

**A clinical study of all the cases of cholelithiasis getting
admitted in the
department of General Surgery, Dr D Y Patil Medical
College, Hospital &
Research Centre Pimpri, Pune**

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ABSTRACT

Background: Cholelithiasis is a chronic recurrent disease of the hepatobiliary system. Gallstones are the major cause of morbidity and mortality throughout the world. With atleast 10% of the adults have gallstones with a recent rise in the incidence due to change in the dietary factors. This study aims to evaluate the demographic factors, its various modes of presentation, treatment, outcome

Method: This prospective study was conducted on 100 patients in General Surgery Ward, at Dr. D.Y. Patil Hospital and Research Centre, Pune for a period of 1 year who were diagnosed with cholelithiasis. Epidemiological aspects, Clinical profile, investigation, treatment and outcomes were analyzed.

Result: The mean age of the patients was 36.82 years with male to female ratio 1:0.69. Pain abdomen was the most common symptom. Ultrasonography showed gallbladder stones in all patients and 31% of patients undergone open cholecystectomy and 65% underwent laparoscopic cholecystectomy. The

conversion rate of lap to open cholecystectomy was 4%. The average length of post operative stay in Laparoscopic Cholecystectomy was 3 days and 7 days in open cholecystectomy.

Conclusion: Laparoscopic cholecystectomy offers better surgical management with reference to post operative pain, lesser number of hospital days and cosmetically better

Keywords: cholelithiasis, laparoscopic, cholecystectomy

INTRODUCTION

Cholelithiasis is one of the most frequently encountered disease and one of the major causes of abdominal morbidity throughout world¹. Incidence of gall stone disease is on a rise globally due to the vast changes in the dietary habits, life style changes associated with high junk diet consumption and increased sedentary life style².

Its prevalence in India is estimated to be around 2 to 29%, where it is most commonly prevalent in northern states as compared to southern states^{3,4}. The prevalence of gall bladder stones varies widely in different parts of the world. In India estimated to be around 4% whereas in western world it is 10%.⁵ Gallstones in patients without biliary symptoms are commonly diagnosed incidentally on ultrasonography, CT scans, abdominal radiography, or at laparotomy. Several studies have examined the likelihood of developing biliary colic or developing significant complications of gallstone disease. Approximately 3% of asymptomatic individuals become symptomatic per year (i.e., develop biliary colic). Once symptomatic, patients tend to have recurring bouts of biliary colic. Complicated gallstone disease develops in 3 to 5% of symptomatic patients per year.⁶ It is estimated that at least 20 million persons in the United States have gall stones and that approximately 1 million new cases of cholelithiasis develop each year. Prevalence in Europe is 18.5% from the autopsy studies with the lowest prevalence from Ireland (5%) and the highest from Sweden (38%). In Australia the prevalence rate varies from 15% to 25%. Highest prevalence in pima Indian tribe of Arizona, with total and female prevalence of 49% and 73% respectively.^{6,7} Gall stones are rare in Africa with prevalence of less than 1% and in Japan it has been increased from 2% to 7%.⁶

AIM:

To study the clinical presentation and management of the patients with cholelithiasis admitted in Dr. D. Y. Patil Medical College, Hospital & Research Centre Pimpri, Pune.

OBJECTIVES:

1. To study the epidemiological aspects of cholelithiasis.
2. To study the clinical presentation of cholelithiasis.
3. To study the outcomes of various treatment modalities of cholelithiasis done in Dr. D Y Patil Medical College, Hospital & Research Centre Pimpri, Pune.
4. To study the post operative outcome of open versus laparoscopic cholecystectomy with regards to pain, mobilization and return to daily routine

activity.

METHODOLOGY:

This was a hospital based, prospective cross-sectional descriptive study that includes a total of 100 cases over a period of 1 year that will be treated on inpatient basis from April 2021 to April 2022. The study was conducted at department of general surgery after approval from the ethical committee of the institution.

