

CLINICAL STUDY OF GALLSTONE DISEASE AND TREATMENT OPTIONSKatta Srinivasa Rao¹, Govindu Naik Meghavathu², G. Subba Rao³, H. R. Prasad T⁴**HOW TO CITE THIS ARTICLE:**

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ABSTRACT: The prevalence of gallbladder stones varies widely in different parts of the world. In India it is estimated to be around 4% whereas in western world it is 10%.¹ In India, it is seven times more common in the north than in the south and it varies with Age, sex and ethnic group.² Because of increased 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 presentations and management, outcomes of the cholelithiasis. **OBJECTIVES:** 1. To study the age and sex distribution in patients presenting with cholelithiasis 2. To study the various modes of presentation of cholelithiasis. 3. To study the type of gall stones 4. To study the various treatment modalities available and its outcome. **MATERIALS AND METHODS:** This study includes a total of 126 cases that were studied prospectively over a period of two years that were treated on inpatients basis from November 2012 to October 2014. All the cases were admitted, examined, investigated and operated. Inclusion criteria: All cases of gall stones, inflamed gall bladder with stones, Gall bladder mass with stones. Exclusion criteria: Bile duct stones, Cirrhosis and pregnant women. **RESULTS:** Highest incidence of Gall stone is in the fifth decade more common in females, commonest is pain right upper quadrant, sign is tender right hypocondrium. Ultrasound is a useful diagnostic tool. Lap cholecystectomy is the gold standard surgery, the conversion rate was 10%. Wound infection was the most common post-operative complication. Lap Cholecystectomy reduces duration of hospital stay. Commonest stone is mixed stone. **CONCLUSION:** The incidence of gall stones was highest in 5th decade and in females. Laparoscopic cholecystectomy reduced the duration of hospital stay, pain and disability and the conversion rate was 10%. The commonest stone was mixed stone.

KEYWORDS: Gall stones; Open Cholecystectomy; Laparoscopic Cholecystectomy.

INTRODUCTION: The malady of gallstones dates back to Egyptian dynasty and archeological reports suggest that young woman had gall stones 2000 years back.³ Gall stones are a major cause of morbidity throughout the world and new gall stones form in about 3 % of population over the age of 40 years,⁴ Gallstones in patients without biliary symptoms are commonly diagnosed incidentally on ultrasonography, CT scan, abdominal radiography, or at laparotomy. 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.⁵

Diagnosis of gall stones is by proper history and physical examination and combining it with appropriate investigation. Changing incidence in India is mainly attributed to westernization and availability of investigation like 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.

Ultrasound has emerged as the preferred test for the evaluation of patients with suspected cholelithiasis or cholecystitis.⁶ Ultrasound is the simplest and most reliable method for diagnosis of gall

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stones.⁷ traditionally open cholecystectomy has been the gold standard for all patients with symptomatic gall stones. The safety of traditional cholecystectomy is due to the availability of well-trained surgeons with an appreciation of normal biliary anatomy and its variations.^{7,8} Innovations and new endeavors have resulted in the evolution of new surgical approach called minimally invasive surgery.⁹ which has revolutionized gall bladder surgery. Gall stones are composed of cholesterol, bilirubin and calcium salts with smaller amounts of protein and other material.¹⁰

Because of increased 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 presentations and management, outcomes of the cholelithiasis.

AIMS AND OBJECTIVES: 1. To study the age and sex distribution in patients presenting with cholelithiasis. 2. To study the various modes of presentation of cholelithiasis. 3. To study the type of gall stones. 4. To study the various treatment modalities available and its outcome.

MATERIALS AND METHODS: This study includes a total of 126 cases that were studied prospectively over a period of two years that were treated on inpatients basis from November 2012 to October 2014. All the cases were admitted, examined, investigated and operated.

RESULTS: This study includes a total of 126 cases that were studied prospectively over a period of two years that were treated on inpatients basis from November 2012 to October 2014.

AGE INCIDENCE

Age group (years)	Number of cases	Percentage
11-20	3	2
21-30	18	14
31-40	26	21
41-50	39	31
51-60	31	25
>60	9	7

Table 1: Age-wise incidence

There was an increased incidence of cholelithiasis in the 5th and 6th decade with the peak incidence in 5th decade. In this study the youngest patient was 19 years old and the oldest patient was 80 years old.

Distribution of Cases by Sex: In the present study 86 patients were female and 40 patients were male. The present study shows gallstones diseases were a common problem in female population. The female to male ratio is approximately 2: 1.

