



A CLINICAL STUDY OF CHOLELITHIASIS

General Surgery

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ABSTRACT

BACKGROUND AND OBJECTIVES: 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 intends to know its various modes of presentation, treatment, outcome

METHODS: Fifty patients with symptoms and signs of cholelithiasis were included in the study, clinical profile, investigation, treatments, outcomes were analyzed.

RESULTS: The highest age incidence of cholelithiasis was in the 5th decade, more common in females. Pain abdomen was the most common symptom. Ultrasonography showed gallbladder stones in all patients and 52% of patients undergone open cholecystectomy, 48% of patients undergone laparoscopic cholecystectomy. The conversion rate of lap to open cholecystectomy was 4%. The operating room time and the length of post operative stay were 110 min and 7 days in open cholecystectomy and 55 min and 3 days in lap cholecystectomy.

INTERPRETATION AND CONCLUSION: The result showed cholelithiasis was more common in females, 5th decade, presented most commonly with pain abdomen. Ultrasonography was the most common investigation. Laparoscopic cholecystectomy reduces the number of hospital days, pain and disability

KEYWORDS

Cholelithiasis; Ultrasonography; Cholecystectomy

INTRODUCTION

Among the many distinguished names in Hindu medicine that of Susrutha, 'The Father of Indian Surgery' stands out in prominence, he compiled the surgical knowledge of his time in his classic 'Susrutha Samhitha'. It believed that this classic was compiled between 800 BC and 400 AD. He described jaundice called Pitta-Ashmarijanya meaning jaundice caused by stone in the bile. It was also known that such jaundice could be caused by wrong diet.¹

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%.²

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. Over a 20-year period, about two thirds of asymptomatic patients with gallstones remain symptom free.³

It is estimated that atleast 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.^{3,5} Gall stones are rare in Africa with prevalence of less than 1% and in Japan it has been increased from 2% to 7%.³

Diagnosis of gall stone is by proper history and physical examination and combining it with appropriate investigation which varies from surgeon to surgeon and hospital to hospital and country to country. Changing incidence in India is mainly attributed to westernization and availability of investigation that is ultrasound to urban as well as rural area and also because of increase affordability due to change in the

socio-economic structure and the cost of investigations.

Because of increase incidence of gall stones and its variable presentations in India as well as in the west, there is a great need for a study which can provide the information regarding the prevalence of the disease, various clinical presentation and management, outcomes of the cholelithiasis.

OBJECTIVES

1. To study the age and sex distribution.
2. To study the various modes of presentation.
3. To study the type of gall stones.
4. To study the various treatment available and its outcome

in patients presenting with gall stones disease at Government Dharmapuri Medical College Hospital, Dharmapuri

METHODOLOGY

This study titled as "A clinical study of cholelithiasis" was done at Government Dharmapuri Medical college Hospital for a period of July 2017 to July 2018.

About 50 consecutive cases were admitted, examined, investigated and operated during this period. An unrestricted materials and methods are gathered. Detailed history of all the 50 cases were taken according to the proforma approved by the guide. Information regarding the age, religion, socio economic status, nature of the symptoms, duration of the symptoms, past history of similar complaints, diet history, history of OCP. Alcohol ingestion, diabetes were obtained. All patients undergone detailed examination, all patients had haemogram, ECG, LFT, blood sugar, blood urea, serum creatinine, urine analysis, blood group, chest X-ray, ultrasound scan of the abdomen. Relevant investigations and speciality consultations were taken for patients with associated medical illness and their control was achieved.

Risk and complications of the condition as well as surgery has been explained to the patients, concerned was taken. Preoperative antibiotics were given. After opening the abdomen the pathological features and anatomical variations were noted, bile obtained from the

gallbladder with a syringe and sent for culture sensitivity. Based on clinical investigation and operative criteria, exploration of the CBD was done. In this study sum of the patients undergone open cholecystectomy and some of the patients undergone lap cholecystectomy because of the reasons like previous operation, obese patient and affordability. A sub hepatic tube drain was used in patients who undergone open cholecystectomy and connected to urosac bag. The abdominal wound was closed in layers. The gallstones were sent for chemical analysis and the gallbladder for histopathological examination. All patients received antibiotics and routine post operative care. Patient was properly examined in the post operative period to note the development in any complication. Suitable treatment was given according to the need. Antibiotics were given and subsequently changed according to the bile culture and sensitivity report. Patients who undergone lap cholecystectomy were discharged on the third day and open cholecystectomy were discharged on the 7th day. Unless any complications. Patients were advised regarding diet, rest and to visit the surgical OPD for regular follow up.

