

# A Prospective Study of 100 Consecutive Laparoscopic Cholecystectomies.

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## ABSTRACT

**Background:** Cholelithiasis, the leading cause for hospital admissions related to gastrointestinal problems, had been traditionally dealt by open cholecystectomy. Erich Muhe performed the first laparoscopic cholecystectomy on September 12, 1985. In September 1992, a National Institute of Health (NIH) consensus conference held in Bethesda concluded that laparoscopic cholecystectomy should be the treatment of choice for gallstone disease. This study on laparoscopic cholecystectomy was done to illustrate the clinical manifestations and peroperative findings in gallstone disease. **Methods:** We prospectively studied 100 consecutive cases undergoing laparoscopic cholecystectomy at our institute. Presenting complaints, laboratory investigations and USG findings were noted. Standard 4-port laparoscopic cholecystectomy was performed, with closed method using Veress needle preferred for the first (umbilical) port. All peroperative findings were analyzed. **Results:** Majority of the patients were female (79%), and the average age of the patients was 40.18 years. Pain in upper abdomen was the most common presenting complaint (93%) and an association with meal was found in 85%. Peroperatively, multiple calculi were found in 77%, with impaction of calculus at neck seen in 10% of the patients. Distended gall bladder was seen in 19%, and mucocoele in 3%. Shrunken gall bladder was observed in 4%. Difficult Calot's triangle, due to adhesions, was found in 22%. Biliary tree or vascular anomaly was seen in 8%. Mean postoperative hospital stay was 1.92 days. **Conclusion:** Pain abdomen in gallstone disease is commonly seen in association with meals. Thick-walled gall bladder, adhesions at Calot's triangle, and distended gall bladder are common peroperative findings.

**Keywords:** Laparoscopic, cholecystectomy.

## INTRODUCTION

Gallstone disease constitute a major health problem in society, affecting 10% to 15% of the adult population.<sup>[1-3]</sup> In both the sexes, the prevalence increases with age.<sup>[1,4]</sup> Male:female ratio is 1:2, and female gender has the most compelling association with the gallstone disease, particularly during the fertile years.<sup>[1]</sup> Obesity and family history are the other significant risk factors.<sup>[1,5-8]</sup>

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The majority of patients with gallstone, upto 80%, remain asymptomatic for the lifetime.<sup>[9]</sup> To become symptomatic, gallstone must obstruct a visceral structure, such as the cystic duct. Biliary colic develops when the stone causes a transient blockade of cystic duct, and it tends to occur following a meal. This is due to increased secretion of cholecystokinin, which leads to contraction of gall bladder, propelling the calculi towards the neck. People with “silent”

gallstone, may eventually develop pain or other symptoms, but this risk is very low averaging 2% to 3% annually, and upto 10% by 5 years.<sup>[10-12]</sup> An even lower proportion, 1% to 2% per year, may present for the first time with major gallstone complications.<sup>[13,14]</sup>

Our study was a prospective study, to illustrate various clinical manifestations, and intraoperative findings in gallstone disease.

### Aim

To study the clinico-epidemiological profile and peroperative findings of gallstone disease.

## MATERIALS AND METHODS

This was a prospective analytical single center study. In this study, 100 consecutive non-emergent cases of gall bladder disease admitted in the department of surgery were included. Age-sex distribution, weight, past history of abdominal surgery, and associated comorbidities were recorded. Investigations included a complete blood count, blood sugar, liver and kidney function tests, electrocardiogram, x-ray chest, and abdominal sonography.

Patients were treated with 4-port conventional laparoscopic cholecystectomy. All peroperative findings were noted. Operative time, and postoperative length of hospital stay were recorded.

#### Inclusion Criteria:

All patients diagnosed with cholelithiasis on USG who were admitted for elective laparoscopic cholecystectomy.

#### Exclusion Criteria:

The following patients were excluded from the study

1. Peritonitis.
2. Gall bladder perforation.
3. Acute cholecystitis\Empyema of gall bladder.
4. Choledocholithiasis.
5. Cholelithiasis with gall bladder mass.

