# Gallstone Disease: Study of Clinical Presentation, Indications for Laparoscopic Cholecystectomy and Types of Gallstones in patients attending a Tertiary Care Hospital in Rural Maharashtra

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***Abstract-***
**Background**: **Gall stone disease is a leading cause for hospital admissions related to gastrointestinal problems worldwide despite a relatively low mortality rate. Geography and particularly ethnicity play an enormous role in the prevalence of gallstone disease and also the type of stone that forms.**
**Aims and objectives: Aim of the present study was to assess clinical presentation, indications for laparoscopic cholecystectomy and types of gall stones in patients of gallstone disease in a tertiary care hospital in rural district of Maharashtra.**
**Methodology: The present study was a cross-sectional study conducted over a period of two years from November 2017 to October 2019 in department of Surgery Swami RamanandTeerth Government Medical College, Ambajogai in rural Maharashtra. The studywas conducted in 50 patients of cholelithiasis in a tertiary care hospital.**
**Results: The mean age of patients of cholelithiasis was 52.78(±9.32) years and ranged from 29 to 68 years. Majority 22 (44%) patients were in the age group of 51-60 yrs. There were 16(32%) males and 34(68%) females. Chronic epigastric pain, chronic right hypochondriac pain; flatulence and dyspepsia were most common symptoms. Chronic cholecystitis was present in 29 (58%) patients, symptomatic gall stone disease (GSD) was present in 12(24%); acute cholecystitis was present in 8(16%) patients and gall bladder polyp was diagnosed pre-operatively in 1(2%) patient. Mixed stones were the most common gall bladder stones present in 23(46%) patients followed by pigment stones in 21(42%) patients and cholesterol stones in 6(12%) patients.**
**Conclusions:**
**All patients of cholelithiasis presented with symptoms and majority were females in age group of 51-60 years. Chronic cholecystitis, symptomatic gall stone disease (GSD) and acute cholecystitis were most common pre-operative indications for laparoscopic cholecystectomy. Mixed stones were the most common gall bladder stones present in 23(46%) patients followed by pigment stones in 21(42%) patients and cholesterol stones in 6(12%) patients.**

***Index Terms*- cholelithiasis, clinical features, pre-operative indications, laparoscopic cholecystectomy, type of gall stones.**

## I. INTRODUCTION

Gall stone disease is a leading cause for hospital admissions related to gastrointestinal problems worldwide despite a relatively low mortality rate at 0.6%. [(1)] In India, the prevalence estimates of gallstones range from 6% - 9% in the adult population with hospital based registries reporting higher prevalence upto 20% .[(2,3)] Factors influencing its prevalence are increasing age,obesity, lifestyle, female gender, diet, ethnicity and co morbid conditions like diabetes mellitus.[(2,4,5)]

Most gallstones are clinically "silent," an incidental finding often uncovered during abdominal ultrasound being performed for another reason [(6)] and up to 80% patients with gall stones will never experience biliary pain or complications such as acute cholecystitis, cholangitis, or pancreatitis. [(7)]

Geography and particularly ethnicity play an enormous role in the prevalence of gallstone disease and also the type of stone that forms: cholesterol gallstones predominate in the developed countries of the Western world; brown pigment stones in the bile ducts are more common in Asia. [(8)]

Genetic susceptibility, female gender, obesity, rapid weight loss, reduced physical activity, diabetes mellitus, lipid abnormalities, diet high in refined carbohydrates and fats with reduced fiber are key factors in gallstone formation.[(9)] This dietary change to a more western diet also might account for the shift from pigment to cholesterol stones in Asian countries. [(10)]

India is currently in a state of epidemiological and nutritional transition with increasing adoption of western diets and sedentary lifestyles and incidence and prevalence of non communicable diseases continues to rise. There are relatively few clinical studies from rural areas of India on clinical features and prevalence of types of gall stones observed after open cholecystectomy in gall stone disease patients.

## II. AIM

The aim of the present study was to assess clinical presentation and types of stones as observed post operativelyin patientsof gallstone disease in a tertiary care hospital in a rural district of Maharashtra.

