

A Clinico-Epidemiological Study and Management of Chronic Calculus Cholecystitis

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Abstract

Background

Chronic calculus cholecystitis is a common disease of hepatobiliary system constituting a significant health problems in developing and developed countries. Many risk factors like age, sex, metabolic disorders, environmental factors, ethnicity are associated with it. Gallstone disease has various clinical presentations. Cholecystectomy is a common abdominal surgery done in Gauhati Medical College and Hospital, Assam. Laparoscopic cholecystectomy is the gold standard method of surgery done for chronic calculus cholecystitis.

Materials and methods

It was a single centre prospective, clinical observational study done in Department of General Surgery, Gauhati Medical College and Hospital, Guwahati, during the period 1st May 2021 to 30th June 2022 (14 months). A sample of 100 patients were included in the study. A detailed clinical history and physical examinations were carried out. The disease was confirmed by abdominal ultrasonography. Patients underwent cholecystectomy of which 50 underwent laparoscopic procedure and 50 open procedure.

Results

Chronic calculus cholecystitis was seen most common in fourth and fifth decade, with a male-female ratio of 1:2.3. More commonly seen in upper middle class family (35%), 90% patients were non-vegetarian, 25% patients were obese. Most common presentation was pain abdomen. Post-operative pain, infection etc were more seen in open cholecystectomy. Early recovery was seen in laparoscopy cholecystectomy procedure.

Keywords

Chronic calculus cholecystitis, Risk factors, Clinical presentations, Laparoscopic cholecystectomy, Early recovery.

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I. Introduction:

Gallstone disease is one of the most common problems affecting the hepatobiliary system. It remains one of the major cause of the abdominal morbidity and mortality through the world (1). Gallstone disease represents the major health problems in developing as well as developed countries (2).

Prevalence of gallstone related to many factors including age, gender, ethnicity, dietary habits etc. In India prevalence of gallstone disease is estimated to be 4%, whereas in western world it is about 10%. Gallstone disease is 7 times more common in Northern India than Southern states. There is increasing trend of incidence of gallstone diseases in India is partially attributed wide spread use of ultrasonography but changing socioeconomic structure, various epidemiological factors including diet are also responsible.

The basis of gallstone disease is basically due to impaired metabolism of cholesterol, bilirubin and bile acid, which causes formation of stones in hepatic bile duct, common bile duct or gall bladder (3).

In this study demographic factors, dietary habit, clinical presentation and complications after surgery have been studied on rural population in Kamrup district of Assam, in the Brahmaputra Valley.

II. Aims and objectives

1. To study the clinic-epidemiological factors responsible for chronic calculus cholecystitis.
2. To study various modes of clinical presentations.
3. To study safety and efficacy of Laparoscopic cholecystectomy over Open cholecystectomy in patients of chronic calculus cholecystitis by comparing results of post-operative pain, post-operative hospital stay, wound infection.

III. Materials And Methods:

It was a single centre prospective, clinical observational study done in Department of General Surgery, Gauhati Medical College and Hospital, Guwahati. During the period 1st May 2021 to 30th June 2022 (14 months).

Sample size: : A sample of 100 patients who fulfilled the inclusion and exclusion criteria, given consent and wanted to get treatment at GMCH were taken at random for study from Kamrup (Rural) district .

Method of Data Collection and procedure:

With approval taken from Institutional Ethical Committee, GMCH and informed consent taken from all participants, all relevant particulars of participating individuals were recorded in a proforma. A detailed clinical history and physical examination was carried out and recorded in a standard proforma . Through clinical evaluation of all patients were done . After the clinical diagnosis by history and physical examination , Haematological, Biochemical and Radiological investigations done. Patients underwent cholecystectomy of which 50 underwent laparoscopic procedure and 50 open procedure. Post-operative events were recorded.

