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A clinical study on the presentation and management of choledocholithiasis in a tertiary care center

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Abstract
Background: Cholelithiasis is a common surgical problem which makes cholecystectomy one of the most frequently performed surgical procedures. Choledocholithiasis is most commonly a complication of gall bladder stone, necessitating additional diagnostic and therapeutic procedures and adds to morbidity and mortality of gall stone disease. This study aims to determine the incidence of choledocholithiasis and the different spectrum of clinical presentation of choledocholithiasis.
Methods: This is a prospective and retrospective study comprising of 50 patients who were admitted with choledocholithiasis.
Results: The incidence of choledocholithiasis is 31.25%. Risk factors includes females, middle aged, diabetes mellitus and dyslipidemia. The most common presentation was obstructive jaundice with ERCP being the best modality of treatment.

Keywords: Choledocholithiasis, obstructive jaundice, ERCP

Introduction
The incidence of choledocholithiasis in developing nations is continuously rising [1, 2]. Possible reasons for the incidence rising is changing dietary habits, increasing awareness of health in people and improvements in imaging technology. Because of increased incidence of gall stones and its variable presentations in India as well as in the west, there is a great need for a study which can provide the information regarding the prevalence of the disease, various clinical presentation and management, outcomes of the cholelithiasis combining it with appropriate investigation which varies from surgeon to surgeon [3]. Common bile duct stones are found in 10-15% of patients having gallstone disease [4]. During the era of open cholecystectomy, the management of common bile duct stones (CBDS) was relatively straightforward, but with the advent of laparoscopic cholecystectomy (LC) in 1980s, the treatment of CBDS, whether recognized preoperatively or intraoperatively remains controversial [5]. Treatment options include selective preoperative endoscopic retrograde cholangiopancreatography (ERCP), conversion to open choledochotomy, postoperative ERCP with endoscopic sphincterotomy (ES), and one stage laparoscopic clearance of CBD stones. Although CBD stones are silent, the development of symptoms is potentially serious; obstructive jaundice, ascending cholangitis and acute pancreatitis are all associated with serious mortality and morbidity which needs immediate attention.

Materials and Methods
This is a retrospective and prospective study comprising of 50 patients who were admitted in Apollo BGS Hospitals, Mysuru with the diagnosis of choledocholithiasis. The study period is from July 2018- July 2020. An intricate study of these cases with reference to history, clinical presentation and investigations was taken. Retrospective case details were retrieved from the medical records section and gastroenterology department.

Inclusion criteria
- All the cases of choledocholithiasis with the patient's age >18years.
- Pre- op USG showing CBD stones or multiple stones in gallbladder.
- CBD stones complicating as obstructive jaundice, cholangitis, acute pancreatitis.

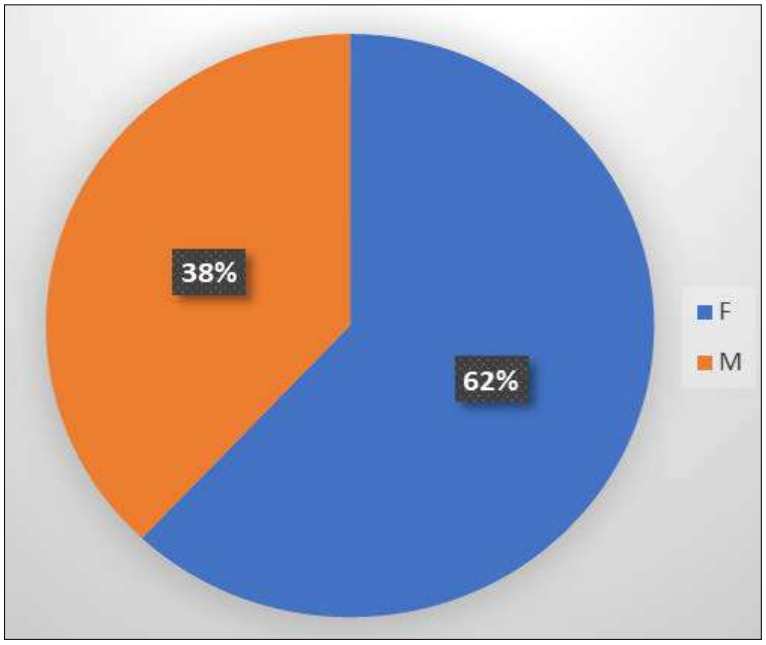
Exclusion criteria

- Patient's age <18 years
- Patient's refusing to be a part of the study.