## III. METHODOLOGY

The present study was a cross-sectional study conducted over a period of two years from November 2017 to October 2019 in department of Surgery, Swami RamanandTeerth Government Medical College, Ambajogai inrural Maharashtra.Approval from Institutional Ethical committee's was taken prior to commencement of the study. A total of 50 patients of cholelithiasisadmitted in surgery department or presenting in surgical OPD for elective as well as emergency cholecystectomywere included in the study after applying the inclusion and exclusion criteria. Written informed consent was takenfrom all participants after informing them about the possible complications of undergoing surgery and possibility of conversion to open cholecystectomy. A structured pretested proformawas used to collect socio-demographic details of all patients followed by detailed history taking and physical examination and details were duly recorded. Relevant investigations were carried out on all patients which includedRenal Function Test, BSL, liver function tests, USG abdomen pelvis, ECG, Chest X Ray, HBsAg, HIV and BT,CT,PTINR. CT abdomen with contrast and MRCP were done if indicated. Laparoscopic cholecystectomy (LC) was performed using the standard four-port technique and pneumoperitoneum was created using Hasson or Veress needle technique.

## IV. STATISTICAL ANALYSIS

Data was compiled in Microsoft excel and Statistical Package for the Social Sciences (SPSS) version 23.0 was used for analysis. Continuous parameters (quantitative data) were presented as Mean +/- SD and categorical (qualitative data) variables were presented as percentage and proportions (%) and depicted in appropriate graphs.

## V. RESULTS

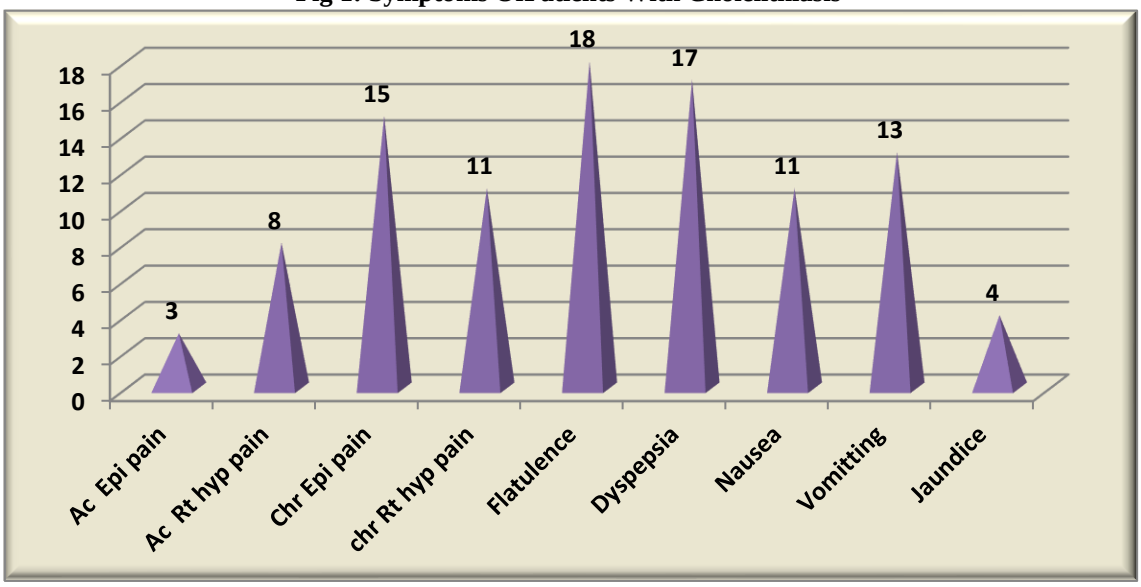
The mean (+-standard deviation) age of patients undergoing laparoscopic cholecystectomy (n=50) was observed to be 52.78(±9.32) years, the minimum age was 29 years and the maximum age was 68 years. Majority 22 (44%) patients were in the age group of 51-60 yrs followed by 12 (24 %) patients in the age group of 41-50 yrs. There were 9 (18%) patients in the age group of 61-70 yrs; 5(10%) patients were in the age group of31-40 yrs and 1(2%) patient was in the age group of 21-30 yrs. There were 16(32%) males and 34(68%) females. Female: male ratio was 2.13:1. Age and gender distribution of patients of cholelithiasisis depicted in table1.

| **Age (yrs)** | **Males (n=16)** | | **Females (n=34)** | |
|---|---|---|---|---|
| | **N** | **%** | **N** | **%** |
| 21-30 | 0 | 0 | 1 | 2.94 |
| 31-40 | 1 | 6.25 | 4 | 11.76 |
| 41-50 | 3 | 18.75 | 7 | 20.59 |
| 51-60 | 9 | 56.25 | 14 | 41.18 |
| 61-70 | 3 | 18.75 | 8 | 23.53 |
| **Total** | **16** | **100** | **34** | **100.00** |

**Clinical Features:**

Among patients of cholelithiasis included in the study; chronic epigastric pain was the most common presenting symptom present in 15 patients, chronic right hypochondriac pain in 11 patients; acute epigastric pain in 3 patients, acute right hypochondriac pain in 8 patients and flatulence in 18patients. Dyspepsiawas present in 17 patients, nausea in 11 patients, vomiting in 13 patients and jaundice was observedin 4 patients. Most of the patients presented with more than one symptom. Symptoms of patientswith cholelithiasisare depicted in figure 1.

