

ERCP for patients who have undergone Billroth II gastroenterostomy and Braun anastomosis

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Author contributions: Wu WG, Gu J and Wang XF designed research; Wu WG, Gu J and Wang XF performed research; Zhang WJ and Zhao MN contributed new reagents or analytic tools; Zhuang M, Tao YJ and Liu YB analyzed data; Wu WG, Gu J and Wang XF wrote the paper; Wu WG and Gu J contributed equally to this work.

Supported by Shanghai Education Commission Scientific Research and Innovation Project, No. 11YZ55

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Received: September 13, 2013 Revised: November 21, 2013

Accepted: December 3, 2013

Published online: January 14, 2014

Abstract

Endoscopic retrograde cholangiopancreatography (ERCP) is efficacious in patients who have undergone Billroth II gastroenterostomies, but the success rate decreases in patients who also have experienced Braun anastomoses. There are currently no reports describing the preferred enterography route for cannulation in these patients. We first review the patient's previous surgery records, which most often indicate that the efferent loop is at the greater curvature of the stomach. We

recommend extending the duodenoscope along the greater curvature of the stomach and then advancing it through the "lower entrance" at the site of the gastrojejunal anastomosis, along the efferent loop, and through the "middle entrance" at the site of the Braun anastomosis to reach the papilla of Vater. Ten patients who had each undergone Billroth II gastroenterostomy and Braun anastomosis between January 2009 and December 2011 were included in our study. The overall success rate of enterography was 90% for the patients who had undergone Billroth II gastroenterostomy and Braun anastomosis, and the therapeutic success rate was 80%. We believe that this enterography route for ERCP is optimal for a patient who has had Billroth II gastroenterostomy and Braun anastomosis and helps to increase the success rate of the procedure.

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Key words: Optimal enterography route; Endoscopic retrograde cholangiopancreatography; Billroth II; Gastroenterostomy; Braun anastomosis

Core tip: We recommend extending the duodenoscope along the greater curvature of the stomach and then advancing it through the "lower entrance" at the site of the gastrojejunal anastomosis, along the efferent loop, and through the "middle entrance" at the site of the Braun anastomosis to reach the papilla of Vater. We believe that this enterography route for endoscopic retrograde cholangiopancreatography is optimal for a patient who has undergone Billroth II gastroenterostomy and Braun anastomosis and helps to increase the success rate of the procedure.

Wu WG, Gu J, Zhang WJ, Zhao MN, Zhuang M, Tao YJ, Liu YB, Wang XF. ERCP for patients who have undergone Billroth II gastroenterostomy and Braun anastomosis. *World J Gas-*

troenterol 2014; 20(2): 607-610 Available from: URL: <http://www.wjgnet.com/1007-9327/full/v20/i2/607.htm> DOI: <http://dx.doi.org/10.3748/wjg.v20.i2.607>

INTRODUCTION

Endoscopic retrograde cholangiopancreatography (ERCP) is efficacious in patients having undergone Billroth II gastroenterostomies, but the success rate decreases in patients who also have had Braun anastomoses. A previous study reported success rates of 83% in patients with simple Billroth II gastroenterostomies but only 29% in patients with both a Billroth II gastroenterostomy and an additional Braun anastomosis^[1]. ERCP failures in such patients are caused by difficulties entering the afferent loop and accessing the papilla^[2-4]. There are currently no reports describing the preferred enterography route for cannulation in these patients. Herein, we describe our method for identifying the optimal enterography route for ERCP in patients with both a Billroth II gastroenterostomy and a Braun anastomosis.

CASE REPORT

In this study, we included patients who had had Billroth II gastroenterostomies and Braun anastomoses and in whom therapeutic biliary intervention was planned between January 2009 and December 2011 in the ERCP unit in the Department of General Surgery, Xin Hua Hospital, which is affiliated with the Shanghai Jiaotong University School of Medicine. During this period, 1659 ERCP procedures were performed. Patients who had normal anatomies, Billroth I / II gastroenterostomies, Roux-en-Y gastroenterostomies, and choledochoduodenostomies were excluded from the study. A total of 10 patients who had undergone Billroth II gastroenterostomies and Braun anastomoses were included in the study. These 10 patients [2 women and 8 men; mean age: 70.8 years (range: 55-83 years)] were admitted to our hospital as a result of upper right quadrant pain, fever and jaundice. Magnetic resonance cholangiopancreatography revealed intra- and extra-hepatic bile duct dilation (common bile duct stones were presented in all patients).