Inclusion criteria

- All cases of cholelithiasis admitted in Dr D Y Patil Medical College, Hospital & Research Centre Pimpri, Pune

Exclusion criteria

- Patients who did not consent for the study
- Patients with stones in the common bile duct
- Pregnancy
- Malignancy (Gall bladder or hepatobiliary tract)

This study included the patients getting admitted in the department of general surgery of Dr. D. Y. Patil Medical college and Hospital, Pimpri Pune with complaints of dyspepsia, acute or chronic cholecystitis, pancreatitis, with USG abdomen confirming gall bladder calculus.

Assessment of parameters:

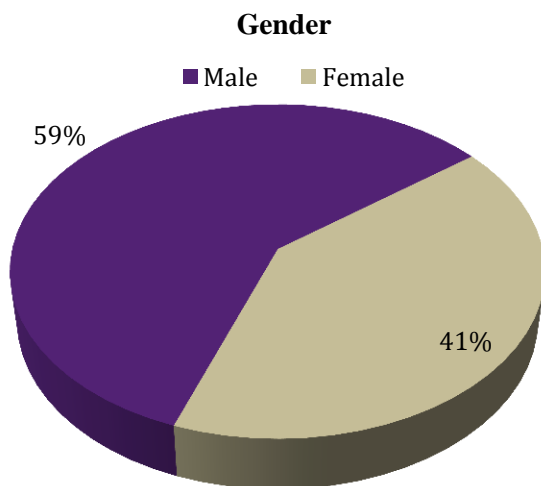
Detailed clinical history of all the 100 cases was taken according to the proforma approved by the guide. Information regarding the demographic characters, past history of similar complaints, risk factors and diet history.

All consenting patients underwent detailed examination performed by the surgeon and subjected to relevant investigations. Based on clinical investigations and operative criteria, some patients underwent open cholecystectomy while others underwent laparoscopic cholecystectomy

All patients received antibiotics and routine post operative care. Patients were properly examined in the post operative period to note the development in any complication. Suitable treatment was given according to the need. Patients were advised regarding diet, rest and to visit the surgical OPD for regular follow up.

RESULTS

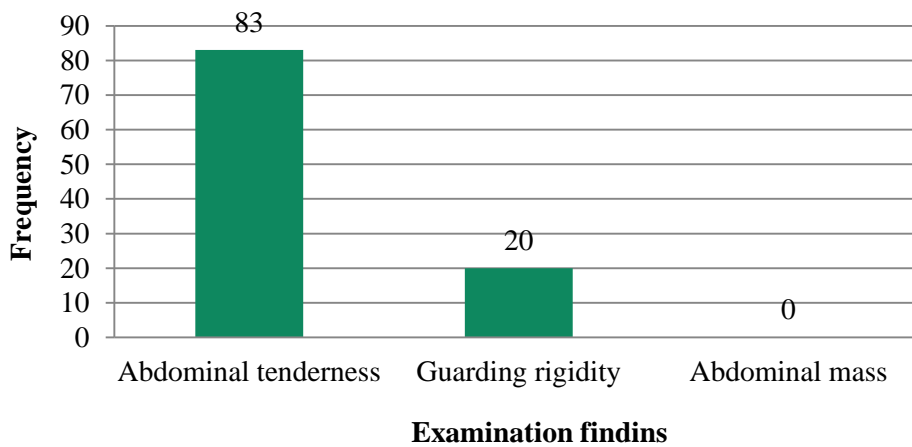
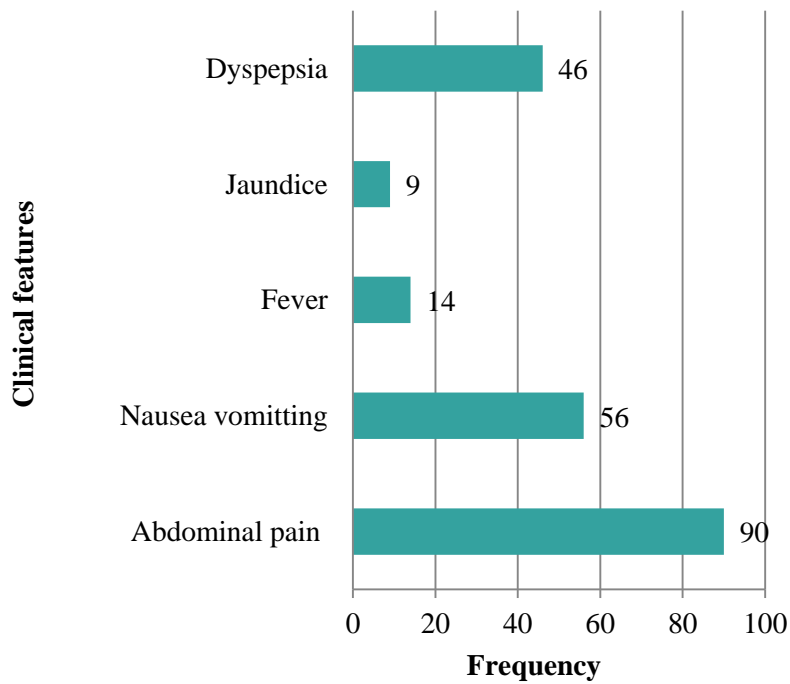
1) Bar diagram showing age and gender wise distribution of study sample



