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Endoscopic Retrograde Cholangiography of a Hepaticojejunostomy Using Double Balloon Enteroscopy

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Key Words

Double balloon enteroscopy · Endoscopic retrograde cholangiography

Abstract

Examination of a biliodigestive anastomosis presents a diagnostic and therapeutic challenge. Visualization of biliodigestive anastomosis and endoscopic retrograde cholangiography with intervention is possible with a double balloon enteroscope.

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Case Report

A unifocal small hepatocellular carcinoma was diagnosed in a 65-year-old male suffering from Child A liver cirrhosis due to HCV infection. After bridging therapy with radiofrequency thermal ablation, liver transplantation was performed 6 months later. Unfortunately, postoperative endoscopic retrograde cholangiography (ERC) revealed a tight stenosis of the choledochcholedochostomy with a broad insufficiency (fig. 1). Stenting was not considered promising. A second-look operation led to the construction of hepaticojejunostomy. The recipient bile duct was closed.

Two months later, liver enzymes, bilirubin, and C-reactive protein rose. There was no leukocytosis and no fever. No flare of viral hepatitis or graft rejection was found. A biliary stenosis was suspected.

ERC was more difficult now. The anatomy of the papilla Vateri remained unchanged, but the recipient bile duct was closed and the bile drained in the first jejunal loop. The hepaticojejunostomy was located distal to the papilla and not reachable by a duodenoscope or a pediatric colonoscope. ERC was therefore repeated using a double balloon enteroscope. After passing about 150 cm jejunum, the biliodigestive anastomosis became visible (fig. 2). A catheter was placed in each of the bile ducts (fig. 3) and contrast

Fig. 1. ERC revealing tight stenosis of the choledochcholedochostomy.

Fig. 2. Biliodigestive anastomosis.

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Fig. 3. Catheter placement.

dye injected (fig. 4). *Enterococcus faecium* and *Acinetobacter baumannii* were cultured from the bile. Cholangitis was treated with ciprofloxacin, metronidazole and vancomycin. No stricture was diagnosed from the cholangiography.

Discussion

Duct-to-duct reconstruction during liver transplantation remains a technical challenge for the surgeon with a biliary complication rate of up to 20% [1]. The main complications – bile leakage and biliary stenosis – can be managed by endoscopic stenting. This is a safe and effective therapy with a success rate of 69–100% [2–4], which should be considered before hepaticojejunostomy is performed [5]. The complication rate of ERC varies between 4% [6] and 15% [7] in the literature. Risk factors such as young age and existence of sphincter Oddi dysfunction are not present in this collective. Contrast injections in the pancreatic duct are not necessary, so in experienced hands the complication rate should be in the lower range.

After hepaticojejunostomy the risk of stricture development is much lower [8], but if a stricture develops, therapeutic access is more difficult and therapeutic results are worse. Dilatation and stenting of a biliary stricture can be performed endoscopically or percutaneously. The percutaneous approach has a general complication rate of 13% [9]. A success rate of 50–80% for balloon dilatation of biliary strictures after liver transplantation has been published [4, 10]. The endoscopic approach has a general complication rate of 4–15% [6, 7].

The success rate in post-orthotopic liver transplant population is 71% [11]. A pediatric colonoscope is generally used. For patients with a biliodigestive anastomosis that is not reachable by a pediatric colonoscope, a double balloon enteroscope may be used instead [12]. The upper tube of the double balloon enteroscope is placed in the duodenum fixed by a balloon. The endoscope threads the intestine until the biliodigestive anastomosis is reached.

Fig. 4. Contrast after injecting dye.

Based on the existing literature it is difficult to decide whether the endoscopic or the percutaneous approach should be preferred. Success rates are comparable [4, 10, 11]. Complications differ in kind. Major complications of the percutaneous approach are hemobilia, hemoperitoneum and ductal injury. They occur in 8% of the patients. Major complications of the endoscopic approach are perforation and pancreatitis. So far, perforation during double balloon enteroscopy has only been described after polypectomy and can be considered very rare in diagnostic procedures. The rate of pancreatitis may be about 4% as already discussed above. Hospital stays tend to be shorter after therapeutic ERC than after therapeutic percutaneous transhepatic cholangiography. The decision which procedure to prefer should be individualized.

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