

Original Article

Patterns of Post-endoscopic Retrograde Cholangiopancreatography (ERCP) Complications

*Habib MR¹, Ahmed F², Gain G³, Hasan R⁴, Ishaque SM⁵, Saifuddin D⁶**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. The aim of the study is to evaluate the pattern of post ERCP complications. This prospective observational study was conducted at the Department of Gastroenterology, Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka from February 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 at and below the age of 50 years, with a mean age of 49.74 ± 14.07 years and the age range was between 18 to 80 years. Majority of the subjects were male (54.7%), and male to female ratio was 1.21:1. The highest number of patients were diagnosed as choledocholithiasis (58.9%)

followed by proximal cholangiocarcinoma (13.7%), Ca-gallbladder with biliary infiltration (8.4%), Distal cholangiocarcinoma (6.3%), Chronic calcific pancreatitis and Periapillary 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 was 12.6%, with pancreatitis accounting for 9.4%, bleeding accounting for 2.1%, and cholangitis accounting for 2.1%. From the study, it can be concluded that pancreatitis is the most frequent Post-ERCP complication.

Keywords: ERCP, cholangitis, obstructive jaundice, pancreatitis.

INTRODUCTION

Endoscopic retrograde cholangiopancreatography (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's discomfort.³ Endoscopic retrograde cholangiopancreatography (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 (PEP). 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. Several studies have revealed number of risk factors for post-ERCP pancreatitis.

Cholangitis is a difficult-to-diagnose complication of ERCP. It can be an indication as well as a complication. PEP 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

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with multiple medical conditions. Cholangitis is primarily caused by a failure or incomplete drainage.^{7,8}

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.¹⁰

In Bangladesh, there are very few ERCP-related studies. Accordingly, we sought to identify patterns of post-ERCP problems.

METHODS

This prospective 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 in Department of Gastroenterology, BSMMU 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 (questionnaire).

Anticoagulant and antiplatelet medications were all 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 extraction 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 again the next morning. Patients were closely monitored for ERCP complications such as sedation-related complications, pancreatitis, cholangitis, bleeding, and perforation.

RESULTS

Out of the 100 eligible patients for ERCP, 5 were excluded due to cannulation failure. Thus, n=95.

Table I shows 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: 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

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

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

Indications	Number 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

Table III shows 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 III : Distribution of study subjects according to therapeutic procedure performed (n=95)

Therapeutic procedures	Number 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

Table IV shows pancreatitis was observed in 9.47% patients, bleeding in 2.1% patients and cholangitis in 1.1% patients.

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

Complication	Number of patients (n)	Percentage (%)
Pancreatitis	9	9.5
Bleeding	2	2.1
Cholangitis	1	1.1
Total	12	12.6

DISCUSSION

ERCP is one of the most technically demanding and high-risk procedures performed by gastrointestinal endoscopists (Adler et al., 2015, Colton and Curran, 2009). It requires significant focused training and experience to maximise success and minimise poor outcomes (Colton, 2002, Testoni et al., 2010).

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). More than half of the patients were above 70 years old.¹¹ Males (54.7%) were predominant than female (45.3%) and male female ratio was 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. Islam et al.² revealed 9.01% complications in their study conducted in BSMMU. Complications occurred in 11.6% cases in the study of Glomsaker et al.¹¹. Complication rate in other studies were 11.2%¹³ and 4.9%⁴. The incidence of PEP in a meta-analysis of 21 prospective studies was approximately 3.5% - 18%.^{15,6}

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 al.¹² found pancreatitis 5.15% and Glomsaker et al.¹¹ found 3.1%. Cholangitis was observed 3.6% in the study of Glomsaker et al.¹¹. The post-ERCP cholangitis rate was 1% or less.¹⁷ In this study, cholangitis was less due to adequate pre and post procedure control of infection. Kapral et al.⁸ found bleeding in 4.2% cases and Glomsaker et al.¹¹ found bleeding in 2.4% cases.

CONCLUSIONS

According to the findings of this study, pancreatitis is the most common complication of ERCP. Overall, 12.6% of

patients experience complications, with pancreatitis accounting for 9.4%, bleeding accounting for 2.1%, and cholangitis accounting for 2.1%.

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