A CLINICAL, PATHOLOGICAL STUDY AND MANAGEMENT OF GALL BLADDER STONES
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ABSTRACT

BACKGROUND
Gallstones are one of the most common medical problems leading to surgical intervention throughout the world. At least 10% of the adults have gallstones. With a recent rise in the incidence due to westernization of diet. It has been well demonstrated that the presence of gallstones with age. This study intends to know its various modes of presentation, its complications, various treatment modalities and their outcome.

The objectives of the study were-
1. To evaluate the complications of cholelithiasis including pathological changes in the gallbladder and
2. To compare & evaluate the advantages and disadvantages of laparoscopic versus open cholecystectomy.

MATERIALS AND METHODS
A prospective study of 100 cases diagnosed to have gallstones and admitted to GEMS Hospital, Srikakulam during September 2013 to October 2015 was done.

RESULTS
LC versus OC (72 cases in laparoscopic and 28 cases in open cholecystectomy) and found that the mean operating room time was 96 min for OC and 90 min for LC. The conversion rate was 4%. The mean duration of hospital stay was 9 days for OC and 4 days for LC. Patients recovered significantly faster after LC.

CONCLUSION
The commonest symptom was pain and commonest sign was tenderness. The most common complication presenting with symptomatic gall stones was chronic cholecystitis. Laparoscopic cholecystectomy is a safe and effective treatment for most patients with symptomatic gallstone.

KEYWORDS
Gallbladder Stones.

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BACKGROUND
The prevalence of gallbladder stone varies widely in different parts of the world. In India it is estimated to be around 4%. Diagnosis of gallstone is by proper history and physical examination and combining it with appropriate investigations. The gallbladder is a slate blue, pear shaped sac partly sunk in a fossa in the right hepatic lobe’s inferior surface. It is 7-10 cm long, 3 cm broad at its widest and 30-50 ml in capacity. It is described as having a fundus, body and neck.¹ The cystic artery is an artery and its occlusion is followed by the gangrene of the gallbladder.²,³ The gallbladder may become enormous and cholecystectomy is then the treatment of choice.⁴

The diagnosis of gangrenous cholecystitis is made using clinical criteria of fever, leukocytosis, persistent pain, abdominal tenderness or guarding, with sonographic findings and intraoperative findings.⁵ Perforation of gallbladder is approximately 3% of all patients undergoing cholecystectomy. Sonography should be the first line imaging modality for evaluating the patients in these cases. These patients are very toxic an again surgery is essential.⁶ Gallstones impacted in the neck of gallbladder or cystic duct, causing common hepatic obstruction: and recurrent cholangitis.⁷ The majority of cases are associated with gallstones and the malignant change is found in approximately 0.9% of cholecystectomies.⁸

Most significant complications that can arise during surgery is bile duct injury. This occurs in 0.1-0.2% cases in open cholecystectomy.⁹ Post cholecystectomy syndrome refers to the persistence of symptoms referable to the biliary tract after cholecystectomy. A major advantage of laparoscopic cholecystectomy is that patients can usually return to work in 1 to 2 weeks, as compared with 4 to 6 weeks after open cholecystectomy.¹⁰

MATERIALS AND METHODS
It is a Prospective Study conducted in the Department of Surgery, GEMS hospital, Srikakulam. About 100 consecutive cases were admitted, examined, investigated and operated during the period of September 2013 to October 2015.
Detailed history of all the cases were taken. Information regarding age, SES, nature of symptoms, duration of the symptoms, past history, dietary history, alcohol ingestion, diabetes was obtained. Investigations included haemogram, ECG, LFT, blood sugar, blood urea, serum creatinine, urine analysis, blood grouping, chest x-ray, ultrasound scan of the abdomen were done.

**Inclusion Criteria**
- Symptomatic gall stones disease with or without complication
- Asymptomatic gall stones of size more than 1.5 cm
- Patients with stones both in the gall bladder and the common bile duct

**Exclusion Criteria**
- A calculous cholecystitis.
- Primary CBD stones without gallstones.
- Comorbid conditions like cardiac disease and renal failure.
- Asymptomatic gallstones of size less than 1.5 cm
- Gall bladder stones with congenital malformations of the biliary tree or stricture of the CBD.

**Open Cholecystectomy**
A sub costal muscle transection incision was used for open cholecystectomy: the length of the incision was tailored to be individual patient and kept to the minimum necessary to allow saph an adequate access to the gall bladder.

