

Original Research Article

Indications and complications of endoscopic retrograde cholangiopancreatography procedures in a tertiary care centre

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ABSTRACT

Background: ERCP is commonly performed for the management of choledocholithiasis, diagnosis and management of biliary and pancreatic neoplasms, and postoperative management of biliary perioperative complications. The aim of this study was to review the indications and complications of endoscopic retrograde cholangiopancreatography (ERCP) procedures in a tertiary care centre.

Methods: From April 2012 to March 2016, consecutive patients undergoing ERCP procedure in medical and surgical gastroenterology department were included in the study. Patients with any previous papillary intervention like papillotomy, sphincterotomy or stent placement were excluded from the study. Patients' demographic characters, ERCP indications and post-ERCP complications were reviewed.

Results: Four hundred and ninety patients were included in the study. Among them male patients were 240 and females were 250. Mean age was 44.6 years and the age range was 18 to 82 years. Most common indication for ERCP was choledocholithiasis (N = 377, 76.93%). and malignant obstructive jaundice (N = 57, 11.63%). Post ERCP complications developed in 29 patients (5.91%). Pancreatitis was the most common post-ERCP complication.

Conclusions: ERCP is a safe procedure. ERCP complications in our center are similar to those reported from other centres.

Keywords: Choledocholithiasis, ERCP, Pancreatitis, Sphincterotomy

INTRODUCTION

Endoscopic retrograde cholangiopancreatography (ERCP) was first introduced in 1968.¹ ERCP is commonly performed for the management of choledocholithiasis, diagnosis and management of biliary and pancreatic neoplasms, and postoperative management of biliary perioperative complications.² ERCP is one of the most technically demanding and highest-risk

procedures performed by gastroenterologists.³ ERCP carries an overall risk of adverse events of 7% or less and mortality rate not more than 0.1%.⁴ Adverse events of ERCP include pancreatitis, bleeding, infection, perforation and sedation-related cardiopulmonary events.² Pancreatitis is the most common serious complication related to ERCP. The incidence of post ERCP pancreatitis ranges from 1.6% to 15.7%, depending on patient selection.^{5,6}

Haemorrhage is primarily a complication related to sphincterotomy. Haemorrhagic complications may be immediate or delayed, with recognition occurring up to 2 weeks after the procedure.² In a meta-analysis of 21 prospective trials, the rate of haemorrhage as a complication of ERCP was 1.3% with 70% of the bleeding episodes classified as mild.⁷ The risk of severe haemorrhage (i.e. requiring ≥ 5 units of blood, surgery, or angiography) is estimated to occur in less than 1 per 1000 sphincterotomies.⁸ Perforation during ERCP may occur during sphincterotomy or may be induced by guidewire. Alternatively luminal perforation may occur at a site remote from the papilla i.e. in the first part of duodenum. Perforation rates with ERCP range from 0.1% to 0.6%.^{9,10} The rate of post-ERCP cholangitis is 1% or less.^{9,10}

The overall mortality rate after diagnostic ERCP is approximately 0.2%.⁵ Death rates after therapeutic ERCP are twice as high (0.4%-0.5% in 2 large prospective studies).⁹

The aim of the present study was to evaluate the indications and complications of ERCP in a tertiary care centre.

METHODS

From April 2012 to March 2016, consecutive patients undergoing ERCP procedure were included in the study. Patients were identified from the ERCP report books and inpatient admission files of Medical Gastroenterology and Surgical Gastroenterology departments, Victoria Hospital. Exclusion criteria included patients with any previous papillary intervention like papillotomy, sphincterotomy or stent placement.

Complications of ERCP were defined as any adverse events related to the ERCP procedure that required more than one night of hospitalization.¹⁰⁻¹² Unless otherwise specified, the severity of complications was graded according to the length of hospitalization and the degree of intervention required.^{13,14} Mild complications required 2 to 3 days of hospitalization; moderate complications required 4 to 10 days of hospitalization. Severe complications required more than 10 days of hospitalization, requiring surgical or invasive radiologic intervention, or leading to death.¹³

Pancreatitis was defined as the presence of abdominal pain at 24 hours after ERCP, together with a 3-fold or greater elevation in serum amylase.^{11,12,14} Cholangitis was defined as an elevation in body temperature to greater than 38°C for more than 48 hours.^{11,12} Cholecystitis was defined as radiographic or clinical evidence of an inflamed gallbladder.¹³

Haemorrhage was defined as mild when there was a decrease in haemoglobin level, moderate when transfusion was required (<4 units), and severe when more than 5 units of blood transfusion were needed or

when intervention was required.¹³ Perforation was graded as mild if there was no leakage or limited leakage of contrast and conservative treatment (intravenous fluids, nasogastric suction) was required for 3 or fewer days; as more serious when treatment was required for 4 or more days; and as severe when intervention was necessary.¹³ In the case of more than one complication occurring in the same patient, only the most clinically relevant one was considered for the purpose of the study.

