

**ORIGINAL ARTICLE****Clinical Profile of Cholelithiasis Patients at a Tertiary Care Hospital: A Comprehensive Study**

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**ABSTRACT:**

Gallstones are indicative of a failure in the regulation of certain biliary constituents, primarily cholesterol and calcium salts, leading to their precipitation. In the pathogenesis of gallstones, the presence of biliary sludge is crucial. Biliary sludge is characterized by a mixture of cholesterol crystals, calcium bilirubinate granules, and a mucin gel matrix. The collection of general patient information, including their name, age, gender, religion, occupation, socio-economic status, and address, was carried out. Detailed medical histories were obtained, focusing on the duration of right upper quadrant pain or epigastric pain, its periodicity, whether it worsened after consuming fatty meals, and if it was alleviated by oral or parenteral analgesics. Among the patients, 32 presented with both nausea and abdominal pain, while 156 experienced vomiting. A larger group, consisting of 188 patients, had both nausea and vomiting. Additionally, jaundice was observed in 66 patients. These clinical findings provide insights into the presentation and associated symptoms of individuals with gallstone-related conditions.

**Keywords:** Cholelithiasis, gallstones, epigastric pain

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**INTRODUCTION**

The gallbladder plays a pivotal role in the digestive process by concentrating bile through the absorption of water and sodium, thus enhancing the digestive potency of this vital fluid. Both the gallbladder and the bile ducts are intricately designed to store and release bile into the duodenum, contributing significantly to the digestive process<sup>1,2</sup>.

The regulation of bile flow, in and out of the gallbladder, is primarily orchestrated by the contraction of the gallbladder itself and the relaxation of the sphincter of Oddi. In a state of good health, the gallbladder is in a constant state of motion. It undergoes a continuous cycle of partial emptying and refilling, driven by the intestinal migratory myoelectric complex, which occurs between meals. This intermittent pattern of contraction and the expulsion of bile into the duodenum is crucial for preventing the stagnation of bile within the gallbladder<sup>3-5</sup>. This, in turn, serves as a protective mechanism against the formation of gallstones by ensuring the continuous and efficient flow of bile during the digestive process. The contraction of the gallbladder is subject to regulation by both the vagus nerve and circulating peptides. During the cephalic phase of digestion, it's the vagal stimulation that primarily triggers gallbladder contraction. However, during the interdigestive period, it's the combination of vagal neurons and circulating polypeptides that mediate this contraction. Vasoactive intestinal polypeptide (VIP), which is released by vagal neurons, plays a key role in inhibiting gallbladder

contraction and facilitates postprandial gallbladder filling. Notably, clinical observations indicate that gallbladder motility is inhibited by truncal vagotomy and by prolonged fasting.

The development of gallstones is attributed to the inability to maintain certain biliary solutes, specifically cholesterol and calcium salts, in a soluble state. An important factor in the pathogenesis of gallstones is the presence of biliary sludge, which is essentially a mixture of cholesterol crystals, calcium bilirubinate granules, and a mucin gel matrix. Intriguingly, the discovery of macromolecular complexes composed of mucin and bilirubin, similar to the composition of biliary sludge, within the central core of most cholesterol gallstones, suggests that biliary sludge may serve as the starting point for the growth of gallstones<sup>6</sup>. This insight contributes to our understanding of gallstone formation and progression. Gallstones are a prevalent biliary pathology, and the incidence of biliary calculous disease can vary significantly across different regions worldwide. By the age of 75, it is estimated that approximately 35% of women and 20% of men will have developed gallstones<sup>7</sup>. The incidence of gallstone disease in Asia is noteworthy and presents a significant healthcare challenge. Moreover, it is observed that the incidence of cholesterol gallstones is on the rise in Asia, a trend that may be linked to environmental and dietary factors.

In India, there is a distinct dual pattern of prevalence with regard to gallstone disease. Some studies have revealed that North Indians have a higher

susceptibility to cholelithiasis compared to South Indians<sup>8</sup>. Interestingly, not only is the prevalence of gallstones different between the two regions, but the nature and characteristics of the disease also exhibit variations, adding a layer of complexity to the understanding and management of gallstone-related conditions in India.

### MATERIALS AND METHODS

A total of 400 patients who underwent laparoscopic cholecystectomy were included in this prospective two-year study.

Data Collection Methods: Patients with cholelithiasis but without choledocholithiasis, and who had no contraindication for general anesthesia, were enrolled in the study. We reviewed the medical records of all patients who had undergone laparoscopic cholecystectomy. The collected data encompassed demographic details, medical history, reasons for surgery, operation duration, factors leading to a switch to open surgery, and post-operative complications.

