



ORIGINAL RESEARCH ARTICLE

INCIDENCE OF CHOLEDOCHOLITHIASIS IN GALLSTONE DISEASE

Kishor Kumar Tamrakar,^{1*} Abhishek Bhattarai,¹ Pragya Devakota²¹Department of Surgery, Chitwan Medical College, Bharatpur, Chitwan, Nepal²Department of Pharmacology, Tribhuvan University Teaching Hospital, Kathmandu, Nepal***Correspondence to:** Dr Kishor Kumar Tamrakar, Department of Surgery, Chitwan Medical College, Bharatpur, Chitwan, Nepal.

Email: kishorktamrakar@gmail.com

ABSTRACT

Background: Five to 20% patients with cholelithiasis also have choledocholithiasis. Most of them are diagnosed during a routine preoperative examination. **Objective:** To study the incidence of choledocholithiasis in patients with gallstone disease. **Materials and methods:** This is a retrospective observational study, conducted over a period of five years from January 2009 to December 2013. Hospital record of the patients with a diagnosis of gallstone disease were evaluated. Clinical pictures of the disease and incidence of choledocholithiasis in those patients were analyzed. **Result:** One thousand four hundred sixty were diagnosed as a gallstone disease over a period of five years. Bile duct stone was found in 59 (4.04%) patients. The median age of presentation was 55 years. Classical charcot's triad was seen in 9 (15.25%) patients. Ultrasound of the abdomen detected choledocholithiasis in 44 (74.57%) patients. Fifty four (91.52%) patients were managed with open cholecystectomy and CBD exploration. **Conclusion:** Incidence of choledocholithiasis in patients with gallstone disease is 4.04%. Most of the choledocholithiasis were diagnosed by ultrasound of the abdomen. Even in the era of minimally invasive surgery, when facilities and technical expertise are not available choledocholithiasis has to be managed with open CBD exploration.

Key Words: Choledocholithiasis, Gall stone, Incidence

INTRODUCTION:

Choledocholithiasis refers to the presence of stones or sludge in the common bile duct and/or common hepatic duct. Five to 20% patients with cholelithiasis also have choledocholithiasis¹. Most of them are diagnosed during a routine preoperative examination, whereas some of them are diagnosed during operation.

Eighty percent of the choledocholithiasis are secondary to the passage of stones from the gallbladder into the common bile duct (also called secondary choledocholithiasis)¹. When the stone is formed primarily in the bile duct, called primary choledocholithiasis. It accounts for about 20% of the choledocholithiasis^{2,3}.

Bile stasis and chronic bactibilia are the main reason for primary choledocholithiasis³. In most of the cases, bile stasis is due to sphincter of Oddi dysfunction, benign biliary strictures, sclerosing cholangitis, and

bile duct cyst and parasitic infection. Bile stasis promotes the growth of bacteria, deconjugate bilirubin, which later form insoluble calcium bilirubinate that finally leads to the formation of biliary sludge and stone formation.

Choledocholithiasis can cause obstruction to the bile duct, suppurative infection to the bile duct, pancreatitis, or secondary biliary cirrhosis after a long time and up to 3.8% have symptoms related to choledocholithiasis during the first year after cholecystectomy.¹

MATERIALS AND METHODS

This is a retrospective observational study, conducted over a period of five years from January 2009 to December 2013.

Hospital record of the patients with a diagnosis of gallstone disease were evaluated. The incidence of bile duct stone in those patients were analyzed.

The diagnosis of cholelithiasis and choledocholithiasis was primarily done by Ultrasonography (USG) of the abdomen. Those patients with a very strong suspicion of choledocholithiasis but not detected by USG were advised to do magnetic resonance cholangio pancreatography (MRCP). If MRCP showed CBD stones or bile sludge they were advised to do endoscopic retrograde cholangiopancreatography (ERCP) and sphincterotomy. Stones not cleared by ERCP or those who refused for ERCP and those diagnosed during the operation were managed by open CBD exploration.

Laparoscopic cholecystectomy was done directly on those patients with normal ultrasound or a low suspicion of choledocholithiasis. Informed consents were taken from all patients. They were explained about the pros and cons of the investigation and intervention. The data were collected on a pro forma and was analyzed using SPSS 19 software.

RESULT

One thousand four hundred sixty patients were diagnosed with a gallstone disease over a period of five years. Bile duct stone was found in 59 (4.04%) patients. Fourteen patients (23.72%) were male and 45 (76.27%) patients were female. Among them, pre-operative diagnosis was made in 54 (91.52%) patients, whereas, 5 patients were diagnosed during operation for cholelithiasis.

The median age of presentation was 55 years with a range from 20 to 80 years.

The most common complaints in patients with bile duct stone are similar to gallstone disease, i.e right upper quadrant pain, nausea/vomiting seen in all 59 patients. Yellowish discoloration of skin and sclera was seen in 10 (16.94%) patients. They were also presented with high color urine and clay color stool.

Nine patients (15.25%) presented with a clinical picture suggestive of cholangitis, intermittent pain, fever, and jaundice, at the time of presentation. None of them presented with intractable pruritus.