**Laparoscopic Cholecystectomy**
Laparoscopic cholecystectomy was performed with the operating surgeon on the left side of the table. Pneumoperitoneum was created using Veress needle and by Hassan’s technique in some cases. It involved two 10 mm and two 5 mm trocars. Peritoneal cavity was visualized and any adhesions if present were released. Calot’s triangle was visualized and dissection was carried out by means of electrocautery and the cystic duct and artery were secured with titanium clips. The completion of the operation, a sub hepatic drain was inserted as required in both the groups.

Data was collected prospectively and included in patient’s demographics. Laboratory results, operative findings, requirement for conversion to open cholecystectomy, operating time (from incision to closure), operative complications, length of hospital stay along with post-operative complications if any were recorded.

**Statistical Analysis**
- Data was entered into Microsoft Excel Sheet and analysed using IBM SPSS Version 22.0.
- Descriptive statistics were expressed as Median and percentages.
- The analysis was done by using Chi-square and Mann-Whitney test.
- P-value of <0.05 will be considered statistically significant.

**RESULTS**
In the present study, pain was the commonest presenting symptoms present in all 100 patients, 37 patients had nausea and vomiting, 21 patients had jaundice, fever was present in 12 patients, and 83 patients had guarding, jaundice was present in 21 cases, of which 16 had cholelithiasis associated with choledocholithiasis. 4 patients had mass in the right hypochondrium.

Ultrasound abdomen was the main investigation carried out. Isolated cholelithiasis was the commonest finding in ultrasound, 66% had multiple stones and 34% had solitary stone. Cholelithiasis with choledocholithiasis accounted for 16% of cases. Dilated bile duct was seen in 12% of cases and gall bladder wall thickening was seen in 26% of cases. Complications of cholelithiasis observed in our study – most of the patients had chronic cholecystitis 76%. 24% patients presented with features of acute cholecystitis of which 4% had empyema of the gall bladder confirmed during surgery and 4 patients had perforation of the gall bladder. Out of these 100 patients 16% had stones both in gall bladder and CBD.

<table>
<thead>
<tr>
<th>Operative Findings</th>
<th>LC (N=72)</th>
<th>OC (N=28)</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating time (in min)</td>
<td>90 (60-130)</td>
<td>96 (60-150)</td>
<td>0.068</td>
</tr>
<tr>
<td><strong>Intra operative complications</strong></td>
<td></td>
<td></td>
<td>0.077</td>
</tr>
<tr>
<td>Bile leak</td>
<td>4</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Stone spillage</td>
<td>3</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>CBD injury</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>adjacent organ injury</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>conversions</td>
<td>4</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td><strong>Post-operative complications</strong></td>
<td></td>
<td></td>
<td>0.12</td>
</tr>
<tr>
<td>Haemorrhage</td>
<td>1</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Wound infection</td>
<td>1</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Retain stone</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Bile leak</td>
<td>2</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

**Table 1**

The median duration of operative procedure was 96 (60-150 min) for OC and 90 min (60-130 min) for LC. The difference was not found to be significant.

The main complications noted per operatively were bile leak 4 (5.5%) in LC and 2 (7.1%) in OC group and stone spillage of 3 (4.1%) in LC and 1 (3.5%) in OC. There was no instance of CBD injury in either group. Post-operative complications were minimal. Post-operative haemorrhage is seen in 1 (1.3%) case of LC and nil in OC. 1 (1.3%) patient in laparoscopic and 3 (10.7%) patients in OC had surgical site infection. 2 (2.7%) in laparoscopic cases and 1 (3.5%) in open case had prolonged bile leak who were managed conservatively (Table 1).

<table>
<thead>
<tr>
<th>Post-operative Recovery</th>
<th>OC</th>
<th>LAP</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duration in hospital stay</td>
<td>9 (4-12)</td>
<td>4 (2-6)</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Time taken to return to normal work</td>
<td>13 (8-18)</td>
<td>8 (4-12)</td>
<td>&lt;0.01</td>
</tr>
</tbody>
</table>

**Table 2**

Here, there is a statistical significance difference between OC & LAP in post-operative recovery according
Duration in hospital stay and time taken to return to normal work (Table 2).

According to histopathology report 76% of patients were reported as having chronic cholecystitis. 5% of patients had acute cholecystitis and 4% had gangrenous changes. 15% had gall bladder showed acute on chronic cholecystitis. And no case of malignancy was noted in our study (Figure 1).