**Fig 1: Symptoms OfPatients With Cholelithiasis**

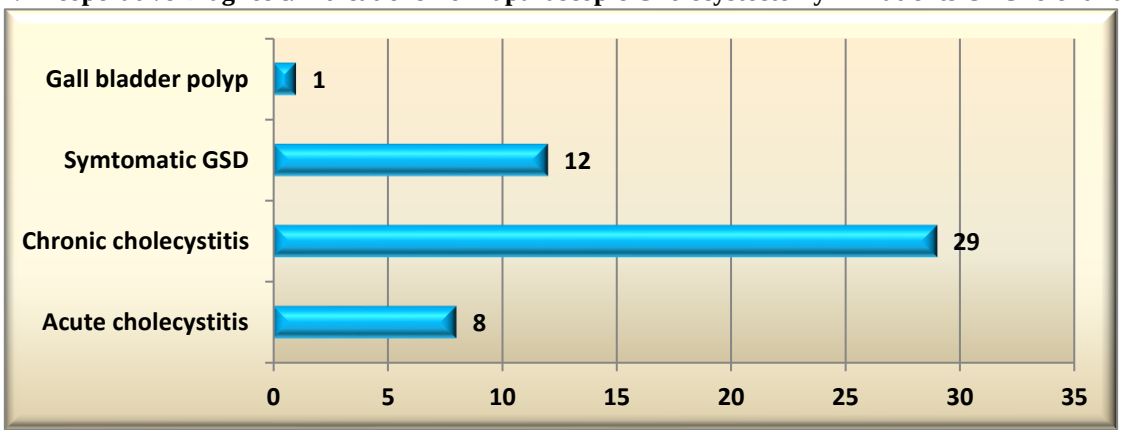



**Preoperative diagnosis/indications for laparascopic cholecystectomy:**
Among total patients of cholecystitis (n=50), 29 (58%) patients had chronic cholecystitis, symptomatic gall stone disease (GSD) was present in 12(24%); acute cholecystitis was present in 8(16%) patients and gall bladder polyp was diagnosed pre-operatively in 1(2%) patient.

**Table 2: Preoperative Diagnosis/Indications ForLaparascopic Cholecystectomy In Patients Of Cholelithiasis**

| Preoperative Diagnosis | N | % |
|---|---|---|
| Acute cholecystitis | 8 | 16 |
| Chronic cholecystitis | 29 | 58 |
| Symptomatic GSD | 12 | 24 |
| Gall bladder polyp | 1 | 2 |
| **Total** | **50** | **100** |

**Fig 2: Preoperative Diagnosis/Indications ForLaparascopic Cholecystectomy In Patients Of Cholelithiasis.**

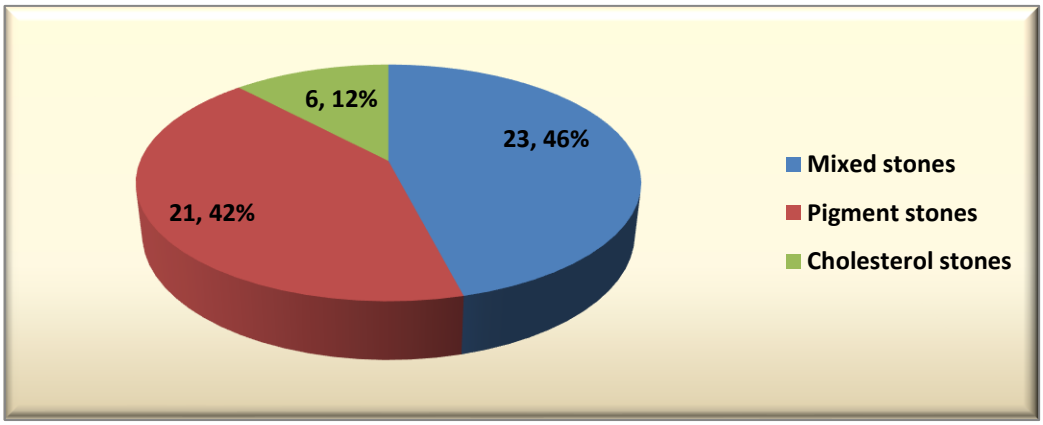



**Type Of Stones:**
As observed post operatively; mixed stones were the most common gall bladder stones present in 23(46%) patients followed by pigment stones in 21(42%) patients and cholesterol stones in 6(12%) patients. Type of stones in patients of cholelithiasis is depicted in table and figure 2.

