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Case Series

Post Gastrojejunostomy Endoscopic Retrograde Cholangiopancreatography: Case Series and Review of Literature

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Abstract

Background: Endoscopic retrograde cholangiopancreatography (ERCP) is a well-established modality for the management of pancreaticobiliary disorders, boasting a success rate of approximately 90–95% in patients with native pancreaticoduodenal anatomy. However, ERCP becomes considerably more challenging in patients with surgically altered gastroduodenal anatomy, particularly following bypass procedures for distal gastric pathology. Such cases necessitate the involvement of highly trained and experienced endoscopists or surgeons due to the technical complexities involved.

Case Presentation: We present a series of four cases in which therapeutic ERCP was performed in patients with a history of gastrojejunostomy after surgical intervention for distal gastric pathology. The major procedural challenges encountered included identification and intubation of the afferent limb, navigation to the papilla, successful cannulation of the papilla and common bile duct, and execution of the appropriate therapeutic interventions.

Discussion: This case series highlights the unique difficulties associated with ERCP in patients with surgically altered anatomy. Strategies to overcome these challenges and optimize clinical outcomes are discussed, and our experience is contextualized through a review of the available literature on this topic.

Conclusion: Therapeutic ERCP in patients with gastrojejunostomy following distal gastric surgery is technically demanding but feasible in experienced hands. Careful preprocedural planning and advanced endoscopic techniques are critical for achieving successful outcomes in this complex patient population.

Keywords: ERCP; Endoscopic Retrograde Cholangiopancreatography; Therapeutic ERCP; Surgically Altered Biliary Anatomy; Gastrojejunostomy; Afferent Limb Cannulation

Introduction

Patients who have had surgical procedures that have changed the upper GI anatomy are frequently referred for endoscopic examination [1]. To select the proper endoscope and accessories and gain useful and accurate diagnostic information, surgeons must first comprehend the postoperative anatomical changes [2-5]. The availability of various alternative procedures with favorable outcomes for different types of reconstruction and the relatively limited number of cases make endoscopic retrograde cholangiopancreatography (ERCP) difficult in patients with surgically changed anatomy. However, no standard technique has been established. To improve the technical and clinical success rates in patients with altered anatomy, all possible procedures require a surgeon with substantial expertise conducting ERCP. Three main challenges in performing these procedures.

- How to access the afferent limb and reach the ampulla in altered anatomy due to gastrojejunostomy?
- How to cannulate the bile duct or pancreatic duct in the new anatomical orientation after surgery,
- How to perform diagnostic and therapeutic interventions

Limited endoscopic maneuverability due to the angulation of the anastomosis, challenging identification of the afferent limb entrance, and determining how to correct endoscopic looping are all issues concerned with accessing the afferent limb. Successful cannulation of the ampulla depends on access to the papilla, availability of endoscopic accessories, adequate expertise of the surgeons, and effective papillary and therapeutic interventions [6]. In our case series, we are reporting ERCP performed in patients with gastrojejunostomy following surgical intervention for distal gastric pathology. We are presenting four cases pertaining to the ERCP in the surgically altered anatomy and highlighting our experience of performing therapeutic interventional ERCP in such patients. Also, the available literature data on this topic is reviewed and discussed.

Postoperative anatomy

Gastrojejunostomy without gastric resection is performed to bypass the distal stomach or duodenum, usually in cases of malignant gastric obstruction that cannot be resected (locally advanced distal gastric cancer), chronic pyloroduodenal ulceration with stricture, and prophylactically during the surgical exploration of a patient with unresectable adenocarcinoma of the head of the pancreas to avoid subsequent gastric outlet obstruction [7].

Endoscopically, the gastrojejunostomy appears as a vertical anastomosis with two stomal openings for the afferent and efferent limbs. Depending on the procedure employed during the surgery, one of the limbs may be in a superior (higher) or inferior (lower) posture. The opening of the afferent limb in an isoperistaltic gastrojejunostomy should be expected in the higher position. The surgeon should look carefully for a gastrojejunostomy in a patient with an upper tract obstruction who had undergone surgery. Because it is usually not large, positioned among edematous gastric folds, and connected with gastric contents due to outlet obstruction, this anastomosis can be easily overlooked. Ulcerations are also common, and tissue retraction might make intubation of the jejunal apertures difficult [8]. When a gastric outlet obstruction has been confirmed, the endoscope is passed retrogradely through the afferent limb to get access to the papilla.

