

Outcome of Obstructive Jaundice Patients after Endoscopic Retrograde Cholangiopancreatography

Rahman MA¹, Begum MUH², Hossain MD³, Rahman SMM⁴, Islam SMS⁵

DOI: <https://doi.org/10.3329/jafmc.v16i2.55293>

Abstract

Introduction: Obstructive jaundice is frequently encountered worldwide including Bangladesh. Therapeutic Endoscopic Retrograde Cholangiopancreatography (ERCP) is one of the procedures to manage obstructive jaundice.

Objectives: To ascertain the outcome of obstructive jaundice patients who underwent ERCP.

Materials and Methods: It was a hospital based cross sectional observational study, carried out in Gastroenterology Department of Combined Military Hospital (CMH) Dhaka from May 2017 to May 2019. Total 200 patients were included in the study. Verbal consents were taken from patients. Data were collected with a checklist and analyzed by using SPSS 20.

Results: Total 200 patients' mean age \pm SD was 56.5 \pm 14.5 years with range 21 to 92 years and majority were 41 to 60 years 80(40%) followed by 61 to 80 years 78(39%). Etiology of obstructive jaundice were, benign 137(68.5%) and malignant 63(31.5%). Among the benign: 69(34.5%) were choledocholithiasis, 45(22.5%) biliary stricture, 20(10.0%) papillary stenosis and 3(1.5%) biliary worms. Among the malignant: 24(12.0%) were distal cholangiocarcinoma, 21(10.5%) periampullary tumors, 10(5.0%) Klatskin tumor, 4(2.0%) carcinoma head of pancreas, and 4(2.0%) other malignancy. Mean serum bilirubin level 17.6 mg/dl with minimum 0.6mg/dl, maximum 41.3mg/dl; mean alkaline phosphatase (ALP) level 351.4U/L with minimum 111U/L and maximum 1262U/L; mean alanine aminotransferase (ALT) level 118.8 U/L with minimum 28 U/L, maximum 521 U/L; ERCP were successfully done in 188(94.0%) patients with single attempt 171 (85.5%), repeated sessions 17(8.5%) and 12(6.0%) patients unsuccessful ERCP; complications occurred in 17(8.5%)patients, of whom post-ERCP pancreatitis 9(4.5%) and post procedure cholangitis 4(2.0%)patients.

Conclusion: Benign etiology of obstructive jaundice were more common than malignant one. Both benign and malignant etiology of obstructive jaundice can be successfully managed with ERCP with few complications.

Key-words: Obstructive jaundice, Choledocholithiasis, ERCP.

Introduction

Obstructive jaundice is frequently encountered in interventional gastroenterology. It may be caused by obstruction of intrahepatic bile ducts and portal tracts or obstruction of bile flow in the extrahepatic bile ducts between the portahepatis and the papilla of Vater¹. Obstructive disorders of the biliary tract include occlusion of the bile duct lumen, intrinsic disorders of the bile ducts, and extrinsic compression. Extrahepatic obstruction to the flow of bile may occur within the ducts or secondary to external compression. Overall, the most common cause of biliary obstruction is luminal occlusion by a gallstone (choledocholithiasis). Cholesterol gallstones are responsible for the majority of cases. Intrinsic narrowing of the bile ducts occurs in inflammatory, infectious, neoplastic or congenital biliary disorders such as biliary atresia. Adult intestinal parasites such as *Ascaris lumbricoides* or eggs of certain liver flukes like; *Clonorchis sinensis*, *Fasciola hepatica* may migrate from the intestine into the bile ducts, thereby obstructing the extrahepatic bile ducts. This is more common in Asian countries².