**Table 3: Type Of Stones In Patients With Cholelithiasis (N=50)**

| Type of stones | N | % |
|---|---|---|
| Mixed | 23 | 46 |
| Pigment | 21 | 42 |
| Cholesterol | 6 | 12 |
| **Total** | **50** | **100** |

**Fig 3: Type Of Stones In Patients With Cholelithiasis (N=50)**




## VI. DISCUSSION

**Age**:In the present study, the mean age of patients of cholelithiasis undergoing laparoscopic cholecystectomy (n=50) was 52.78(±9.32) years; ranging from 29 to 68 years. Majority 22 (44 %) patients were in the age group of 51-60 yrs. Increasing age is associated with increased frequency of gallstones; escalating markedly after age 40 to become 4 to 10 times more likely in older individuals. [10]Comparable findings have been reported by following similar studies:
In a study Zucker KA et al. [11]the mean age of patients was 51.7 years and ranged from 17-82 years. In astudyGul R et al. [12] evaluated the safety and feasibility of laparoscopic cholecystectomy for acute cholecystitis; the mean age of patients was 39.83 ± 8.25 years and 38.27 ± 9.82 years, respectively. In astudy by Bhandari TR et al. [13] median ages were 65 years (range: 60–80) and 45 years (range: 21–59) for the > 60 years group and the < 60 years age group of patients with gall stone disease respectively. Veerabhadrappa PS et al. [14] studied epidemiology of gall stone disease in the region of Madhya Pradesh, India and majority (26.6%) of cases were in the age group of 51-60 years similar to the present study.

**Gender**: In the present study; there were 16(32%) males and 34(68%) females. Female: male ratio was 2.13:1. Similar preponderance of females have been reported by other similar studies on patients with cholelithiasis conducted by Gul R et al. [12], Bhandari TR et al. [13] andVeerabhadrappa PS et al. [14]
Advancing age and female gender is a non modifiable risk factor for gall stone disease; escalating markedly after age 40 to become 4 to 10 times more likely in older individuals. [10]

**Clinical presentation**: In the present study, most common presenting symptoms were chronic epigastric pain in 15 patients and chronic right hypochondriac pain in 11 patients.
Comparable presenting symtoms have been reported by similar studies: In the study by Gul R et al. [12] right hypochondriac region (RHC) pain was present in all patients and in the study by Veerabhadrappa PS et al. [14] most (71.7%) patients presented with the complaints of pain in the region of hypochondrial region followed by nausea in 46.6%.
In the present study major pre-operative indications laparoscopic cholecystectomy were chronic cholecystitis in 29 (58%) patients, symptomatic gall stone disease (GSD) in 12(24%); acute cholecystitis in 8(16%) patients and in 1(2%) patient gall bladder polyp was diagnosed pre-operatively. Acute cholecystitis was the major indication for laparoscopic cholecystectomy in studies by Zucker KA et al. [11] and Gul R et al. [12] whereas in the study by Taki-EldinA et al.[15] the major indication for laparoscopic cholecystectomy was symptomatic chronic calculous cholecystitis.

**Type of gall stones**: In the present study; mixed stones were the most common gall bladder stones present in 23(46%) patients followed by pigment stones in 21(42%) patients and cholesterol stones in 6(12%) patients. In the study by Veerabhadrappa PS et al. [14] majority of cases had mixed type of stones. Cholesterol gallstones predominate in the developed countries of the Western world; brown pigment stones in the bile ducts are more common in Asia. [1]
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## VII. CONCLUSION

All patients of cholelithiasis presented with symptoms. Chronic cholecystitis, symptomatic gall stone disease (GSD) and acute cholecystitis were most common pre-operative indications for laparoscopic cholecystectomy. Mixed stones were the most common gall bladder stones present in 23(46%) patients followed by pigment stones in 21(42%) patients and cholesterol stones in 6(12%) patients.

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