In the follow up period attention were given to subject to improvement of the patients with regard to symptoms as well as examination of the operative scar.

RESULTS

This study includes a total of 50 cases that were studied prospectively over a period of 1 year, that were treated as a inpatients basis from July 2017 to July 2018

AGE INCIDENCE

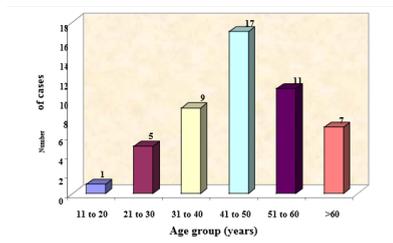
Distribution Of Cases By Age Group

Table 1: Age-wise incidence

Age group (years)	Number of cases	Percentage
11-20	1	2
21-30	5	10
31-40	9	18
41-50	17	34
51-60	11	22
>60	7	14

There is an increased incidence of cholelithiasis in the 5th and 6th decade with the peak in the 5th decade. In my study the youngest patient was 19 years old and the oldest patient is 75 years old.

Figure 24: Age-wise incidence

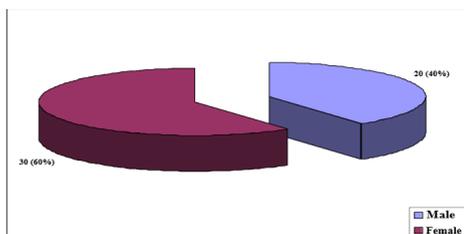


DISTRIBUTION OF CASES BY SEX

Table 2: Sex-wise distribution

Sex	Number of cases	Percentage
Male	20	40
Female	30	60
Total	50	100

Figure 25: Sex-wise distribution



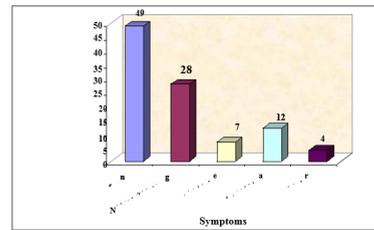
In the present study 30 patients were female and 20 patients were male. The present study shows gallstones diseases are a common problem in female population. The female to male ratio is 3:2.

PRESENTING SYMPTOMS

Table 3: Presenting symptoms

Symptoms	Number of cases	Percentage
Pain	49	98
Nausea/vomiting	28	56
Jaundice	7	14
Dyspepsia	12	24
Fever	4	8

Figure 26: Presenting symptoms

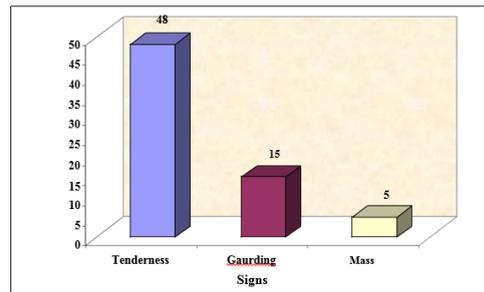


PRESENTING SIGNS

Table 4: Presenting signs

Signs	Number of cases	Percentage
Tenderness	48	96
Gaurding	15	30
Mass	5	10

Figure 27: Presenting signs

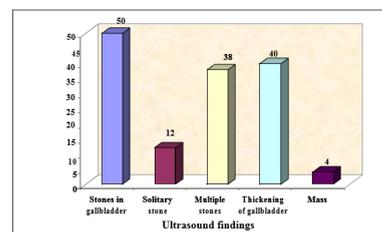


ULTRASOUND

Table 5: Ultrasound findings

Ultrasound findings	Number of cases	Percentage
Stones in gallbladder	50	100
Solitary stone	12	24
Multiple stones	38	76
Thickening of gallbladder	40	80
Mass	4	8

Figure 28: Ultrasound findings



Ultrasound scanning of the abdomen was done in all patients. 43 patients had stone in gallbladder, 40 patients had thickening of Gall

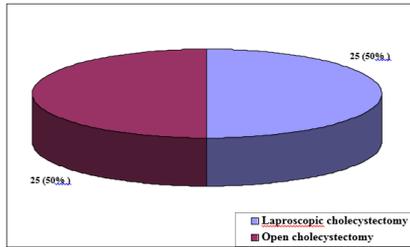
bladder.

TYPE OF OPERATION

Table 6: Type of operation

Type of operation	Number of cases	Percentage
Laprosopic cholecystectomy	25	50
Open cholecystectomy	25	50

Figure 29: Type of operation



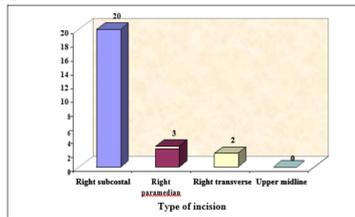
In the present study 25 patients undergo laparoscopic cholecystectomy and 25 patients undergone open cholecystectomy.