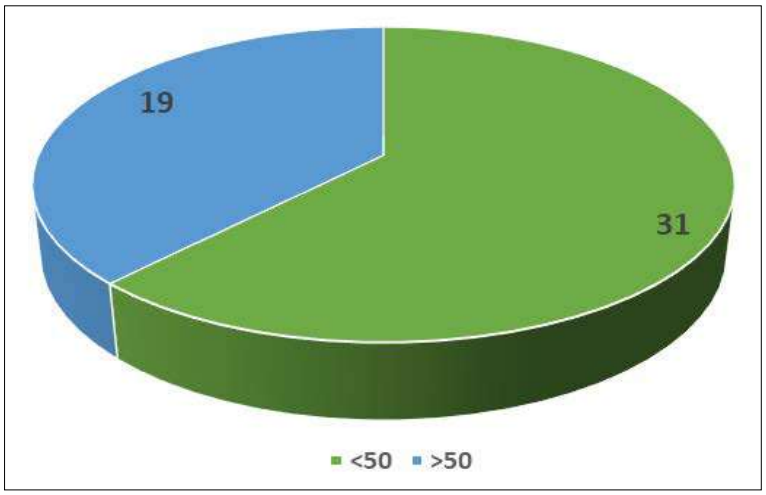
Date analysis: all of the data was recorded in excel sheets with regards to age and sex of the patient, clinical presentation, comorbidities. complications, investigations, type of treatment. All data was analyzed using the statistical method of chi- square test.

Results

A total of 160 cases of GB stones were taken of which 50 patients had choledocholithiasis, bringing the incidence to 31.25%. Among the 50 patients, 31 were female and 19 were male patients the incidence of CBD stones with respect to age was seen more in age group less than 50 years. 40-50 years was the most common age group (36%), while least number of patients were seen in more than 70 years of age. Females of age <50 years are more commonly affected compared to males. As the age progress the incidence is almost same in males and females.



Graph 1: incidence in relation to gender



Graph 2: incidence in relation to age

Table 1: incidence in relation to gender and age

			Sex		Total
			F	M	
Age Group	<50 years	Count	22	9	31
		%	70.96	29	62.0%
	>50 years	Count	9	10	19
		%	47.36	52.63	38.0%
Total		Count	31	19	50
		%	62	38	100.0%

Patients with BMI >25 were more prone to develop CBD stones (88%). However, the correlation between the body mass index and the complications associated with CBD stones was not significant.

All patients were symptomatic of which abdominal pain was invariably present in all patients. Jaundice was present in 22 patients (44%). Vomiting was present in 17 patients (34%). Fever was present in 16 patients (32%).

Majority of the patients had elevated Alkaline phosphatase and gamma glutamyl transpeptidase levels suggestive of obstructive

jaundice. 76% of the patients had associated co-morbidities like hypertension, diabetes mellitus and dyslipidemia. The incidence of complications like obstructive jaundice, pancreatitis, cholangitis and sepsis was calculated and the incidence in association with comorbid conditions were evaluated. A significant correlation was seen in the incidence of complications in association with diabetes mellitus and dyslipidemia.

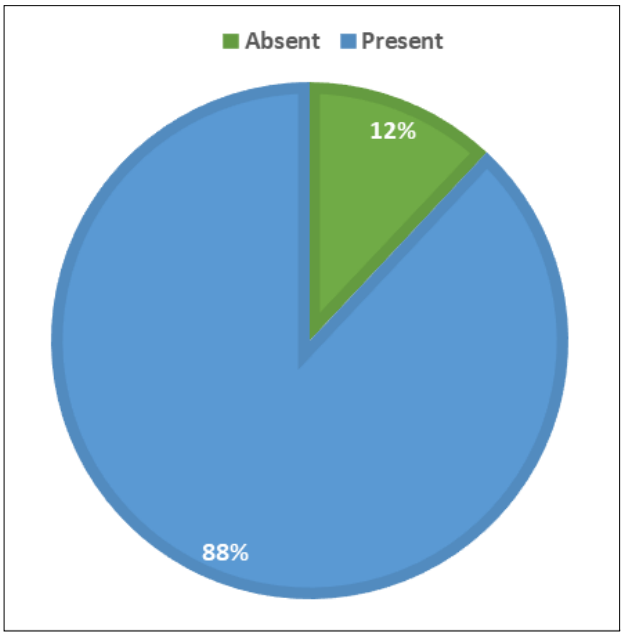
Table 2: association of Diabetes mellitus with complications