IV. Result

The following analysis were done and observed results are discussed below:

Age

Out of 100 population the chronic calculus cholecystitis were most common in fourth and fifth decade, accounting for more than half of all cases (65%). Over all mean age 41.62 year with range from 18 year to 65 year. The mean age of male patient 45.66 year and female patient 37.57 year .

Age	Frequency	Percentage
< 20	5	5.0
21-30	15	15.0
31 - 40	40	40.0
41 - 50	25	25.0
51 - 60	10	10.0
> 60	5	5.0
Total	100	100.0

Table 1 . Age distribution of study population

Gender

In our study out of total of 100 patients, 30 were males and the rest 70 females. This shows that chronic cholelithiasis is predominant in the female population with a male:female ratio of 1:2.3

Sex	Frequency	Percentage
Male	30	30.0
Female	70	70.0
Total	100	100.0

Table 2 : Gender distribution.

Diabetes, Obesity and Family history

In our study, out of 100 patients of chronic calculus cholelithiasis, 20% cases were found diabetic, 25% patients were seen obese (BMI> 30), 5% patients seen over weight and 70% patients were of normal weight. In our study 15% patients had family history of cholelithiasis.

Socioeconomic status

In our study highest number of patients of chronic calculus cholecystitis were seen in upper middle class family , cases of 35%, followed by upper class and middle class population, each of cases 25% lowest cases of chronic cholelithiasis were seen in lower class population.

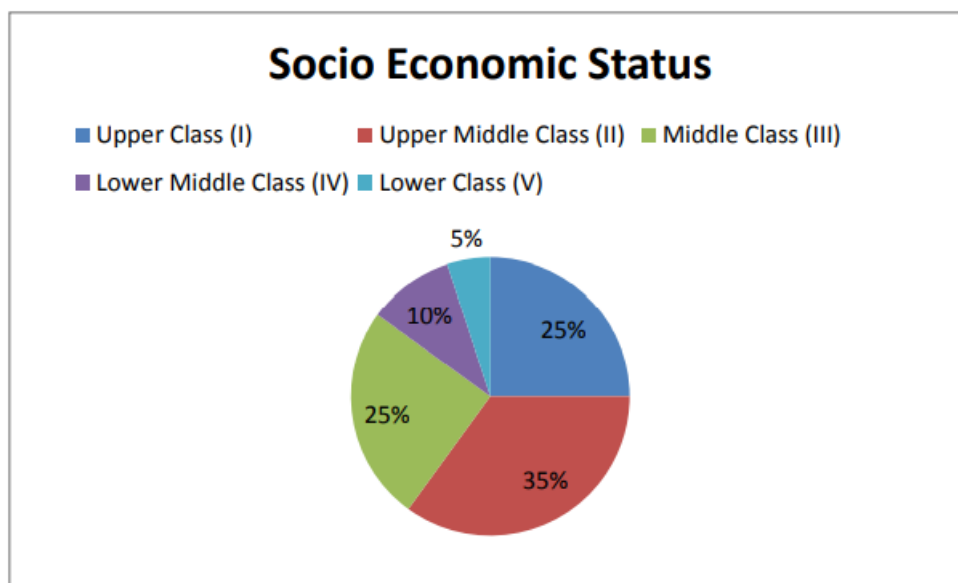


Fig 1: Pie diagram showing Distribution of socioeconomic status

Diet

In our study 90% population took non-vegetarian diet and only 10% population took vegetarian diet.

