A minimally invasive technique utilizing percutaneous and endoscopic rendezvous for successful treatment of a proximal bile leak following partial hepatectomy

A 43-year-old woman presented with a grade B bile leak after right hepatectomy for metastatic colon cancer. She developed subhepatic bilomas which were managed with percutaneous drains. Endoscopic retrograde cholangiography (ERC) demonstrated a high-grade bile leak secondary to a large defect in the left hepatic duct, possibly due to complete dehiscence of the staple line of the right hepatic bile duct. Despite placement of a fully covered self-expandable metallic stent (SEMS), the bile leak persisted. Percutaneous transhepatic biliary drainage (PTBD) was attempted. The left hepatic duct was accessed in an antegrade fashion; however, the guidewire repeatedly entered the subhepatic space and could not be directed into the common bile duct. Simultaneous ERC and PTBD were performed. The leak (Fig. 1) and discontinuity between the left hepatic duct and common bile duct was redemonstrated at ERC. A guidewire was advanced in a retrograde manner to the area just distal to the leak (Fig. 2). A 15-mm snare (Amplatz GooseNeck, Covidien, Plymouth, Minnesota, USA) was advanced in an antegrade manner across the left hepatic duct defect to capture the wire (Fig. 3) and pulled externally to secure biliary access. A percutaneous biliary drainage catheter was directed over the guidewire, through the SEMS, into the distal duodenum using endoscopic guidewire traction (Fig. 4). The drain was customized with additional side holes which remained within the intrahepatic biliary tree but not in the region of the ductal defect (Fig. 5). At 6-month follow-up, the subhepatic collections had resolved on imaging.

Bile leaks occur in up to 10%–12% [1,2] of patients following hepatic surgery, and are a significant cause of postsurgical morbidity, prolonged hospital stay, and mortality [2]. Indications for resection of colorectal cancer liver metastasis have expanded in recent times, leading to larger and more complex resections [3]. Preoperative bevacizumab and surgical technique are independent predictors of bile leaks [2]. Establishing continuity between the biliary tree distal and proximal to the defect is crucial for successful treatment [4]. We describe successful establishment of biliary continuity using an ERC–PTBD rendezvous procedure (after failure of standard endoscopic techniques) to treat a large defect which obviated the need for repeat laparotomy.

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Fig. 1 Balloon occlusion cholangiogram obtained by passing a retrieval balloon through a fully covered self-expandable metallic biliary stent (yellow arrow) demonstrates a leak at the confluence of the left hepatic and common bile ducts (red arrow). Contrast is seen filling within a subhepatic collection (white arrow). Contrast in the left hepatic ducts is from concurrent percutaneous cholangiogram performed through an indwelling anchor drain.

Fig. 2 A snare is passed antegrade through the left hepatic duct (white arrow) while a guidewire is passed retrograde through the common bile duct (yellow arrow).

Fig. 3 A snare is passed antegrade through the catheter within the left hepatic duct. The guidewire (yellow arrow) is grasped using a 15-mm snare (white arrow).

Fig. 4 The 12-Fr biliary drainage catheter is passed antegrade through the fully covered self-expandable metallic stent previously placed across the papilla (yellow arrow) and directed endoscopically toward the distal duodenum (white arrow).
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Fig. 5 The percutaneously placed 12-Fr biliary drainage catheter is advanced through the common bile duct while ensuring that side holes are not present in the region of duct discontinuity (in between yellow asterisks).