

# A Study On Extra Hepatic Biliary Calculi

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## ABSTRACT

**Introduction:** Gallstone disease is the commonest disease involving biliary tract and is associated with significant morbidity and mortality so in this study we evaluated the age, sex incidence, most common etiological factors for extra – hepatic biliary calculi, illustrated the varying clinical presentations, studied the various modes of management adopted in our institution and analyzed the biochemical types of stones prevalent in this part of country.

**Material and methods:** This study was conducted in Thanjavur medical college, Department of General surgery between August 2014 to August 2016. Patients admitted in various surgical units of our hospital were studied. A total of 60 patients were studied. A detailed history including dietary factors, life style habits, were elicited in all patients and thorough clinical examination was done in them. Various modalities of Investigations and treatment were carried out and analysis of the collected data were done.

**Results:** From our study of 60 patients with extra hepatic biliary calculi we observed that 31 females had extrahepatic biliary calculi. GB calculi was seen in 41 cases and CBD calculi in 19 cases. In 32 cases incidence was around 40-50 years. Among 41 cases with GB calculi chronic cholecystitis was the presentation in 38 cases, acute cholecystitis in 2 cases and mucocele in 1 case. Among the 19 cases with CBD calculi Obstructive jaundice was the presentation in majority of the cases. For those with GB calculi Elective cholecystectomy was done in 39 patients and two were emergency procedures.

**Conclusion:** Laparoscopic cholecystectomy and open cholecystectomy have their advantages and disadvantages. Surgeon should have sound knowledge of the both ways so as to benefit the mankind in his best possible way.

**Keywords:** GB Calculi, CBD Calculi, Mixed Stones, Multiple Stones, E.coli

## INTRODUCTION

Continued research on Management of Extrahepatic biliary calculi using minimal invasive surgery especially after 1988 with advent of laparoscopic cholecystectomy followed by laparoscopic CBD exploration<sup>1</sup>, endoscopic management of gallstones and CBD calculi<sup>2, 3</sup>, extra – corporeal shock wave lithotripsy has greatly improved and modernized the management of gallstone disease with minimal mortality and morbidity. Calculus disease of biliary tract is the one of the most common problems affecting the digestive tract.<sup>4</sup> Extra–hepatic biliary calculi account for more than 95% of it. It includes cholelithiasis. Gallstone disease once more common in western world the incidence is increasing considerably in India, possibly due to change in dietary habits and lifestyle modifications.<sup>5</sup>

Exact incidence in Indian is not known but prevalence in Indian males and females is estimated to be 4% and 6% respectively. Because of extensive studies of etiology of gallstone disease and better understanding of pathogenesis and technological advancements in past three decades, the management has become more appropriate and effective. The aim of our study

was to evaluate the age, sex incidence, most common etiological factors for extra – hepatic biliary calculi, illustrate the varying clinical presentations, study various modes of management adopted in our institution and to analyse the biochemical types of stones prevalent in this part of country.

## MATERIAL AND METHODS

This study was conducted in Thanjavur medical college, Department of General surgery between August 2014 to August 2016. Patients admitted in various surgical units of our hospital were studied. A total of 60 patients were studied. A detailed history including dietary factors, life style habits, were elicited in all patients and thorough clinical examination was done in them.

### Inclusion criteria

All in-patients admitted with clinical diagnosis of cholelithiasis / CBD calculus and its complication.

### Exclusion criteria

Those who were not willing for the study, and drop outs. All patients were subjected to basic blood, urine and biochemical evaluation including liver function and USG abdomen. CT scan abdomen, MRCP were done in selected subjects. Patients were operated. Operative findings noted, recorded and analysed. Epidemiological factors relevant to age, sex distribution were noted.

Bile was sent for bacteriological analysis, stones sent for its biochemical composition. In all jaundiced patients, prolonged prothrombin time corrected by vit k IM injection for 3 days prior to surgery. Both open and laparoscopic cholecystectomy were performed for gallbladder calculi randomly and based on availability of laparoscope. For CBD calculi, open CBD exploration was done and drainage procedure was done either in form of T tube or biliary enteric anastomosis. All patients received peri operative antibiotic. Those with CBD diameter of >1.5 cms are subjected to biliary enteric anastomosis.

