

G-Tube Guided Endoscopic Retrograde Cholangiopancreatography; A Lifesaving Procedure

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Abstract

Introduction: Acute cholangitis is a consequence of obstruction and infection of the biliary tract. Endoscopic retrograde cholangiopancreatography (ERCP) is key in the management of choice as acute cholangitis as stone extraction and/or stent insertion establishes biliary drainage and relief of infection.

Anatomical variation following Roux-en-Y gastric bypass surgery or patients with esophageal obstructions like in our case are prone to make the early intervention by ERCP a challenge .

We describe a case report of septic cholangitis in a patient whom gastrostomy tube (G-tube) access allowed the performance of successful ERCP which was otherwise impossible.

Case report: 75-year-old male with multiple comorbidities and esophageal cancer status post G-tube placement for malnutrition who presented with cholangitis.

On admission, the patient had fever, nausea and decrease in level of activity. His initial evaluation showed that the patient had a sepsis with a fever of 99.6, leukopenia with WBC of 2.0, elevation in the liver enzymes with alkaline phosphatase of 238, alanine aminotransferase of 48, total bilirubin 1.2 and lactic acid of 3.2. His infectious workup included blood cultures that grew *Enterobacter cloacae*. His CT scan showed stone in the common bile duct.

MRCP demonstrated a 1.3 cm obstructive distal common bile duct stone with extrahepatic and intrahepatic biliary dilatation. ERCP was unsuccessful due to a partially obstructing esophageal mass. After changing to a small pediatric endoscope, the scope was able to be passing the mass and a showed a good visualization of the ampulla but therapeutic intervention was not successful.

Patient was brought back for a second attempt using his G-tube. A wire was passed under fluoroscopy adjacent to the G-tube then the G-tube was removed. Then a stent anchoring system was used with 3 anchors being placed. Subsequently, an axios stent (lumen-apposing self-expandable metallic stent) was placed under combined direct vision and fluoro. The stent was then sutured down in order to prevent migration. Following placement of the stent balloon dilatation was performed inside the stent up to 15 mm in size. Following dilatation over a jag wire the ERCP scope was passed through the stent and used to cannulate the ampulla. A sphincterotomy was performed and the stone was removed with a balloon catheter.

Following completion of the stone removal the Axios stent was then removed and a G-tube was replaced and confirmed with contrast for position.

The patient tolerated the procedure without any complication, his bilirubin normalized and the patient discharged in stable condition the next day on a total course of 14 days of antibiotics.

Conclusion: In cholangitis patient with limited access, G-tube sites provide a useful access value to examine the gastrointestinal track for therapeutic intervention.

Keywords: Endoscopic retrograde cholangiopancreatography; Cholangitis sphincterotomy; G-tube

Introduction

Acute cholangitis is the infection and inflammation of the bile duct and it was first described by Charcot 1877 and the term hepatic fever was used and later exchanged to acute cholangitis [1].

Acute cholangitis has a wide spectrum of presentations ranging in severity from a mild form with fever and jaundice to a severe form

with septic shock requiring intensive care unit admission [2]. Acute cholangitis requires the existence of both biliary obstruction and bacterial infection of the biliary tree. The most common cause of biliary obstruction is choledocholithiasis while recent reports suggested that the incidence of cholangitis following malignant diseases, sclerosing cholangitis, and non-surgical instrumentation of the biliary tract has been increasing [3].

Poor prognostic factors for acute cholangitis include old age, female sex, organs failure, acidosis, bilirubin >90 $\mu\text{mol/L}$, albumin <30 g/L, low platelet, pre-existing cirrhosis, presence of liver abscess and malignant biliary obstruction [2]. The mortality rate of obstructing cholangitis was high too decades ago and close to 100% and that was before the introduction of biliary drainage using deferent modalities and techniques like percutaneous trans hepatic cholangiography, ERCP, endoscopic ultrasound guided drainage or open surgical drainage.

Since the description of the first ERCP procedure by McCune et al in 1968, multiple studies reported a high successful rate of ERCP in achieving the cannulation and increase the survival rate in patients with cholangitis [4,5].