INCISION

Table 7: Type of Incision

Type of incision	Number of cases
Right subcostal	20
Right paramedian	3
Right transverse	2
Upper midline	0

Figure 30: Type of Incision



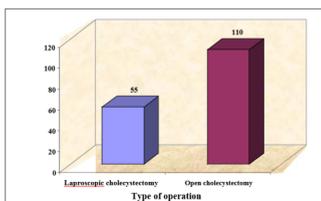
Out of 25 patients who undergone open cholecystectomy, 20 patients were operated through a right subcostal incision, 3 patients were operated through right paramedian incision and two patients through a right transverse incision.

OPERATION

Table 8: Operating room time

Type of operation	Operating room time
Laprosopic cholecystectomy	55 min
Open cholecystectomy	110 min

Figure 31: Operating room time



The operating room time for open cholecystectomy was 110 min and lap cholecystectomy was 55 min.

COMPLICATIONS

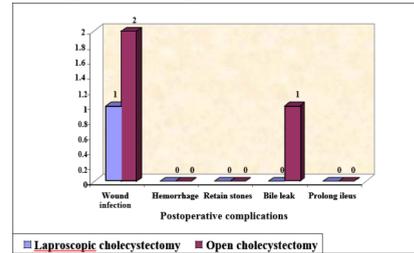
Table 9: Postoperative complications

Postoperative complications	Laprosopic cholecystectomy	Open cholecystectomy	Total
Wound infection	1	2	3
Hemorrhage	0	0	0
Retain stones	0	0	0
Bile leak	0	1	1
Prolong ileus	0	0	0

Intraoperative complications

Intra operative complication	Laprosopic cholecystectomy	Open cholecystectomy
Bile duct injury	1	1

Figure 32: Postoperative complications



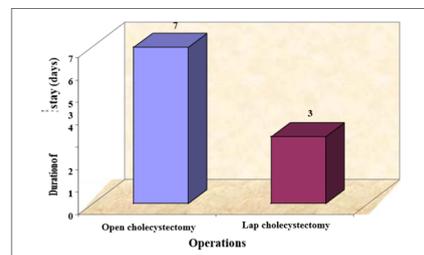
In the present study 5 patients had wound infection. 1 patient had postoperative bile leak which was managed conservatively and patient recovered. Three patients had bile duct injury which was repaired on the T-tube.

DURATION OF HOSPITAL STAY

Table 10: Duration of hospital stay

Operation	Length of stay (days)
Open cholecystectomy	7
Lap cholecystectomy	3

Figure 33: Duration of hospital stay



Postoperative length of stay was 7 days for open cholecystectomy and 3 days for lap cholecystectomy.

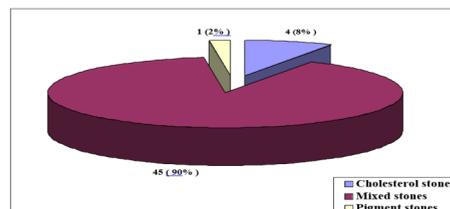
TYPES OF STONES

Table 11: Type of stones

Type of stone	Number of cases	Percentage
Cholesterol stone	4	8
Mixed stones	45	90
Pigment stones	1	2

In the present study gallstones analysis was done in all patients. 45 patients had mixed type of stone, 4 patients had cholesterol stone and 1 patient had pigment stone.

Figure 34: Type of stones



DISCUSSION

In this study 50 cases of Cholelithiasis that were admitted in Government Dharmapuri Medical college hospital, Dharmapuri, from July 2017 to July 2018. Well-known available literature on Cholelithiasis is reviewed. In this study the results of our study are compared with those of well-known authors.

After a detailed history, clinical investigations and available treatment following observations were noted.

