



## ORIGINAL RESEARCH PAPER

## Surgery

## A CLINICAL STUDY OF CHOLELITHIASIS

**KEY WORDS:** cholelithiasis, pain, tenderness, ultra sound.

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## ABSTRACT

The prevalence of gallbladder stone varies widely in different parts of the world. In India it is estimated to be around 4%. This study was done at Mahatma Gandhi Memorial Hospital, Warangal for a period of November 2009 to October 2011 over 90 subjects, with an objectives of analysis of age, sex distribution and mode of presentation. The highest age incidence of cholelithiasis was seen in the 5th and 6th decade with maximum incidence in the 5th decade. There was an increased incidence in females. Pain was the most common symptom (present in 97.78% of the patients), nausea and vomiting were the second most common symptom presenting in 55.56% of patients, Tenderness in the right hypochondrium was the most common sign present in 96.67%, of the patients,

## INTRODUCTION

Among the many distinguished names in Hindu medicine that of Sushruta, the "father of Indian surgery" stands out in prominence, he compiled the surgical knowledge of his time in his classic "Sushruta Samhitha". It is believed that, this classic was compiled between 800B.C. and 400A.D. he described a jaundice called pitta-ashmarijanya meaning a jaundice caused by stone in bile<sup>[1]</sup>. It was also known that such jaundice could be caused by wrong diet.

The prevalence of gallbladder stone varies widely in different parts of the world. In India it is estimated to be around 4%. An epidemiological study restricted to rail road workers showed that north Indians have 7 times higher occurrence of gall stone as compared with south Indians<sup>[2]</sup>. There has been a marked increase in the incidence of the gall stone in the west during the past century. In the United states the autopsy series have shown gall stones in atleast 20% of women and 8% of men over the age of 40 years.

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<sup>[3]</sup>. Gall stones are rare in Africa with prevalence of less than 1% and in Japan it has been increased from 2% to 7%.

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.

## AIMS AND OBJECTIVES

1. To study the age and sex distribution of Gall stones
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 Mahatma Gandhi Memorial Hospital, Warangal.

## MATERIALS AND METHODS

This study "A clinical study of cholelithiasis" was done at Mahatma Gandhi Memorial Hospital, Warangal for a period of November 2009 to October 2011.

90 cases of cholelithiasis were admitted, examined, investigated and operated during the period between November 2009 and October 2011. Detailed history of all the 90 cases was taken that included information regarding the age, sex, nature of the symptoms, duration of the symptoms, past history of similar complaints, diet history, history of OCP, alcohol ingestion and diabetes. All patients underwent detailed examination, hemogram, ECG, LFT, blood sugar, blood urea, serum creatinine, urine analysis, blood group, chest x-ray, ultrasound scan of the abdomen. Relevant investigations and specialty consultations were taken for patients with associated medical illness and their control was ascertained pre operatively.

Risk and complications of the condition as well as surgery has been explained to the patients, written consent was taken. Appropriate 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 some of the patients had undergone open cholecystectomy and some of the patients underwent laparoscopic cholecystectomy due to the factors like previous operation, obese patient. A sub hepatic tube drain was used in patients who underwent open cholecystectomy and connected to collecting bag. The abdominal wound was closed in layers. The gall stone 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 underwent laparoscopic cholecystectomy were discharged on the third day and those who underwent 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 was given towards improvement of the patients with regard to symptoms as well as examination of the operative scar.

## RESULTS AND DATA ANALYSIS

In this study 90 cases of cholelithiasis who were admitted in Mahatma Gandhi Memorial Hospital during the period of November 2009 to October 2011 were studied. Presently available literature on Cholelithiasis is reviewed and the results of the study are compared with those of other authors.

**AGE OF INCIDENCE**

Age in years	No. of Cases	%	Herman's series <sup>[4]</sup>	%	Rushad's series	%
11 – 20	2	2.22	25	1.60%	0	0
21 – 30	8	8.88	92	5.90%	4	3.33%
31 – 40	16	17.78	226	14.60%	36	30.00%
41 – 50	30	33.33	325	21.00%	30	25.00%
51 – 60	18	20.00	473	30.60%	29	24.16%
> 60	16	17.78	352	23.57%	21	17.5%

There is an increased incidence of cholelithiasis in the 5th and 6th decade with the peak in the 5th decade. In the study, the youngest patient was 15 years old and the oldest patient was 72 years old.