However, access difficulties and challenges sooner surfaced for the group of patients that have an alteration in the anatomy following Roux-en-Y gastric bypass or people who had esophageal obstructions. Until recently, surgical option was the only available access to the stomach and biliary tree in those groups of patients and with a high percentage of complications, cost and death that made a decision to find alternative route to access the biliary tree. Wiendi in 1971 was the first to report a diagnostic fiberoptic stomal endoscopy which then inspired Schapira et al. [6] in 1975 to do the first ERCP approach through a gastrosomy port. 17 years later, the first report of ERCP in a patient with Roux-en-Y gastric bypass after accessing the stomach remnant with a 15 mm port in the left upper quadrant was reported by Peter et al 2002 [6].

Subsequently, Deferent accesses has been described in the literature with a good success rate as Ceppa et al. had a successful ERCP through trans-gastric approach in 4 of 5 patients and similar technique described by Nguyen [7,8].

We describe a case report of septic cholangitis in a patient whom the regular ERCP was unsuccessful due esophageal cancer and successful approach was achieved through a G-tube.

Case Report

75-year-old male with past medical history of type 2 diabetes mellitus, coronary artery disease, dysphagia secondary to esophageal cancer with metastases to the liver, stomach and lymph nodes and malnutrition status post gastrostomy tube (G-tube) placement who presented with cholangitis.

On admission, the patient had fever, nausea and decrease in level of activity, His initial evaluation showed that the patient had a sepsis with a fever of 99.6, leukopenia with WBC of 2.0, elevation in the liver enzymes with alkaline phosphatase 238, alanine aminotransferase 48, total bilirubin 1.2 and lactic acid of 3.2. His infectious workup included blood cultures that grew *Enterobacter cloacae*. His CT scan showed stone in the common bile duct.

MRCP demonstrated a 1.3 cm obstructive distal common bile duct stone with extra hepatic and intrahepatic biliary dilatation (Figures 1

and 2). ERCP was unsuccessful due to a partially obstructing esophageal mass. After changing to a small pediatric endoscope, the scope was able to be passing the mass and a showed a good visualization of the ampulla but therapeutic intervention was not successful.

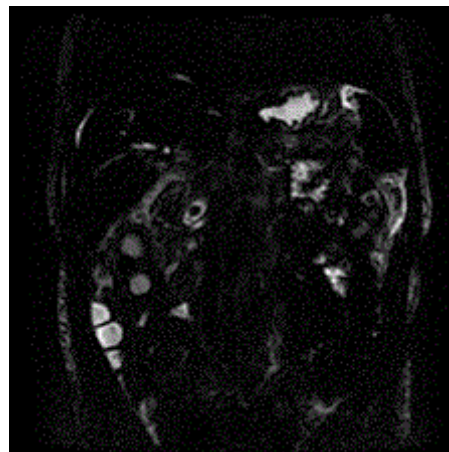


Figure 1: MRCP demonstrating a 1.3 cm gallstone lodged within the common bile duct with normal appearing pancreatic duct.

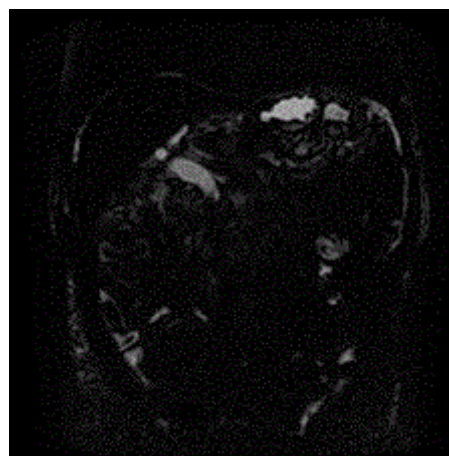


Figure 2: MRCP showing dilatation of the common bile duct.

Patient was brought back for a second attempt using his G-tube. A wire was passed under fluoroscopy adjacent to the G-tube then it was removed. Then a stent anchoring system was used with 2 anchors being placed. Subsequently, an AXIOS stent, a lumen-apposing self-expandable metallic stent (LASEMS), was placed under combined direct vision and fluoroscopy (Figure 3). The stent was then sutured down in order to prevent migration. Following placement of the stent balloon dilatation was performed inside the stent up to 15 mm in size. Following dilatation over a jag wire the ERCP scope was passed through the stent and used to cannulate the ampulla. A sphincterotomy was performed and the stone was removed with a balloon catheter (Figure 4).



