Successful Treatment of Persistent Bile Duct Leaks Using Choledochoscopy-Guided Glue Embolization During Endoscopic Retrograde Cholangiopancreatography

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CASE REPORT

Bile leak is a feared complication of hepatobiliary surgery and trauma that increases morbidity. Although most leaks resolve after biliary stenting and/or sphincterotomy, large or persistent defects often require surgical intervention.¹ To reduce surgical morbidity, novel endoscopic techniques are increasingly used to avoid surgical intervention. N-butyl cyanoacrylate, a synthetic glue, can be used to seal bile leaks; however, identification and cannulation of smaller ducts can prove challenging.² We describe 2 cases during which choledochoscopy was used during endoscopic retrograde cholangiopancreatography (ERCP) to guide cannulation and the deployment of synthetic glue for bile leak eradication.

First is a 73-year-old man who underwent hepatic lobectomy for intrahepatic cholangiocarcinoma who postoperatively developed a bile leak from a dissected left hepatic duct stump. Despite percutaneous drainage, sphincterotomy, and endoscopic stenting over 4 weeks, repeat ERCP demonstrated persistent contrast extravasation (Figures 1A and 1B). Cannulation under direct visualization using choledochoscopy and injection of 1 mL of glue in lipoidal mixture achieved complete resolution (Figure 1C). Second is a 58-year-old man who suffered a liver laceration and bile leak after abdominal trauma. Percutaneous drainage and endoscopic stent exchanges over 24 months were ultimately unsuccessful. A leaking intrahepatic biliary radicle was identified and was similarly embolized under the guidance of choledochoscopy with 0.5 mL of glue (Figures 2A and 2B). A final cholangiogram revealed

Figure 1. (A) Cholangiography demonstrating contrast extravasation from site of left hepatic stump leak (arrow) and choledochoscope cannulation, (B) unobstructed view of bile leak, and (C) postembolization cholangiography with successful stump occlusion.
complete ductal occlusion (Figure 2C). In both cases, 2 10-French straight plastic stents 10 and 12 cm in length were used and exchanged before embolization. Both patients were asymptomatic at the 1-year follow-up with no evidence of recurrence.

Biliary leaks provide unique challenges and often require an interdisciplinary approach. Fortunately, endoscopic techniques have reduced the necessity of surgical intervention. Synthetic glue and metal coils are most frequently used for vascular embolization but are increasingly used in the biliary system. Choledochoscopy has been previously used for large bile leaks in conjunction with percutaneous transhepatic approaches; however, similar success using ERCP alone is less common and more technically challenging. Because glue solidifies instantly after leaving the catheter, it necessitates precise deployment on the first attempt. Direct visualization with choledochoscopy facilitates cannulation and ensures accurate deployment, avoiding the unnecessary exclusion of healthy parenchyma. Choledochoscopy is thus an invaluable tool for patients with compromised liver function or who have undergone a liver transplant. Although ERCP is not without complications, the benefits of foregoing surgery largely outweigh these risks. These cases demonstrate that choledochoscopy-guided glue embolization during ERCP can be successfully used to treat large and/or persistent bile leaks with good long-term outcomes.

DISCLOSURES

Guarantor of the article: Sushil Ahlawat, MD.

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