Similar incidence is seen in the studies of Herman et al (5<sup>th</sup> decade)<sup>[4]</sup>. Hanif series<sup>[5]</sup> 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 were noted in the studies of Ganey et al<sup>[6]</sup>, Moreaux et al<sup>[7]</sup>.

**DISTRIBUTION OF CASES BY SEX**

Sex	No. of cases	%	Battacharya's series <sup>[8]</sup>	%	Alok Sharma series <sup>[9]</sup>	%
Male	36	40%	26	28.6	41	70
Female	54	60%	65	71.4	17	30

In the present study 54 patients were females and 36 patients were males. The present study shows that gallstone disease is a common problem in female population. The female to male ratio is 3:2.

Battacharya series<sup>[8]</sup> showed 71.4% were females, 28.6% were males. Similar sex preponderance in favour of females was noted by A.P.Tamhankar<sup>[10]</sup>, Ganey et al<sup>[6]</sup> Major Alok Sharma et al<sup>[9]</sup>, series showed that 70% were males and 30% were females.

**PRESENTING SYMPTOMS**

Symptoms	No. of cases	%	Alok Sharma series <sup>[8]</sup>	%	Ganey's series <sup>[6]</sup>	%
Pain	88	97.78%	58	100	987	95
Nausea / Vomiting	50	55.56%	48	82.8	576	55.6
Jaundice	12	13.33%	03	5.17	101	10
Dyspepsia	20	22.22%	05	8.62	222	21
Fever	8	8.88%	NA	00	92	9

Pain was the commonest symptom presenting in 88 patients, 50 patients had nausea and vomiting, 12 patients had jaundice (the cause of the jaundice was stone in the common bile duct. The common bile duct was explored in these patients and stones were removed). Dyspepsia was present in 20 patients (relieved after cholecystectomy) and fever (secondary to cholangitis due to biliary obstruction) was present in 8 patients.

Similar presentations were noted in the series of Alok Sharma<sup>[8]</sup>, Ganey series<sup>[6]</sup>, Goswitz et al series.

**GENERAL PHYSICAL EXAMINATION**

In the study, 55 patients were moderately built and nourished, 20 were obese. These observations are against the time honored aphorism that fat people are more prone for this disease. 60 patients were diabetic and 45 patients were hypertensive. Pallor was present in 26 patients who were corrected with blood transfusion.

**PRESENTING SIGNS**

Signs	No. of cases	%
Tenderness	87	96.67
Guarding	28	31.11
Mass	7	7.78

In the present study 87 patients had tenderness in the right hypochondrium while 28 patients had guarding and 7 patients had mass in the right hypochondrium.

**INVESTIGATIONS**

All the patients underwent routine hematological and biochemical investigations. The hemoglobin of patients ranged from 5 to 15 gm%. Serum bilirubin was raised in 7 patients, levels ranged from 1.8 to 5 mg%.

**ULTRASOUND**

Finding on Ultrasonography	No. of cases	%	Alok Sharma series <sup>[8]</sup>	%
Stones in Gallbladder	90	100	57	98.3
Solitary stones	22	24.44	15	26.3
Multiple stones	68	75.56	42	73.7
Stones in Bile duct	13	14.44	03	5.2
Thickening of Gallbladder	72	80	10	17.2
Distended Gallbladder	11	12.22	03	5.2
Gallbladder Mass	07	7.78	01	1.7

Ultrasound scanning of the abdomen was done in all patients. 90 patients had stone in gallbladder, 13 patients had stones in both gallbladder and common bile duct.

**PRE-OPERATIVE EVALUATION**

A hemoglobin level of 10gm% was accepted for the surgery. Blood transfusion was given to selected patients to improve the hemoglobin level. 10 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. All diabetic patients were maintained on insulin injection in the preoperative period. Associated medical illness was treated accordingly before taking the patient to surgery.

**TYPE OF OPERATION**

Type of Operation	No. of cases	%
Laparoscopic Cholecystectomy	44	48.88
Open Cholecystectomy	46	51.11

In the present study 44 patients underwent laparoscopic cholecystectomy and 46 patients underwent open cholecystectomy.