## RESULTS

**Table 1: Epidemiology.**

	Number	Mean Age (in years)	Overweight (BMI > 25)
Male	21	43.43	5
Female	79	39.32	17
Total	100	40.18	22

Out of 100 patients, 79 were female. Average age of the patient was  $40.18 \pm 12.7$  years. 22 patients were overweight (BMI > 25.0), and evenly distributed between both sexes (23.8% of males; 21.5% of females).

**Table 2: Age distribution.**

Age	No. of patients
Below 30 years	20
30-39 years	31
40-49 years	25
50-59 years	14
60 or above	10

Most patients were in their fourth decade of life (31%). Three-fourth patients (76%) were less than 50 years of age.

**Table 3: Clinical Presentation.**

Clinical Presentation	No. of patients
Pain upper abdomen	93
Heaviness after meals	85
Fever	5
Jaundice	1
Bloating/belching	52
Dyspepsia	48
Lump	2

Pain in upper abdomen was the most common presentation (93%). Feeling of heaviness after meals (85%), bloating, belching (52%) or dyspepsia (48%) were fairly common. Fever (5%) or jaundice (1%) was seldom found.

Average duration of symptoms was 14.47 months, with a median of 8 months. 42% of patients had history of 12 months or more.

**Table 4: Comorbidities.**

Comorbid conditions	No. of patients
Hypothyroidism	5
Hypertension	8
Emphysema	1
Bronchial Asthma	2
Infertility	2
Diabetes Mellitus	3
BPH	1
H/o Pulmonary Tuberculosis	1

Hypertension was the commonest comorbid condition found (8%), followed by hypothyroidism (5%). 3 out of 8 cases with hypertension were male (Odds Ratio 2.26), whereas 4 out of 5 cases of hypothyroidism were female (Odds Ratio 1.06).

**Table 5: Previous Abdominal Surgery.**

Previous Surgery	No. of patients
Tubal ligation	11
Caesarian section	10
Appendectomy	1
Hysterectomy	6

Previous history of abdominal surgery was found in 26 patients, and all were female. Tubal ligation was the commonest operation (11 patients; 13.9% of females; Lap 9; Open 2). 5 patients had history of more than 1 abdominal history. Amongst male, one patient had history of thoracotomy (CABG).

**Table 6: USG findings.**

USG findings	No. of patients
Multiple gall stones	77
Single gall stone	23
Sludge	1
Calculus impacted at neck of GB	2
Thickened GB wall	13
Distended GB	13
Mucocele	1
Shrunken GB	7
Polyp	1
CBD stone	1
Dilated CBD	1
Hepatomegaly	1

USG abdomen was suggestive of multiple calculi in gall bladder in 77%. Impacted calculus at neck of gall bladder was observed in 2 cases. Distended gall bladder was seen in 13%, and thickened wall was reported in 13%. CBD stone was seen in 1%.

Closed method using Veress needle was used to create the umbilical port in 87 cases. Direct entry using safety trocar was used in the other 13 cases.

Intraoperatively, distended gall bladder (19%), thickened gall bladder wall (26%), and stone impacted at neck (10%) were common findings. Gall bladder thickly adherent to liver bed, omentum, or stomach was seen in 15%.

Difficult Calot's triangle due to adhesions was observed in 22%. Cystic artery was found placed anterior to duct in 7%. Other anomaly of biliary tree or vessel was seen in 8%. CBD calculi was seen in 1%, Type II Mirrizi syndrome was observed in 1%.

Dissection of Calot's triangle required an average of 14.2 minutes.

**Table 7: Intraoperative findings: Gall Bladder**

Peroperative findings of Gall Bladder	No. of patients
Multiple calculi	77
Single calculus	23
Stone impacted at neck	10
Thick GB wall	26
Thin GB wall	2
Distended GB	19
Shrunken GB	4
Mucocele	3
Pyocele	1
Adhesions	15
Polyp	1
Bile spillage	3
Stone spillage	2

**Table 8: Intraoperative findings: Biliary Tree, Vessels and Liver**

Other intraoperative findings	No. of patients
Adhesions between liver, abdominal wall	3
Liver Hemangioma	1
Adhesions at Calot's triangle	22
Dilated cystic duct	3
Short cystic duct	3
Accessory cystic duct	1
Sectoral duct	1
Cholecystohepatic duct	1
CHD running parallel to cystic duct	1
Arteriorly placed cystic artery	7
Caterpillar turn	2
Accessory Cystic artery	1
Aberrant posterior cystic artery	1
Right HA placed anterior to CBD	1
CBD calculi	1
Dilated CBD	1
CBD adherent to Hartmann's pouch	1
Type II Mirizzi syndrome	1

