

Successful Trans-Cholecysto-Cystic Duct Common Bile Duct Stenting in a Case of Malignant Obstructive Jaundice

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ABSTRACT

Malignant obstructive jaundice (MOJ) is a disease that could negatively affect patient outcomes. It is treated with Endoscopic Retrograde Cholangiopancreatography (ERCP), Percutaneous Transhepatic Biliary drainage (PTBD), or Endoscopic ultrasound-guided biliary drainage (EUS-BD). We here present a case where malignant obstructive jaundice that failed both ERCP and PTBD achieved successful biliary decompression through trans-cholecysto-cystic duct CBD stenting. A 53-year old female presented to our center with obstructive jaundice secondary to a pancreatic uncinuate tumor. Multiple attempts of ERCP and PTBD failed due to difficult cannulation and inadequate dilation of IHD. Furthermore, EUS-BD expertise was not available in our center. A percutaneous cholecystostomy was performed for temporary biliary decompression. After a multidisciplinary discussion was made, the decision was made for trans-cholecystic-cystic duct CBD stenting. The procedure was a success without significant complications. There are multiple ways for biliary decompression. ERCP and PTBD are most commonly used as the first-line treatment with a high success rate. However, PTBD is associated with more complications, with a morbidity rate of up to 33%. With the advancement of EUS, EUS-BD has been a popular treatment option with similar technical success. However, it is a complex and risky procedure that requires expertise. In this case, we achieved a biliary decompression technique similar to PTBD. Instead, the gallbladder and cystic duct are used as passage for stenting. The result is better than envisaged with successful biliary decompression without complications. In conclusion, trans-cholecysto-cystic duct biliary stenting is a feasible procedure to be done for biliary decompression.

Key words: jaundice, obstructive, cholangiopancreatography, endoscopic retrograde, cholecystostomy, stents

INTRODUCTION

Malignant obstructive jaundice is a condition where there is blockage of biliary flow that results from compression of the biliary tree either directly by a primary malignant tumor or secondary metastasis. It leads to pathological disorders that negatively impact patients' general health. If the obstruction is not relieved promptly, the risk of infections and subsequent sepsis is greatly increased. With the advancement of interventional therapy techniques, a variety of minimally invasive procedures can be performed to relieve the obstruction of the biliary tree. Endoscopic retrograde cholangiopancreatography (ERCP), and percutaneous transhepatic biliary drainage (PTBD) are the main

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management options in biliary decompression, with success rates documented up to near 100(1). However, problems arise when ERCP and PTBD are not feasible due to papilla cannulation failure and intrahepatic duct cannulation failure due to minimally dilated ducts. In these cases, alternative and less commonly practiced options such as Endoscopic ultrasound-guided biliary drainage (EUS-BD) and percutaneous cholecystostomy can be explored. Although feasible, these options have their demerits. EUS-BD is technically challenging with the requirement of an experienced endoscopist to perform, while percutaneous cholecystostomy would result in a long-term external drain. We here present a case report in which a case of malignant obstructive jaundice is treated with trans-cholecysto-cystic duct biliary stenting, which serves as a simple, easy alternative way of internal biliary decompression in cases where ERCP and PTBD failed. The presentation, diagnosis, challenges, and management are discussed.

CASE REPORT

A 53-year-old female presented to our center with symptoms of obstructive jaundice of tea-colored urine, pale stools, and right hypochondriac pain. On initial presentation, physical examination was unremarkable other than scleral jaundice. Blood works showed raised total bilirubin of 217 micromol/L and ALP 267. A contrast-enhanced CT scan was subsequently performed, which revealed an uncinate tumor causing obstructive jaundice and perihepatic collection (*fig. 1 a, b*). The common bile duct is minimally dilated with no intra-hepatic duct dilatation seen (*fig. 1 c*). Index ERCP was performed for therapeutic biliary decompression with metallic stenting planned. However, the procedure failed due to difficult cannulation as the ampulla was buried within multiple mucosal folds. The subsequent PTBD failed as well due to small caliber intra-hepatic ducts. A percutaneous cholecystostomy with percutaneous drainage of the perihepatic collection was then done for biliary decompression and drainage of collection. The patient showed improvement post drainage with reduced pain and total bilirubin count. However, the options for long-term internal biliary drainage were limited in our center, as EUS-guided endoscopic biliary drainage was not available due to a lack of expertise. Therefore, a multidisciplinary discussion was conducted between the interventional radiology and hepatobiliary surgery team. A decision was made for trans-cholecysto-cystic duct biliary stenting. Pre-procedure, percutaneous cholecystostomy was spigot for 24 hours to dilate the biliary system,

