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# Complications of laparoscopic cholecystectomy: an analysis of 1,695 laparoscopic operations

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## ABSTRACT

**Background:** Laparoscopic cholecystectomy (LCs) is the gold standard method to treat gallstone disease. But there are some complications which occur frequently as compared to open cholecystectomy.
**Methods:** The prospective study was conducted in the Department of Surgery, Kamineni Institute of Medical Sciences, Telengana during the period of 2 years; March 2015 to February 2017. A total of 1,695 laparoscopic cholecystectomy cases were included in this study. Several treatment options such as, conservative treatment, minimally invasive treatment and open surgery was performed based on the severity of the disease.
**Results:** Majority of patients were female (83.9%) and most common age group affected was above 40 years. Intra-operative and post-operative complication occurred in 4.5% and 1.9% patients respectively. Majority complications were treated by conservative treatment and minimally invasive treatment. So, in conclusion, we can use conservative and minimally invasive treatment to manage the complications from laparoscopic cholecystectomy.
**Conclusions:** Conservative treatment options and minimally invasive treatment was more efficient to overcome the post-operative complication of laparoscopic cholecystectomy.

**Keywords:** Cholelithiasis, Complications of cholecystectomy, Laparoscopic cholecystectomy

## INTRODUCTION

Laparoscopic cholecystectomy (LCs) has become the standard method to treat gall bladder stone. It has certain advantages over open cholecystectomy, such as early recovery, short hospital stays and less pain after surgical procedure. Apart from these advantages LCs has certain complications like; bile leakage, subhepatic abscess, hemorrhage, choleperitoneum, biliary fistula.[1,2]

Several studies reported higher complication rate after Laparoscopic cholecystectomy than open cholecystectomy.[1-3] Thus this present study was focused to analyze the rate of complications and proper method to treat them.

## METHODS

This study was carried out in the Department of Surgery, Kamineni Institute of Medical Sciences, Narketpally, Telangana State, India. A total of 1,695 laparoscopic cholecystectomy cases were included in this study. The study design was approved by Institutional ethical committee. Patients were received consent form before included in this study. Data was recorded and analyzed by statistical analysis software 20.0.

## RESULTS

Among 1,695 cases, 16.4% were male patients and 83.9% were female (Figure 1).

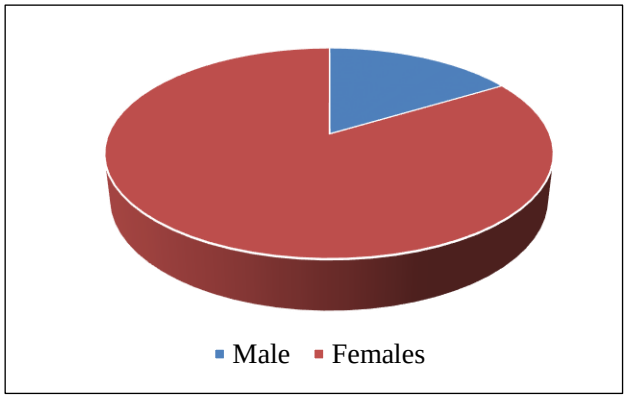


**Figure 1: Male:female ratio of cholelithiasis cases (n=1695).**

The age group ranges between 20-80 years and most of them were above 40 years (Table 2).

**Table 2: Age group distribution among cholelithiasis case (n=1695).**

| Age group (years) | Total no. | Percentage (%) |
|---|---|---|
| 20-30 | 69 | 4.07 |
| 31-40 | 262 | 15.46 |
| 41-50 | 758 | 44.7 |
| 51-60 | 439 | 25.9 |
| > 60 | 167 | 9.8 |

Most common operative diagnosis was chronic calculous cholecystitis (68.5%) (Table 3).

The degree of difficulty at operative procedure was measured by Caschieri's scale.[3] Most of the cases were Grade I type (67.3%) (Table 4).

Out of 1,695 LCs intra operative complications occurred in 4.5% patients and common was bile leakage (1.53%) (Table 5).