Endoscope

Because there is no defined protocol for doing ERCP in patients with surgically altered anatomy and problematic biliopancreatic system access, several types of endoscopes can be employed based on local competence, expertize and availability [9-11]. We are using the conventional side viewing UGI endoscope (TJF-150, OLYMPUS; length 155 cm) in intubating the short limb (approximately 20 cm) of the gastrojejunostomy anastomosis to gain access to the duodenal papilla. The main problem we encounter using this particular endoscope is the difficult endoscopic orientation of the side viewing endoscope in intestinal anastomosis with varying length limbs.

Alternate, novel, versatile endoscopes can also be used for better maneuverability to increase the success of ERCP [9]. Forward-viewing gastroscopes and colonoscopes, with or without additional distal cap [12], DAE (single-balloon, double-balloon and spiral enteroscopy) with adapted shorter length (152cm) [13-15], prototype endoscopes like the swan neck shaped multi-bending backward-oblique viewing duodenoscope (M-D scope, TJF-Y0011; Olympus) [16], the variable stiffness duodenoscope (TJF-Y0001;Olympus) [17] and the multi-bending forward-viewing endoscope with two working channels (M-scope, GIF-2T260M, Olympus) [18] may increase ERCP success rate in patients with altered anatomy.

Case Reports

Case 1

A 58 years old male presented with an episode of pain abdomen and vomiting for a fortnight. He had undergone a previous posterior retro colic isoperistaltic loop gastrojejunostomy for chronic duodenal ulcer a year back.

USG confirmed the presence of 21 mm lower CBD calculus which was vertically oriented with cholelithiasis. ERCP was performed

with side viewing endoscope as previously mentioned through the afferent limb and Cannulation of the ampulla performed. 7 Fr plastic stent was placed in the CBD and the procedure was uneventful (Figure 1). Post ERCP imaging studies revealed clearance of CBD stone with stent *in situ*. Patient underwent laparoscopic cholecystectomy after 6weeks with extraction of the stent endoscopically.

Case 2

A 61 years old male presented with episode of obstructive jaundice and right upper quadrant pain abdomen. He had undergone a previous posterior gastrojejunostomy for chronic duodenal ulcer with deformed duodenal bulb with outlet obstruction almost 2 yrs back. CECT performed showed 18mm stone at the lower third of CBD. ERCP was performed with side viewing endoscope through the afferent limb. Cannulation of the ampulla done successfully (Figure 2). 7 Fr plastic stent was placed. Post ERCP imaging studies revealed cholelithiasis with stent *in situ*. Patient underwent laparoscopic cholecystectomy after 4 weeks of ERCP. Post ERCP phase was uneventful.

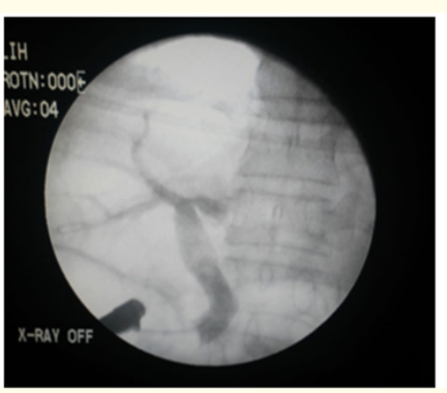

Figure 1

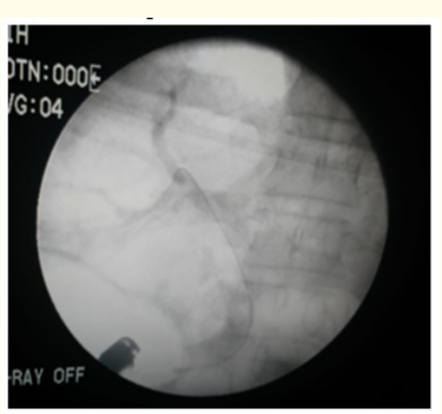

Figure 2

Case 3

A 72 years old male presented with an episode of obstructive jaundice and pain abdomen for a period of 3 weeks. He had undergone a previous posterior gastrojejunostomy for chronic duodenal ulceration. CECT abdomen confirmed the presence of cholangiocarcinoma of the distal third of the CBD. ERCP was performed with side viewing endoscope through the afferent limb. Cannulation of the ampulla was achieved. 7 Fr plastic stent was placed (Figure 3). Post ERCP imaging studies revealed stent *in situ* with no features of obstruction. Patient was lost to follow up.