Age (years) Statistics	
N	100
Mean	36.82
Std. Error of Mean	1.076
Std. Deviation	10.760
Range	47
Minimum	19
Maximum	66

Mean age of 100 study sample was 36.82 years (standard deviation – 10.76 years), with the highest 66 years and lowest 19 years. There were 59% males and 41% females in the study while 46% samples were from 31-40 years age group followed by 25% subjects were from 21-30 years age group.

2) Details of clinical presentation among study subjects

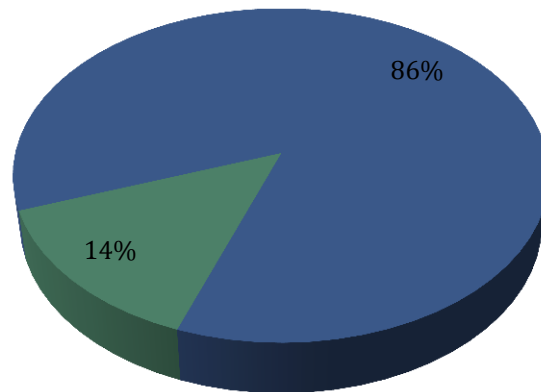


Above bar diagram shows that abdominal pain and tenderness were major clinical features among study subjects and it was present in 90% & 83% cases. Nausea vomiting (56%), dyspnea (46%), guarding rigidity (20%), fever (14%) etc. were also present in some subjects, some subjects were having more than one finding.

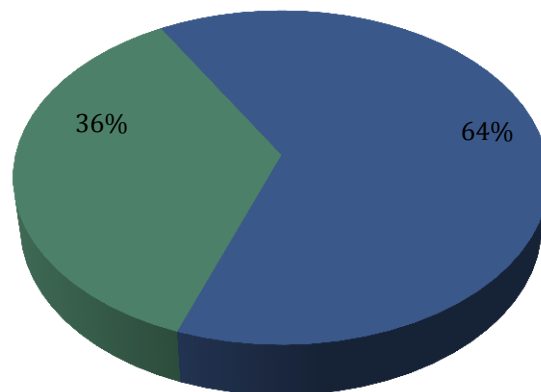
3) Distribution of cases as per risk factors and comorbidity

Comorbid condition

■ Present ■ Absent

**Addiction**

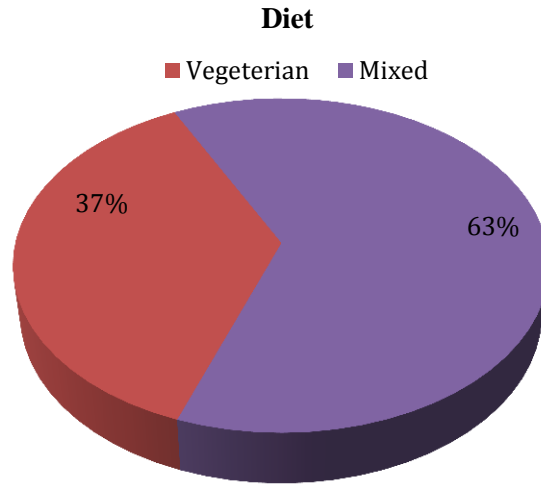
■ Present ■ Absent



COMORBIDITIES/ RISK FACTORS	No of Patients	Percentage
Tobacco Chewer	15	15
Alcohol Consumption	8	8
Smoker	18	18
DM	8	8
HTN	11	11

