

Endoscopic Retrograde Cholangiopancreatography at Dhulikhel hospital: Outcome Analysis

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ABSTRACT

Background

Endoscopic Retrograde Cholangiopancreatography (ERCP) is an important but potentially invasive therapeutic procedure in treating various pancreatobiliary conditions. In Nepal, the ERCP services is limited to a few tertiary care centers mostly in the capital, Kathmandu. Dhulikhel hospital has started ERCP since 2011 providing services to patients from all over the country. The study analyzes the outcome from data since August 2011 to 2013 August.

Objective

To analyze the results of ERCP done in Dhulikhel hospital, Kathmandu University hospital.

Method

This is a retrospective study. The ERCP records of all the patients done since August 2011 to August 2013 were retrieved. A total of 516 attempts of ERCP were done since August 2011 to August 2013. Out of these, 423 were included for the analysis. The repeat ERCP for the same patient due to failed cannulation or patients undergone ERCP but incomplete documentation were excluded. The demographic data, indications, the findings, the outcome in terms of success or failure to cannulation, success or failure of stone extraction, stenting and complications were all derived and analyzed. SPSS 16 version was employed for data management and analysis.

Result

The female: male ratio was found to be 1.7 : 1. The mean age of patients were 50.57±17.8 Years. The most common indication for ERCP were: choledocholithiasis 208(49.17%); followed by: obstructive jaundice 69(16.3%) of undetermined cause, acute biliary pancreatitis 26(6.4%), suspected bile duct injury during cholecystectomy 18(4.2%), periampullary growth 21(4.96%), Cholangiocarcinoma 12(2.8%), chronic pancreatitis 10(2.3%), CBD stent exchange 23(5.43%), dilated cbd 21(4.96%) , acute cholangitis 14(3.3%).The most common finding was CBD stone in 308(72.81%), normal in 51(12.1%), bile duct stricture in 45(10.63%). Bile duct injury during cholecystectomy was found in 13(3.1%), biliary obstruction due to ampullary growth and pancreatic head mass was found in 21(4.96%) and 6(1.41%) respectively. Choledochal cyst was found in 5(1.2%), chronic pancreatitis in 7(1.7%). Biliary fascioliasis was found in one (0.24%); and roundworm in 1(0.24).The most common complication was acute pancreatitis in 17(4%), post-ERCP cholangitis 6(1.4%), bleeding 6(1.4%), duodenal perforation in 1(0.2%), arrhythmia in 1(0.2%) and one death (0.2%).

Conclusion

ERCP has been a potentially emerging therapeutic tool for various pancreato-biliary disorders in Nepal.

KEY WORDS

Cholidocholelithiasis, endoscopic retrograde cholangio Pancreatography, stenting

INTRODUCTION

The ERCP was first introduced in 1968.¹ It has now become a widely performed procedure worldwide and has become a well established diagnostic and therapeutic tool for a variety of pancreato-biliary diseases, such as-treatment of choledocholithiasis, the diagnosis and management of biliary and pancreatic tumors, and the management of biliary injuries after surgery.²⁻⁴ However, the evolution of the role of ERCP has occurred simultaneously with the emerging novel but sensitive diagnostic and therapeutic modalities, such as magnetic resonance imaging (MRCP), laparoscopic cholecystectomy and CBD exploration , and EUS. Because of this technological advancement, the role of ERCP has become largely therapeutic at present time. Moreover, the ERCP is invasive, technically demanding procedure, and carries a potentially serious morbidity and mortality.

In Nepal, pancreato-biliary disorders are commonly encountered in day to day clinical practice requiring ERCP in most occasions. The availability of newer diagnostic modalities such as MRCP and EUS are limited in Nepal. Likewise, the hospitals which provide ERCP services are also limited and mostly confined within the capital city in Nepal. Therefore, patients from outside Kathmandu are normally referred to centers in Kathmandu or likely to go to India at the border area. Moreover, the ERCP incurs an extra high economic burden to most of the Nepalese patients most of whom are from poor socioeconomic strata.

