

Patterns of post endoscopic retrograde cholangiopancreatography (ERCP) complications- experience from an university hospital

Md Rehan Habib, Farid Ahmed, Md Sarower Islam, Subarna Saha, S M Ishaque, Dewan Saifuddin Ahmed

Article Info

Department of Gastroenterology, Sir Salimullah Medical College & Mitford Hospital (MRH), Department of Gastroenterology, Sheikh Russel National Gastroenterology Institute and Hospital (FA), Department of Gastroenterology, BSMMU, Dhaka (MSI, SMI, DSA), Department of Transfusion Medicine, BSMMU, Dhaka (SS)

For Correspondence:
Md. Rehan Habib
Email: mdrehanhabib@gmail.com

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Abstract

In the treatment of common bile duct stones and palliative decompression of malignant strictures, endoscopic retrograde cholangiopancreatography (ERCP) is the gold standard. However, there are still concerns about procedure-related complications and patient discomfort. To evaluate the pattern of the post ERCP complications. This prospective observational study was conducted at the Department of Gastroenterology, Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka from February 2017 to October 2017. A total of one hundred patients who were eligible for ERCP were included in this study but five patients were excluded due to cannulation failure. Clinical examination, biochemical, and radiological investigation were performed before and after ERCP to assess the complication that occurred. The majority of patients in this study were under the age of 50, with a mean age of 49.74 ± 14.07 years between the ages of 18 and 80 years. Males (54.7%) were predominant than female (45.3%) and male to female ratio was 1.21:1. The most common diagnosis was choledocholithiasis (58.9%) followed by proximal cholangiocarcinoma (13.7%), Carcinoma-gallbladder with biliary infiltration (8.4%), Distal cholangiocarcinoma (6.3%), Chronic calcific pancreatitis and Periampullary carcinoma each (3.2%), Suspected SOD & Chronic pancreatitis each (2.1%) and Worm in CBD and benign biliary stricture each (1.1%). In this study, the overall post-ERCP complication rate was 12.6% with pancreatitis accounting for 9.4%, bleeding accounting for 2.1%, and cholangitis accounting for 2.1%. From the study data it can be concluded that pancreatitis is the most frequent Post-ERCP complication.

Introduction

Endoscopic retrograde cholangio pancreatography (ERCP) was first introduced by the surgeon, McCune and co-workers¹ as a diagnostic tool for evaluating diseases of the biliary tract and pancreas. Eventually, it became a therapeutic modality. Although the ERCP procedure has progressed technically, it is still associated with potentially serious complications² and patient discomfort.³

ERCP is widely used for the treatment of a variety of pancreatico-biliary diseases. However, it is a high risk procedure that can result in complications such as acute pancreatitis, bleeding, cholangitis, cholecystitis, and perforation.⁴ The most common and serious complication of ERCP is pancreatitis. According to recent research, the incidence of post- ERCP pancreatitis ranges between 2 and 5%.⁴⁻⁶ However, in severe cases, it is associated with a high morbidity

and mortality.^{6,7} By identifying high-risk populations, it is possible to reduce the occurrence and severity of post-ERCP pancreatitis. Cholangitis is a difficult-to-diagnose complication of ERCP. It can be an indication as well as a complication. Pancreatitis occurs immediately after an ERCP, but cholangitis can occur as a fulminant, uncontrolled sepsis within the first hours of an ERCP, or it can occur days or even weeks later. It can be difficult to detect mild cholangitis in a patient with multiple medical conditions. Cholangitis is primarily caused by a failure or incomplete drainage.^{7,8} On the other hand, bleeding after an ERCP is another common complication. The majority of bleeding is oozing from the precut sphincterotomy site, with no or minor clinical consequences. Arterial bleeding that stops on its own can be difficult to detect because it resembles a temporary pause caused by a vessel spasm.^{9,10}



In Bangladesh, there are very few ERCP-related experiences published so far. This paper describes the common complications encountered after the procedure in an university hospital.

Methods

This observational study was conducted in the Department of Gastroenterology, Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka during the period of February 2017 to October 2017. A total of 100 patients eligible for ERCP were enrolled in this study but five of them were excluded due to cannulation failure. Prior to data collection both verbal and written consent was taken from the patients. Data were collected using a preformed data collection sheet.

Anticoagulant and antiplatelet medications were stopped 72 hours before the procedure. Prior to ERCP, a prophylactic dose of third generation cephalosporine was routinely administered. To prevent sphincter of Oddi spasm, hyosine-N-butyl bromide was also given intravenously at the commencement of ERCP. The procedure was carried out under fluoroscopic supervision. The procedure was carried out with patients under conscious sedation to help them relax and stay comfortable, or under general anaesthesia, depending on the anaesthesiologist's individual assessment of the patients. Midazolam and pethidine was used for sedation and analgesia respectively. Propofol was used as an anaesthetic agent during ERCP in the presence of an anaesthesiologist.

Patients were placed on an x-ray table in the prone position while a duodenoscope was inserted down the esophagus, through the stomach, and into the duodenum. The papilla of Vater was identified. For contrast injection, a catheter was advanced past the sphincter of Oddi into the common bile duct (CBD). The pancreatic duct was cannulated selectively based on the ERCP indications and endoscopic or radiologic findings. The conventional sphincterotome was used to perform sphincterotomy selectively. Therapeutic procedures were carried out in accordance with the appropriate indication. Stone extraction was used to treat choledocholithiasis. Worm extractor was used to treat worms in the common bile duct. Biliary stenting was used as a palliative therapy in patients with malignant biliary obstruction.