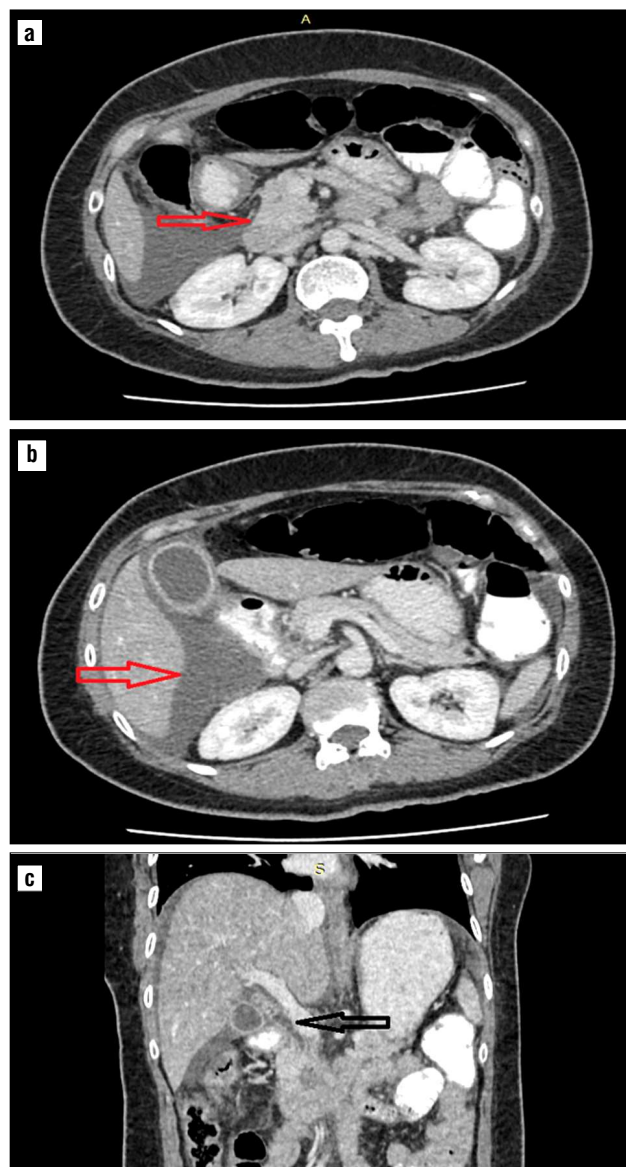


Figure 1 - (a): CT scan (axial view) revealing uncinate tumor (red arrow); (b): CT scan showing subhepatic collection (red arrow); (c): CT Coronal view showing minimally dilated common bile duct (black arrow) and intrahepatic duct

which would facilitate internalization. The procedure was then performed the next day. During the procedure, the ultrasound performed still showed small intra-hepatic ducts where PTBD is not feasible. Cholecystostomy was done. The cystic duct is cannulated with an 8Fr arterial sheath, and the Progreat catheter is successfully maneuvered into D2 with the aid of a 5Fr Kumpe access catheter (*fig. 2 a, b*). Guidewire was then exchanged with an Amplatz catheter, and a biliary metallic stent was deployed. Post-deployment, contrast flows smoothly into the duodenum (*fig. 2 c*). Patient was monitored postoperatively for possible complications such as iatrogenic cystic duct injury. Fortunately, the patient was well clinically post-procedure, and further