**INCISION IN OPEN CHOLECYSTECTOMY**

Type of Incision	No. of cases
Right Sub costal	31
Right Para median	13
Right Transverse	02
Upper Midline	00

Out of 46 patients who underwent open cholecystectomy, 31 were operated through a right sub costal incision, 13 patients were operated through right paramedian incision and 2 patients through a right transverse incision.

**POST OPERATIVE TREATMENT**

All the patients were given IV fluids, nasogastric aspiration was done, and antibiotics and analgesics were given. Drainage tube was removed between 3 to 10 days based on the drainage. T-Tube cholangiogram was performed in 13 patients and T-Tube was removed after confirmation of the patency of the duct.

**COMPLICATIONS**

Post operative complication	Open cholecystectomy	Laparoscopic cholecystectomy	Total
Wound infection	4	2	6
Hemorrhage	0	0	0
Retained stone	0	0	0
Bile leak	2	0	2
Prolonged Ileus	0	0	0
Intra operative complication	Open Cholecystectomy	Laparoscopic Cholecystectomy	Total
Bile duct injury	2	2	4
Total complications	8	4	12

In the present study 6 patients had wound infection. 2 patients had post operative bile leak which was managed conservatively and patients recovered. 4 patients had bile duct injury which was repaired on the T-tube.

**HISTOPATHOLOGY REPORT**

Histopathology Report	No. of cases	%
Chronic cholecystitis	86	95.56
Acute cholecystitis	04	4.44
Ruptured gallbladder	00	00
Gangrenous gallbladder	00	00

In the present study 86 patients were reported has having chronic cholecystitis, 4 patients had acute cholecystitis and no case of malignancy was noted.

**TYPES OF STONES**

Type of stone	No. of cases	%	Mathur et al <sup>[11]</sup>	%
Cholesterol stone	07	7.78	3	12
Mixed stone	81	90.00	21	84
Pigment stone	02	2.22	01	4

In the present study gallstones analysis was done in all patients. 81 patients had mixed type of stones, 7 patients had cholesterol stones and 2 patients had pigment stones.

**BILE CULTURE**

Organism isolated	No. of cases	%	Mathur et al <sup>[11]</sup>	%
Staphylococcus aureus	02	2.22	3	12
Pseudomonas pyocyanus	02	2.22	1	4
Salmonella	00	00	1	4
E.coli	14	15.56	4	16
Klebsiella	04	4.44	0	0
No growth	68	75.56	13	52

Bile culture was done in all patients, 68 patients had no growth, 14 cases reported growth of E.coli, 4 patients had growth of Klebsiella and 2 patients each having reported the growth of staphylococcus aureus, Pseudomonas. These results were similar to the studies of S.N. Mathur et al<sup>[11]</sup>, Goswitz et al and Battacharya et al<sup>[8]</sup>.

**FOLLOW UP:** There was no problem in the follow up period in any patient.

1. 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 females.
2. Pain was the most common symptom (present in 97.78% of the patients), nausea and vomiting were the second most common symptom presenting in 55.56% of patients, dyspepsia was present in 22.22% of patients, jaundice in 13.33% of patients, 8.88% of patients had fever.
3. Tenderness in the right hypochondrium was the most common sign present in 96.67%, guarding was the next sign present in 31.11% of the patients and mass abdomen in

- 7.78% of the patients.
4. Ultrasonography is the investigation of choice in our hospital. All patients had gallstones, 24.44% of patients had solitary stone. 75.56% of patients had multiple stones, 14.44% of patients had bile duct stones, 80% had thickening of gallbladder, 12.22% had gallbladder distension and 7.78% had gallbladder mass.
5. 48.88% patients underwent laparoscopic cholecystectomy, 51.11% underwent open cholecystectomy. Lap to open conversion rate was found to be 4%. Right sub costal incision was the most common incision used in open cholecystectomy. 4 patients had intra-operative bile duct injury which was repaired immediately and the patients recovered.
6. The post operative complication in the present study was 13.33%. Wound infection was the commonest, 2 patients had postoperative bile leak which was managed conservatively and the patients improved.
7. Histopathology revealed chronic cholecystitis in majority of the cases while bile culture revealed no growth in majority of cases in the present study.
8. Gallstones analysis showed mixed stone in 90% of the cases and cholesterol stones in 7.78% of the cases as the most common variety.
9. There was no mortality in the present study.

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