Additional procedure-interrupting events such as hypoxia (decrease in oxygen saturation to below 90% for 2 minutes), hypotension (decrease in systolic blood pressure to below 90 mmHg for 2 minutes), and bradycardia (decrease in heart rate to less than 50 beats per minute for 2 minutes) were included as ERCP complications.¹³ All ERCPs were performed by a team lead by a senior medical or surgical gastroenterologist. All the procedures were done under conscious sedation.

RESULTS

Of a total of 520 ERCPs reviewed, 490 procedures were included in the study. Among them male patients were 240 and females were 250. Mean age was 44.6 ± 26 years and the age range was 18 to 82 years (Table 1).

Table 1: Demographic profile of patients.

Charateristics	Number of patients
Total number of patients	490
Number of male patients	240
Number of female patients	250
Age (Mean \pm SD)	44.6 \pm 26 years
Age (range)	18-82 years

Table 2: Indications for ERCP.

Indications	n = 490	%
Choledocholithiasis	377	76.93
Carcinoma Head of pancreas	20	4.08
Periampullary carcinoma	15	3.06
Chronic pancreatitis	15	3.06
Distal cholangio carcinoma	10	2.04
Benign distal biliary stricture	10	2.04
Hilar cholangio carcinoma	7	1.43
Post-operative biliary leak	7	1.43
Post-operative biliary stricture	5	1.02
Biliary ascariasis	5	1.02
Choledochal cyst	5	1.02
Carcinoma gall bladder with CBD infiltration	5	1.02
Primary sclerosing cholangitis	3	0.61
Hydatid cyst with biliary communication	3	0.61
Liver abscess with biliary communication	2	0.41
Caroli's disease	1	0.20

Indications for ERCP procedure are listed in Table 2. Most common indication for ERCP was choledocholithiasis (N=377, 76.93%). Malignant obstructive jaundice was seen in 57 patients (11.63 %). Among them 20 patients had carcinoma head of pancreas, 15 patients had periampullary carcinoma, 10 patients had distal cholangiocarcinoma, 7 had hilar cholangiocarcinoma and 5 patients were having carcinoma gall bladder with CBD infiltration. All the patients with malignant obstructive jaundice were inoperable and biliary self-expandable metal stent (SEMS) was placed in all. Post ERCP complications developed in 29 patients (5.91%). Seventeen patients (3.46%) developed acute pancreatitis. All the patients had mild pancreatitis and were treated conservatively. Five patients (1.02%) developed cholangitis. All the patients were admitted and treated with intravenous antibiotics. Post sphincterotomy haemorrhage was seen in 5 patients (1.02%). None of the patients required blood transfusion. One patient developed sphincterotomy induced duodenal perforation. Patient improved with conservative treatment within three days. One patient developed liver abscess due to cholangitis. He improved with IV antibiotics.

Table 3: Complications of ERCP.

Complications	Number of patients (%)
Pancreatitis	17 (3.46%)
Hemorrhage	5 (1.02%)
Cholangitis	5 (1.02%)
Perforation	1 (0.20%)
Liver abscess	1 (0.20%)

DISCUSSION

In the present study, we reviewed 490 patients who underwent ERCP in our institute. In this study choledocholithiasis was the most common indication for ERCP (76.93%) followed by malignant biliary obstruction i.e carcinoma head of pancreas, cholangiocarcinoma, carcinoma gallbladder, and ampullary carcinoma (11.63%).

In the present study overall complication rate was 5.91%. Over all complication rate was 4.9% in the study by Masci E et al and 11.2% in the study by Vandervoort J et al.^{10,15}

The incidence of post ERCP pancreatitis, in a meta-analysis of 21 prospective studies, was approximately 3.5% but ranged widely (1.6% - 15.7%) depending on patient selection.⁵⁻⁷ Vandervoort J et al. reported acute pancreatitis in 7.2% of patients undergoing therapeutic ERCP.¹⁵ In the present study post ERCP pancreatitis developed in 3.46% patients which is comparable to the previous studies.

In a meta-analysis of 21 prospective trials, the rate of haemorrhage as a complication of ERCP was 1.3% with 70% of bleeding episodes classified as mild.⁷ In our study

haemorrhage was seen in 1.02% of patients and it was mild in all the patients. In the present study the rate of cholangitis was 1.02%, which is comparable to previous studies.^{9,10}

In our series one patient (0.20%) developed perforation. He was managed conservatively. Perforation rates during ERCP ranges from 0.1 to 0.6%.^{9,10} There was no post-ERCP mortality in the present study. There was no cardio-pulmonary or anaesthetic complications among the study subjects.

CONCLUSION

ERCP is highly effective and safe procedure in the hands of experienced endoscopist. Its indications and complications in our centre are similar to those reported from other centres.

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Conflict of interest: None declared

Ethical approval: The study was approved by the institutional ethics committee

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