Above pie chart showing 14% subjects were having some sort of comorbidity while remaining 86% were without any comorbid condition. Hypertension (8%) and diabetes (5%) were most common comorbid conditions, some subjects were having more than one comorbid condition.

And 36% subjects were having some sort of addiction including smoking, alcohol, tobacco chewing etc. while remaining 64% were without and addiction.

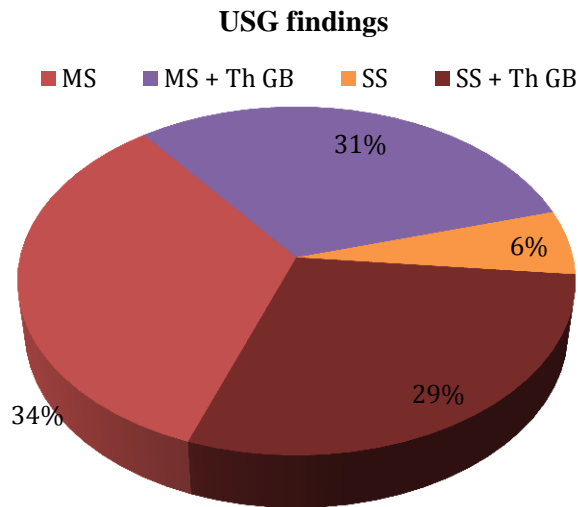


Above pie chart showing 63% subjects were having mixed diet pattern (vegetarian & non-vegetarian food) while remaining 37% subjects prefer vegetarian food.

BMI (kg/m²) Statistics	
N	100
Mean	26.30
Std. Error of Mean	0.37
Std. Deviation	3.71
Range	14.70
Minimum	18.60
Maximum	33.30

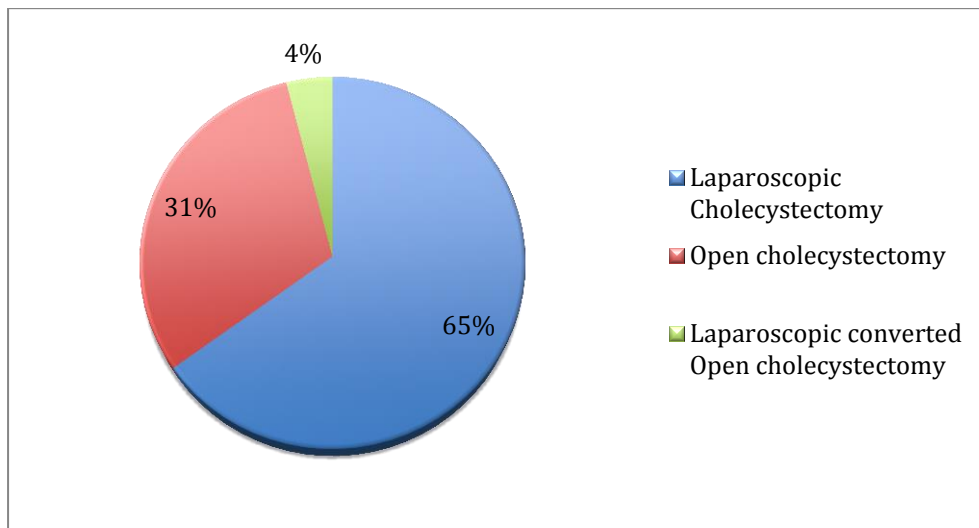
Mean BMI 100 study sample was 26.30 kg/m² (standard deviation – 3.71 kg/m²), with the highest 33 kg/m² and lowest 18.60 kg/m².

