Choledochoduodenostomy in the Management of Dilated common bile duct due to Choledocholithiasis

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ABSTRACT

Choledochoduodenostomy (CDD) is the operative procedure for Choledocholithiasis in the presence of a dilated common bile duct (CBD). It has been reported as a most effective treatment of CBD stones than T-tube drainage but is regarded as a obsolete therapeutic method due to fears of higher morbidity, cholangitis, "sump" syndrome etc. This study was done prospectively to assess the aforementioned issues analyzing our two years (July 2009 – June 2011) experience.CDD was performed in 31 patients (22 females and 9 males) with aged 18 – 72 years. CBD stones were the only indications in all patients with 18 (45.1%) patients had cholangitis, 8 (35.4%) had cholecystitis and 5 (19.3%) had biliary colic. Abdominal sonogram revealed dilated CBD with single or multiple calculi. The diameter of CBD varies from 14 – 29mm with stone size being ranged from 10 – 26mm.Early post operative complications were seen in 4 (12.9%) patients. Only one patient had recurrent cholangitis presented lately due to intrahepatic stones.CDD is a highly effective treatment for choledocholithiasis in all age group with low morbidity and mortality provided a wide anastomosis is accomplished.

Keywords: Common bile duct calculi; choledocholithiasis, Choledochoduodenostomy, cholangitis.

INTRODUCTION

Choledochoduodenostomy (CDD) is the operative procedure for choledocholithiasis in the presence of a dilated common bile duct.[1] The first successful CDD was performed by Sprengel in 1891 to remove common duct stones and decompress the bile duct.[2] Since then, numerous studies involving series of cases with long term follow up, confirms this procedure technically easy with low mortality. In the case of multiple common bile duct stones, when one cannot be certain of complete duct clearance, permanent drainage of biliary tree, i.e., CDD may be indicated. This study was done to analyze the efficacy in terms of postoperative morbidity and mortality observed in patients who underwent CDD.

MATERIALS AND METHODS

This study was conducted in Nepal Medical College and Teaching Hospital, Jorpati Kathmandu from July 2009 to June 2011 upon patients who underwent CDD for lower common bile duct obstruction due to choledocholithiasis with dilated common bile duct (CBD). The study comprised 31 patients of which 22 females and 9 males of 18 to 72 years of age. The common presenting symptoms were abdominal pain with or without jaundice and on and off fever associated with chills and rigor suggestive of cholangitis. All patients underwent complete haemogram, renal function tests, liver function tests, bleeding profiles and urine analyses. Abdominal ultrasound was performed in every patient with magnetic resonance cholangiopancreatography (MRCP) in some where indicated. All patients underwent elective cholecystectomy followed by choledochotomy to remove the ductile calculi and performed choledochoduodenostomy with a longitudinal incision of at least 1.5cm length in the dilated portion of the common bile duct. After the Kocher maneuver was carried out the duodenum was brought, without tension, adjacent to the choledochotomy and a transverse incision was made in the first part of duodenum. The side to side anastomosis was carried out in a single layer suture using 3(0) absorbable suture material.

RESULTS

Out of 31 patients with choledocholithiasis, 22 (70.9%) were females and 9(29.0%) were males (Table-1) with more than half of total patients are from 3rd to 5th decade of life (range: 18-72 years). 18(45.1%) out of 31 patients presented with features of cholangitis, 8(35.4%) patients had cholecystitis and 5(19.3%) had biliary colic (Table-2). On haemogram, leucocytosis was present in 17 (54.8%) patients. At the time of presentation, in 25(80.6%) patients, serum bilirubin level was raised. Serum alkaline phosphatase (ALP) was raised in 29(92.2%) patients (Table-3). Abdominal sonogram revealed dilated common bile duct with single or multiple calculi in it. The diameter of common bile duct varies from 14- 29mm with stone size being ranged from

Table-1: Age group and Gender distribution of patients

SN	Age group	male	Female	Total
1	0-20		2	2
2	21-40	1	4	5
3	41-50	3	9	12
4	51-60	3	4	7
5	61-70	1	2	3
6	>70	1	1	2
		9 (29.0 %)	22 (70.9 %)	31

10-26mm according to ultra sonogram report. That means the CBD diameters is proportionally raised with the size of the stone, and it is statistically significant (P< 0.05) Fig. 1.

In two third of the population the common bile duct is significantly dilated after the age of 40 in comparison with early age group which is statistically significant (P < 0.05) Fig. 2.

In 20 patients (64.6%), cholecystectomy was done at the time of the CDD. In the remaining 11cases (35.4%), the gall bladder had been removed previously. All patients underwent CDD with the size of anastomotic stoma is being at least 15mm.Mean surgery time was 140+-20 minutes with length of hospital stay was 8+/-2 days.