## STATISTICAL ANALYSIS

Microsoft office 2007 was used for the statistical analysis. Descriptive statistics like mean and percentages were used for data interpretation.

## RESULTS

In our study a total number of 60 cases were studied in which the

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**How to cite this article:** Marimuthu Veerasamy, A. Muthuvinayagam, K. Sugumaran. A study on extra hepatic biliary calculi. International Journal of Contemporary Medical Research 2017;4 (1):133-135.

incidence of extra hepatic biliary calculi was seen in 29 (48.4%) males and 31 (51.6%) female. 41 (68.3%) of the cases had only GB calculi and 19 (31.7%) had CBD calculi (Figure 1). Gallstone disease is more prevalent in 4<sup>th</sup> and 5<sup>th</sup> decades. GB stone disease was prevalent among 41 – 50 years in (32 cases) (36.67%) GB calculi among 41 – 50 years in (15 cases) (36.59%) and CBD calculi among 41 – 50 years were seen in (7 cases) (36.84%). Clinical presentation of GB calculi was Acute cholecystitis in 2 (4.9%) cases, Chronic cholecystitis in 38 (92.7%), Mucocele in 1 (2.4%) (Figure 2). Clinical presentation of CBD calculi was Obstructive jaundice in 15 (78.9%), Cholangitis in 5 (26.3%) and Pancreatitis in 2 (10.5%) patients (Figure 3). The Accuracy of preoperative ultrasound was 100%. Various Surgical procedures performed for GB calculi includes Emergency cholecystectomy in 2 cases, Elective cholecystectomy in 39 patients of which 20 were laparoscopic and 19 were Open.

For CBD calculi surgical procedures performed were, Cholecystectomy with T tube drainage - 13 (68.4%) Cholecystectomy with Choledochoduodenostomy in 2 cases, Cholecystectomy with choledochojunostomy in 2 cases, Cholecystectomy with transduodenal sphincteroplasty in 2 cases. (Figure 4). Multiple stones were more common than single stone. Out of the 60 cases, 20 (33.3%) had single stone and 40 (67.7%) had multiple stones and in those with GB calculi 13 (31.7%) had single stone and 28 (68.3%) had Multiple stones and those with CBD calculi 7 (36.9%) had single stone and 12 (63.1%) had multiple stones. Bile was sent for culture and sensitivity in all cases and bacteriology was studied, Culture was positive in 19 cases (31.6%) – E Coli positivity in 12 cases (63.1%) Kiebsiella in 4 cases (21%) and Others – 3 cases (15.8%) Biochemical analysis of stone showed Cholesterol stone in 5 (8.3%), Pigment stone in 5 (8.3%) and mixed stone in 50 (83.3%) cases. Of the 41GB calculi, 4 (9.7%) had Cholesterol stone 3 (7.3%) had pigment stone 34 (82.9%) had mixed stone and Of the 19 CBD calculi 1 (5.3%) had cholesterol stone 2 (10.5%) had pigment stone and 16 (84.2%) had mixed stones. Gall bladder specimen sent for Histopathological examination in all 60 cases. It showed Acute cholecystitis in 2 (3.3%) cases, Chronic cholecystitis in 58 (96.7%) cases and there was no evidence suggestive of malignancy. Mean hospital stay for Open cholecystectomy was 6 days, 2days for Laparoscopic cholecystectomy and 10 days for Open CBD exploration. Post operatively during second week T tube cholangiogram was performed in 13 cases. Found to be normal in all cases. No evidence of residual calculi. Complications include Postoperative biliary leak in 2 cases after open CBD exploration which was of low output type and managed conservatively. Wound infection occurred in 6 cases (10%) Pus let out and sent for culture and sensitivity. Parenteral antibiotics administered according to culture and sensitivity report.