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ULTRASOUND:

Ultrasound findings	Number of cases	Percentage
Stones in gallbladder	126	100
Multiple stones	101	80
Thickening of gallbladder	80	63
Solitary stone	25	20
Mass	5	4

Table 2: Ultrasound findings

Ultrasound scanning of the abdomen was done in all patients. 126 patients had stones in gallbladder with 101 patients having multiple stones 25 patients having single stone with thickening of Gall bladder in 80 patients.

Type of operation	Number of cases	Percentage
Laparoscopic cholecystectomy	86	68
Open cholecystectomy	30	24
Laparoscopic to open cholecystectomy	10	8

Table 3: Type of operation

In the present study, 86 patients underwent laparoscopic cholecystectomy and 30 patients underwent open cholecystectomy and 10 patients from Laparoscopic to open cholecystectomy.

Type of operation	Mean Operating room time
Laparoscopic cholecystectomy	55min
Open cholecystectomy	110 min

Table 4: Operating room time

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

Postoperative complications	Laparoscopic cholecystectomy	Open cholecystectomy	Total
Wound infection	0	12	12
Hemorrhage	0	0	0
Retain stone	0	0	0
Bile leak	1	0	1
Prolong ileus	2	6	8

Table 5: Postoperative complications

In the present study 12 patients had wound infection. 1 patient had postoperative bile leak which was managed conservatively and patient recovered.

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Operation	Mean Duration of stay
Open cholecystectomy	8
Laparoscopic Cholecystectomy	3

Table 6: Duration of hospital stay

Mean Duration of hospital stay: Postoperative length of stay was 8 days for open cholecystectomy and 3 days for laparoscopic cholecystectomy.

Type of stone	Number of cases	Percentage
Mixed stones	88	70 %
Pigment stones	25	20 %
Cholesterol stone	13	10 %

Table 7: Type of stones

In the present study gallstones analysis was done in all patients. 88 patients had mixed type of stones, 13 patients had cholesterol stone and 25 patients had pigment stone.

DISCUSSION: In this study 126 cases of Cholelithiasis that were admitted in Government General Hospital, Guntur from November 2012 to October 2014 were included in the study group. 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:

Age group (years)	Present study		Herman's series		Rushad's series	
	No.	%	No.	%	No.	%
11-20	3	2	25	1.6	0	0
21-30	18	14	92	5.9	4	3.33
31-40	26	21	226	14.6	36	36.30
41-50	39	31	325	21.0	30	25.0
51-60	31	25	473	30.6	29	24.16
>60	9	7	352	23.5	21	17.5

Table 8: Comparison of age incidence with other studies

In this study, cases fall between 19 and 80 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,¹¹ and Rushad's series. Hanif series showed peak incidence in 5th decade. In western studies the peak incidence is in the 5th and 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.¹² and Moreaux et al.¹³

ULTRASOUND FINDINGS:

Ultrasound findings	Present study		Alok Sharma series	
	No.	%	No.	%
Stones in gallbladder	126	100	57	98.3
Multiple stones	101	80	42	73.7
Thickening of gallbladder	80	63	10	17.2
Solitary stone	25	20	15	26.3
Mass	5	4	1	1.7

Table 9: Comparison of ultrasound findings with other study

Ultrasound scanning was done in all patients, all the cases revealed stone in the gall bladder. Gall bladder stones were seen in 126 patients. Out of which 25 were solitary stones, 101 were multiple, thickening of gall bladder was seen in 80 patients, mass detected in 5 patients. Many of the features in my study were similar to studies of Major Alok Sharma et al.¹⁴ Except that of thickening of the gallbladder.

Type of Operation: In the present study 40 patients underwent open cholecystectomy and 86 patients underwent Lap cholecystectomy. The conversion rate from lap to open cholecystectomy was 10%. Which was more when compared with the studies of Scott et al (4.3%)¹⁵.

The most common incision used in open cholecystectomy was Rt. Sub costal Incision, which was used in 30 patients, 2 patients were operated through Rt. Para median incision and 8 patients by Rt transverse incision. In 35 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 mass was found due to perforation and presence of omentum over the gallbladder.

OPERATING ROOM TIME:

Type of operation	Operating room time	Barkun et al.	Trondsen et al.
Laposcopic cholecystectomy	55 min	73 min	50min
Open cholecystectomy	110 min	86 min	100min

Table 10: Comparison of operating room time with other studies

The operative room time for laparoscopic cholecystectomy was ranged from 45 min to 100 min. with mean time of 55 min and open cholecystectomy was ranged from 100 min to 130 min. with approximate average time being 110 min. Which were similar to study of Trondsen et al¹⁶. 50 min for laparoscopic cholecystectomy and 100 min for open cholecystectomy.