The consultant gastroenterologist checked on all patients after the procedure and as per protocol until next 24 hours before shifting to respective wards or department. Patients were closely monitored for ERCP complications such as sedation-related complications, pancreatitis, cholangitis, bleeding, and perforation.

Results

Table-I

Demographic profile of the study subjects (n=95)

	Number of patients (n)	Percentage (%)
Age (groups)		
≤40	26	27.4
41 - 50	30	31.6
51 - 60	20	21.1
>60	19	20.0
Mean ± SD	49.74 ± 14.07	
Gender		
Male	52	54.7
Female	43	45.3

Mean age of the patients was 49.74 ± 14.07 years within the range of 18 - 80 years. Males (54.7%) were predominant than female (45.3%) (Table-I).

Table-II

Distribution of study subjects according to co-morbid disease (n=95)

Co-morbid disease	Number of patients (n)	Percentage (%)
HTN	12	12.63
DM	7	7.36
Bronchial Asthma	3	3.15

HTN was in 12.63% cases, DM was in 7.36% cases and bronchial asthma in 3.15 cases (Table-II).

Table-III

Distribution of study subjects according to indication of ERCP (n=95)

Indications	No. of patients (n)	Percentage (%)
Choledocholithiasis	56	58.9
Proximal cholangiocarcinoma	13	13.7
Ca gallbladder with biliary infiltration	8	8.4
Distal cholangiocarcinoma	6	6.3
Periampullary carcinoma	3	3.2
Chronic calcific pancreatitis	3	3.2
Chronic pancreatitis	2	2.1
Suspected SOD	2	2.1
Biliary stricture	1	1.1
Worm in CBD	1	1.1

Maximum patients had choledocholithiasis (58.9%) followed by proximal cholangiocarcinoma (13.7%), Ca gallbladder with biliary infiltration (8.4%), Distal cholangiocarcinoma (6.3%), Chronic calcific pancreatitis & Periapillary carcinoma each (3.2%), Suspected SOD & Chronic pancreatitis each (2.1%) and Worm in CBD & Biliary stricture each (1.1%) (Table III).

Table-IV

Distribution of study subjects according to therapeutic procedure performed (n=95)

Therapeutic procedures	No. of patients (n)	Percentage (%)
Stone extraction	49	51.6
Stenting in common bile duct	38	40
Only papillotomy done	7	7.4
Removal of worm	1	1.1

Stone extraction was done in 51.6% patients, stenting in common bile duct in 40% patients and only papillotomy done in 7.4% patients and removal of worm in 1.1% patients (Table-IV).

Table-IV

Distribution of study subjects according to complications (n=95)

Complication	No. of patients (n)	Percentage (%)
Pancreatitis	9	9.5
Bleeding	2	2.1
Cholangitis	1	1.1
Total	12	12.6

Pancreatitis was observed in 9.47% patients, bleeding in 2.1% patients and cholangitis in 1.1% patients (Table - V).

Discussion

ERCP is one of the most technically demanding and high-risk procedures performed by gastrointestinal endoscopists.^{11,12} It requires significant focused training and experience to maximise success and minimise poor outcomes.^{11,12}

In this study maximum patients were below the age of 50 years with a mean age of 49.74 ± 14.07 years (age range of 18 – 80 years). However, in another study done by Glomsaker et al found more than half of the patients were above 70 years old.¹³ In this study, males (54.7%) were predominant than female (45.3%) with a male female ratio of 1.21:1.

The most common diagnosis was choledocholithiasis (58.9%), followed by proximal cholangiocarcinoma (13.7%),

gallbladder carcinoma with biliary infiltration (8.4%), distal cholangiocarcinoma (6.3%), chronic calcific pancreatitis and periampullary carcinoma (3.2%), suspected SOD and chronic pancreatitis (2.1%), and worm in CBD and biliary strict (1.1 %). Therapeutic procedure of the study subjects, stone extraction done in 49 patients (51.6%), stenting in common bile duct in 38 patients (40%), only papillotomy done in 7 patients (7.4%) and removal of worm in 1 patient (1.1%).

The overall complication rate in this study was 12.6% which is comparable to other Bangladeshi studies done by Islam et al.¹³ They revealed 9 % complications in their study conducted at BSMMU. Complications occurred in 11.6% cases in the study of Glomsaker et al.¹⁴ Complication rate in other studies were 11.2%¹⁴ and 4.9% respectively.¹⁵ The incidence of pancreatitis in a meta-analysis of 21 prospective studies was approximately 3.5% - 18%.¹⁵⁻¹⁸

In this study, pancreatitis was seen in 9.4% patients, bleeding in 2.1% patients and cholangitis in 1.1% patients in this study. One of the most common complications in post-ERCP is pancreatitis. Islam et al¹⁴ found pancreatitis in 5.15% cases and Glomsaker et al¹⁵ experienced it in 3.1% cases. Cholangitis was observed 3.6% in the study of Glomsaker et al.¹⁵ The post-ERCP cholangitis rate was minimum in this study probably because of adequate pre and post procedure control of infection. In comparison, Kapral et al¹⁹ found bleeding in 4.2% cases and Glomsaker et al.¹⁵ found bleeding in 2.4% cases in western studies.

Conclusion

This study demonstrated that post-ERCP complications is minimum in BSMMU setting compared to global data. However, more precaution and alertness is required to avoid common complications like pancreatitis in future and there is more room for improvement.

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