USG diagnosed choledocholithiasis in 44 (74.57%) patients. Ten patients (16.94%) were presented with the very strong predictor for choledocholithiasis, MRCP was done in all those patients. MRCP diagnosed choledocholithiasis in 8 patients and bile sludge in 2

patients. ERCP sphincterotomy and stone extraction was done in 5 patients. Stone clearance rate was achieved in all patients. Open cholecystectomy and CBD exploration was done in 54(91.52%) patients, with successful removal of stones from the CBD.

DISCUSSION

The exact incidence and prevalence of choledocholithiasis are unknown, however, an estimated prevalence of about 12 % of adult population in the united states of America have choledocholithiasis with incidence increasing with age⁴. It has been estimated that 3.4 to 20 percent of patients have choledocholithiasis at the time of diagnosis of gallstone disease.⁵⁻⁹ In this study, its incidence is 4.04% of all symptomatic gallstone disease.

Generally, the female sex is considered as a risk factor for choledocholithiasis, the American Society of Gastrointestinal Endoscopy (ASGE) risk criteria for predicting the likelihood of having choledocholithiasis in a patient with gallstone disease do not take sex into consideration¹⁰. However, it has been seen that the incidence of choledocholithiasis was higher in the female patients than in male patients across the low-, intermediate- and high-likelihood ASGE categories¹⁰. In present study also higher incidence of choledocholithiasis is seen in female patients as compared to male patients.

As in cholelithiasis, there is a wide range of age variation in having choledocholithiasis. Choledocholithiasis has rarely seen in infant and pediatric age group^{11,12}. Mostly choledocholithiasis seen after the 3rd decade of life and in elderly people. In present study also, choledocholithiasis is mostly seen in the 3rd decade of life and highest incidence is seen in the 6th decade of life.

As in the other study, most common mode of presentation of choledocholithiasis is upper abdominal pain followed by jaundice and fever¹³. In this study about 17% patients presented with jaundice and 15% presented with classical charcots triad.

To detect choledocholithiasis, ultrasound of an abdomen has low sensitivity in the range of 25–58% and specificity of 68–91 %, but when it combines with liver function test it has been shown

to have an excellent negative predictive value for choledocholithiasis, approaching 95%.¹³ In this study, ultrasound is able to pick up choledocholithiasis in 74.57% patients and about 17% of the patients need MRCP to diagnose choledocholithiasis. These patients were presented with abnormal liver function test with a high index of suspicion of choledocholithiasis. In five patients (8.47%), it was diagnosed during operation.

Most patients were managed with open CBD exploration and T tube drainage. Only a few patients managed with a minimally invasive approach.

CONCLUSION

Incidence of choledocholithiasis in patients with gallstone disease is 4.04%. Most of the choledocholithiasis were diagnosed by ultrasound of the abdomen. Even in the era of minimally invasive surgery, when facilities and technical expertise are not available choledocholithiasis has to be managed with open CBD exploration.

REFERENCES

1. Almadi MA, Barkun JS, Barkun AN. Management of suspected stones in the common bile duct. Canadian Medical Association journal 2012;184(8):884-92.
2. Konstantakis C, Triantos C, Theopistos V, et al. Recurrence of choledocholithiasis following endoscopic bile duct clearance: Long term results and factors associated with recurrent bile duct stones. World journal of gastrointestinal endoscopy 2017;9(1):26-33.
3. Lygidakis NJ. Incidence and significance of primary stones of the common bile duct in choledocholithiasis. Surgery, gynecology & obstetrics 1983;157(5):434-6.
4. Everhart JE, Khare M, Hill M, Maurer KR. Prevalence and ethnic differences in gallbladder disease in the United States. Gastroenterology 1999;117(3):632-9.
5. Collins C, Maguire D, Ireland A, Fitzgerald E, O'Sullivan GC. A prospective study of common bile duct calculi in patients undergoing laparoscopic cholecystectomy: natural history of choledocholithiasis revisited. Annals of surgery 2004;239(1):28-33.
6. Petelin JB. Laparoscopic common bile duct exploration. Surgical endoscopy 2003;17(11):1705-15.
7. Prat F, Meduri B, Ducot B, Chiche R, Salimbeni-Bartolini R, Pelletier G. Prediction of common bile duct stones by noninvasive tests. Annals of surgery 1999;229(3):362-8.
8. Tozatti J, Mello AL, Frazon O. Predictor factors for choledocholithiasis. Arquivos brasileiros de cirurgia digestiva : ABCD = Brazilian archives of digestive surgery 2015;28(2):109-12.
9. Costi R, Gnocchi A, Di Mario F, Sarli L. Diagnosis and management of choledocholithiasis in the golden age of imaging, endoscopy and laparoscopy. World journal of gastroenterology 2014;20(37):13382-401.
10. Chhoda A, Jain D, Singhal S. Sex-related differences in predicting choledocholithiasis using current American Society of Gastrointestinal Endoscopy risk criteria. Annals of gastroenterology 2017;30(6): 682-7.
11. Ozcan N, Kahrman G, Gorkem SB, Arslan D. Percutaneous management of bile duct stones in children: results of 12 cases. Diagnostic and interventional radiology 2017;23(2):133-6.
12. Thomas M, Kadiwar K, Domajnko B, Santos MC. Choledocholithiasis in a 4-month-old infant. Journal of pediatric surgery 2007;42(6): E19-21.
13. Desai R, Shokouhi BN. Common bile duct stones - their presentation, diagnosis and management. The Indian journal of surgery 2009;71(5):229-37.