![Figure 1. Histopathology Report](image)

DISCUSSION

In the present study, pain was the predominant symptom in the study involving 100% patients. The commonest site of pain was in the Rt. Hypochondrium, and the next commonest site was epigastrium. 6% patients complained of pain radiating to the back. 76% patients had chronic recurring pain and 24% patients had acute onset of pain. Similar presentations were noted in the series of Alok Sharma, et al.11 37% of cases in the present series had nausea/vomiting. Vomiting was spontaneous, occurred mostly during the attack of pain. Vomiting in this study was less than Ganey et al series.

In the present study, 21 (21%) patients had jaundice. The cause of the jaundice was stone in the common bile duct in 16 (16%) patients, 5 (5%) patients had features of cholangitis. The common bile duct was explored in 4 (4%) patients and stone were removed. Fever was present in 12 (12%) cases in the present study. Fever was due to acute cholecystitis and secondary to cholangitis due to biliary obstruction. The fever occurred as a part of Charcot’s triad. Fever was of moderate degree.

Tenderness in the Rt. Hypochondrium was present in 83 (83%) patients which was similar to Kapoor et al12 and Karl et al13 studies, guarding was present in 4 (4%) patients. A positive murphy’s sign present in 16 (16%) patients. Globular mass was felt in 4 (4%) patient who had empyema of the gall bladder. Icterus was present in 21 (21%) patients.

In investigations, Haemoglobin of patients ranged from 8 to 15 gm%. Serum bilirubin was raised in 23 patients, the bilirubin levels ranged from 1.1 to 10 mg%. Alkaline phosphatase was raised in 38 patients.

This study showed that morbidity rate is more with open cholecystectomy than laparoscopic cholecystectomy. The operating time was almost equal in both the procedures, 96 min (60-150 min) for OC and 90 min (60-130 min) for LC, slightly more mean time in OC was due to dense adhesions and in patients requiring CBD exploration and T-tube insertion. In this study, there were no major complications and several minor ones. There was no peri-operative mortality and no CBD injury. The complications observed per-operatively were bile leak, stone spillage and blood loss which were found to be comparable in both the groups.

Post-operative complications were surgical site infection, were 1 in LAP and 3 OC, bile leak was seen in 2 (2.7%) patients of laparoscopic cholecystectomy and 1 (3.5%) patient of OC who were managed conservatively.

Conversion was necessary in 4 (5.5%) patients out of 72 cases required conversion due to difficult dissection in view of distortion of calot’s triangle due to dense adhesions. Conversion was found to be slightly higher than the southern surgeons club series.

The two most beneficial aspects of LC are, the short hospital stay and the rapid recovery. In this study, the median duration of hospital stay was 4 days for LC group and 9 days for OC group. The difference was found to be statistically significant (P<0.01). This was also confirmed in various other series. The time taken to return to normal work was also less in LC cases than OC cases.

Chronic cholecystitis was the most common histopathology of the gallbladder in patients with biliary calculi, present in 76% of patients in our study similar to that in Blackpool Victoria hospital series. Acute cholecystitis was evident histologically in 5% in our series, a little less than in Blackpool Victoria Hospital series. There are no cases of acute on chronic cholecystitis in the comparative series and we had almost 15% acute on chronic cholecystitis. The frequency of gangrenous cholecystitis was similar to that of in Blackpool Victoria hospital series.

CONCLUSION

- The commonest symptom was pain abdomen.
- The commonest sign was tenderness.
- Ultra-sonogram is the imaging modality of choice.
- The most common complication of gallstone disease was chronic cholecystitis.
- Laparoscopic cholecystectomy is safe and effective treatment for most patients with symptomatic gallstones.
- One should not hesitate to convert to an Open Cholecystectomy if significant adhesions or inflammation are identified during laparoscopy.
- Technically, the dissection of the cystic artery and cystic duct is very precise and less peri-operative blood loss in laparoscopic technique.
- Laparoscopic Cholecystectomy patients tolerate oral feeds earlier and are mobilized faster.
- The duration of hospital stay is less, and patients can be discharged quickly from the hospital in laparoscopic cholecystectomy.
- Patients of Laparoscopic Cholecystectomy group can resume their work earlier.
- The cosmetic advantages in Laparoscopic Cholecystectomy is obvious.
REFERENCES