AGE INCIDENCE**Table 12: Comparison of age incidence with other studies**

Age (years)	Present study		Herman's series		Rushad's series	
	No.	%	No.	%	No.	%
11-20	1	2	25	1.6	0	0
21-30	5	10	92	5.9	4	3.33
31-40	9	18	226	14.6	36	36.30
41-50	17	34	325	21.0	30	25.0
51-60	11	22	473	30.6	29	24.16
>60	7	14	352	23.5	21	17.5

In this study, cases fall between 19 and 75 years. There is an increased incidence in the 5th and 6th decade with the maximum incidence in the 5th decade. Similar incidence is seen in the studies of Herman et al. (5th decade).¹⁰⁸ Hanif¹⁰⁹ series showed peak incidence in 5th decade. In western studies the peak incidence is in the 5th and 6th decades. The rise in the peak age of incidence is due to change in the dietary factor. Similar findings are noted in the studies of Ganey et al.¹¹⁰ and Moreaux et al.¹¹

SEX DISTRIBUTION**Table 13: Comparison of sex distribution with other studies**

Age (years)	Present study		Herman's series		Rushad's series	
	No.	%	No.	%	No.	%
11-20	1	2	25	1.6	0	0
21-30	5	10	92	5.9	4	3.33
31-40	9	18	226	14.6	36	36.30
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>60	7	14	352	23.5	21	17.5

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SEX DISTRIBUTION**Table 13: Comparison of sex distribution with other studies**

Sex	Present study		Battacharya's series		Alok Sharmaseries	
	No.	%	No.	%	No.	%
Male	20	40	26	28.6	41	70
Female	30	60	65	71.4	17	30
Total	50	100	91	100	58	100

In the present study 30 out of 50 cases were female while the rest 20 were male. Battacharya¹¹² series showed 71.4% were female, 28.6% were male. Similar sex preponderance in the favour of females were noted by Tamhankar AP,¹¹³ Ganey et al.¹¹⁰ and Major Alok Sharma et al.,¹¹⁴ series showed that 70% were male and 30% were female.

PRESENTING SYMPTOMS**Table 14: Comparison of presenting symptoms with other studies**

Symptoms	Present study		Alok Sharma series		Ganey's series	
	No.	%	No.	%	No.	%
Pain	49	98	58	100	987	95
Nausea/ vomiting	28	56	48	82.8	576	55.6
Jaundice	7	14	3	5.17	101	10
Dyspepsia	12	24	5	8.62	222	21
Fever	4	8	Na	Na	92	9

Pain was the predominant symptoms in the present study with 98%. The commonest site of pain was in the Rt. Hypochondrium, and the next commonest site was Epigastria. 5 patients complained of pain radiating to the back. 48 patients had chronic Recurring pain, 2 patients had acute onset of pain, pain was colicky in nature. 13 patients had dull

aching pain, 33 patients had Colicky pain. Similar presentations were noted in the series of Alok Sharma, Ganey series, Goswitz et al. series.¹¹⁵ 56% (28 patients) of cases in the present series had nausea/vomiting. Patients Vomiting was spontaneous, occurred mostly during the attack of pain.

Vomiting in this study was similar to Ganey et al. series. In the present study 7 patient had jaundice. 24% (12 patients) of patient had dyspepsia. The Endoscopic examination in these patients did not reveal any pathology. On ultrasound examination, these patients had Gall stones.

The dyspepsia was relieved after these patients undergone Cholecystectomy. The incidence of dyspepsia in present series was similar to Ganey series, Alok Sharma series. Fever was present in 4 cases in the present study. Fever was secondary to cholangitis due to biliary obstruction. The fever occurred as a part of Charcot's triad.

GENERAL PHYSICAL EXAMINATION

The 43 patients were moderately built and nourished, 7 patients were obese. These observations are against the time-honoured aphorism that fat people are more prone for this disease. 6 patients were diabetic and 7 patients were Hypertensive. Pallor was present in 6 patients who are corrected with blood transfusion.

PRESENTING SIGNS

Tenderness in the Rt. Hypochondrium was present in 48 patients guarding was present in 15 patients. A positive Murphy's sign present in 7 patients. A mass was felt in four patients. The mass could be due to distention of gallbladder are adherent omentum over laying the inflamed gallbladder.

INVESTIGATIONS

All the patients undergo routine hematological and biochemical investigations. The hemoglobin of patients ranged from 8 to 15 gm%.

ULTRASOUND FINDINGS**Table 15: Comparison of ultrasound findings with other study**

Ultrasoundfindings	Present study		Alok Sharma series	
	No.	%	No.	%
Stones in gallbladder	50	100	57	98.3
Solitary stone	12	24	15	26.3
Multiple stones	38	76	42	73.7
Thickening of gallbladder	40	80	10	17.2
Mass	4	8	1	1.7

Ultrasound scanning was done in all patients, all the cases revealed stone in the gall bladder. Gall bladder stones were seen in 50 patients. Out of which 12 were solitary stones, 38 were multiple, thickening of gall bladder was seen in 40 patients, mass detected in 4 patients. Many of the features in my study were similar to studies of Major Alok Sharma et al.¹¹⁴

PREOPERATIVE EVALUATION

A hemoglobin level of 10 gms was accepted for the surgery. Blood transfusion was given to selected patients to improve the hemoglobin level. 2 cases diagnosed as acute Cholecystitis were managed conservatively with IV fluids, nasogastric aspiration, antibiotics, and analgesics. These patients were treated conservatively and were then offered surgery after 6 weeks. Associated medical illness was treated accordingly before taking the patient to surgery.

