# Laparoscopic Cholecystectomy in Alhindiya Hospital: Analysis Study

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## Abstract

**Background:** Cholecystectomy is one of the most frequently performed operations. Open cholecystectomy has been the gold standard for over 100 years. Laparoscopic cholecystectomy was introduced in the 1980s. Laparoscopic cholecystectomy has become the definitive treatment of choice for symptomatic gall bladder disease. It replaced the old traditional method of open approaches with lower complication rates.
The laparoscope was introduced into Alhindiya hospital during early 2008 and after that the numbers of laparoscopic operations started to increase gradually and includes cholecystectomy, ovarian drilling, ovarian cysts, and appendectomy and diagnostic operations.
**Objective:** This study summarizes the experiences associated with 150 laparoscopic cholecystectomies performed in Alhindiya hospital to assess the safety of these operations.
**Patients and Methods:** This is an analysis study were the records of 150 consecutive patients who underwent laparoscopic cholecystectomy in Alhindiya hospital were reviewed. 125 patients were females and 25 patients were males (F to M ratio= 5-1). The age range was between 18 -75 years.Analysis of different data was performed.
**Results:** The commonest indications for surgery were symptomatic cholelithiasis (100 cases) and acute/chronic cholecystitis (35 cases). The mean operating time was 36.8 minutes. The mean length of stay in the ward was 17.7 hours. Only 5 cases were converted to open procedures. The commonest postoperative complication was wound-infection. Mortality rate was zero.
**Conclusion:** In summary, this study demonstrates that laparoscopic cholecystectomy can be performed safely in Alhindiya general hospital with good results and low complications rate.
**Keywords:** Laparoscopic cholecystectomy**,** gallbladder surgery, acute cholecystitis, galls stones.

## Introduction

Gallstones are one of the major causes of morbidity. It is estimated that the incidence of symptomatic cholecystolithiasis is up to 2.17 per thousand inhabitants [(1)] with an annual performance rate of cholecystectomies of more than 500,000 in USA [(2)]. Open cholecystectomy was the gold standard for treatment of gall stones until the end of the 1980s. This operative procedure was effective with low mortality and complications. Laparoscopic cholecystectomy was introduced in 1985 [(3)] and rapidly became the method of choice for surgical removal of the gallbladder. This is because it was assumed that it has lower morbidity and complication rates and a quicker postoperative recovery compared to open cholecystectomy. In non-randomized studies, the laparoscopic cholecystectomy seemed superior to open cholecystectomy (Deziel 1993; Downs

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1996; Shea 1996). Differences in primary outcomes like mortality and complication proportions (particularly bile duct injuries) are important reasons to choose one of the two operative techniques. When these primary outcomes show no significant difference, then secondary outcomes like non-severe complications, pulmonary outcomes, differences in health status related quality of life, hospital stay, and differences in cost-effectiveness analysis should help decide which technique is superior [4].

The first LC to be performed in Alhindiya hospital was at 18-1-2008.Since that the numbers of operations started to increase gradually.

In this article, we present our experience with 150 consecutive cases of LC done in Alhindiya hospital between that time and March 2010.

## Objective

This study summarizes the experiences associated with 150 laparoscopic cholecystectomies performed in Alhindiya hospital to assess the safety of these operations.

## Patients and Methods

In 2008, laparoscopic procedures were started in our hospital. From January 2008 to March 2010, a total of 150 laparoscopic cholecystectomy were performed.

All patients were admitted on the morning of surgery, unless the individual had medical illness that necessitated earlier admission. Preoperative hematological and biochemical blood investigations and abdominal ultrasounds were routinely performed with additional chest radiograph and electrocardiographs for all patients older than 40 years of age. The procedure was performed with the standard 3- port technique using 12-14 mm Hg of CO2 pneumoperitoneum. In all of the cases except 3, the pneumoperitoneum was created via blind port technique. Two 10-/12-mm ports and one 5-mm ports were used. The camera was operated through the infraumbilical port and all of the operations were performed via a retrograde approach with the initial dissection beginning at Calot's triangle.

In all cases, the cystic duct was clipped and transected. In more than 85% of these cases (128 patients), coagulation of the cystic artery by diathermy was performed, and in the other cases the cystic artery was controlled by the use of clips. The gallbladder was retrieved via the epigastric port. Drains were left in situ in selected cases of acute cholecystitis or empyema and difficult procedures, and these drains were removed in the first post operative day. Criteria for discharge included (1) starting oral fluid diet, (2) adequate pain control, (3) ability to ambulate.

The data regarding: indications for operation, severity classification, operative time, length of stay, and complications were collected. Indications for LC were broadly grouped into the categories as shown in Table 1.