In this study, we defined our inclusion criteria to comprise patients with symptomatic cholelithiasis, those who had undergone previous abdominal surgeries, and individuals aged between 17 and 70 years<sup>9</sup>. Conversely, our exclusion criteria encompassed pediatric patients, individuals diagnosed with gall bladder carcinoma, cases of perforated gall bladder, patients considered unsuitable for general anesthesia, instances of choledocholithiasis that could not be resolved via ERCP, and those with significant bleeding disorders. These carefully outlined criteria guided the selection of participants for our research, ensuring a focused and relevant study population.

### RESULTS

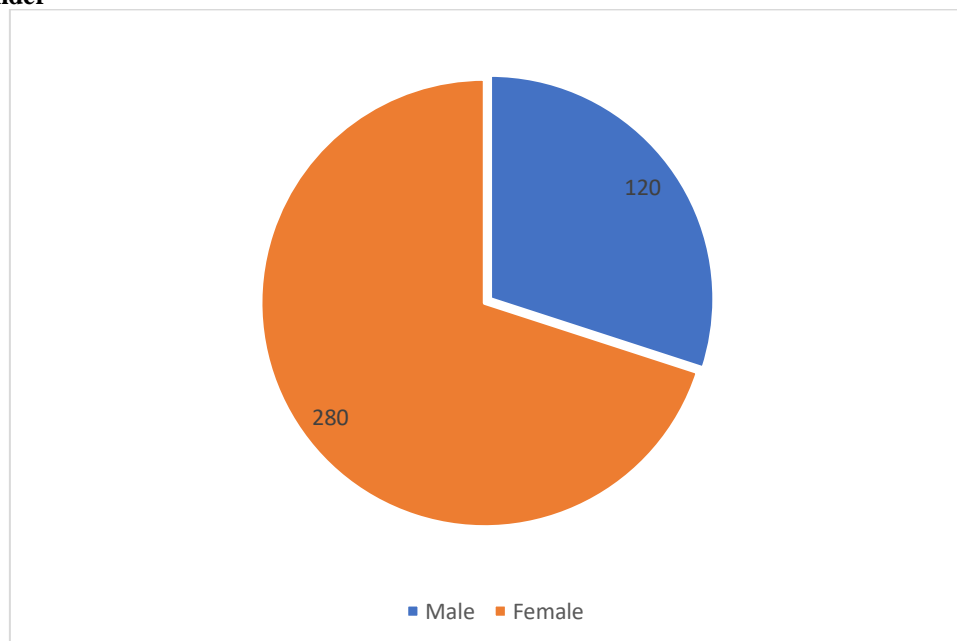
The average age of participants in this study was 42.89 years, with a broad age range spanning from 17 to 70 years. Notably, the highest incidence of cases was observed within the age bracket of 31-40 years, closely followed by the age group of 18-30 years.

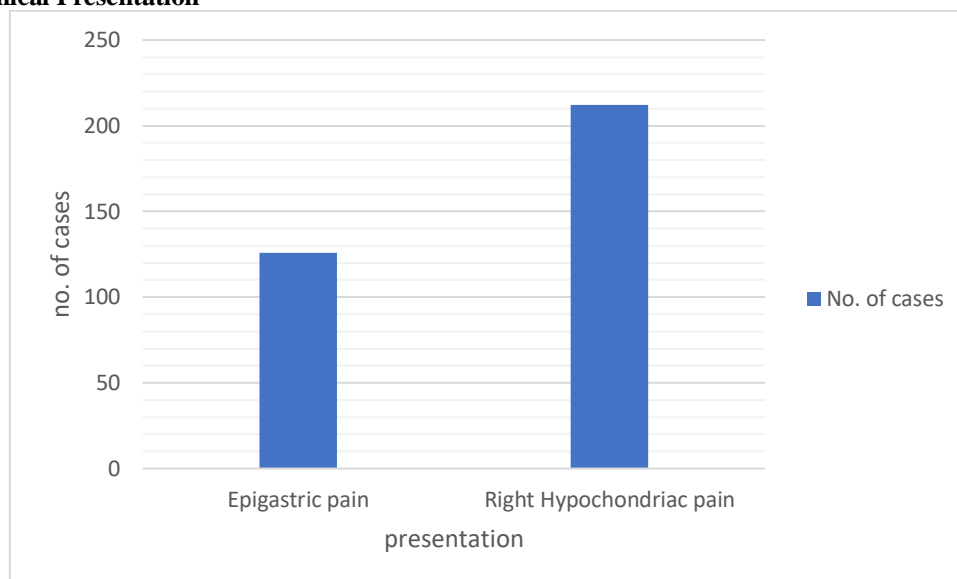
**Table1: Age Group**

Age Group	No. of Patients	Percentage (%)
18-30	98	24.5%
31-40	106	26.5%
41-50	88	22.2%
51-60	70	17.5%
61-70	38	9.5%

Out of the 400 cases examined in this study, 120 were male patients, while 280 were female patients. This distribution indicates a male-to-female ratio of 1:2. It is evident from this sex distribution that gall bladder diseases are more prevalent among females than males.