**Table 3: Operative diagnosis (n=1695).**

| Diagnosis | Percentage (%) |
|---|---|
| Chronic calculous cholecystitis | 68.5 |
| Acute cholecystitis | 13.2 |
| Acalculous cholecystitis | 9.6 |
| Gallbladder mucocele | 5.7 |
| Gallbladder + CBD lithiasis | 2.9 |

**Table 4: Degree of difficulty at operation (n= 1695).**

| Grade | Percentage (%) |
|---|---|
| Grade I | 67.3 |
| Grade II | 22.8 |
| Grade III | 7.0 |
| Grade IV | 2.8 |

**Table 5: Intra-operative complications (n= 76).**

| Complications | Percentage (%) |
|---|---|
| Cystic duct injury | 1 |
| Bile leakage from gallbladder | 1.53 |
| Bowel injury | 0.64 |
| Spillage of stone | 1.3 |

In this study reported 1.9% was post-operative complications. 17 cases of post-operative complications due to bile leakage were treated by conservative technique. 5 haemorrhage also managed by conservative treatment. Minimally invasive treatment was used to treat 5 patients with bile leakage from gall bladder, 2 sub hepatic abscesses and 2 biliary fistulas (Table 6). There was 1 open surgery performed for biliary fistula case. No mortality was found in the present study. Most common problem has seen in patients with bile leakage from gall bladder and haemorrhage.

**Table 6: Post-operative complications and treatment (n= 32).**

| Complications | Conservative treatment (total n=22) | Minimally invasive treatment (total n= 9) | Open surgery (total n=1) |
|---|---|---|---|
| Bile leakage | 17 | 5 | - |
| Haemorrhage | 05 | - | - |
| Sub-hepatic abscess | - | 2 | - |
| Choleperitoneum | - | - | - |
| Biliary fistula | - | 2 | 1 |

## DISCUSSION

Laparoscopic cholecystectomy is the standard operative procedure for the management of cholelithiasis. Most of the people (80%) with gallstones never develop symptoms. Gall stones have certain complications such as inflammation of the gallbladder, pancreas and liver.[1,4] Symptoms from these complications include such as; fever, pain, yellowish skin, vomiting and tea color urine. In this study, a total of 1,695 cases, 16.4% were male and

83.9% were female patients. Female are in more risk to get gallstone disease in middle or older age group. Several other studies also showed the same scenario.[4,5] The most common symptoms diagnosed were chronic calculous cholecystitis (68.5%) in the present study. Kapoor M et al, reported 86.6% had multiple calculi.[6] The major cause of intraoperative and postoperative complication was due to abnormal ductal and vascular anatomy. Similarly reported by Capizzi F et al.[7] The major intra-operative complications occurred due to LCs was bile leakage from gall bladder (1.53%), other problem such as cystic duct injury (0.64%), and spillage of stone (1.3%). Bile leakage was prevented by clipping the accessory bile duct. Endoscopic sphincterotomy was performed in early post-operative period for the management of bile leakage. This preventive measure was also recommended by other authors.[8-11] Bile leakage is more common in LCs than open cholecystectomy. In the present study, we found 8 out of 32 post-operative patients had bile leakage problem. Woods et al, reported 17 out of 34 cases had biliary complications.[12] In this study, haemorrhage was found in 14 out of 32 cases due to laparoscopic means. Subhepatic abscess reported in the present study was 2 out of 32 cases. Another study done by Huang et al, found that 3 such complications out of 350 LCs.[13] Spillage of stone (1.3%) was found in intra-operative period, extraction of the calculous done after 3-4 day of LCs. Out of 32 post-operative complications, 22 cases were treated by CT, 9 cases by minimally invasive treatment and 1 open surgery was performed. In the present study, no mortality was found among cholelithiasis patients. According to other studies there was 1.9% morbidity and 1% rate due to LCs. Although it has certain complications and chances of mortality but recent scenario shows morbidity and mortality rate lesser than the open surgery.[13-16]

## CONCLUSION

Conservative treatment options and minimally invasive treatment was more efficient to overcome the post-operative complication of laparoscopic cholecystectomy.

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