Primary sclerosing cholangitis (PSC) may cause segmental biliary strictures. Focal narrowing and localized obstruction of the bile duct is an unusual complication of acquired immunodeficiency syndrome (AIDS cholangiopathy). Biliary strictures may also follow hepatic arterial infusion of certain chemotherapeutic agents³ or result from surgical injury to the bile duct or hepatic artery. External compression of the bile ducts may occur secondary to inflammation of surrounding viscera like; pancreatitis or may result from neoplastic involvement like; carcinoma head of the pancreas. Extrinsic compression of the biliary tract may occasionally occur due to hepatocellular carcinoma or peri-portal lymph nodes enlarged by metastatic tumor or lymphoma. Pancreatitis may also produce extrinsic biliary compression as a result of edema or pseudo cyst formation. Rarely, gallstones in the cystic duct or infundibulum of the gallbladder compress the common hepatic duct (Mirizzi's Syndrome) and produce obstructive jaundice⁴.

The clinical manifestations of obstructive jaundice are dark urine, pale stools and generalized pruritus. Fever, biliary colic, weight loss, abdominal pain and abdominal mass are also the representatives of obstructive jaundice⁵. Painless jaundice is a classic feature of carcinoma of the head of the pancreas. Obstructive jaundice may lead to various complications including cholangitis, pancreatitis, renal and hepatic failure. The diagnosis of obstructive jaundice can

1. Lt Col Md Anisur Rahman, MBBS, FCPS, OJT, Interventional Gastroenterology (India), Classified Medical Specialist and Gastroenterologist, CMH, Dhaka (E-mail: arafanis@gmail.com)
2. Dr Most. Umme Habiba Begum MBBS, FCPS, Associate Professor, Dept. of Paediatrics, Rangpur Community Medical College 3. Brig Gen Md Delwar Hossain, MBBS, FCPS (Medicine), FCPS (Gastroenterology), Adviser Specialist Medicine, CMH Dhaka 4. Col SM Mizanur Rhamn, MBBS, FCPS (Medicine), FCPS (Gastroenterology), Senior Gastroenterologist, CMH, Dhaka 5. Lt Col SM Shahedul Islam, MBBS, FCPS (Medicine), FCPS (Gastroenterology), Gastroenterologist, CMH, Dhaka.

be done by testing serum bilirubin level in conjugated and unconjugated fractions, alkaline phosphatase (ALP) and transaminases level. Regardless of the cause, physical obstruction of bile ducts causes a predominantly conjugated hyperbilirubinemia. Other modalities of investigations include ultrasonography, plain abdominal x-ray, computed tomography, contrast-enhanced multi sliced computed tomography, endoscopic retrograde cholangiopancreatography (ERCP), percutaneous trans-hepatic cholangiography (PTC), endoscopic ultrasound (EUS)⁷, magnetic resonance cholangiopancreatography (MRCP), cholescintigraphy, radionuclide scanning angiography and staging laparoscopy^{8,9}.

In the patient with bile duct obstruction, therapy is typically directed at relieving the obstruction. The therapeutic strategy chosen depends in part on the location and likely cause of the obstructing lesion. The main treatment of the obstructive jaundice is mechanical decompression; however, the complications and other symptoms are also necessarily treated. Low fat diet should be given to patient suffering from post-hepatic obstructive jaundice to minimize the discomfort due to fat ingestion and diarrhea¹⁰. Decompression of bile duct obstruction can be done by endoscopic (ERCP) insertion of stents, percutaneous insertion of stents, surgical bypass or removal of lesions by surgery¹¹. Dexchloropheniramine, Hydroxyzine, Cholestyramine, Ursodeoxycholic acid and Naltrexone are used as a therapeutic approach in treatment and management of post hepatic jaundice¹².

In our best knowledge, there is no well documented database regarding the etiology, clinical pattern and outcome of therapeutic ERCP in obstructive jaundice patients in Bangladesh. In this study we have tried to express our last two years' experiences that may help in future planning pertinent to obstructive jaundice in our centre as well as in Bangladesh. The aim of this study was to ascertain etiology, clinical and demographic profile of obstructive jaundice patients in a tertiary care hospital along with outcome of the patients who underwent therapeutic ERCP.

Materials and Methods

This study was a hospital based cross-sectional observational study, carried out in Gastroenterology Department of Combined Military Hospital (CMH), Dhaka in between May 2017 to May 2019. Total 200 patients as per inclusion criteria were included in the study. Verbal consents were taken from patients or relatives and data were collected in a checklist from hospital records, analyzed by using SPSS 20.