		Co-Morbidities - DM		Total	Chi-square value	df	p-value	Conclusion
		Absent	Present					
Complications - Obstructive Jaundice	Absent	4	11	15	4.667	1	0.031	Significant
	Present	21	14	35				
	Total	25	25	50				
Complications - Cholangitis	Absent	24	22	46	1.087	1	0.297	Not Significant
	Present	1	3	4				
	Total	25	25	50				
Complications - Pancreatitis	Absent	23	17	40	4.5	1	0.034	Significant
	Present	2	8	10				
	Total	25	25	50				
Complications - SEPSIS	Absent	25	21	46	4.348	1	0.037	Significant
	Present	0	4	4				
	Total	25	25	50				

Table 3: association of Dyslipidemia with complications

		Co-Morbidities - DLP		Total	Chi-square value	df	p-value	Conclusion
		Absent	Present					
Complications - Obstructive Jaundice	Absent	5	10	15	1.847	1	0.174	Not Significant
	Present	19	16	35				
	Total	24	26	50				
Complications - Cholangitis	Absent	24	22	46	4.013	1	0.045	Significant
	Present	0	4	4				
	Total	24	56	50				
Complications - Pancreatitis	Absent	21	19	40	1.623	1	0.203	Not Significant
	Present	3	7	10				
	Total	24	26	50				
Complications - SEPSIS	Absent	24	22	46	4.013	1	0.045	Significant
	Present	0	4	4				
	Total	24	26	50				

USG abdomen was done in all 50 patients of which 21 showed abnormal findings like dilated CBD and CBD stone and rest showed negative finding. Patient with negative finding on ultrasound underwent other investigations like MRCP, CECT and EUS which was dependent on the practitioner. ERCP was the primary modality of treatment. 44 underwent ERCP with stone removal and stenting except 1 who underwent laparoscopic CBD exploration and stone retrieval 11.36% of the patients had complications associated with ERCP. All patients underwent cholecystectomy as the definitive management.



Graph 3: patients undergoing ERCP

Discussion

This study was done for 2 years (July 2018- July 2020). 160 patients came with GB stones out of which 50 patients had CBD stones. Thus, the incidence is 31.25%. The increased incidence of CBD stones in my study is probably because of presence of fully equipped department of Gastroenterology and being a tertiary center there is high inflow of referral cases giving us more exposure to complicated cases. The incidence of CBD stones was seen between 30-80 years of age. Incidence was higher in age group less than 50 years; mainly 40-50years (36%). In our study, females had a higher incidence to develop choledocholithiasis when compared to males. (1.5:1). Obesity is a risk factor for development of GB stones which in turn can increase the risk of CBD stones. In my study a relationship between obesity and incidence of complications due to CBD stones like obstructive jaundice, cholangitis, pancreatitis and sepsis was analyzed. Patients with co morbidities diagnosed previously or at the time of admissions was noted. The co morbidities included in my study were diabetes, hypertension and dyslipidemia. Diabetes mellitus was present in 50% of cases, hypertension in 30% and dyslipidemia in 26% of cases. Of these, diabetes mellitus showed significant increase in the incidence of pancreatitis, obstructive jaundice and sepsis with P values of 0.034, 0.031 and 0.037 respectively. The study also showed a signification association between dyslipidemia and development of cholangitis and sepsis with P values of 0.045 and 0.045 respectively. ERCP was the modality of treatment in most of the cases. Among the 50 cases, 44 patients underwent ERCP.6 patients didn't undergo as investigation showed evidence of passed out calculus. ERCP was unsuccessful in one case due to presence of large and multiple CBD stones and the patient underwent Laparoscopic CBD exploration, stone retrieval along with Laparoscopic cholecystectomy in the same sitting. Laparoscopic cholecystectomy was attempted in all patients. Patients who failed in Laparoscopic cholecystectomy underwent Laparoscopic converted to open cholecystectomy or subtotal cholecystectomy.

Conclusion

In my study

Incidence of CBD stone was 31.25%. Incidence was common in females compared to males. High prevalence was seen in age group 40-50years.Diabetes, Dyslipidemia was associated with higher chances of development of complications. Obstructive jaundice was the most common complication of choledocholithiasis. ERCP was the most common modality used for the treatment of CBD stone followed by cholecystectomy.

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