Diagnostic and therapeutic endoscopic retrograde cholangiopancreatography after Billroth II gastrectomy – safe provision in a district general hospital

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ABSTRACT

INTRODUCTION Endoscopic retrograde cholangiopancreatography (ERCP) is available in many district general hospitals in the UK. Most of the published literature on ERCP in cases with Billroth II gastrectomy reflects teaching hospital experience. The aim of this study was to evaluate this procedure in the district general hospital setting, over a 10-year period.

Patients and Methods: Details of 41 consecutive patients, whom had previously undergone Billroth II gastrectomy and were referred for ERCP were analysed for presenting symptoms and outcome of their ERCP. All procedures were carried out by a single radiologist using a conventional Olympus side-viewing duodenoscope.

Results: 48 examinations and 44 therapeutic procedures were carried out in 41 cases. Afferent loop intubation and cannulation of ampulla was successful in 87.5% and 98%, respectively. Two episodes of minor bleeding occurred after sphincterotomy, not requiring blood transfusion. One case of afferent loop perforation (2%) was repaired surgically. There were no cases of pancreatitis or death in this series.

Discussion and Conclusions The results show that ERCP after a Billroth II gastrectomy can be safe and successful in the majority of cases when carried out by clinicians with a special interest, including those in a district general hospital. However, experience with this procedure will diminish due to fewer indications for Billroth II gastrectomy and emergence of magnetic resonance cholangiopancreatography. It may be advisable to concentrate this technique in a few designated centres with skill and expertise.

KEYWORDS

Endoscopy – Cholangiopancreatography – Billroth II

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Endoscopic retrograde cholangiopancreatography (ERCP) is widely used in the diagnosis and treatment of pancreatic-biliary disease.¹ It is available in most acute hospitals in the UK. However, there are potential difficulties in carrying out this examination following a Billroth II gastrectomy and few centres have wide experience of ERCP in this situation. In this study, we have evaluated the results of ERCP in Billroth II gastrectomy patients treated in a district general hospital over a 10-year period. The aim of the study was to evaluate the success rate, safety and effectiveness of ERCP in Billroth II gastrectomy patients and consider the future provision of this service.

Patients and Methods

The details of patients who undergo an ERCP are held on a database in the radiology department. Those cases that had previously undergone a Billroth II gastrectomy were

extracted from this and their notes reviewed. Information was collected on patient demographics, indications for ERCP, technical difficulties, interventional procedures, outcome and complications. A single radiologist (WTY) carried out all the ERCP examinations and all cases were admitted under the care of a surgeon with a gastrointestinal interest (JDS).

Examinations were carried out in the radiology department. All patients received Midazolam (Hypnovall[®]) sedation, Pethidine analgesia and oxygen administered by nasal cannula and monitored by pulse oximetry. A single dose of Ciprofloxacin was administered at the start of the procedure. All examinations were carried out using an Olympus side-viewing duodenoscope (JF1T10 – distal tip diameter 12 mm, channel diameter 3.2 mm; TJF 200 – distal tip diameter 13.5 mm, channel diameter 4.2 mm; TJF 240 – distal tip diameter 13.5 mm, channel diameter 4.2 mm). The afferent loop was intubated with minimal air

Table 1 Published series of ERCP in Billroth II gastrectomy

Reference	Number	Success rate		Complication
		Intubation	Cannulation	
Forbes & Cotton ²	53(63)	60%	87%	None
Osnes <i>et al.</i> ⁶	147	98%	94%	Perforation 1%
Hintze <i>et al.</i>	65	92%	92%	Deaths 2%; bleed 2%
Faylona <i>et al.</i> ⁷	110 (185)	82%	70%	Perforation 5%
Present series	41 (48)	87.5%	98%	Perforation 2%

insufflation, occasionally using rotational movement and a reverse angulation technique. Cannulation of ampulla was usually achieved by standard 5-Fr ERCP cannula without fashioning the customary curve at the tip. In a few cases, access to the bile duct was gained with the assistance of a hydrophilic guide-wire pre-cut papillotomy. Sphincterotomy was carried out by placing 7-Fr double pigtail plastic stent through the ampulla into the bile duct, using it as a guide to cut in the line of the duct with a Cook's needle knife papillotome, set to a blend current of 2.5 A. Balloon dilatation of the pancreatobiliary sphincter (balloon sphincteroplasty) was performed in four cases in order to remove small common duct stones. An Olympus lithotripter and Cook's balloon catheters were used to fragment and extract bile duct stones. Temporary drainage of the bile duct was achieved with a 7-F double pigtail stent in those cases requiring additional procedures for duct stone clearance.

Results

Forty-one patients underwent a total of 48 ERCP examinations. There were 35 males and 6 females with a median age of 75 years (range, 51–91 years). The indications for ERCP were obstructive jaundice in 30 cases due to: stones (16), gastric cancer (3), pancreatic cancer (2), chronic pancreatitis (2), and miscellaneous (7). Common bile duct dilatation without jaundice was the indication in 9 (22%), recurrent pancreatitis 2 (4.8%) and Sump syndrome 1 (2.4%) cases.

Afferent loop intubation and cannulation of the ampulla was successful in 42/48 (87.5%) and 41/42 (98%) examinations respectively. Intubation failed in 6 cases due to a long afferent loop (3) or stomal stenosis (3). The therapeutic procedures undertaken were endoscopic sphincterotomy (22) with stone extraction (4), lithotripsy with stone extraction (9), and stent placement (7). Five cases required a second ERCP for stone clearance and 1 case required three procedures for successful stent placement. Afferent loop perforation was the single major complication (2%). This was detected during the procedure and managed by immediate

laparotomy and primary suture reinforced with an omental patch. In no other case was the postoperative stay prolonged as a result of the procedure. There were two episodes of minor bleeding after sphincterotomy, both of which remained haemodynamically stable and neither required transfusion. There were no deaths related to the procedure in the entire series.

Discussion

ERCP in Billroth II gastrectomy is a technically demanding procedure due to the altered anatomy.² However, once afferent loop intubation has been achieved, cannulation of ampulla is successful in most cases and other studies have reported a 50–88% success rate at diagnostic cannulation (Table 1).^{3–5} The afferent loop intubation and ampulla cannulation rate of 87.5% and 98%, respectively, in the present series demonstrates that a successful procedure can be completed in a non-specialist setting (Table 1). Afferent loop perforation is a specific complication of ERCP in this setting and has a mortality rate varying from 0.7–5%.^{6,7} We believe the risk of this can be minimised by avoiding excessive looping of the endoscope in the afferent loop and not attempting 'blind' rotational manoeuvres. Perforation is usually intraperitoneal and it is recommended that an immediate surgical repair be undertaken.⁸ Surprisingly, acute pancreatitis was not encountered as a complication in this series and this may reflect the use of stent-guided sphincterotomy which allows a safe, precisely controlled cut of the pancreatobiliary sphincter.⁹

It is clear that with a marked fall in the indications for Billroth II gastrectomy, a reduced number of cases will present for ERCP in this situation. Magnetic resonance cholangiopancreatography (MRCP), a non-invasive substitute to diagnostic ERCP,^{10,11} will also contribute to the decreasing need for ERCP in this setting. These factors will combine to diminish the pool of potential patients who require this technically demanding procedure.

Conclusions

Safe and effective provision of this procedure depends on the skill and expertise based on sound training and experience. In order to achieve this in the face of an ever diminishing pool of such patients, it may be advisable to concentrate this technique to a limited number of designated centres.

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