Results

Among 200 patients ≤40 years were 36(18%), 41 to 60 years 80(40%), 61 to 80 years 78(39%), and >80 years 6(3%); mean age±SD was 56.5±14.5 years with range 21 to 92 years. Male 155(77.5%) and female 45(22.5%); retired from service 85(42.5%), housewife 45(22.5%), service person 37(18.5%), farmer 30(15%) and 3(1.5%) businessman (Table-I).

Table-I: Demographic profile of obstructive jaundice Patients (n=200)

Traits		Frequency	Percentage
Age (years)	40 years or less	36	18
	41-60 years	80	40
	61-80 years	78	39
	>80 years	6	3
	Mean±SD = 56.5±14.5; Range = 21-92		
Gender	Male	155	77.5
	Female	45	22.5
Occupation	Retired from service	85	42.5
	Housewife	45	22.5
	Service	37	18.5
	Farmer	30	15.0
	Business	03	1.5

Etiology of obstructive jaundice of study patients were: choledocholithiasis 69(34.5%), benign biliary stricture 45(22.5%), cholangiocarcinoma 34(17.0%) of whom distal cholangiocarcinoma 24(12.0%) and Klatskin tumor or proximal cholangiocarcinoma 10(5.0%); peri-ampullary tumor 21(10.5%), papillary stenosis 20(10.0%), carcinoma head of pancreas 4(2.0%), other malignances 4(2.0%) and biliary worms (Ascariasis) 3(1.5%); total benign etiology of obstructive jaundice 137(68.5%) and 63(31.5%) malignant etiology (Table-II).

Table-II: Etiology of obstructive jaundice in study patients (n=200)

Etiology	Number	Percentage
Choledocholithiasis	69	34.5
Benign biliary stricture	45	22.5
Cholangiocarcinoma	34	17.0
-Distal	24	12.0
-Proximal (Klatskin tumor)	10	5.0
Peri-ampullary tumor	21	10.5
Papillary stenosis	20	10.0
Carcinoma head of pancreas	04	2.0
Other malignancy	04	2.0
Biliary worms (Ascariasis)	03	1.5

Laboratory parameters of 200 study patients found; serum bilirubin level mean 17.6 mg/dl with minimum 0.6mg/dl, and maximum 41.3 mg/dl; serum ALT level mean 118.8 U/L with minimum 28 U/L and maximum 521 U/L; serum ALP level mean 351.4 U/L with minimum 111 U/L and maximum 1262 U/L (Table-III).

Table-III: Laboratory parameters of study patients (n=200)

Variables	Mean	Minimum	Maximum
Serum bilirubin	17.6	0.6	41.3
Serum ALT	118.8	28	521
Serum ALP	351.4	111	1262

ERCP were successfully done in 188 patients (94.0%), of whom in single attempt 171 (85.5%) patients, and 17(8.5%) patients needed repeated sessions; and 12(6.0%) patients needed surgical or other

interventions due to unsuccessful ERCP. Complications of ERCP occurred during or after procedure; total complications occurred in 17(8.5%) patients, of whom post-ERCP pancreatitis in 9(4.5%) patients, infection/cholangitis in 4(2.0%) patients, duodenal injury/perforation in 2(1.0%) patient, and excessive bleeding in 2(1.0%) patients (Table-IV).

Table-IV: Outcome (n=188) and complications (n=17) of ERCP in obstructive jaundice patients

Variables		Frequency	Percentage	
Outcome	Successful	Total	188	94.0
		Single session	171	85.5
		Repeated session	17	8.5
	Unsuccessful & needed surgery	12	6.0	
Complications		Post-ERCP pancreatitis	9	4.5
		Infection/cholangitis	4	2.0
		Duodenal perforation/injury	2	1.0
		Excessive bleeding	2	1.0
		Total	17	8.5