Secondary suturing was performed later. No mortality in our institution was seen.

**DISCUSSION**

60 patients with extrahepatic biliary calculi were included in this study, out of which 41 patients (68.3%) had gallstone and 19 patients (31.6%) had CBD calculi. The incidence of extrahepatic biliary calculi increases with age, and higher incidence were found in 4<sup>th</sup> and 5<sup>th</sup> decade. Maximum incidence

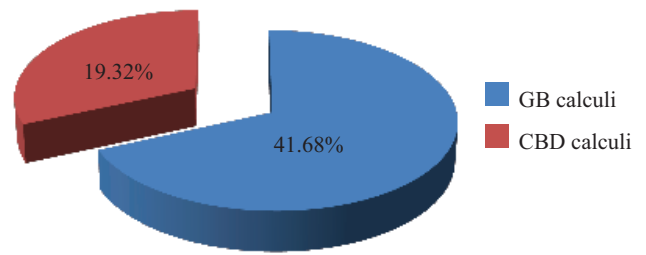


Figure-1: Location of calculi

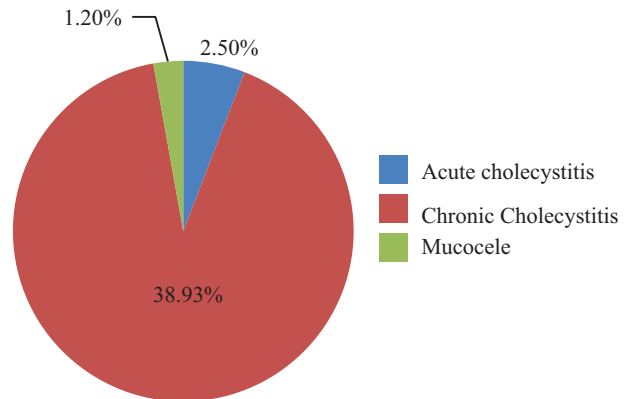


Figure-2: Clinical presentation GB calculi

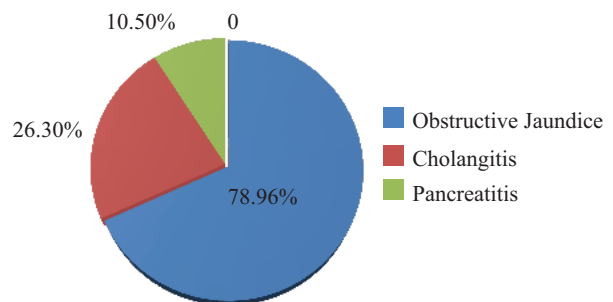


Figure-3: Clinical presentation of CBD calculi

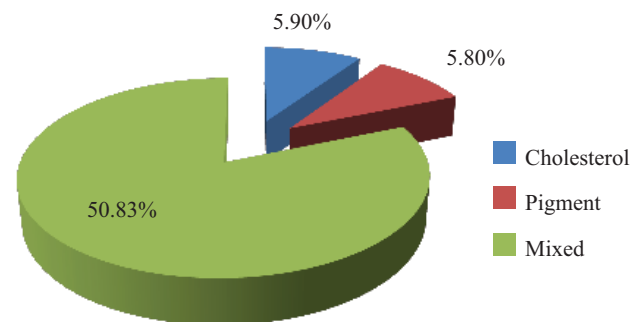


Figure-4: Composition of stone

in 4<sup>th</sup> and 5<sup>th</sup> decades were also observed in Gupta et al (1967)<sup>6</sup> / Vijaypal et al (1980) / Tyagi et al (1992) series. Varying female preponderance from 2:1 to 4.5:1 has been observed in several studies (Vijaya pal et al., 1980; Gupta, 1967. In our series, there is only slight female preponderance.<sup>8</sup>

Among all patients reported abdominal pain at sometime during the course of illness the location is right hypochondrium<sup>7</sup> being 90% in our series, which is comparable to 84% in Vijay Pal et al (1980).<sup>8</sup>