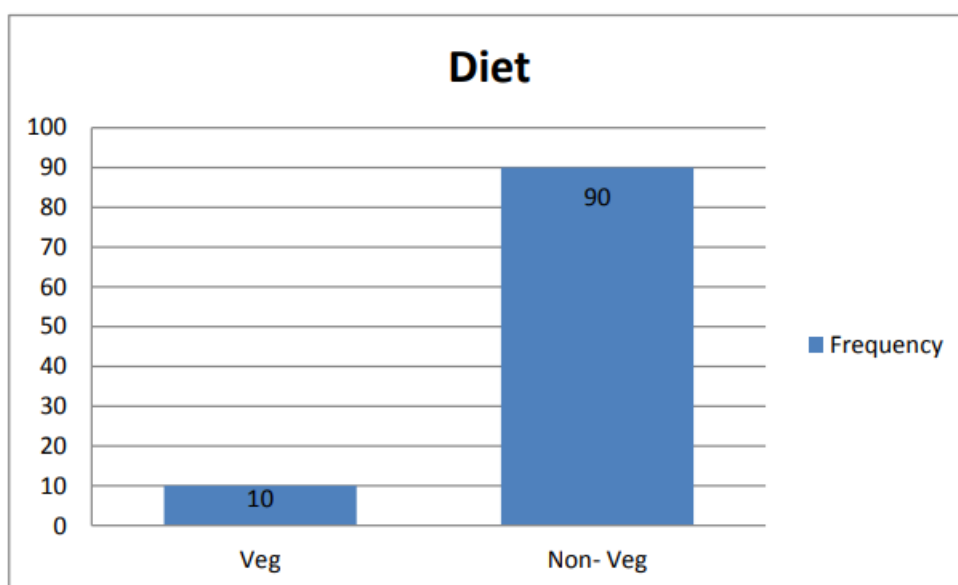


Fig 2: Bar diagram of diet distribution.

Clinical presentation and procedure

In our study, it was observed that, out of 100 patients 85 cases attended hospital with the complain of pain abdomen, 75% presented with flatulence and dyspepsia. Only 5% patients of our study population of chronic calculus cholecystitis presented with fever and 50% patients presented with nausea and vomiting. On clinical examination, it was observed that 30% patients of chronic calculus cholecystitis had tenderness in Right Hypochondrium.

25% patients had single calculi and 75% patients had multiple calculi as found in USG whole abdomen. 50% patients undergone laparoscopic cholecystectomy (LC) and 50% patients undergone open cholecystectomy (OC).

Intra operative complications

In our study it was observed that out of 50 laparoscopic cholecystectomy bile and stone spillage was seen 2 cases (4%) , bleeding seen in 3 cases (6%). On the other hand bleeding was seen in open

cholecystectomy in 10 cases . No bile/stone spillage was seen in open cholecystectomy . P value was found to be 0.002 , which was significant.

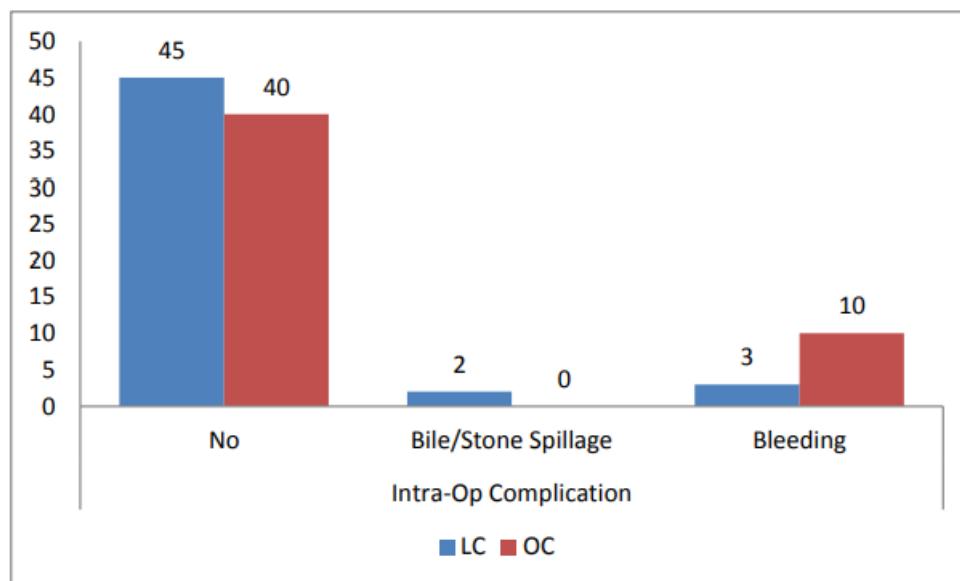


Fig 3: Bar diagram showing Comparison of intra operative complications.