When conducting the procedure, we first review the patient's previous surgery records, which most often indicate that the efferent loop is at the greater curvature of the stomach. One major challenge is distinguishing between the afferent and efferent loops. Our solution is to extend the duodenoscope along the greater curvature of the stomach until the gastrojejunal anastomosis becomes visible, from which perspective the "lower entrance" is the entrance to the right efferent loop (Figure 1A). We are occasionally able to draw back the duodenoscope to "relax" the gastrojejunal anastomosis and thus differentiate the "upper entrance" from the "lower entrance." The efferent loop makes a better entrance for the duodenoscope because it is less angulated than the afferent loop.

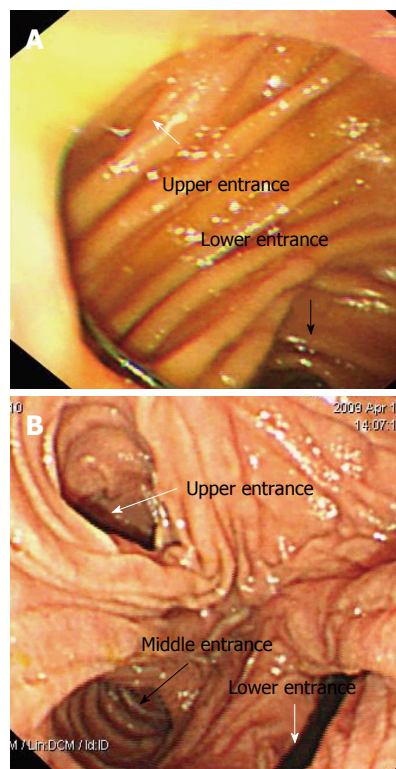


Figure 1 The gastrojejunal anastomosis is detected at the distal end of the stomach, and 2 stomal openings corresponding to an end-to-side anastomosis can be identified endoscopically. If the efferent loop was constructed at the greater curvature of the stomach in the previous surgery, the "lower entrance" is the entrance to the right efferent loop (A). Three stomal openings can be identified endoscopically at the site of the Braun anastomosis, and the "middle entrance" leads to the appropriate loop to reach the papilla of Vater. The "middle entrance" is unique irrespective of the endoscopic approach used (B).

Three stomal openings can be visualized endoscopically, but identifying the correct entrance is a major challenge (Figure 1B). The "middle entrance" is the entrance to the loop that can be used to reach the papilla of Vater when the endoscope is advanced from the efferent loop and is unique irrespective of the endoscopic approach used.

Ten patients who had each undergone a Billroth II gastroenterostomy and a Braun anastomosis were included in our study. The overall success rate of enterography was 90% for the patients who had Billroth II gastroenterostomies and Braun anastomoses, and the therapeutic success rate was 80%. One patient's procedure was unsuccessful because of a failure to access the papilla (due to a long afferent loop), and cannulation failure occurred another patient.

DISCUSSION

Many endoscopists enter the afferent loop *via* the site of the gastrojejunal anastomosis, but the sharp angulation caused by adhesions may make it impossible to advance the endoscope into the afferent loop. Premature entry into the afferent loop at the gastrojejunal anastomosis is

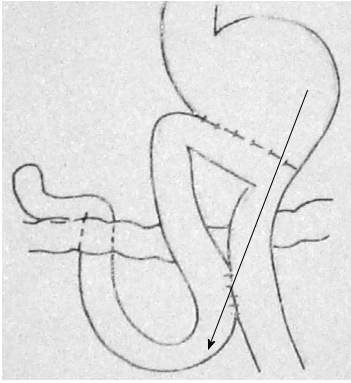


Figure 2 The duodenoscope should be extended along the greater curvature of the stomach and then advanced through the “lower entrance” at the site of the gastrojejunal anastomosis, along the efferent loop, and through the “middle entrance” at the site of the Braun anastomosis to reach the papilla of Vater.



