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Choledochoscope-Guided PTGBD-ERCP Collaboration: A Novel Procedure for Relieving Biliary Obstruction

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1. Abstract

Pancreatic tumor patients often experience biliary obstruction and bile stasis due to tumor compression at the lower end of the common bile duct. Percutaneous transhepatic gallbladder drainage (PTGBD) is a technique that can rapidly reduce the excessive tension within the gallbladder, alleviating the clinical symptoms of the patient. In this article, we report a case in which a patient initially underwent endoscopic retrograde cholangiopancreatography (ERCP) and percutaneous transhepatic cholangial drainage (PTCD), but failed to achieve jaundice reduction. Subsequently, our department performed a collaborative PTGBD-ERCP procedure under choledochoscope guidance, successfully advancing the guidewire to the duodenum and completing the placement of a biliary stent to facilitate bile drainage, leading to the resolution of jaundice and the patient's smooth discharge. Choledochoscope-guided PTGBD-ERCP collaboration is a jaundice reduction measure following failed ERCP and PTCD, effectively addressing the challenge of difficult drainage in cases of biliary obstruction. It represents a novel procedure for relieving biliary obstruction.

2. Introduction

Pancreatic cancer and other tumors often lead to lower bile duct obstruction, causing obstructive jaundice. Currently, ERCP is commonly used to alleviate jaundice by placing metal stents. However, the success rate of ERCP is limited due to various factors such as tumor compression, biliary tract curvature, and abnormalities in the duodenal papilla. For patients in whom ERCP treatment fails, PTCD is a traditionally effective alternative drainage procedure. PTCD has a relatively high incidence of adverse events, with common post-PTCD complications including cholangitis and stent blockage or displacement.

If ERCP fails and the intrahepatic bile ducts do not expand, PTGBD-ERCP collaboration can be used to place biliary stents. There have been a few reports of using PTCD-ERCP collaboration as well. However, whether the guidewire can enter the duodenum in these collaborative procedures often relies on luck, especially in the case of PTGBD-ERCP collaboration, where the success rate is even lower. To address this clinical issue, for cases where the intrahepatic bile ducts are dilated, we employ intraductal cholangioscopy-guided PTCD-ERCP collaboration. For cases where the intrahepatic bile ducts are not dilated, we use intraductal cholangioscopy-guided PTGBD-ERCP collaboration, significantly enhancing the success rate. We have completed multiple cases with a 100% success rate. The techniques we have successfully developed have not been reported in the literature and may be an innovative approach on an international scale. These techniques can greatly improve the success rate of relieving biliary obstruction, approaching 100%. This article presents individual case reports of our procedures, with the hope of providing insights to fellow medical practitioners.

3. Clinical Data

Patient, male, 56 years old, admitted due to jaundice of the sclera and skin for 4 days. Past medical history includes diabetes, which is controlled with oral medication, and a history of pancreatic tumor resection. Physical examination upon admission: Alert and oriented, skin and sclera yellowish, cardiovascular and pulmonary examinations normal. Abdomen soft, tenderness in the right upper quadrant, no guarding or rebound tenderness, negative Murphy's sign, no liver percussion tenderness, no shifting dullness, bowel sounds 3-4 times/minute. No edema in the lower limbs. Laboratory results: Aspartate aminotransferase (AST) 271.00 U/L (ref-

erence range 17.00-59.00 U/L), alanine aminotransferase (ALT) 144 U/L (0-50 U/L), total bilirubin 260 U/L (3-22.0 U/L), alkaline phosphatase 1441 U/L (reference range 38-126 U/L), and gamma-glutamyl transferase (GGT) 1267 U/L (15-73 U/L). CT scan revealed uneven density in the pancreatic head, enlarged gallbladder, intra- and extrahepatic bile duct dilation, distal common bile duct obstruction, indicating recurrence of the pancreatic tumor causing obstruction of the distal common bile duct. ERCP was initially planned for biliary stent placement, but multiple attempts were unsuccessful. Subsequently, PTCD was attempted but also failed. Finally, PTGBD was performed successfully via percutaneous transhepatic gallbladder puncture. The sinus tract was dilated to 12F, and an intraductal cholangioscopy-guided procedure was conducted. This involved inserting a guidewire into the sinus tract under X-ray guidance, followed by collaboration with an endoscope to place both metal and plastic stents. The patient's condition improved postoperatively, and successful drainage was achieved (Figure 1).

Similar techniques were used in several cases where PTCD-ERCP collaboration was guided by intraductal cholangioscopy. In cases where ERCP failed, PTCD was initially performed, followed by sinus tract dilation to 12F and insertion of a 9F intraductal cholangioscope to guide a guidewire into the duodenum for ERCP collaboration. These procedures were successful in several cases.

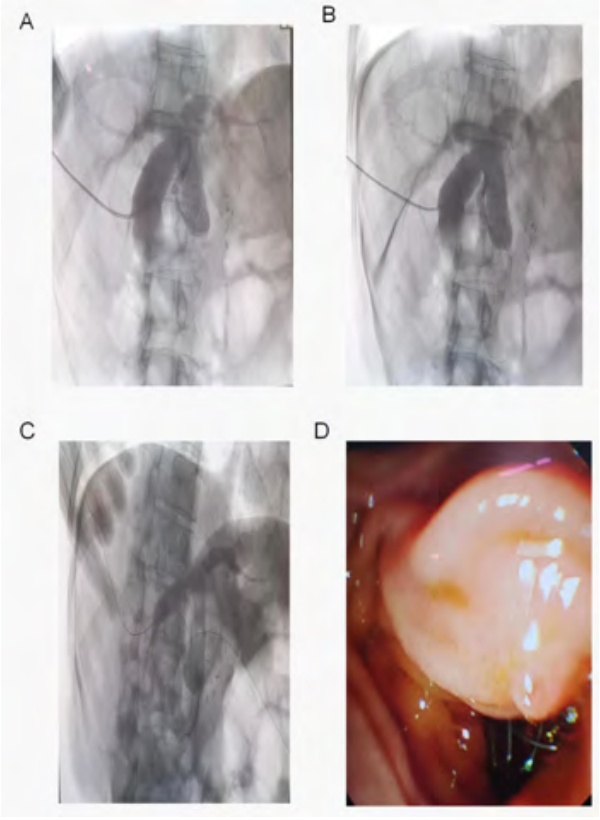

Figure 1: Successful Placement of Metal Stent through PTGBD-ERCP Collaboration Technique

4. Discussion

ERCP is a commonly used procedure for alleviating obstructive jaundice. However, ERCP is associated with a certain failure rate. The emergence of intraductal cholangioscopy offers a new treatment option for patients with obstructive biliary diseases in whom ERCP has failed. ERCP collaboration is a measure taken after ERCP failure to alleviate jaundice. However, without the guidance of intraductal cholangioscopy, the process can be somewhat blind, and guidewire insertion into the duodenum is often challenging. Particularly in cases where the intrahepatic bile ducts are not dilated, the probability of successfully passing the guidewire percutaneously through the liver, bile duct, and duodenal papilla into the duodenum is even lower. The intraductal cholangioscopy-guided PTCD-ERCP collaboration and intraductal cholangioscopy-guided PTGBD-ERCP collaboration techniques we have employed have achieved a success rate close to 100%, effectively addressing the challenges in jaundice alleviation during difficult ERCP cases. This approach does not require general anesthesia and can be performed under local infiltration anesthesia with lidocaine, reducing surgical risks. These techniques have not been reported in the literature and might be considered innovative procedures with significant clinical implications for relieving biliary obstruction.