Operative time was calculated from the insertion of the first port to skin closure of the last port. At the time of surgery, the gallbladder was categorized as class I, II, III, or IV, depending on the degree of difficulty encountered in defining the gallbladder and the associated anatomy. The gallbladder was defined as class I when the anatomy was clear, class II when the anatomy was discernible after initial dissection, class III when the anatomy was discernible after difficult dissection, and class IV when the anatomy was unclear and when Calot's triangle and other structures

may have been impossible to identify [5]. Length of stay was calculated from the time of admission to the time of discharge. The data collected were compiled and analyzed.

## Results

Since January 2008, a total of 150 cases of LCs were performed. The youngest patient was 18-year- old girl while the oldest patient in this study was a 75-year old woman who presented with gall bladder polyp.

The mean age was 36.5 years, females (125 patients) outnumbered males (25 patients), showing a clear predominance of the female gender. The indications for operation are as shown in Table 1. One hundred (66.67%) patients had LC because of symptomatic gallstones, 10 (6.67%) patients because of acute cholecystitis, and 35 (23.3%) patients because of acute-on-chronic cholecystitis. The average overall operative time was 36.8 minutes. Once the cases were complicated with acute inflammatory changes, the average operating time increased (Table 2).

A same-day discharge was achieved in 78 (52%) patients. The average overall length of stay was 17.7 hours. The length of stay was longer for those cases complicated by acute inflammatory changes (Table 3). The severity classification was used to determine the difficulty in performing the procedure and was a subjective measure of severity. Eighteen percent of the cases were of the class 1; seventy two% were of class 2 with classes 3 and 4 accounting for 6.7% and 3.3%, respectively (Table 4). There were 5 conversions to open cholecystectomy overall, mainly for difficult dissection and abnormal anatomy. Major complications included 1 case of cystic duct leakage, intraoperative cystic artery bleeding (2 cases) and one patients developed umbilical port hernias. The port site most prone to wound sepsis was the epigastric port and wound sepsis accounted for 10 cases.

There was 1 case of retained stones which underwent ERCP with sphincterotomy and stone extraction.

There were no cases of common bile duct injury. There were no procedure-related deaths.

**Table 1.** Indications for Cholecystectomy

| Indication | No. of Cases | % |
|---|---|---|
| Symptomatic cholelithiasis | 100 | 66.67 |
| Acute/chronic cholecystitis | 35 | 23.3 |
| Acute cholecystitis | 10 | 6.67 |
| Empyema gallbladder | 3 | 2 |
| Gallbladder polyp | 2 | 1.3 |

**Table 2.** Indications and Operative Time

| Indication | Operative Time (Min) |
|---|---|
| Symptomatic cholelithiasis | 36 |
| Acute/chronic cholecystitis | 37.5 |
| Acute cholecystitis | 40.5 |
| Empyema gallbladder | 45 |
| Gallbladder polyp | 38.5 |

**Table 3.** Indications and Length of Stay

| Indication | Average Length of Stay (hour) |
|---|---|
| Symptomatic cholelithiasis | 17.5 |
| Acute/chronic cholecystitis | 18.5 |
| Acute cholecystitis | 24 |
| Empyema gallbladder | 24 |
| Gallbladder polyp | 24 |

**Table 4.** Severity Classification and Operative time

| Class | Average Time | No. of Cases |
|---|---|---|
| 1 | 34 | 27 |
| 2 | 37.5 | 108 |
| 3 | 42.5 | 10 |
| 4 | conversion | 5 |

**Table 5.** Complications and Management

| Type of Complications | No. of Patients | Management |
|---|---|---|
| Cystic duct leakage | 1 | Exploratory laparotomy and ligation of cystic duct |
| Retained common bile duct stones | 1 | Endoscopic retrograde cholangio-pancreatography and stone retrieval |
| Cystic artery bleeding (intra op.) | 2 | Clip ligation |
| Port site hernias | 1 | Surgical repair |
| Wound infection | 10 | Local therapy and antibiotics |

## Discussion

Laparoscopic cholecystectomy is now the procedure of choice for the management of symptomatic gall bladder disease and has been well accepted as the most effective and safe procedure for the treatment of symptomatic gallstones. It has been well documented that cholecystectomy done laparoscopically has been associated with decreased morbidity, analgesic requirement, hospital stay, superior cosmoses, and earlier return to normal function.

On average, the patients return to normal function within 1 week and patient satisfaction is high. As the surgeon's dexterity and technological advances with this surgical modality have improved over the years, operation time has decreased, associated complications have diminished, and the need for conversion to open cholecystectomy has also been reduced [6] .These advantages have resulted in the declining of indications for open cholecystectomy.

Laparoscopic surgery has been well accepted in the international community. However, its introduction to Alhindiya community has been delayed till the availability of trained surgeon.