Figure 3 Retrieval-balloon-assisted enterography. A catheter is advanced into the middle limb and contrast injected into the loop to confirm that the limb is the duodenal stump.

the main cause of failure to access the papilla. We avoid this by extending the duodenoscope along the efferent loop until the Braun anastomosis is visible. We recommend extending the duodenoscope along the greater curvature of the stomach and then advancing it through the “lower entrance” at the site of the gastrojejunal anastomosis, along the efferent loop, and through the “middle entrance” at the site of the Braun anastomosis to reach the papilla of Vater. We believe that this enterography route for ERCP is optimal for patients with Billroth II gastroenterostomies and Braun anastomoses (Figure 2) and helps to increase the success rate of the procedure. Ten patients who received Billroth II gastroenterostomies and Braun anastomoses were included in our study. The overall success rate of enterography was 90% for the patients who had undergone Billroth II gastroenterostomies and Braun anastomoses, and the therapeutic success rate was 80%.

When the efferent loop is located at the lesser curvature of the stomach, we recommend extending the duodenoscope along the greater curvature of the stomach and then advancing it through the “upper entrance” at the site of the gastrojejunal anastomosis, along the

efferent loop, and through the “middle entrance” at the site of the Braun anastomosis to reach the papilla of Vater. If the previous surgery records do not specify the location of the efferent loop, we extend the duodenoscope along the greater curvature of the stomach until the gastrojejunal anastomosis is visible and then advance it through the “lower entrance” and along the jejunal loop until it reaches the 3 stomal openings at the site of the Braun anastomosis. We use a catheter (usually the wire-guided retrieval balloon that is used to remove the common bile duct stone) to explore the middle limb and inject contrast into the loop to confirm that the limb is the duodenal stump (Figure 3) and have therefore termed this procedure “retrieval-balloon-assisted enterography”^[5,6]. It should be emphasized that when performing ERCP in patients with postsurgical anatomical changes, endoscopic guidance is insufficient and should be supplemented with radiographs. If the middle limb into which the catheter was advanced is the distal jejunum rather than the duodenal stump, the duodenoscope should be retracted to the gastrojejunal anastomosis and then advanced through the “upper entrance,” along the limb, and then into the “middle entrance” at the site of the Braun anastomosis to reach the papilla of Vater.

COMMENTS

Case characteristics

Ten patients were admitted to their hospital as a result of upper right quadrant pain, fever and jaundice.

Clinical diagnosis

Upper right quadrant pain, fever and jaundice.

Differential diagnosis

Magnetic resonance cholangiopancreatography.

Laboratory diagnosis

Liver function tests were outside normal limits.

Imaging diagnosis

Magnetic resonance cholangiopancreatography revealed intra- and extra-hepatic bile duct dilation (common bile duct stones were presented in all patients).

Treatment

Endoscopic retrograde cholangiopancreatography.

Related reports

Endoscopic retrograde cholangiopancreatography (ERCP) is efficacious in patients having undergone Billroth II gastroenterostomies, but the success rate decreases in patients who also have had Braun anastomoses.

Term explanation

Braun anastomosis is an anastomosis between the afferent and efferent loops of the jejunum after a loop gastroenterostomy.

Experiences and lessons

The authors recommend extending the duodenoscope along the greater curvature of the stomach and then advancing it through the “lower entrance” at the site of the gastrojejunal anastomosis, along the efferent loop, and through the “middle entrance” at the site of the Braun anastomosis to reach the papilla of Vater. The authors believe that this is the optimal enterography route for ERCP in patients having undergone Billroth II gastroenterostomies and a Braun anastomoses.

Peer review

In this paper, Wu *et al* describe a method for identifying the optimal route for ERCP in patients with both a Billroth II gastroenterostomy and a Brown anastomosis. The methods used appear feasible and useful to increase success rate of ERCP in such setting. The figures are a good argument for their methods. The manuscript can be accepted for publication.

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P- Reviewers: Mendelsohn RB, Trifan A

S- Editor: Song XX **L- Editor:** A **E- Editor:** Liu XM





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ISSN 1007-9327