**Fig 1: Gender**



**Fig 2: Clinical Presentation**

Among the 400 patients included in the study, 212 of them (53.00%) reported their primary complaint as pain in the right hypochondrium, while 126 patients (31.50%) presented with epigastric pain. Notably, 60 patients (15%) were found to be asymptomatic, with cholelithiasis incidentally discovered.

**Table 2: Co-morbidities**

Co-morbidity	No. of patients	Percentage (%)
Diabetes Mellitus (DM)	76	19%
Hypertension (HTN)	64	16%

## DISCUSSION

In this study, the age range of cases included individuals between 18 and 70 years. Notably, there is a higher incidence of cases observed in the third and fourth decades of life, with the maximum incidence occurring in the third decade. Our study revealed a mean age of 42.89 years<sup>10</sup>.

It's interesting to note that Daradkeh reported a slightly higher mean age of 47.2 years, while Richards ML et al. reported a mean age of 40 years in their respective studies. This variance in mean age across studies reflects the diverse demographics and characteristics of the patient populations examined. All 400 patients in this study were scheduled for elective laparoscopic cholecystectomy. However, it's noteworthy that among the 200 patients, 32 of them, representing 8.0%, required conversion to open cholecystectomy. Interestingly, the highest number of patients requiring conversion fell within the age group of 51-60 years, with 12 patients (37.5%) in this category. This observation aligns with findings from Thomas B. Hugh et al. and Rohde V et al.<sup>11</sup>, who also reported a similar peak incidence of cholecystectomy conversions occurring in the third and fourth decades of life. In the current study, there were 280 female cases out of a total of 400, leaving 120 as male cases. Interestingly, Battacharya's series demonstrated a predominance of female cases, with 71.4% being female and 28.6% male.

The elevated incidence among females could be attributed to several factors. One possible reason is the

influence of pregnancy and childbirth on biliary tract disease. These events can have a definitive impact, primarily through the development of cholestasis, weight gain, and subsequent hypercholesterolemia, which may contribute to a higher prevalence of gall bladder diseases among females. The reasons behind the higher conversion rates in female patients have remained elusive, despite being associated with a significant risk factor in our series<sup>12</sup>. This underscores the increased likelihood of laparoscopic cholecystectomy (LC) conversions in females compared to males.

Among the 400 patients who underwent surgery, (53%) reported their chief complaint as pain in the right hypochondrium, while (31.5%) presented with pain in the epigastrium. Additionally, 62 patients (15.5%) were asymptomatic and had their condition incidentally detected, mirroring similar presentations noted in the series of Alok Sharma, Ganey, and Goswitz et al. Moreover, 56% of the cases in our study, which amounts to 56 patients, experienced nausea and vomiting. Notably, the episodes of vomiting were spontaneous and most frequently occurred during painful attacks. This pattern of vomiting in our study aligns with findings from Ganey et al.<sup>13</sup>'s series. In the current study, 66 patients were diagnosed with jaundice, which was attributed to common bile duct stones. To address this, endoscopic retrograde cholangiopancreatography (ERCP) was employed to clear the common bile ducts, followed by stenting. Interestingly, 24% of the patients reported

dyspepsia as a symptom. However, endoscopic examinations did not reveal any underlying pathology in these cases. On ultrasound examinations, gallstones were identified in these patients. Notably, the dyspepsia was alleviated following cholecystectomy, and the incidence of dyspepsia in our study paralleled findings in Ganey's and Alok Sharma's series. Furthermore, fever was observed in 8 cases within our study, and this fever was secondary to cholangitis stemming from biliary obstruction. The fever manifested as part of Charcot's triad and was of moderate intensity. These patients received conservative management to address their condition.

### CONCLUSION

In our research, we observed a striking gender disparity in the occurrence of gall bladder diseases, with a significantly higher incidence among females in comparison to males. Specifically, we found that there were twice as many female patients as male patients, constituting a ratio of 2:1. A substantial 70% of the patients included in the study were female, highlighting the significant gender-related prevalence of gall bladder conditions. Additionally, our investigation revealed that the common age bracket at which individuals sought medical attention for gall bladder diseases was between 31 and 40 years. This age group accounted for a substantial portion of our patient population, with 26.5% of the patients falling within this category. This finding emphasizes the importance of understanding the age-specific dynamics and risk factors associated with gall bladder ailments, particularly in individuals within the 31-40-year range.

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