Case 4

A 71years old male presented with an episode of pain abdomen. He had undergone a previous anterior gastrojejunostomy for carcinoma of pylorus. CECT confirmed the presence of recurrence of the disease with enlarged celiac nodes causing extrinsic compression over the left hepatic and common hepatic ducts. ERCP was performed with side viewing endoscope through the afferent limb. 10 cm long partly covered metallic stent was placed in the CBD extending into the right hepatic duct (Figure 4). Post ERCP imaging studies revealed stent *in situ.* Patient died after 9 months of the procedure due to metastatic disease.

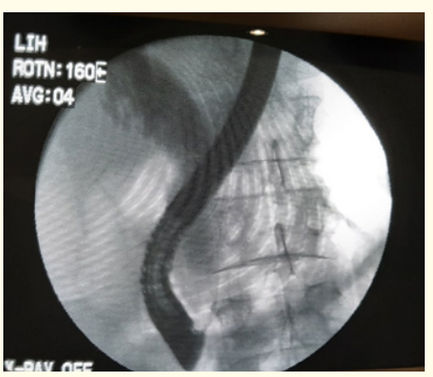

Figure 3

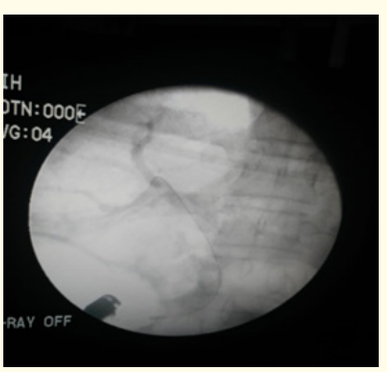

Figure 4

Discussion

Choledocholithiasis can be present in 10% of those with gallstone disease and can be a technically challenging problem to treat in the post gastrojejunostomy surgery patients mainly due to the altered upper gastrointestinal anatomy. The expertise available to treat these patients varies as many of them would be admitted to the local hospital rather than the institute where the primary surgery was carried out. An extensive search of the available literature has indicated that our patient 4 is the only reported case of successful treatment with ERCP in a patient with gastrojejunostomy to alleviate the biliary obstruction. Several challenges are faced in performing therapeutic ERCP in surgically altered anatomy. Sharp angulation at the level of the gastrojejunostomy may lead to the loop formation in the obstructed gastric outlet, leading to the failed intubation of the afferent limb. The afferent limb maybe of considerable length can be torqued due to previous abdominal procedure and postoperative adhesions. Changing the patient's position or giving abdominal compression will aid in guiding the endoscope. Further gastrograffin (Diatrizoate Meglumine and Diatrizoate Sodium Solution) dye can be used to identify the afferent loop depending on the direction of the injected dye which were incorporated in our patients.

The distal approach changes the direction of cannulation of papilla of Vater where the common bile duct is in direct line with the operating channel of the endoscope. Cannulation with a straight catheter is possible when the endoscope is rotated to face the papilla at 7 o'clock, keeping in mind that the common bile duct is in line with the working channel of the forward-viewing endoscope. The common bile duct is easier to cannulate with a forward-viewing endoscope from the distal approach than the pancreatic duct.

Analysis of different literatures revealed ERCP in patients with surgically altered anatomy have a complication risk ranging from 0% to 19.5%, with perforation being the most common and frequently fatal event, followed by bleeding, cholangitis, mucosal tears, and post-ERCP pancreatitis. In contrast to conventional ERCP, the risk of post-ERCP pancreatitis is low since most complications for ERCP in individuals with altered architecture are limited to the biliary system, which is easier to cannulate in the distal approach than the pancreatic duct.

Conclusion

This paper describes the therapeutic ERCP techniques using a conventional side viewing duodenoscope in managing cases of pancreaticobiliary pathologies in a patient with gastrojejunostomy and with varied surgically corrected anatomy. This also describes various technical intricacies and also the challenges faced while performing ERCP with conventional side viewing duodenoscope. Technical difficulties defined by inability to reach or to cannulate the biliopancreatic system and complications determine the overall success rate of these advanced ERCP procedure. As these scenarios can be technically challenging, it may be appropriate to manage such patients with the relevant expertise in surgery and endoscopy. Currently there is no gold standard approach or guidelines to deal with biliopancreatic disorders in patients with surgically altered anatomy. Performing ERCP in post-surgical patients is in active evolution, aiming for faster, easier, more efficient and safer results. The success of the procedure depends mainly on the endoscopist performing the ERCP, expertise of the endoscopist, sound orientation towards the surgically altered anatomy and the endoscopes used to perform the ERCP.

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