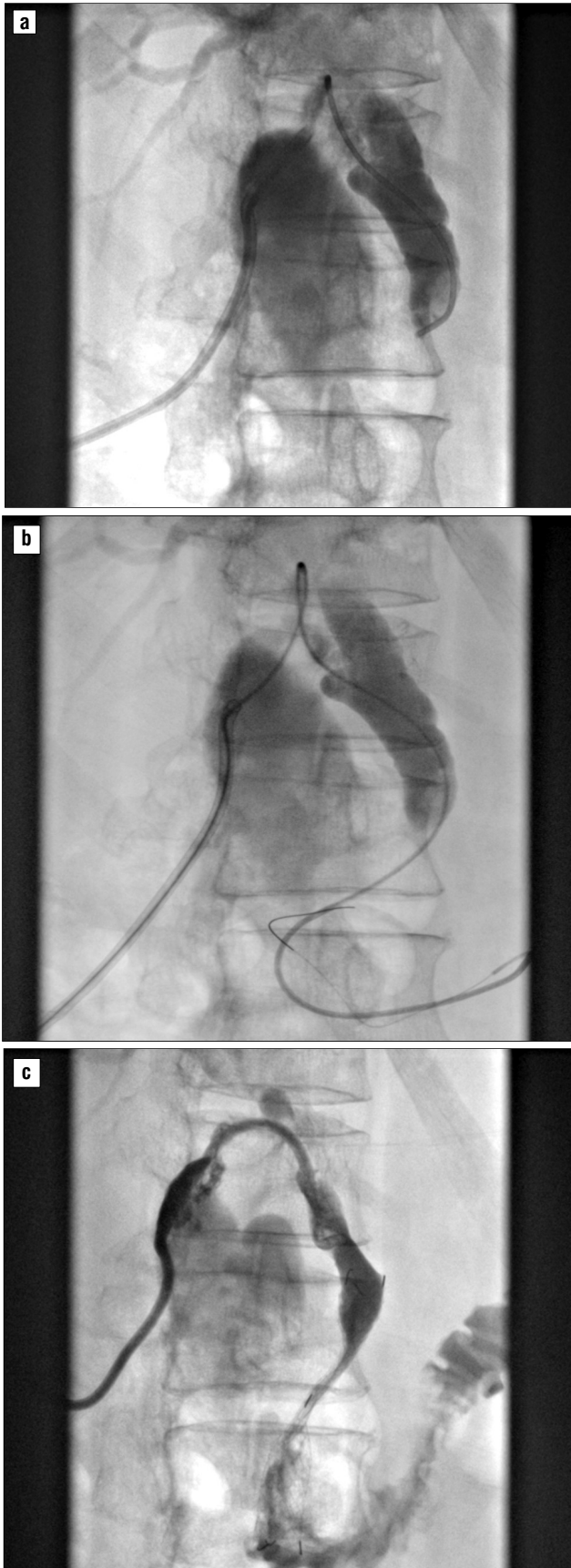


Figure 2 - (a): Successful cystic duct cannulation; (b): Guidewire advance to second part of duodenum; (c): Fluoroscopy post metallic stent deployment showing smooth contrast flow to duodenum



Figure 3 - CT Coronal view post procedure 2 weeks, showing metallic in-situ (Black arrow)

blood works showed no increase in bilirubin or ALP count, indicating successful biliary drainage. CT scan repeated two weeks post-procedure showed stent was in situ (*fig. 3*), and percutaneous cholecystostomy was removed.

DISCUSSION

Malignant obstructive jaundice (MOJ) often results in multiple arrays of pathological conditions that would negatively affect patient outcomes. Malnutrition, coagulopathy, low immunity, decreased digestion, and absorption is among the long-term complications. Furthermore, if not treated early, it could lead to life-threatening sepsis and even death (2). Multiple strategies for biliary decompression have been developed over the years to treat such conditions. Among the methods of biliary decompression, ERCP is most commonly used as the first-line treatment. It is associated with a high success rate of achieving biliary decompression. ERCP - guided biliary drainage is performed by direct cannulation of the papilla using an endoscope and fluoroscopy. However, it is not always successful in all cases. The papilla has to be endoscopically reachable and accessible for successful ERCP-guided biliary drainage. In cases such as patients with a history of Roux-en-Y reconstruction, it would require further endoscopy expertise, such as balloon enteroscopy-assisted ERCP or laparoscopic-assisted ERCP, for successful cannulation. PTBD is an alternate option that can be performed in patients who experience ERCP cannulation failure. However, this procedure is associated with a higher complication rate, such as catheter dislodgement, infection, bleeding, biliary leakage, and pneumothorax, with a morbidity rate of up to 33% (3). Furthermore, it still needs to have the pre-requisite of intra-hepatic ducts dilated for such a procedure. In the early 21st century, these two options

discussed were the only options for biliary drainage. However, with the advancement of endoscopic ultrasound (EUS), EUS-guided biliary drainage (EUS-BD) has been a popular treatment option with similar technical success when compared to PTBD with fewer complications rate (4). However, it is a complex and risky procedure which are only performed in highly specialized center by skilled endoscopist, which is sparse in a developing country.

The initial attempt to manage this patient with ERCP failed. The reason for this is the folding of mucosa and distorted anatomy by the uncinat tumor, making the papilla inaccessible. Subsequent PTBD failed as well due to the small caliber of intrahepatic ducts. In a center where an advanced endoscopist is not available, EUS-guided biliary drainage is not feasible as well. Therefore, options are limited. Although there has only been a few documented case of trans-cholecysto-cystic duct biliary stenting, our center had decided to proceed with the procedure in view of limited resources. Care was taken pre and during the procedure. Pre-procedure, percutaneous cholecystostomy was kept spigot to allow dilatation of cystic duct. During the course, no complications were seen. The whole procedure was done only using fluoroscopy guidance. The patient was discharged well with no complications.

CONCLUSION

In conclusion, trans-cholecysto-cystic duct biliary

stenting is a feasible procedure to be done for biliary decompression in cases where PTBD and ERCP failed, with no expertise in EUS-guided biliary drainage available. It only requires fluoroscopy, and only an interventional radiologist is needed, compared to EUS-guided BD, which requires an experienced endoscopist. However, further data and such procedures would have to be done to evaluate its safety profile for better patient care.

Statement and declaration

The authors have no competing interest to declare and no financial interest to disclose. All authors certify they have no affiliations in any organization.

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