Dhulikhel hospital is a university hospital of Kathmandu University, located 30 km outside the Kathmandu valley, providing health care to largely the people from rural community. ERCP has been introduced since early 2011 and now has become one of the referral centers for ERCP in the country. This study was carried out in order to evaluate the outcome of the procedure done in the two year time period.

METHOD

This is a retrospective study. The ERCP documentation files of all the patients done since August 2011 to August 2013 were retrieved. The saved cholangiogram images of each patient who had undergone ERCP were also reviewed and analyzed. The total number of ERCP done in this period was 516; out of these, 423 cases were included and analyzed for the study. The repeated procedures or procedure with incomplete informations were excluded in the analysis. The demographic data and indications for ERCP were studied. The outcome of ERCP was analyzed in terms of:

- Success or failure to cannulation,
- Success or failure of stone extraction; partial stone extraction without complete duct clearance was counted as failed extraction
- Success of stenting of bile or pancreatic duct, and

- Complications during or immediately after the procedure.

The total findings at ERCP, both duodenoscopic and radiographic were also recorded and analyzed. SPSS 16 version was employed for data management and analysis.

RESULT

A total of 423 patients undergoing ERCP since August 2011 to August 2013 were analyzed. The female: male ratio was found to be 1.7 : 1. The mean age of patients were 50.57±17.8 Years. (Table 1) The most common indication

Table 1. Demographic characteristics.

n= 423

Variables	Frequency (Percentage)
Age (mean)	50.57±17.78
Sex	
Male	154 (36.4)
Female	269 (63.6)
Ethnicity	
Brahmin/Chhetri	152 (35.9)
Newar	99 (23.4)
Mongol	106 (25.1)
Dalits	26 (6.1)
Others	40 (9.5)

for ERCP (Table 2) were: choledocholithiasis in 208(49.2%); followed by: obstructive jaundice of undetermined cause in 69(16.3%), acute biliary pancreatitis in 26 (6.4%), suspected bile duct injury during cholecystectomy in 18(4.2%), periampullary growth in 21(4.96%), Cholangiocarcinoma in 12(2.8%), chronic pancreatitis in 10(2.3%), CBD stent exchange in 23(5.43%), dilated cbd in 21(4.96%), acute cholangitis in 14(3.3%); and CBD stricture in 1(0.23%).

Table 2. Indications for ERCP procedure.

Variables (Indications)	Frequency (Percentage)
Cholichocholelithiasis	208 (49.2)
Obstructive jaundice of undetermined cause	69 (16.3)
Acute biliary pancreatitis	26 (6.4)
Suspected Bileduct injury during lap cholecystectomy	18 (4.2)
Periampullary growth	21 (4.9)
Cholangio carcinoma	12 (2.8)
Chronic pancreatitis	10 (2.3)
CBD stent exchange	23 (5.4)
Dilated CBD	21 (4.9)
Acute Cholangitis	14 (3.3)
CBD stricture	1 (0.2)

Among the ERCP findings (Table 3), the most common finding was CBD stone in 209(49.40%); out of which, 75 (35.9%) were giant stones, 9(4.3%) were impacted either at the ampulla or proximal duct; and in 15(7.17) patients stones were intra-hepatically located. In 51(12.1%)

patients, the findings were normal. Bile duct stricture was found in 45(10.63%); out of which, 33(73.33%) were believed to be malignant stricture and 12(26%) due to benign cause. Bile duct injury during cholecystectomy was found in 13(3.1%), biliary obstruction due to ampullary growth and pancreatic head mass was found in 21(4.96%) and 6(1.41%) respectively. Duodenum diverticulum was found in 18(4.3%) patients. Choledochal cyst was found in 5(1.2%), chronic pancreatitis in 7(1.7%), Mirrizi's syndrome in 4(0.9%), duodenobiliary fistula in 6(1.41%), biliary fascioliasis in one (0.24%), roundworm in 1(0.24) and portal biliopathy in 1(0.24). Selective cannulation of desired duct

Table 3. Findings of ERCP.