Discussion

Jaundice is a challenging problem for patients, more so when patients are ignorant of the on-going severe underlying disease. Extra hepatic obstruction to the flow of bile may occur within the ducts or secondary to external compression. While comparing the other studies done elsewhere¹³ found that female was more affected than male in obstructive jaundice, but the observation in present study implies that the overall incidence of obstructive jaundice was more in males compared to females (male 155, 77.5% and female 45, 22.5%). The mean age of incidence of obstructive jaundice was 56.5(21-92) years in present study with \pm SD 14.5 and that in other study¹³ it was 50.4 years with $SD \pm 10.9$. Our study showed, there were different occupational patients who had been suffering from obstructive jaundice including farmer, service personnel, retired from service, and housewives. There was no distinct occupational predilection without obstructive jaundice in the study. Obstructive jaundice is characterized by relatively greater elevation of alkaline phosphatase (ALP) than the aminotransferases or gamma-glutamyltransferase (GGT)¹⁴. In present study we found that mean serum bilirubin was 17.6mg/dl, with minimum 0.6mg/dl, and maximum 41.3 mg/dl along with high alkaline phosphatase level, mean ALP 351.4 U/L and mild to moderate ALT elevation.

In the present study, we found 137(68.5%) obstructive jaundice patients had been suffering from benign underlying biliary diseases and 63(31.5%) had been suffering from malignant biliary diseases. Shukla et al¹⁵ found in their study that malignancy (68%) tends to be more common than benign disease (32%) as cause of obstructive jaundice. In another study from Bangladesh¹³ observed, benign underlying biliary diseases were in 21(42%) cases, whereas

29(58%) patients had malignant causes of obstructive jaundice. They found among the benign causes choledocholithiasis was the commonest whereas carcinoma head of the pancreas was commonest in malignant group. In present study we also observed that choledocholithiasis was the commonest benign cause 69(34.5%) but cholangiocarcinoma 34(17.0%) was the commonest malignant cause of obstructive jaundice. Obstructive jaundice is also called as surgical jaundice. In earlier days when therapeutic gastroenterological interventions were under developed, surgical removal of gallstone was the main option for obstructive jaundice caused by choledocholithiasis. But in modern era, with the advent of development of interventional gastroenterology, the scenario has been changed. Since its introduction in 1968, ERCP has become an invaluable procedure in the diagnosis and management of a variety of pancreaticobiliary disorders.

The role of ERCP has evolved from a diagnostic to a mainly therapeutic intervention because of improvements in other imaging modalities including MRI and/or MRCP and endoscopic ultrasound¹⁶. ERCP has been emerged now as one of the main option of therapy for obstructive jaundice as both curative and palliative remedy. In current study we have observed, ERCP were successfully done in 188(94.0%) patients of whom with a single attempt in 171(85.5%) patients, and 17(8.5%) patients needed repeated sessions due to difficulty in cannulation, large impacted stone in common bile duct or prolong procedure time; 12(6.0%) patients needed surgical or other intervention due to unsuccessful ERCP due to duodenal stenosis or unapproachable papilla of Vater. Similar result was also found by Nakai et al. in their study¹⁷, technical success in ERCP were in 475 (95.6%) patients among 520 obstructive jaundice cases. They also observed adverse events 14.5% in ERCP. Adverse events related to ERCP may occur in any setup. Based on Freeman et al. definition¹⁸, the overall incidence of post-ERCP pancreatitis is estimated to be 3% to 10% in systematic reviews¹⁹. But a recent meta-analysis of 108 randomized, controlled trials involving 13,296 patients, reported a 9.7% overall incidence of post-ERCP pancreatitis (95% confidence interval [CI], 8.6%-10.7%), with an increased incidence of 14.7% (95% CI, 11.8%-17.7%) in high-risk patients²⁰. We also observed complications in 17(8.5%) patients during or after ERCP procedures. Post-ERCP pancreatitis 9(4.5%) were the common complications related to ERCP intervention and those were managed conservatively. Post-procedure severe abdominal pain also occurred in some patients.

Conclusion

Choledocholithiasis was the commonest benign etiology whereas cholangiocarcinoma was the commonest malignant cause of obstructive jaundice. Both benign and malignant obstructive jaundice can be successfully managed with ERCP with few complications, though with the assistance of newer modalities of procedure, complications can be reduced further.