Overall mean operative time was 51.3 minutes. Conversion to open cholecystectomy was required in 8 cases (3 male, 5 female). Adhesions in Calot's triangle were the reason for conversion in all 8 cases. Drain was used in 16 cases. 11 out of 16 such cases had adhesions at either Calot's triangle or involving gall bladder. Drain was removed after a median interval of 1 day postoperatively. Mean duration of postoperative hospital stay was 1.94 days.

## DISCUSSION

About 10 to 27% of the adult population has gall bladder disease, with the cholelithiasis and cholecystitis accounting for most of them.<sup>15</sup> In India, gallstone remains the most common digestive disease presenting in the surgical outpatient department.<sup>16</sup>

In our series, the mean age was 40.18 years, and 79% patients were female. These findings were consistent with the saying that gallstone is a disease of "fat, fertile, female, in fourties". Other studies like

Ghnam et al had mean age of 41.4 years, Khan et al 45.09 years, and Shah et al 50.4 years.<sup>17-19</sup> Female preponderance was also found by Bhasin et al (84%), Muhlim et al (85%), and Koulas et al (78%).<sup>20-22</sup>

Abdominal pain was the presenting complaint in 93% of the patients, and a history of heaviness following meals was present in 85%. Similar figures by found by McSherry et al in their study, wherein 556 (80.5%) out of 691 patients with diagnosed gallstone disease had symptoms attributed to biliary tract disease.<sup>23</sup> Berhane et al in their study of pain characteristics in gallstone disease found that all 220 patients had history of abdominal pain, and 66% were intolerant to food.<sup>24</sup>

Patients had history of gallstone related complaints for a mean duration of 14.47 months. McSherry et al found the mean duration of symptoms in their study to be 82.9 months.<sup>23</sup>

In our study, 8% patients were hypertensive, and 3% had diabetes mellitus. Sachdeva et al in their study comprising of 150 patients, also found that hypertension was the commonest associated comorbidity (19%), followed by diabetes mellitus (10%).<sup>25</sup>

26% patients in our study had history of prior abdominal surgery. These figures were similar to those found by Wongworawat et al.<sup>26</sup> In their study comprising of 504 patients, 175 patients (34.7%) had undergone prior abdominal surgery.

Intraoperatively, we found adhesions in 37% cases (between GB and neighbouring viscera in 12 cases; at Calot's triangle in 19; both in 3; and between liver and abdominal wall in 3 cases). Comparatively, Shah et al found adhesions in 55% cases, Mulhim et al in 61.5%, and Yetkin et al in 51%.<sup>19,21,27</sup>

Difficult Calot's triangle was observed in 22 cases. In comparison, difficult Calot's triangle was found by Shah et al in 12% cases, Yetkin et al in 5.3%, and Duca et al in 9.8%.<sup>19,27,28</sup>

In our study, calculus impacted at the neck of gall bladder or Hartmann's pouch was found in 10%. This was similar to the findings observed by Lal et al (11 out of 73 cases; 15.07%).<sup>29</sup> Mucocele was found in 3 cases. This was comparable with other studies, like 2% as observed by Bhasin et al, 3.2% by Mulhim et al, and 0% by Duca et al.<sup>20,21,28</sup> We found contracted or shrunken gall bladder in 4% cases, as compared to 15.07% found by Lal et al.<sup>29</sup>

Conversion to Open Cholecystectomy was required in 8%. This was comparable to the conversion rate of 12% as observed by Shah et al, 4% by Bhasin et al, and 8% by Yetkin et al.<sup>19,20,27</sup>

## CONCLUSION

Gallstone disease is a predominantly female condition. Though literature suggests that association of pain abdomen with meals is not found in overwhelming majority, a leading question about the

same points to the contrary. Dyspepsia, belching and bloating are found commonly.

Laparoscopic cholecystectomy is associated with lesser hospital stay, and less patient discomfort. Adhesions are commonly observed intraoperatively. Difficult Calot's triangle is the leading cause of conversion to open procedure.

Anomalies of cystic duct or artery are not uncommon.

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