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Original Research Article

Retrospective analysis of endoscopic retrograde cholangio pancreatography (ERCP) procedures in a tertiary care centre in coastal Odisha

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ABSTRACT

Background: ERCP is commonly performed for radiologic visualisation and therapeutic procedure for treating various pancreatico-biliary disorders. There is no comprehensive data available till date about ERCP procedures from Odisha. The aim of this study was to review the indications and complications of endoscopic retrograde cholangiopancreatography (ERCP) procedures in a tertiary care centre in Odisha.
Methods: From July 2013 to December 2016, consecutive patients undergoing ERCP procedure 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: Three hundred and fourteen patients were included in the study. Among them male patients were 161 and females were 153. Mean age was 50.75 years and the age range was 18 to 82 years. Most common indications for ERCP was malignant obstructive jaundice (N = 171, 54%) and choledocholithiasis (N = 137, 43.6%). Post ERCP complications developed in 25 patients (8%). Pancreatitis was the most common post-ERCP complication.
Conclusions: ERCP is a safe procedure. ERCP complications in our centre 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. 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. 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 July 2013 to December 2016, total 519 patients were referred for ERCP procedure to Department of Gastroenterology, S.C.B. Medical College and Hospital, Cuttack. Among them ERCP was done in 314 patients and were included in the study. Among 205 patients in which ERCP couldn't be performed 86 patients refused for consent, 58 patients had unstable vitals, 29 patients had massive ascites refractory to repeated large volume paracentesis, 13 patients had gastric outlet obstruction, 19 patients had gastrojejunostomy and they were excluded from the study. Also, patients with any previous papillary intervention like papillotomy, sphincterotomy or stent placement were excluded from the study.

Complications of ERCP were defined as any adverse events related to the ERCP procedure that required more than one night of hospitalization. Unless otherwise specified, the severity of complications was graded according to the length of hospitalization and the degree of intervention required. 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.

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. Cholangitis was defined as an elevation in body temperature to greater than 38ºC for more than 48 hours. Cholecystitis was defined as radiographic or clinical evidence of an inflamed gallbladder.

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. 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. 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. All ERCPs were performed by a team lead by a senior medical gastroenterologist. All the procedures were done under conscious sedation.

RESULTS

Of a total of 519 ERCPs referred, 314 procedures were included in the study. Among them male patients were 161 and females were 153. Mean age was 50.75 years and the age range was 18 to 82 years (Table 1).

Table 1: Demographic characteristics.

Gender	Male	Female	P value
Benign (N=143)	74 (51.8%)	69 (48.2%)	0.933
Malignant (N=171)	87 (50.6%)	84 (49.4%)	

Among 314 cases included for study, 143 (46%) were benign aetiology while 171 (54%) were malignant aetiology. Among Benign causes (N=143), 74 (51.8%) were male and 69 (48.2%) were female (Table 1).

Indications for ERCP procedure are listed in Table 2.

Table 2: Indications for ERCP.

Indications	Frequency	%
Choledocholithiasis	137	43.6%
Benign CBD stricture	6	1.9%
Carcinoma of gall bladder	80	25.4%
Cholangiocarcinoma	43	13.6%
Periampullary carcinoma	24	7.6%
Carcinoma of head of pancreas	13	4.1%
Other malignancies	1	3.5%

Most common indication for ERCP was choledocholithiasis (N=137, 43.6%). Malignant obstructive jaundice was seen in 171 patients (54%). Among them 80 patients were having carcinoma gall bladder, 43 patients had cholangiocarcinoma, 24 patients had periampullary carcinoma, 13 patients had carcinoma head of pancreas. Gender ratio across all biliary diseases is shown in Table 3.

Among all patients who were referred for ERCP male predominance were patients with choledocholithiasis, cholangiocarcinoma, periampullary carcinoma and carcinoma of head of pancreas. Similarly, female predominance was patients with benign CBD stricture, carcinoma of gall bladder and other malignancies with obstructive jaundice.

Average stone size among choledocholithiasis patients was 11.6 mm (mean). Most CBD stones were <10 mm in size. Average stone sizes with frequency are shown in Table 4.

Table 3: Gender ratio across all biliary diseases.

Diagnosis	Male	M:F ratio
Choledocholithiasis (N=137)	51.8%	1.07
Benign CBD stricture (N=6)	33.3%	0.50
Carcinoma of gall bladder (N=80)	45%	0.82
Cholangiocarcinoma (N=43)	51.2%	1.05
Periampullary carcinoma (N=24)	66.6%	2.00
Carcinoma of head of pancreas (N=	53.8%	1.17
Other malignancies(N=11)	36.4%	0.44

Table 4: Average stone size with frequency.

Stone size	Frequency
<10 mm	65
10-20 mm	49
>20 mm	23

CBD Stone retrieval was successful in 95 cases in initial attempt. While in 42 cases there was failure in extraction of stone and in these patients CBD stenting by a plastic biliary stent was done. Subsequently in these remaining 42 cases repeat ERCP resulted in retrieval of stone in 28 cases. There was basket wire breakage in 1 case and remaining 13 patients were referred for surgery. Most common Indications in malignant biliary obstruction was before chemotherapy in unresectable diseases 65 cases (38%). Indications of ERCP in malignant biliary obstruction is shown in Table 5.

Table 5: Indications of ERCP in malignant biliary obstruction.

Indications	Frequency	%
Preoperative biliary decompression in resectable diseases	26	15.2%
Before chemotherapy in unresectable diseases	65	38%
Palliative intent	57	33.3%
To relieve cholangitis	23	13.5%

Most common level of malignant obstruction was in common bile duct 65.5%. The level of malignant obstructions was shown in Table 6. Post ERCP complications developed in 25 patients (8%). Fifty-one patients (16.24%) had asymptomatic hyperamylasemia after ERCP procedures and sixteen patients (5%) developed acute pancreatitis. All the patients had mild pancreatitis and were treated conservatively. Twelve patients (3.8%) developed cholangitis. All the patients were admitted and treated with intravenous antibiotics.

Post sphincterotomy haemorrhage was seen in 4 patients (1.27%). None of the patients required blood transfusion. None of our patients develop perforation. Complications of ERCP are shown in Table 7.

Table 6: Level of malignant obstructions.

Level	Frequency	%
Common bile duct	112	65.5%
Hilar	36	21%
Common hepatic duct	23	13.5%

Table 7: Complications of ERCP.

Complications	Number of patients	%
Asymptomatic hyperamylasemia	51	16.24%
Pancreatitis	16	5%
Cholangitis	12	3.8%
Bleeding	4	1.27%

DISCUSSION

In the present study, we reviewed 314 patients who underwent ERCP in our institute. In this study, malignant biliary obstruction was the most common indication for ERCP (54%) followed by choledocholithiasis (46%). In the present study, overall complication rate was 8%. 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, 11]

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.[11] In the present study post ERCP pancreatitis developed in 5% 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 present study, haemorrhage was seen in 1.3% of patients and it was mild in all the patients. In the present study, the rate of cholangitis was 3.8%, which is comparable to previous studies.[9, 10] In present series none of our patients developed perforation. 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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