4) USG finding among study subjects



Above pie chart shows that multiple stone (34%) & multiple stone with thicken gallbladder (31%) were most common USG findings among study subjects followed single stone with thickened gallbladder (29%) and single stone (6%) on USG.

5) Type of Operation



In the present study out of 100, 65 patients underwent Laparoscopic Cholecystectomy and 31 patients underwent open cholecystectomy. However in 4 patients laparoscopic converted open cholecystectomy was done due to difficult calot's triangle, excessive adhesions and bleeding

6) Operating room time

The average operating time for Laparoscopic Cholecystectomy was 55 mins, 120 minutes for Open Cholecystectomy and 150 minutes for Laparoscopic Converted Open Cholecystectomy

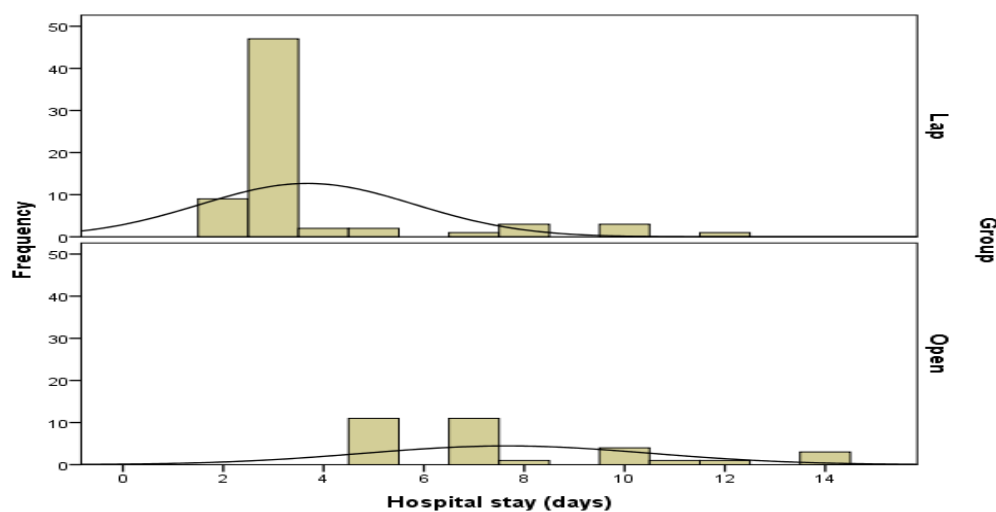
Type of Operation	Time (in minutes)
Laparoscopic Cholecystectomy	55
Open Cholecystectomy	120
Laparoscopic converted Open Cholecystectomy	150

7) Complications after surgery

Complications	Cholecystectomy		Total
	Laparoscopic	Open	
Bile duct injury	1	1	2
Bile leaked	1	1	2
Wound infection	4	6	10
Total	6	8	14

Above table shows that, wound infection was major complication (10%) of open cholecystectomy than laparoscopic cholecystectomy (6% & 4% respectively) followed by bile duct injury & bile leaked (2% each). On application of chi square test post-operative complications were associated with open cholecystectomy ($p=0.029$).