Variables (Indications)	Frequency (Percentage)
Choliodocholelithiasis	209 (49.4)
Normal findings	51 (12.1)
CBD stricture	45 (10.7)
Ampullary growth	21 (5.0)
DU diverticulum	18 (4.3)
Post cholecystectomy bile duct injury	13 (3.1)
Chronic pancreatitis	7 (1.7)
Ca head of pancreasee	6 (1.4)
Duedenobiliary fistula	6 (1.4)
Choledocol cyst	5 (1.2)
Mirrizi Syndrome	4 (0.9)
Portal biliopathy	1 (0.2)
Round worm	1 (0.2)
Biliary fascioliasis	1 (0.2)

was achieved 94.1%; 4 % of patients were cannulated at second ERCP attempt. The complete CBD clearance was achieved in up to 81.5 % of patients. CBD Stenting was done in 120(28.35%) patients with success rate up to 95.8%. Of these, 54.2% stenting was for obstructing malignant stricture; 29.2% for obstructing stone with failed extraction, 10.0 % benign stricture , and 6.7% for post cholecystectomy bile duct injury.

The most common complication was acute pancreatitis in 17(4%) patients; two (0.5%) had severe pancreatitis requiring prolonged hospitalization. Post-ERCP cholangitis in 6(1.4%), bleeding in 6(1.4%) , duodenal perforation in 1 (0.2%), arrhythmia in 1(0.2%) and one death (0.2%).

DISCUSSION

Pancreato-biliary diseases requiring ERCP is common in Nepal as shown by our study done in a period of two years. Our study showed the three most common indications (Table 2) for ERCP as: choledocholithiasis (49.17%), obstructive jaundice (16.3%) with no definitive cause and acute biliary pancreatitis (6.4%). The indication for suspected biliary injury during cholecystectomy was 18(4.2%). Various population based studies have shown

incidence of bile duct injuries as ranging from 0.1 to 0.5.⁵⁻⁷ In a study done in one of the teaching hospitals in Nepal showed post- cholecystectomy bile duct injury up to 2.6 %.⁸ The relatively high (4.2%) rate of bile duct injuries in our study is due to the referral from the different hospitals in Nepal. Nevertheless, this figure underscores the fact that bile duct injury is an important and prevalent complication of cholecystectomy in Nepal.

The indication of ERCP (Table 2) for diagnostic purpose was 4.96% in this study. This finding probably reflects the limited use of MRCP, and unavailability of EUS in Nepal thus prompting low threshold for indicating ERCP. However, compared with the figure from a study done at Bir hospital where up to 48.3% out of 662 patients had diagnostic ERCP is much lower.⁹ With the availability and improvement in the non-invasive tools such as MRCP and EUS the number of diagnostic indications can be anticipated to decrease in the future.

The most common findings during ERCP (Table 3) were: CBD stone in 72.81%, out of which, 75 (35.9%) were large (Fig 1).The significant number of large bile duct stone also reflects a long standing nature of stone and the late detection. In 12.1% of patients the findings were normal. The normal finding was reported in up to 32.41% in the study done at Bir hospital.⁹ Bile duct stricture was found in 10.63%; out of which 73.33% was believed to be malignant; although, histopathological confirmation of the diagnosis was not possible in all cases.

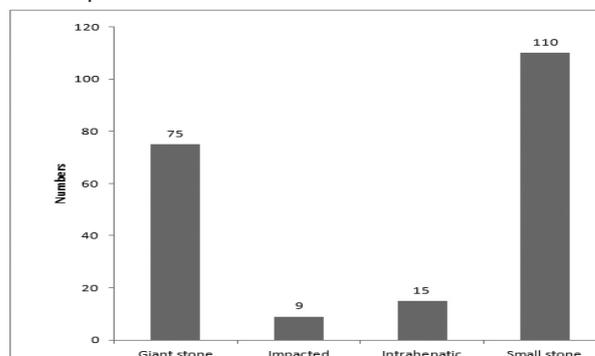


Figure 1. Types of stones found during ERCP procedures.