DURATION OF HOSPITAL STAY:

Operation	Length of stay (days)		
	Present study	Barkun et al.	Trondsen et al.
Open cholecystectomy	8	4	4
Lap cholecystectomy	3	3	3

Table 11: Comparison of duration of hospital stay with other studies

Duration of hospital stay for open cholecystectomy was more in my study compared to the studies of Trondsen et al¹⁶ and Barkun et al.¹⁷

Types of stones:

Type of Stone	Present study		Mathur SN et al.	
	No.	%	No.	%
Mixed stones	88	70	21	84
Pigment stones	25	20	1	4
Cholesterol stone	13	10	3	12

Table 12: Comparison of incidence of type of stones with other studies

In the present study 70% had mixed stones and 10% had cholesterol stone. 20% had pigment stone. When compared with the studies of Mathur SN et al increased incidence of pigment stones were observed.

Postoperative Complication: In the present study wound infection was the most common complication, which was 9%. 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.

CONCLUSION:

1. 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 was more common in females.
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 10%. Subcostal incision was the most common incision used for open cholecystectomy and next being the right transverse incision.
4. Wound infection was the most common complication.
5. Laparoscopic cholecystectomy reduced the duration of stay in the hospital, pain and disability as compared to open cholecystectomy.
6. The commonest type of the stone was mixed stone.

BIBLIOGRAPHY:

1. Tandon R. Diseases of Gall Bladder and Biliary Tract. In: API Textbook of Medicine, Shah SN, ed. 9th ed. Mumbai: API Publications; 2012 Apr. p.911.
2. Park K. Man and medicine towards health for all. In: Park's Text book of preventive and social medicine. 17thed. New Delhi: Banarasi Das Publications; 2002 Nov. p.1-10.
3. Karan JA, Rose GJ. Cholelithiasis and cholecystectomy. In: Maingot's abdominal operations, Zynnel MJ, Schwartz SI, Ellis H, eds. 10th ed. New York: McGraw-Hill Publications; 2001. p.1717-38.
4. Jensen KH, Jorgensen T. Incidence of gallstones in a Danish population. *Gastroenterology* 1991; 100: 790-4.
5. Cuschieri A. Disorder of the biliary tract. In: Textbook of surgery. 4th ed. Philadelphia: Arnold Publication;2002. p.375-453.
6. Blumgart LH. Gallstones and gallbladder. In: Text book of Surgery of liver and biliary tract. New York: Harcourt Publishers;2007. p.617-791.
7. McSherry CK. Cholecystectomy: The Gold Standard. *Am J Surg* 1989; 158: 174-8.
8. Morgenstern L, Wong L, Berci G. Twelve hundred open cholecystectomies before the laparoscopic era. A standard for comparison. *Arch Surg* 1992; 127: 400-3.
9. Pickleman J, Ganzalez RP. The improving results of cholecystectomy. *Arch Surg* 1986; 121: 930-4.
10. Johnston DE, Kaplan MM. "Pathogenesis and treatment of gallstones". *The New England Journal of Medicine*, 1997 Feb 11; 328(6): 412-21.
11. Hermann RE. "Biliary disease in the aging patients". New York: Masson;1983. p.227-32
12. Ganey JB, Johnson PA, Jr, Prillaman PE, McSwain GR. Cholecystectomy: clinical experience with a large series. *Am J Surg* 1986 Mar; 151(3): 352-7.
13. Moreaux J. Prospective study of open cholecystectomy for calculous biliary disease. *Br J Surg* 1994; 81: 116-9.
14. Sharma A. Towards a safer cholecystectomy – the fundus to port approach. *Indian Journal of Surgery* 1997 Jun; 141-5.
15. Scott, 1992. Scott TR, et al: Laparoscopic Cholecystectomy: a review of 12397 patients. *Surg Laparosc endosc* 1992; 2: 191 – 198.
16. Trodsen, 1993. Trondsen E, et al: Laparoscopic and Open Cholecystectomy: a prospective, randomized study *J Surg* 1993; 159: 217 – 221.
17. Barkun, 1992. Barkun JS et al: Randamized controlled trail of laparoscopic versus mini – cholecystectomy. *Lancet* 1992; 340: 1116 – 1119.

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