The cost of LC was shown to be 18% less than for open conventional cholecystectomy, principally because of the shorter postoperative stay [7]. Strasberg et al, in 1999, thought that the incidence of complications were reduced but remained higher than open cholecystectomy [8]. This was clearly evident by our low complication and

conversion rates. As more experience is accrued, the classic contraindications for LC are being abandoned, and more difficult cases are being done. LC has become the treatment of choice for symptomatic cholelithiasis, but controversy persists over the use of this approach in the treatment of acute cholecystitis. Even after LC became widely accepted for treating cholelithiasis, acute cholecystitis was still considered a relative contraindication because of the higher rates of perioperative complications recorded. Even though LC for acute and gangrenous cholecystitis is technically demanding, in experienced hands, it is safe and effective. It does not increase the mortality rate, and the morbidity rate seems to be even lower than that in open cholecystectomy. However, a moderately high conversion rate must be accepted.[9]. Lo (1996) recommended emergent LC within 72 hours of onset of acute cholecystitis because it was associated with significantly fewer conversions (11% vs 23%), fewer complications (13% vs 29%) and fewer hospitalizations than interval cholecystectomy. [10]. Lai noted that LC as early as 24 hours after the onset of acute cholecystitis did not increase complications or conversions. In our experience, earlier intervention for patients with acute cholecystitis resulted in a better overall outcome and earlier returns to normal function (6.67%). Nevertheless, LC is still reported as having a higher complication rate for acute cholecystitis with currently reported complication rate of 9% to 17% [11]. Fortunately, our complications were limited to superficial wound infections with no bile duct injuries.

LC for acute cholecystitis was associated with increased operative time (40.5 minutes) and increased duration of stay (24 hours), but overall outcome and return to normal function was much better than open or interval cholecystectomy. There was an increased incidence of class 4 cholecystectomies in patients who presented with acute cholecystitis. The indications for LC are expanding rapidly so that there are relatively few contraindications. The only absolute contraindication to LC is a preoperative diagnosis of gallbladder carcinoma. Relative contraindications include acute cholangitis, portal hypertension, pregnancy, and bleeding diathesis. But this list is still evolving and will depend on the expertise of the surgical team. [12] Conversions are more common in difficult cases, especially the class 4 cases; however, in our practice, open cholecystectomy was performed for those cases where the cholecystectomy was complicated by the presence of local factors like active inflammation and dense adhesions that made the dissection of Calot's triangle difficult. As a result, our conversion rate was limited to 5 cases. One case having empyema of the gallbladder and 4 cases having severe acute cholecystitis. The cases were all converted on the basis of difficult anatomy at Calot's triangle and easy bleeding. These cases were safely done via the open approach with no complications, and the patients were discharged (on average) by day 2. General factors that are suggestive of technical difficulty include increased age, male gender, long symptomatic intervals, and greater number of acute attacks before LC. Three of the cases that converted were male. As experience with laparoscopic surgery advances, the need for conversion to open surgery will become negligible. Laparoscopic surgery has advanced tremendously over the years and the surgeon's expertise with this form of surgery, has also improved. This has resulted in the average time to perform

LC being reduced from 83 minutes in 2000 to 21 minutes in 2007 [13]. On average, our overall operative time was 36.8 minutes. One of the major advantages of LC is the reduction in hospital stay. Previous data have shown that the length of stay is twice as long for open cholecystectomy vs LC. In our study, the average length of stay was 17.7 hours. Fifty-two percent of the patients undergoing LC were suitable for same-day discharge. Actual discharge in 24 hours was achieved in 95% of the total patients. LC is accompanied by a definite risk of morbidity and mortality. Bile duct injuries appear to be a major problem, as their incidence during LC has been reported to be 2.5 to 4 times higher than with the traditional open technique. [14]. Bile duct injury is the most feared complication of LC, and every effort should be made to prevent this dreadful complication. In our study, there were no bile duct injuries. This has resulted from meticulous dissection of the safety zone (cystic duct– gallbladder junction) and avoidance of the danger zone (cystic duct–common duct junction) and conversion without hesitation in selected cases. The major complications encountered in our study were cystic duct leakage (1 case), Retained common bile duct stones (1 case) and cystic artery bleeds (2 cases). The complication with the highest incidence was that of port site infection (10 patients), usually of the epigastric port. The literature reports the incidence of port site infections at less than 3% [15]; in our study, the incidence was 6.6% this is may be due to direct contact of retrieved gall bladder with the wound. Similarly, the literature reports the incidence of port site hernia rate as less than 0.5% [16]; in our study, the incidence was 0.6%.

Apart from the initial acquisition of the necessary equipment and instruments, the subsequent maintenance of this equipment and replacement of damaged parts presents challenges to our hospital. In addition, the training of personnel is required for the efficient laparoscopic procedures.

## Conclusion

LC has undoubtedly become the gold standard for the management of benign gallbladder disease. It is clearly superior to the open procedure in decreasing postoperative pain, in-hospital stay, cosmetic concerns, and return to normal function. This study clearly demonstrates that LCs can be done safely and efficiently in Alhindiya hospital but another extra facilities and experiences should be added to avoid certain complications and elevate performance and expansion to perform other operations.

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