Postoperative events

In our study it was observed that out of 50 post-operative laparoscopic cholecystectomy patients , 1 case (2%) had wound infection, on the other hand in post-operative open cholecystectomy patients 5 cases (10%) had wound infection. P value was calculated as 0.047, which was significant. Out of 50 post operative laparoscopic cholecystectomy patients, 40 cases (80%) had mild pain ,10 cases (20%) had moderate pain, no severe pain was seen . On the other hand 10 cases (20%) had mild pain, 30 cases (60%) had moderate pain, and 10 cases (20%) had severe pain. Comparison was done, p value was found <0.0001, which is significant.No bile leak was seen in post operative patients of open cholecystectomy patients. But 1 case (2%) had bile leak in post operative laparoscopic cholecystectomy patients. P value was found to be 0.546, which was insignificant. Resumption of oral intake was significantly earlier in group Laparoscopic cholecystectomy (mean 15.2hrs) when compared to group Open cholecystectomy (26.4 hrs) with P value <0.0001. ,Post-operative mobilization was significantly earlier in Group Laparoscopic cholecystectomy (mean 19.2 hour) than open cholecystectomy(37.2 hour) with P value <0.001. The total duration of hospital stay was shorter in group LC (mean 2.3 days) compared to patients in OC group (mean 4.5 days) with P value <0.0001.

V. Discussion

The epidemiological factors responsible for chronic calculus cholecystitis, clinical presentations, different modalities of surgical treatment and it's outcomes are discussed here with respect to different studies as below :

In the present study, the chronic calculus cholecystitis was found most common in fourth and fifth decade, accounting for more than half of all cases (65%). Over all mean age 41.62 year with range from 18 year to 65 year. Out of total of 100 patients 30 were males and the rest 70 females. This shows that chronic cholelithiasis is predominant in the female population with a male-female ratio of 1:2.3.

This present study was consistent with findings of Bansal A et al(4), Thamilselvi et al(5), VignaSaiPotula et al(6), V Singh et al(7), Dr JitendraSankpal et al(8).

In our study 15% patients have family history of cholelithiasis. Highest patients of chronic calculus cholecystitis was seen in upper middle class family , cases of 35%, followed by upper class and middle class population, each of cases 25%, lowest cases of chronic cholelithiasis seen in lower class population. 90% population took nonvegetarian diet and only 10% population took vegetarian diet, suggesting that cholelithiasis is more common in patients consuming a mixed diet, 20% cases are found diabetic. Out of 100 cases of chronic calculus cholecystitis 25% patients were obese (BMI> 30), 5% patients seen over weight and 70% patients are of normal weight.

Our study was consistent with findings of Bansal et al(4), Thamilselvi et al(5), Dr JitendraSankpal et al(8), Alok Chandra Prakash et al(9), V Singh et al(7), Venkateshwar R V et al(10).

In our study, it was observed that out of 100 patients, 85 cases attended hospital with complaint of pain abdomen, 75% presented with flatulence and dyspepsia. Only 5% patients of our study population of chronic calculus cholecystitis presented with fever, 50% patients presented with nausea and vomiting. On clinical examination it was observed that 30% patients of chronic calculus cholecystitis having tenderness in Right Hypochondrium in our study. So, pain abdomen was the most common presenting symptom (85%) followed by flatulence and dyspepsia (75%).

Clinical presentation of our study was similar to Bansal et al(4), Thamilselvi et al(5), VignaSaiPotula et al(6) and Dr. Manoj Karthik S(11).