Table-2: Clinical presentation of patients

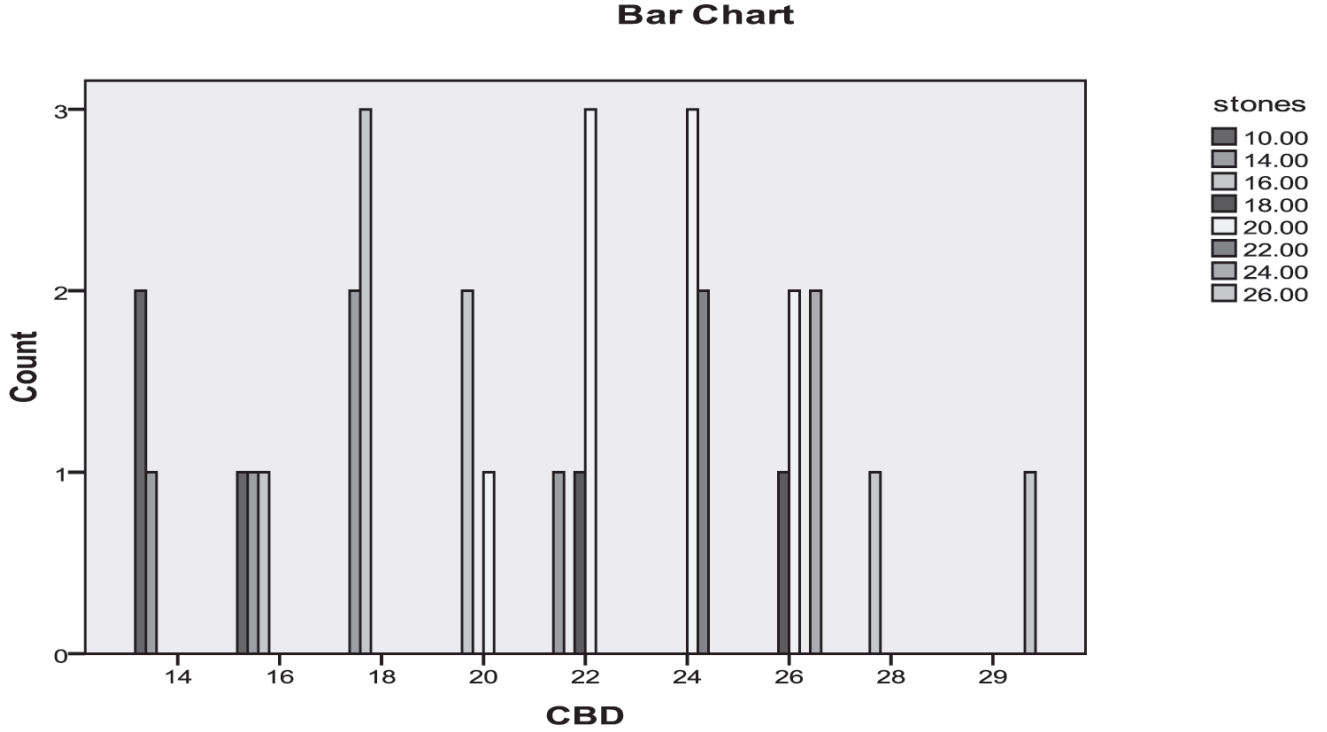
SN	Features	n. (%)
1	Cholangitis	18 (45.1)
2	Cholecystitis	8 (35.4)
3	Biliary Colic	5 (19.3)
	Total	31

Early postoperative complications were seen in 4(12.9%) patients, wound infection in 3 and pneumonia in one patient. One patient presented with recurrent history of cholangitis lately due to multiple intra hepatic calculi. She is being managed conservatively every time she gets admitted in the hospital. Patients were followed at 2 weeks, 3 and 6 months, and one year after surgery. There was no evidence of sump syndrome in this study.