Figure 3: ERCP showing proper placement of stent under direct visual fluoroscopy.

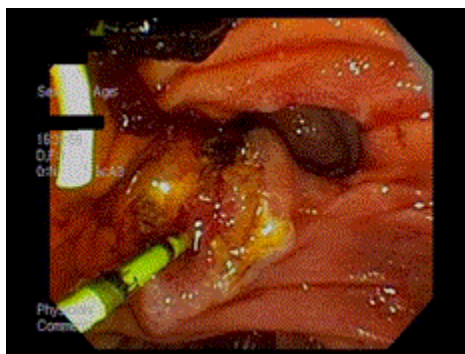


Figure 4: Endoscopic viewing of sphincterotomy and stone extraction.

Following completion of the stone removal the Axios stent was then removed and a G-tube was replaced and confirmed with contrast for position.

The patient tolerated the procedure without any complication, his bilirubin normalized and the patient discharged in stable condition the next day on a total course of 14 days of antibiotics.

Discussion

Acute cholangitis is primarily bacterial infection of the biliary tree and it's a product of bile stasis/ obstruction and infection of the biliary tract. As a result of the infection, most of the patient presents with fever, jaundice and right upper quadrant pain that is known as Charcot's triad [9].

The most common risk factor for cholangitis is obstruction of the biliary tract through choledocholithiasis, then followed by benign biliary stenosis, stricture of a biliary anastomosis and recently increased the number of cholangitis due to unresectable malignancies that have become the most common cause of cholangitis after the choledocholithiasis [10].

Most of patients present with fever and features of infection, antibiotic should be administered with a wide spectrum board then narrowed depending on the sensitivity of the microorganism.

Diagnostic and therapeutic role of the ERCP is important in the management of acute cholangitis as stone extraction and/or stent insertion is the treatment of choice for establishing biliary drainage in acute cholangitis. Endoscopic biliary drainage in patients with acute cholangitis showed that is safe and effective procedure and associated with a lower mortality rate and lower hospital stay when compare it to the group of patients who underwent surgical decompression approach [11,12].

Anatomical variation following Roux-en-Y gastric bypass or people who had esophageal obstructions make the early intervention by the ERCP a challenging procedure and there is an increase in the failure rate, risk of complication and worse outcome. A success rate of only 65%-67% of the ERCP in Roux-en-Y gastric bypass group of patients when compare it to 90%-95% success rate in the normal anatomy group [13,14]. One of the alternative routes to access the stomach and biliary tree is to create a trans-gastric port in the stomach and it was first reported by Peter et al. in 2002 [15].

The literature showed that the success rate in the group of patients with anatomical variation getting a endoscopic evaluation through a surgically created route through the stomach has a reasonable higher success rate than the traditional ERCP route knowing that most of these data reported from a small number patients. Tekola et al. found 100% success rate in his eleven patients who underwent ERCP through trans-gastric ERCP after waiting for 45 days for the port to mature [16].

Martinez et al performed the endoscope evaluation through trans-gastric remnant for 6 patients and were successful in all patients, 3 of the 6 had ERCP evaluation and only one of the three was not successful in cannulation of the common bile duct despite normal pancreatic duct evaluation [4]. Ceppa et al. had successful endoscopic evaluation in 9 of ten patients whom they had Roux-en-Y gastric bypass, 4 of 5 patients underwent successful ERCP and the fifth one had a stone impaction in the ampulla [7].

In our case the patient has an esophageal mass and difficulty swallowing for which he had a G-tube before his presentation to the hospital. The first ERCP attempt was not successful due to the esophageal mass, using the dilated G tubes sites provided access for the ERCP scope. This allowed access into the biliary tree sphincterotomy and stone extraction. After anchoring the system, a stent placed and ballooning dilatation to 15 mm the ERCP scope inserted. The papilla was accessed and sphincterotomy was made and stone was removed. By approaching the biliary tract through the G-tube, we were able to relief the blockage by removing the stone, remove the source of infection, and decrease the hospital stay as the patient discharged after two days from the procedure in stable condition.

Conclusion

ERCP failure in acute cholangitis patients due to surgical alteration or difficulty crossing esophageal mass is challenging. However, using alternative access routes such as G-tube sites should consider when available. Such approach can decrease mortality, morbidity and prevent unfavourable outcome in septic patients with cholangitis.

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