Majority of symptomatic gallstone disease patients present as chronic cholecystitis (92.7%). Other presentation being acute

cholecystitis and mucocele. Majority of CBD calculi patients presented with Obstructive jaundice (78.9%). 2 patients presented as gall stone pancreatitis, 5 patients presented with cholangitis. The accuracy of Pre – op USG was 100% in our series as compared to Mesherry et al (1989)<sup>9</sup> 90%, Schwartz et al (1990)<sup>10</sup> 100%. Majority of cases showed multiple calculi (66.7%) as compared to Farzaneh et al (2007) (62.5%). Of 60 patients operated in our study cholecystectomy was done in 41 patients (68.3%)

Emergency cholecystectomy - 2 (features of peritonitis) and Elective cholecystectomy - 39. In 50% of Elective cases, laparoscopic cholecystectomy was done. Poor cardiorespiratory reserve, previous surgeries and presence of CBD calculus were not taken up for laparoscopic procedure. Out of 19 patients with CBD calculi, T tube drainage – 13 (68.4%), Biliary enteric anastomosis – 4 (21.5%), Transduodenal sphincteroplasty – 2 (10.5%) as compared to Girard RM et al<sup>11</sup> with CBD exploration and T tube drainage rate of 92.8%. Biliary enteric anastomosis was done because of large CBD diameter and presence of multiple CBD calculi. Transduodenal sphincteroplasty was performed due to impacted stone in the lower end of CBD in one case and poor CBD anatomy due to extensive adhesions in the other case.

Right flank drain was kept in all cases of CBD exploration. No drains were kept for Open / Laparoscopic cholecystectomy. Post operative course Oral feeds were started on next day of surgery in both laparoscopic cholecystectomy and open cholecystectomy. In case of CBD exploration, oral started once ileus gets relieved. Bile culture was done in all cases. Positive in 19 cases (31.6%), as compared to Steward et al (56%). Commonest organism isolated being E coli followed by Klebsiella.<sup>12</sup> In patients with T tube, T tube cholangiogram was done in 2<sup>nd</sup> week. Normal in all 13 patients, T tube removed during 2<sup>nd</sup> week. Post operative morbidity was significantly higher in case of Open cholecystectomy when compared to laparoscopic cholecystectomy.<sup>13</sup> 2 patients had post operative biliary leak (3.3%) both after CBD exploration, presented with bilious fluid in drainage tube, which was of low volume and settled with conservative management. Post operative wound infection was noticed in 6 cases (10%) 4 cases with CBD exploration and 2 cases with open cholecystectomy. Pus let out sent for culture and sensitivity. Managed with appropriate antibiotics. Secondary suturing was done later. No mortality in our series as compared to Mc sherry (1989)<sup>14</sup> – 0.6 – 4%, Ganey et al (1996) 0.5%, Pappas et al (1990) 0% and Girard et al (2000) 0.3 – 1.6%.<sup>11</sup> Mean hospital stay for open cholecystectomy cases was 6 days, laparoscopic cholecystectomy 2 days CBD exploration 10 days. In our series 83.3% of stones were of mixed type as compared to Ganey et al (70%) and Vijay Pal et al (91.3%).<sup>8</sup>

## CONCLUSION

Patients with gallstones are not a homogenous group. They are now being detected with greater frequencies with advent of USG and CT scan.

Medical dissolution of stone theoretical, is not very popular with our hospital patients because of non – availability, laparoscopic cholecystectomy is now replacing open cholecystectomy, with availability of instrument, more of laparoscopic cholecystectomy is being carried out replacing open cholecystectomy. However

open cholecystectomy has its own indications. It is therefore necessary that a surgeon should have adequate knowledge and experience in this field. Open CBD exploration is being followed in our institution because of lack of expertise in laparoscopic CBD exploration and non availability of ERCP even though they produce better results.

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**Source of Support:** Nil; **Conflict of Interest:** None

**Submitted:** 17-12-2016; **Published online:** 31-01-2017