

A Prospective Study on Cholelithiasis and Its Complications

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Abstract: The aim of the present study is to comprehensively study and evaluate the common etiological factors, types of clinical presentations and ultrasonography findings in Cholelithiasis, various reasons for diversion in the treatment (other than laparoscopic cholecystectomy, which is the gold standard), and to study the postoperative complications (if any) and incidence of various types of gallstones. Patients and methods: This hospital based prospective study includes 100 consecutive cases diagnosed with cholelithiasis admitted in Siddhartha Medical College and General Hospital between October 2015 to October 2017. Results: Increased incidence of cholelithiasis in the 5th and 6th decade. Female to male ratio is 3:2. Diabetes was noted as a risk factor in 44% of patients. 96 patients were reported as having chronic cholecystitis, 4 patients had acute cholecystitis and no evidence of rupture or gangrene or malignancy was noted. The operating room time for open cholecystectomy was 60-120 min with an average of 90 min and laparoscopic cholecystectomy was 40-100 min with an average of 70 min. The conversion rate from laparoscopic to open cholecystectomy was 4%. Bile duct injury was the most common complication, followed by wound infection. Conclusion: Majority of patients with cholelithiasis were females, age in the 5th decade with pain as most common presenting symptom and tenderness in right hypochondrium as most common sign. One should not hesitate to convert to open cholecystectomy if significant adhesions or inflammation are identified during laparoscopy. Subcostal incision was the most common incision used for open cholecystectomy. The pain and duration of hospital stay was less and patients can be discharged quickly when laparoscopic cholecystectomy was done.

Keywords: Cholelithiasis, Laparoscopic cholecystectomy, Open cholecystectomy, Postoperative complications

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I. Introduction

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 stones as compared to south Indians [1].

There has been a marked increase in the incidence of the gall stones in the west during the past century [2]. In the United States, the third National Health and Nutrition Examination Survey (NHANES III) has revealed an overall prevalence of gall stones of 7.9% in men and 16.6% in women [3]. 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 is in Pima Indian tribe of Arizona, with total and female prevalence of 49% and 73% respectively [2, 4]. Gall stones are rare in Africa with prevalence of less than 1% and in Japan it has been increased from 2% to 5% [2].

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 investigations, mainly ultrasound, to urban as well as rural areas, and also because of increased affordability due to change in the socioeconomic structure and the cost of investigations. Because of increase in incidence of gall stones and its variable presentations in India as well as in the west, there is great need for a study which can provide the information regarding the prevalence of the disease, various clinical presentations and management, and outcomes of cholelithiasis.

II. Aims And Objectives

The aim of the present study is to comprehensively study and evaluate the common etiological factors, types of clinical presentations and ultrasonography findings in Cholelithiasis, various reasons for diversion in the treatment (other than laparoscopic cholecystectomy, which is the gold standard), and to study the

postoperative complications (if any) and incidence of various types of gallstones.

III. Materials And Methods

3.1 Source Of Data: Patients diagnosed with cholelithiasis admitted in Siddhartha Medical College and General Hospital between October 2015 to October 2017 (2 years).

3.2 Study Design: Hospital based prospective study.

3.3 Inclusion Criteria:

All patients diagnosed with cholelithiasis by ultrasonography and patients with stones both in the gallbladder and common bile duct.

3.4 Exclusion Criteria:

Patients with acalculous cholecystitis, age below 18 years, Primary CBD stones without stones in the gallbladder, comorbid conditions like cardiac disease and renal failure and associated congenital malformations of the biliary tree were all excluded from the study.

3.5 Method Of Collection Of Data:

About 100 consecutive cases were admitted, examined, investigated and operated during the period of October 2015 to October 2017. Detailed history of all the cases was taken according to a pre-approved proforma. Information regarding the age, religion, socio economic status, nature of the symptoms, duration of the symptoms, past history of similar complaints, dietary history, history of OCP intake, alcohol ingestion, and diabetes was obtained. All patients underwent detailed examination. Investigations included were haemogram, ECG, LFT, blood sugar, blood urea, serum creatinine, urine analysis, blood grouping, chest x-ray, and ultrasound scan of the abdomen. Patients with stones in the CBD underwent pre-operative ERCP with stenting. 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, consent for surgery and for inclusion in the present study was taken.

3.6 Surgical Procedure:

As this is a tertiary centre, all patients were subjected to laparoscopic cholecystectomy, unless otherwise complicated. All operations were performed by consultant surgeons. All operations were done under General Anaesthesia. Laboratory results, operative findings, requirement for conversion to open cholecystectomy, operating time, intra-operative and post-operative complications and length of hospital stay were recorded. All patients were administered NSAID's and anti-emetics as required. Patients were allowed liquids once bowel sounds returned. They were discharged from the hospital once they were fully mobilized and pain relief was adequate. Data was collected prospectively and included in patient's demographics. Patients were encouraged to resume work and normal daily activity as soon as possible. Evaluation of return to normal work was made during an OPD appointment 4 weeks after surgery.

IV. Observations And Results

The present study is a hospital based prospective study, which included a total of 100 cases that were studied over a period of 2 years, and were treated on inpatient basis at Government General Hospital, Vijayawada from October 2015 to October 2017. There is an increased incidence of cholelithiasis in the 5th and 6th decade with the peak in the 5th decade. In the present study, the youngest patient was 15 years old and the oldest patient was 72 years old. 60 patients were female and 40 patients were male. The present study showed gallstone disease was a common problem in female population. The female to male ratio is 3:2.