DISCUSSION

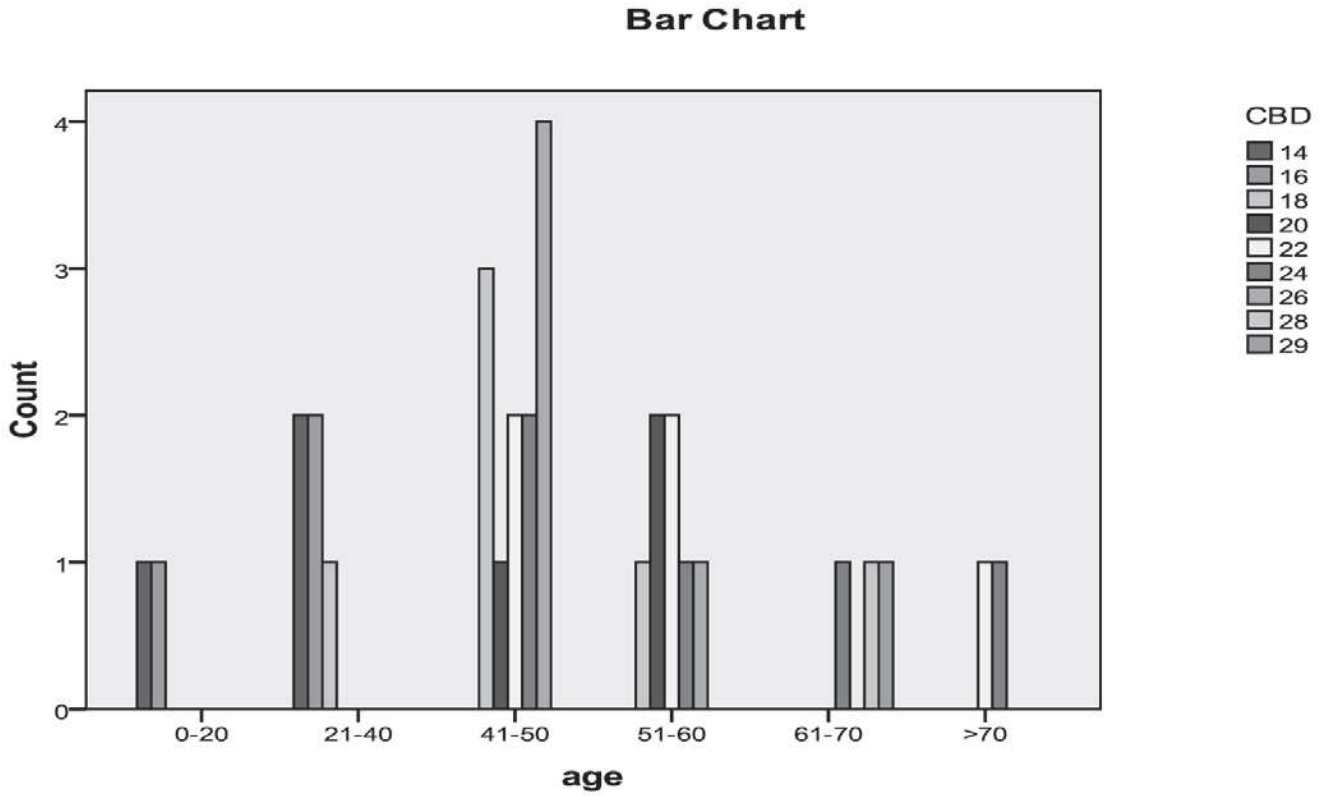
The aim of this study was to analyze the results obtained from CDD in patients followed for more than a year and to determine the safety of this operation. Its particular advantages include less manipulation of the pancreas and bileducts. Although the follow-up in our study is short, there have been minimal late complications related to gastrointestinal symptoms. Sump syndrome has been reported occasionally by other authors,[3] but several reviews of large numbers of patients with CDD have shown no cases of this syndrome[4,5] as in our study too.

Fig. 1. Relation between CBD and Stone size in mm:



P value: 0.001

Fig. 2. Relation between Age groups and Common Bile Duct (CBD) dilatation in mm:



P value: 0.047

Reflux of duodenal contents into the biliary system has been the presumed cause of recurrent cholangitis but experimental studies showed that cholangitis only developed in cases of a narrow or stricture anastomosis.[6] Cholangitis following biliary drainage is believed to be due to some degree of biliary obstruction with a rise in pressure in the biliary tree,[7] in association with bacterobilia, which is common after CDD.[8] One patient in our study frequently presented with features of recurrent cholangitis following CDD due to retained intra hepatic calculi and she is being managed conservatively every time she gets admitted in the hospital.

The review of the relevant literature suggest that the indications for CDD remain the same as those detailed by Degenshein in 1974.[9] CDD has been recommended in the treatment of multiple calculi of the common bile duct, retained or residual stones, hepatic stones, dilated CBD with diameter greater than 15mm, failure or non availability of ERCP.[10-13] Choledocholithiasis remains the sole indication in our series. While CDD is particularly recommended for use in elderly patients,[14] we have also done in younger age group populations.

We have no mortality following CDD although a mortality rate of less than 1% has been reported.[15] The morbidity of CDD observed in our study is 16.1%. In conclusion our data, corroborating others[16,17] indicate that CDD is a very safe procedure with low morbidity and mortality risk.

Table-3: Lab investigation of patients

SN	Haemogram Features	n. (%)
1	Leucocytosis	17 (54.8)
2	Raised Bilirubin	25 (80.6)
3	Raised Alkaline phosphatase	29(92.2)
	Total	31

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