8) Hospital stay (days) among study subjects

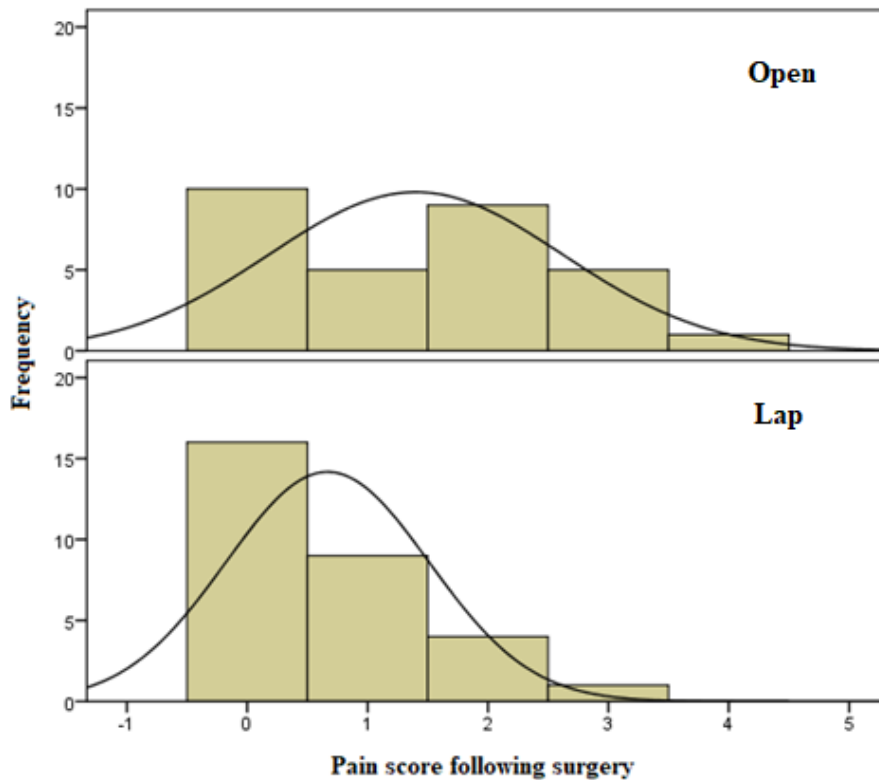


Group Statistics

	Group	N	Mean	Std. Deviation	Std. Error Mean	P value
Hospital stay (days)	Lap	68	3.68	2.140	.260	0.000
	Open	32	7.66	2.869	.507	

Mean duration of laparoscopic cholecystectomy (3.68 ± 2.1 days) was lower than open cholecystectomy (7.66 ± 2.86 days) and difference between them was statistically significant ($p=0.00$), it means in laparoscopic cholecystectomy patients were discharged earlier than open cholecystectomy.

9) Pain score on day 3 after surgery

**Group Statistics**

	Group	N	Mean	Std. Deviation	Std. Error Mean	P value
Pain score	Lap	68	0.67	0.84	0.15	0.01
	Open	32	1.40	1.22	0.22	

Mean pain score on day 3 after laparoscopic cholecystectomy (0.67 ± 0.84) was lower than open cholecystectomy (1.40 ± 1.40) and difference between them was

statistically significant ($p=0.01$), it means in laparoscopic cholecystectomy patients were having less pain than open cholecystectomy on day 3.

DISCUSSION

Cholelithiasis is one of the most frequently encountered disease and one of the major causes of abdominal morbidity throughout world.¹ Incidence of gall stone disease is on a rise globally due to the vast changes in the dietary habits, life style changes associated with high junk diet consumption and increased sedentary life style.²

In this study 100 cases of Cholelithiasis that were admitted in Dr D Y Patil Medical college, Hospital and Research Institute for a period of 1 year were studied on the basis of demographic factors, clinical presentation and its surgical management with post operative complications and the results of our study are compared with those of well known authors.

In a study of Muthalaisamy.⁸ (Trichy) mean age was 43.56 ± 13.18 years and other studies in literature like Shukrya Kamil Khalaf (Iraq) and Adam Gyedu (Ghana).⁹ had the similar incidence. The mean age in our study was 36.82 years (standard deviation – 10.76 years). Maximum patients were observed in the 4th and 5th decade, which is suggestive of early occurrence of gallstone disease in Indian population that is consistent with study done by Bhatti in Lahore Pakistan and Muthalaisamy in Trichy but Veerbhadrappa in Madhya Pradesh found an increased incidence in 5th and 6th decade in India.¹¹⁻¹²

In the present study 41% were female while 59% were male. Battacharya¹³ series showed 71.4% were female, 28.6% were male. Similar sex preponderance in the favour of females were noted by Tamhankar AP,¹⁴ Ganey et al.¹⁵ and Major Alok Sharma et al.,¹⁶ series showed that 70% were male and 30% were female.

