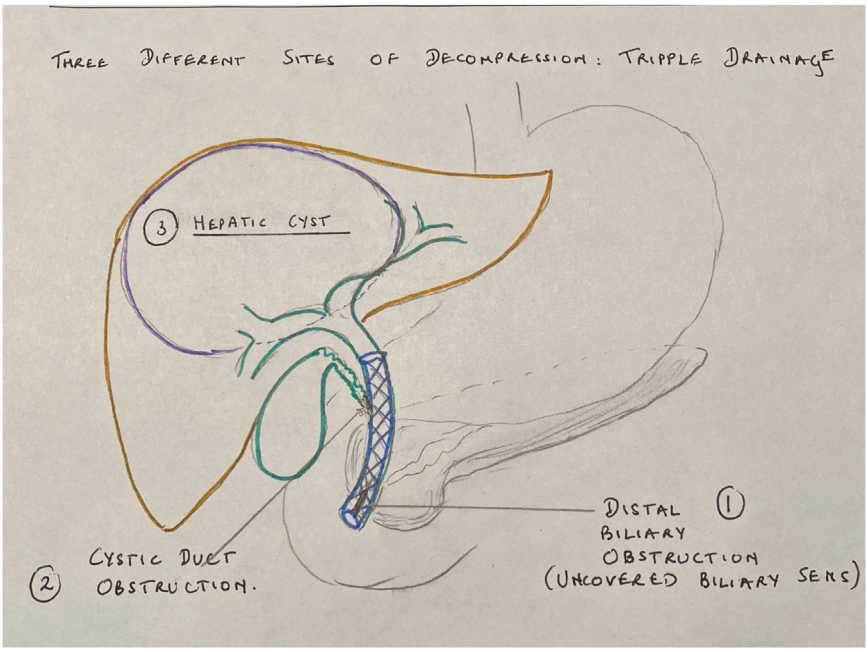

Figure 2. Diagram showing the position of the distal biliary obstruction, cystic duct obstruction, and hepatic cyst.

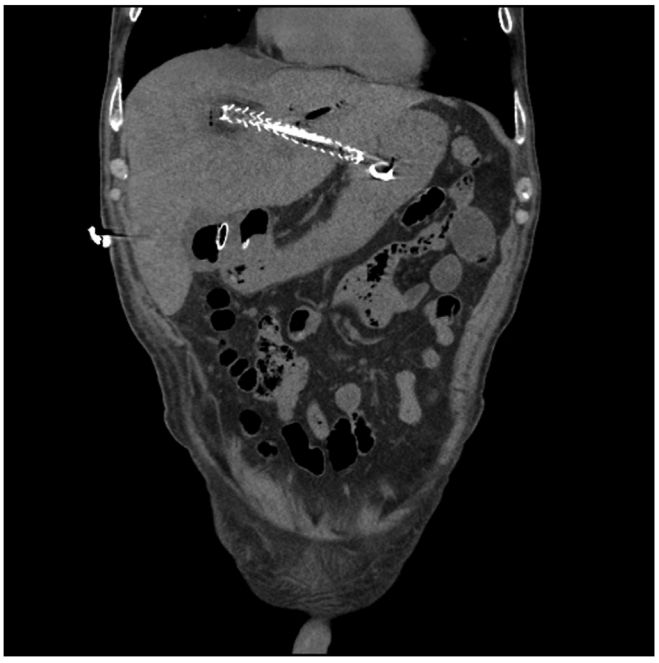

Figure 3. CT scan 6 weeks after the procedure showing near complete resolution of the hepatic cyst after drainage.

After the procedure, the patient was pain free within 24 hours. *Klebsiella pneumoniae* was cultured from both the cyst fluid and the gallbladder aspirate. He completed a 4-week course of antibiotics as per the infectious disease service at our institution. The plan was to leave all 3 stents in long term, given that removal would risk recurrence of the hepatic cyst and infection. A CT scan was done 6 weeks after drainage and showed nearly complete decompression of the cyst (Fig. 3). He lived an additional 9 months after his procedure without recurrent infections but succumbed to his metastatic pancreatic cancer.

This video highlights how needle aspiration of a cyst can help confirm whether it is infected, and endoscopic drainage can be performed in the same procedure to avoid the need for percutaneous drains. When pain seems out of proportion to the primary biliary disease process, a secondarily infected hepatic cyst could be the cause. In this video we show how, if needle access is difficult because of hepatic vessels in the way, dynamic tract changes can be made while passing the needle to avoid vessels.

In conclusion, patients with indwelling biliary stents are most commonly septic from cholangitis. Cholecystitis can also cause sepsis in patients with advanced pancreatic cancer. Rarely, a hepatic cyst can become secondarily infected by cholecystitis. For management, these cases can be treated with triple drainage using 3 different types of hepatobiliary stents.

DISCLOSURE

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