References

1. Walker BR, Colledge NR, Ralston SH, Penman ID. *Lives and biliary tract disease: Davidson's principles and practice of medicine*, 22ed; 2014: 921-88.
2. Bektas M, Docmeci A, Cinar K. Endoscopic management of biliary parasitic diseases. *Dig Dis Sci*. 2010; 55(5):1472-8.
3. Brown KT, Kemeny N, Berger MF et al. Obstructive jaundice in patients receiving hepatic artery infusional chemotherapy: Etiology, treatment implications and complications after transhepatic biliary drainage. *J Vasc Interv Radiol*. 1997; 8:229-34.
4. Erben Y, Benavente-Chenhalls LA, Donohue JM et al. Diagnosis and treatment of Mirizzi's syndrome: 23-year MayoClinic experience. *J Am Coll Surg*. 2011; 213:114-19; discussion 120-1.
5. Malhi H, Gores GJ, Malhi H, et al. Review article: the modern diagnosis and therapy of cholangiocarcinoma. *Aliment Pharmacol Ther*. 2006; 23(9):1287-96.
6. Briggs CD, M Peterson. Investigation and management of obstructive jaundice. *Surgery*. 2007; 25(2):74-80.
7. Jennifer LB, Peter FE. Biliary obstruction: Medscape-Drugs and diseases-Gastroenterology; updated Nov 2018:<https://emedicine.medscape.com>.
8. Yusuf TE, Bhutani MS, Yusuf TE et al. Role of endoscopic ultrasonography in diseases of the extrahepatic biliary system. *J Gastroenterol Hepatol*. 2004; 19(3):243-50.
9. Barkun JS, Chaudhury P, Barkun AN. Approach to the Jaundiced Patient. *ACS Surgery: Principles and practice*. 2006.
10. Lidofsky SD, Kobos R. *Jaundice: Sleisenger and Fordtran's Gastrointestinal and Liver Disease*. 10th ed. Philadelphia, Saunders Elsevier; 2016:336-48.
11. Baron TH. Palliation of malignant obstructive jaundice. *Gastroenterol Clin North Am*. 2006; 35(1):101-12.
12. Bergasa NV. Medical palliation of the jaundiced patient with pruritus. *Gastroenterol Clin N Am*. 2006; 35:113-23.
13. Roy BC, Hanifa MA, Alam MS et al. Etiological Spectrum of Obstructive Jaundice in a Tertiary Care Hospital. *Global Journal of Medical Research*. 2015; 15(4):1-5.
14. Green RM, Flamm S. AGA technical review of the evaluation of liver chemistry tests. *Gastroenterology*. 2002; 123:1367-84.
15. Shukla S, Kharat PR, Patbarniya N et al. Clinicopathological study on patients presenting with obstructive jaundice. *Int Surg J*. 2018; 5(2):705-10.
16. Vinay C, Mouen AK, Muthusamy VR et al. American Society for Gastrointestinal Endoscopy guideline- Adverse events associated with ERCP. *Gastrointestinal Endoscopy*. 2017; 85(1):32-47.
17. Nakai Y, Isayama H, Yamamoto N et al. Indications for endoscopic ultrasonography (EUS)-guided biliary intervention: Does EUS always come after failed endoscopic retrograde cholangiopancreatography? *Dig Endosc*. 2017; 29(2):218-25.
18. Freeman ML, Nelson DB, Sherman S et al. Complications of endoscopic biliary sphincterotomy. *N Engl J Med*. 1996; 335:909-18.
19. Andriulli A, Loperfido S, Napolitano G, et al. Incidence rates of post-ERCP complication: A systematic survey of prospective studies. *Am J Gastroenterol*. 2007; 102:1781-8.
20. Kochar B, Akshintala VS, Afghani E et al. Incidence, severity and mortality of post-ERCP pancreatitis: a systematic review by using randomized, controlled trials. *GastrointestEndosc*. 2015; 81:143-9.