In the present study the mean BMI was 26.30 kg/m^2 (standard deviation – 3.71 kg/m^2), with the highest 33 kg/m^2 and lowest 18.60 kg/m^2 . A study by Shukrya Kamil Khalaf in 2016 stated that an increased BMI was independently associated with a higher risk of gallstones.⁹ Similar findings were seen in the studies by Talseth, in Sweden, in 2016 and Stender in 2013 in which a causal association between elevated BMI and increased risk of symptomatic gallstone disease was seen.¹⁷⁻¹⁸ But a study by [Hui Sun](#) et al. in 2009 (China) stated that the causal association is gender specific and obese women are more significantly associated with gallstone disease compared to obese men.¹⁹

In the present study, 63% patients had mixed diet as compared to 37% patients with vegetarian diet but this association was not statistically significant. Similar finding was seen in a study by Shabanzadeh in which it was stated that there is no significant association of clinical gallstone events and diet.²⁰ But this association is variable in literature like a study by Verma and by McConnell are of exactly contrast opinion in relation to association with vegetarian and non vegetarian diet.^{21,22}

Abdominal pain and tenderness were major clinical features among study subjects and it was present in 90% & 83% cases. The commonest site of pain was in

the right hypochondrium, and the next commonest site was epigastrium. Nausea vomiting was 56%. Vomiting was spontaneous, occurred mostly during the attack of pain. Dyspepsia was present in 46%, which were similar to the findings of Lokesh et al.²⁴ Guarding and rigidity in 20%, and fever was present in 14%. Some subjects were having more than one finding. Similar presentations were noted in the series of Alok Sharma, Ganey series, Goswitz et al. series.^{15,16,23}

Ultrasound scanning was done in all patients, all the cases revealed stone in the gall bladder. Gall bladder stones were seen in 100 patients. Out of which 6 were solitary stones, 34 were multiple, thickening of gall bladder was seen in 60 patients. Many of the features in my study were similar to studies of Major Alok Sharma et al.¹⁶

All 100 patients underwent surgery out of which 65 patients underwent Laparoscopic Cholecystectomy and 31 patients underwent open cholecystectomy The conversion rate from lap to open cholecystectomy was 4%. Which was similar to studies of Scott et al. (4.3%).²⁵ The conversion rate was 7% in Schlumpf et al.²⁵ and 2.2% in Newman et al.²⁵ The operative room time for open cholecystectomy was ranged from 55 min to 100 min, with approximate average time being 55 min, and lap cholecystectomy was Ranged from 100 min to 130 min, with approximate average time being 120 min. Which were similar to study of Trondsen et al. (50 min).²⁵

All the patients were given IV fluids, Nasogastric aspiration was done, and antibiotics and analgesics were given. Drainage tube was removed between 3 and 5 days based upon the drainage. In the present study wound infection was the most common complication, which was 10% followed by bile duct injury & bile leaked (2% each). The wound infection rate in the study of Saxena et al. was 6.3%. One patient had bile leakage through the drain tube, the patient was managed conservatively and the patient improved. In this case drain was removed on the 7th day.

There was no problem in the follow up period in any patient. Nothing more can be stated because of limited period of follow up of patients.

CONCLUSION

1. The incidence of gallstones was the highest in the 4th and 5th decades of the life with maximum incidence in the 5th decade. Gallstones disease is more common in female.
2. The commonest symptom was pain abdomen and the commonest sign was tenderness in the right hypochondrium. Ultrasonography was the investigation of the choice. It showed multiple gallstones and thickening of the gallbladder in the majority of cases.
3. The conversion rate from laparoscopic cholecystectomy to open cholecystectomy

was 4%. Subcostal incision was the most common incision used for open cholecystectomy.

4. Wound infection was the most common complication.

5. Laparoscopic cholecystectomy reduced the number of stay in the hospital, pain and disability as compared to open cholecystectomy.

6. Further studies are required in larger populations to determine the prevalence rate and mode of management in patients with cholelithiasis.

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