Perabdominal ultrasonography was the primary radiological diagnostic tool in our study. In our study, 25% patients had single calculi and 75% patients had multiple calculi as found in USG whole abdomen. Bansal et al(4) in their study found that 36.5% patients had single calculus and 63.5% patients had multiple calculi on abdominal USG. Thamilselvi et al(5) found 14.1% single calculus and 69.23% multiple calculi in gallbladder. Venkateshwar R V et al.(10) found 25.6% of single calculus and 62.8% of multiple calculi in gallbladder on per abdominal ultrasonography.

In our study, 50% patients underwent laparoscopic cholecystectomy (LC) and 50% patients underwent open cholecystectomy (OC). It was observed that mean time duration of surgery in laparoscopic cholecystectomy was 58.5 min and in open cholecystectomy it was 83.0 min. When comparison was done, P value was found < 0.0001 , which is significant. The present study is consistent with Hussain A et al (12), Rooh-ul-Muqim et al (13).

In our study it was observed that out of 50 laparoscopic cholecystectomy bile and stone spillage was seen 2 cases (4%), bleeding seen in 3 cases (6%). On the other hand bleeding was seen in open cholecystectomy in 5 cases (10%). No bile/stone spillage was seen in open cholecystectomy. P value was found to be 0.002, which was significant. The intra operative complications of the present study are similar to studies by Dr JitendraSankpal et al.(8), VignaSaiPotula et al(6).

In our study, it was observed that out of 50 post operative laparoscopic cholecystectomy patients, 1 case (2%) had wound infection, on the other hand in post operative open cholecystectomy patients 5 cases (10%) had wound infection. P value was calculated as 0.047, which was significant. Out of 50 laparoscopic cholecystectomy patients, 40 cases (80%) had mild pain, 10 cases (20%) had moderate pain, no severe pain was seen. On the other hand 10 cases (20%) had mild pain, 30 cases (60%) had moderate pain, and 10 cases (20%) had severe pain. Comparison was done, P value was found < 0.0001 . No bile leak was seen in post operative patients of open cholecystectomy but 1 case (2%) had bile leak in laparoscopic cholecystectomy patients. P value was found to be 0.546, which was insignificant. Though post operative bile leak was seen slightly more in laparoscopic cholecystectomy patient, p value is > 0.05 , were insignificant. The present study is consistent with Rooh-ul-Muqim et al (14), Dr JitendraSankpal et al.(8), VignaSaiPotula et al(6), Bansal et al(4).

In our study, the total duration of hospital stay was shorter in group LC (mean 2.3 days) compared to patients in OC group (mean 4.5 days) with P value < 0.0001 , which is significant statistically. The present study is consistent with studies by, Dr JitendraSankpal et al.(8) regarding hospital stay of the patients.

VI. Conclusion

The patients of chronic calculus cholecystitis were most common in fourth and fifth decade, with a female preponderance, females are more than two times sufferer than males. Besides age and female sex, diet, diabetes, obesity, upper middle class socioeconomic status, family history are the risk factors for chronic calculus cholecystitis. Pain, flatulence, nausea and vomiting are the major clinical presentations of chronic calculus cholecystitis. Perabdominal USG is the primary radiological investigation for diagnosis of chronic calculus cholecystitis. Wound infection and other complication are more predominant in open cholecystectomy group than the laparoscopic procedure. Post operative recovery is earlier in laparoscopic cholecystectomy than open cholecystectomy. Laparoscopic cholecystectomy can be recommended as the first choice of operative treatment for the patient of chronic calculus cholecystitis as it provides better cosmetic results, lesser pain, fewer incidence of surgical site infection, lesser postoperative hospital stay and early recovery.

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Dr.Md. ShamsulAlom, et. al. “A Clinico-Epidemiological Study and Managment of Chronic Calculus Cholecystitis.” *IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)*, 22(2), 2023, pp. 35-40.