TYPE OF OPERATION

In the present study 25 patients undergo open cholecystectomy and 25 patients undergone Lap cholecystectomy. The conversion rate from lap to open cholecystectomy was 4%. Which was similar to studies of Scott et al. (4.3%).⁷ The conversion rate was 7% in Schlumpf et al.⁷ and 2.2% in Newman et al.⁷ The most common incision used in open cholecystectomy was Rt. Sub costal Incision, which was used in 20 patients, 3 patients were operated through Rt. Paramedian incision and 2 patient by Rt transverse incision. In 45 cases, duct first method was done and in 5 patients, fundus first method was done. The reason for

fundus first method was dense adhesion. The duct first method was the method of choice. Intra operatively in 5 cases gallbladder were distended. Among them in two case omentum was present over the gallbladder.

OPERATING ROOM TIME

Table 16: Comparison of operating room time with other studies

Type of operation	Operating room time	Barkern et al.	Tron Dsen et al.
Laposcopic cholecystectomy	55 min	73 min	50 min
Open cholecystectomy	110 min	86 min	100 min

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 110 min. Which were similar to study of Trondsen et al. (50 min).⁷ For open cholecystectomy, 100 min for lap cholecystectomy. Operating room time for open cholecystectomy in my study was also similar to the studies of Barkarn et al.⁷ and Mchohan et al.⁷

DURATION OF HOSPITAL STAY

Table 17: Comparison of duration of hospital stay with other studies

Type of stone	Present study		Mathur SN et al.	
	No.	%	No.	%
Cholesterol stone	4	8	3	12
Mixed stones	45	90	21	84
Pigment stones	1	2	1	4

In the present study 90% had mixed stones and 8% had cholesterol stone, 2% had pigment stone, which is similar to the studies of Mathur SN et al.

POSTOPERATIVE TREATMENT

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.

POSTOPERATIVE COMPLICATION

In the present study wound infection was the most common complication, which was 6%. 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.

FOLLOW UP

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

- The incidence of gallstones was the highest in the 5th and 6th decades of the life with maximum incidence in the 5th decade. Gallstones disease is more common in female.
- 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.
- The conversion rate from laparoscopic cholecystectomy to open cholecystectomy was 4%. Subcostal incision was the most common incision used for open cholecystectomy and next being the right paramedian.
- Wound infection was the most common complication.
- Laparoscopic cholecystectomy reduced the number of stay in the hospital, pain and disability as compared to open cholecystectomy.
- The commonest type of the stone was mixed stone.

SUMMARY

The study consists of only 50 cases of cholelithiasis therefore there

may be some variations in the statistics as number of my cases is small for full statistical evaluation.

- The highest age incidence of cholelithiasis was in the 5th and 6th decade with maximum incidence in the 5th decade. There was an increased incidence in female.
- Pain was the most common symptom present in 98% of the patients, nausea and vomiting were the second most common symptom presenting in 56% of patients, dyspepsia was present in 24% of patients, jaundice in 14% of the patients, 8% of patients had fever.
- Tenderness in the right hypochondrium was the most common sign present in 96%, guarding was the next sign present in 30% of the patients and mass abdomen in 10% of the patients.
- Ultrasonography was the investigation of choice in our hospital. All patients had gallstones, 24% solitary stone, 76% multiple stones, thickening of gall bladder is seen in 80% cases.
- 50% of patients undergone laparoscopy cholecystectomy, 50% of patients undergone open cholecystectomy. Lap to open conversion rate was 4% in our study. Right subcostal incision was the most common incision used in open cholecystectomy in our study.
- The operative time in our study was 55 min for open cholecystectomy and 110 min for laparoscopic cholecystectomy.
- The postoperative complication in the present study was 12%. Wound infection was the commonest, 1 patient had postoperative bile leak which was managed conservatively and the patient improved.
- The period of post-operative stay in our study was 7 days for open cholecystectomy and 3 days for laparoscopic cholecystectomy in majority of the cases. There was no mortality in the present study.
- Gallstones analysis showed mixed stone in 90% of the cases and cholesterol stones in 8% of the cases as the most common variety

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