Table 1: Distribution of Risk Factors among Patients in Present Study

RISK FACTORS	NO. OF CASES	%
Obesity (BMI > 32)	14	14
Diabetes Mellitus	44	44
Estrogen Supplements	2	2
Cirrhosis of Liver	2	2
Sickle cell disease	3	3
Total	65	65

Table 2: Distribution of Operative Complications among Patients in Present Study

Intra operative Complications	Open Cholecystectomy	Lap Cholecystectomy	Total
Bile Duct injury	1	2	3
Hollow Visceral injury	0	1	1
Post-operative Complications	Open Cholecystectomy	Lap Cholecystectomy	Total
Wound Infection	1	1	2
Hemorrhage	0	0	0

Retained Stone	0	0	0
Bile Leak	1	0	1
Prolonged ileus	0	0	0
Pulmonary Embolism and Death	0	1	1
Total complications	3	5	8

1 patient was suspected to have pulmonary embolism and died on the 3rd post-operative day. On histopathological examination, 96 patients were reported as having chronic cholecystitis, 4 patients had acute cholecystitis and no evidence of rupture or gangrene or malignancy was noted. Bile culture showed no growth in 70 patients, E-coli in 16, Klebsiella in 4, Staphylococcus aureus in 2 and Pseudomonas in 2 patients. Post-operative length of stay was 7 days for open cholecystectomy and 3 days for laparoscopic cholecystectomy.

V. Discussion

In this study, cases were in between 18 – 79 years. There was an increased incidence in the 5th & 6th decade with maximum incidence in the 5th decade. Similar incidence was seen in the studies of Herman et al⁵ which showed peak incidence in 5th decade. Pain was the predominant symptom in the present study with 98%. The commonest site of pain was in the right hypochondrium, & the next commonest site was epigastrium.

Table 3: Comparison of Presenting Symptoms with Various Researchers

PRESENTING SYMPTOMS	PRESENT STUDY	%	ALOK SHARMA SERIES ⁶	%	GANEY SERIES ⁷	%
Pain	98	98	58	100	987	95
Nausea/ Vomiting	56	56	48	82.8	576	55.6
Jaundice	14	14	3	5.17	101	10
Dyspepsia	24	24	5	8.62	222	21
Fever	8	8	NA	NA	92	9

Tenderness in the right hypochondrium was present in 96 patients, guarding was present in 30 patients. A positive Murphy’s sign was present in 14 patients. A mass was felt in 8 patients. The mass could be due to distention of gallbladder or adherent omentum overlaying the inflamed gallbladder. In the present study, tenderness was the commonest sign.

Table 4: Comparison of Ultrasonography findings with Various researchers

USG FINDING	PRESENT STUDY	%	ALOK SHARMA ⁶ SERIES	%
Stones in GB	100	100	57	98.3
1. Solitary Stone	24	24	15	26.3
2. Multiple Stones	76	76	42	73.7
Bile duct stones	14	14	3	5.2
Thickening of GB	80	80	10	17.2
Dilated Bile duct	12	12	3	5.2
Mass	8	8	1	1.7

In the present study, all patients underwent laparoscopic procedure unless otherwise complicated. 96 patients underwent laparoscopic cholecystectomy successfully, of which 4 of them had additional open CBD exploration and T tube cholangiography. The conversion rate from laparoscopic to open cholecystectomy was 4%, which was similar to studies of Scott et al⁸(4.3%) and 7% in Schlumpf et al⁹, The reasons for conversion were bile duct injury in 2 cases, duodenal perforation in 1 case and dense adhesions resulting from severe inflammation in 1 case.

The most common incision used in open cholecystectomy was right sub-costal incision, which was used in 6 patients, 2 patients were operated through right Para median incision and none through right transverse or upper midline incisions. In 7 cases, duct first method was done & in 1 patient, fundus first method was done. The reason for fundus first method was dense adhesions. The duct first method was the method of choice. Intra-operatively, in 3 cases gallbladder were distended. Among them in 1 case, omentum was present over the gallbladder.

In the present study, the common bile duct was explored in 4 patients and stones were retrieved. In all 4 patients CBD was closed with T—tube drainage. The operating room time for open cholecystectomy was 60-120 min with an average of 90 min and laparoscopic cholecystectomy was 40-100 min with an average of 70 min, In the present study 90 % had mixed stones & 8 % had cholesterol stones, 2% had pigment stones, which was similar to the studies of S.N. Mathur et al.¹⁰

VI. Conclusion

1. The highest incidence of cholelithiasis was in the 5th decade, even though no age group was exempt from the disease.
2. The incidence of cholelithiasis was more in females.
3. The commonest symptom was pain abdomen.
4. The commonest sign was tenderness in the right hypochondrium.
5. Ultrasonography was the imaging modality of choice.
6. Diabetes was the most common risk factor.
7. Laparoscopic cholecystectomy was the procedure of choice, unless otherwise complicated.
8. The most common cause of conversion to open procedure was bile duct injury followed by hollow viscus injury
9. One should not hesitate to convert to open cholecystectomy if significant adhesions or inflammation are identified during laparoscopy.
10. Subcostal incision was the most common incision used for open cholecystectomy.
11. Bile duct injury was the most common complication, followed by wound infection.
12. The pain and duration of hospital stay was less and patients can be discharged quickly when laparoscopic cholecystectomy was done.
13. Not even a single case of gallbladder had carcinomatous changes on HPE, even though a clear relationship was described in most of the references.

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