

Endoscopic Retrograde Cholangiography in a Patient with Billroth II Type Gastroenterostomy



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Abstract

Operatively altered anatomy such as Billroth II gastroenterostomy represents a challenge in endoscopic retrograde cholangiopancreatography and might require dedicated instruments. In this article, the authors demonstrate the technique of endoscopic retrograde cholangiography and sphincterotomy in a patient with Billroth's operation-II. Sphincterotomy is performed with a specially designed Billroth papillotome to enable papillotomy in the direction of the papillary roof. This article is part of an expert video encyclopedia.

Keywords

Bile duct stone; Billroth II gastroenterostomy; Billroth's operation-II; Billroth papillotome; Cholangiography; Cholangiopancreatography, Endoscopic retrograde; Endoscopic retrograde cholangiopancreatography; Video.

Video Related to this Article

Video available to view or download at doi:10.1016/S2212-0971(13)70204-8

Technique

Endoscopic retrograde cholangiography (ERC) after Billroth II gastroenterostomy using a Billroth papillotome for papillotomy.

Materials

- Endoscope:
 - Therapeutic Video Duodenoscope (TJF-160VR; Olympus EMEA, Hamburg, Germany; outer diameter: 11.3 mm; working channel: 4.2 mm).
- Material:
 - Guide wire (VisiGlide with hydrophilic coated tip; 0.035", 260 cm; Olympus, Hamburg, Germany).
 - Catheter (7 Fr., 1.8–2.3 mm, 215 cm; MTW, Wesel, Germany).
 - Billroth papillotome (20 mm cut, 2.3 mm, 215 cm; MTW, Wesel, Germany).
 - Dormia basket (22 mm diameter, 2.3 mm, 190 cm, FG-V432P; Olympus, Hamburg, Germany).
 - Double-pigtail stent (GastroSoft, 10 Fr., 7 cm, OptiMed-4000-5120, OptiMed, Ettlingen, Germany).
 - Pusher (10 Fr., 170 cm; MTW, Wesel, Germany).

Endoscopic Procedure

Billroth's II type resection was previously a common option for treatment of gastric ulcer disease. A jejunal loop is attached

to the partially resected stomach, and the resected gastric opening of the duodenum is closed. After resection, the papilla may be reached by entering the afferent jejunal loop into the duodenum. In this situation the duodenum is entered from the opposite side as compared to normal anatomy. During this maneuver, the endoscope rotates 180° and the papilla is mostly situated at the 5–7 o'clock position with the common bile duct directed toward the 5 o'clock position. ERC after Billroth's operation-II without Roux-Y anastomosis can usually be performed with a conventional duodenoscope. Owing to the above-mentioned anatomic changes, sphincterotomy needs to be performed with a dedicated Billroth II papillotome with a design that allows easy cutting in the 5 o'clock direction. Alternatively, sphincterotomy can be performed with a needle knife after prior stent placement to prevent perforation. Stone extraction is performed with a conventional stone extraction basket. It is advised to keep the wire in place for directional guidance.

Key Learning Points/Tips and Tricks

- Endoscopic retrograde cholangiopancreatography using a standard duodenoscope is feasible in patients with Billroth II gastroenterostomy.
- Papillotomy should be performed using a specially designed Billroth papillotome enabling the correct cutting direction.
- Stone extraction and stent placement can be performed after Billroth II gastroenterostomy with conventional instruments.

Complications and Risk Factors

Complications of retrograde cholangiography are the same as of standard ERC.

This article is part of an expert video encyclopedia. Click here for the full [Table of Contents](#).

Alternatives

A gastroscope can be used instead of a duodenoscope. A transparent cap can be helpful for optimal orientation. If a Billroth II papillotome is not available, sphincterotomy can be performed with a needle knife after prior stent placement to prevent perforation. Balloon dilatation could be performed instead of sphincterotomy to widen the papilla before stone extraction.

Scripted Voiceover

| Time (min:sec) | Voiceover text |
|----------------|---|
| 0:01 | Gastric resection with Billroth 2 type gastrojejunostomy encompasses partial gastrectomy with end-to-side gastrojejunostomy. |
| 0:12 | This is a 75-year-old woman with Billroth 2 type gastroenterostomy presenting with cholangitis and suspected bile duct stones. Here we see the gastrojejunostomy with a side-to-side jejunal anastomosis. |
| 0:25 | The afferent loop is inserted with a duodenoscope and the position confirmed by fluoroscopy. The afferent jejunal loop leads the endoscope to the duodenal stump. Now we have to identify the papilla. |
| 0:42 | The yellow arrow indicates the blind end of the duodenum, the black arrow the surgical suture and the white arrow points to the native papilla. |
| 0:54 | We slightly suck some air from the intestine, and as you see, the papillary orifice opens and becomes perfectly visible. |
| 1:27 | Now, a hydrophilic guidewire is inserted into the papilla and a 7 French catheter is advanced over the guidewire. |
| 1:36 | Fluoroscopy shows a dilated common bile duct with contrast-sparing suggestive of bile stones. The catheter is removed while the guidewire is kept in place. |
| 1:47 | The inverted position of the endoscope in relation to the papilla and the intramural segment of the common bile |

duct makes papillotomy technically demanding. A dedicated Billroth-II sphincterotome might facilitate sphincterotomy in these cases. This device has a reverse bow with a sigmoid shape and allows cutting in the opposite direction of a conventional sphincterotome.

| | |
|------|--|
| 2:25 | Now, we insert the Billroth-II sphincterotome over the guidewire. |
| 3:00 | The cutting is performed in the cranial direction in the 5 o'clock position as this is the direction of the intramural common bile duct. |
| 3:15 | In some cases it might be useful to leave the guidewire in place during stone extraction procedure to straighten the papilla and open up the papillary orifice. |
| 3:25 | A Dormia basket is inserted alongside the guidewire into the bile duct and stones with a size up to 10 mm are extracted. |
| 3:40 | Capture and extraction of intraductal stones is guided by fluoroscopy. |
| 4:20 | Under fluoroscopic guidance a 7 cm long 10 F-double-pigtail stent is inserted into the bile duct as complete removal of biliary stones is not guaranteed in a large diameter common bile duct. |
| 4:35 | After the procedure the patient was scheduled for elective cholecystectomy. Extraction of the biliary stent is planned afterwards. |

Further Reading

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