Biliary obstruction due to ampullary growth and pancreatic head mass was found in 4.96% and 1.41%, respectively. Similar rates had been reported in the study from Bir hospital (5.24 and 2.8 % respectively).⁹

Choledochal cyst was found in 1.2% of cases in our study. Although, reported to be rare with incidence of 1/100000-150000 in western countries; this congenital defect has been reported more common in Asia with incidence rate up to 1/1000.¹⁰ Out of 662 patients, Shrestha et al found choledochal cyst in up to 10 cases (1.64%) in Bir hospital.⁹

In this study, biliary fascioliasis and roundworm were detected in 1(0.24%) patient respectively. Although, biliary ascariasis is commonly reported findings in most studies from developing world.¹¹⁻¹⁴ Biliary fascioliasis is probably the first case found in our study from Nepal. This finding

confirms that biliary fasciolosis exists in Nepal ; and, should prompt suspicion in cases with biliary obstruction. The selective duct cannulation was successful in 94.1%. In 4% of cases the cannulation was successful at second ERCP attempt.

In our study, the complete stone extraction was achieved in 81.5%. This comparatively lower rate of CBD clearance as

Table 4. Indications for bile duct stenting .

n= 120

Variables	Frequency (Percentage)
Malignant stricture	65 (54.2)
Obstructing stone with failed extraction	35 (29.2)
Post cholecystectomy bile duct injury	8 (6.7)
Benign Stricture	12 (10.0)

compared to most studies is attributable to higher incidence of large stones, stone impaction in the duct intra-hepatic location of stones and lack of mechanical lithotripter in the initial period of starting ERCP at this institution.¹⁵⁻¹⁸

CBD stenting was done in 120 (28.4%) patients. The most common indication (Table 4) for stenting was tumor obstruction (54.2%) and failed stone extraction (8.2%). The success rate for CBD stenting was 95.8%. PD stenting was done only in 2(0.5%). Low rate of pancreatic duct stenting is due to lower number of indications for PD stenting compared to biliary tract diseases requiring stenting.

Among the complications after ERCP (Table 5), acute pancreatitis was found in up to 4 % (17); in 2(0.5%) developed severe pancreatitis requiring prolonged hospitalization. However, there was no death due to pancreatitis. The current rate of pancreatitis in clinical practice is variable. Reports suggest that in academic centers the rate of pancreatitis varies from between 1% to 30% of procedures.^{19,20} Our rate of acute pancreatitis is comparable to most of the literatures. This reasonably low

incidence of PEP is attributable to the use of prophylactic PD stenting we have been practicing for high risk patients in our institute. In our study, 6(1.4%) patients developed acute cholangitis which were mostly related with stenting in hilar growth. Acute cholangitis has been reported to be 0.4%-1.8% of ERCP patients in various studies.²¹⁻²³

There was one (0.2%) death in our study which was due to a severe sepsis and multiorgan failure following ERCP for failed stone extraction. The rate of mortality associated with ERCP has been reported at up to 1.0% with a mean of 0.4%.^{21,22} The bleeding was found in 6(1.4%) cases and one (0.2%) had severe bleeding post sphincterotomy requiring blood transfusion. Bleeding risk during ERCP is 0.3%-1.3%, and this rate is even higher with sphincterotomy and in patients undergoing anticoagulant therapy.^{21,22,24,25} None of the patients in our study was on anticoagulant drugs. Duodenal perforation occurred in one (0.2%) patient with infiltrating duodenal tumor . But no case of perforation related to sphincterotomy was found in our study.

Our study had some limitations. This is a retrospective study, some of the findings were missing in the documentations and not included in the study. Most of the patients were referred patients from another hospitals, and not reviewed subsequently. Lack of adequate number and quality of accessories in the initial period of starting ERCP is likely to affect the outcome of the procedure.

CONCLUSION

In conclusion, our study showed that biliary disorders requiring ERCP are common problem in Nepal. Whereas ERCP has a definite therapeutic role in treating these conditions but also carries a significant risk of morbidity and mortality. Appropriate indications to ERCP and judicious use of non-interventional technique such as MRCP and EUS will help minimize the complications.

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