

Efficacy of Mini lap Cholecystectomy in the Management of Symptomatic Cholelithiasis

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How to cite this article:

A V N Ganga Prasad, Pradeep Gudi Pati. Efficacy of Mini lap Cholecystectomy in the Management of Symptomatic Cholelithiasis. *New Indian J Surg.* 2019;10(4):383-387.

Abstract

Gallstone disease is one of the most common biliary pathology. It is estimated that gallstones affect 10–15% of the population in the western societies. Approximately 1–2% of asymptomatic patients will develop symptoms requiring surgery per year, making cholecystectomy one of the most common surgeries performed by the general surgeons.

Traditional open cholecystectomy (OC) has more postoperative pain due to excessive dissection and lengthy muscle dissection. Hence laparoscopic cholecystectomy (LC) was introduced which revolutionized the treatment of gallstone disease. Though, these advances have markedly reduced postoperative pain and hospital stay, etc. they are associated with high cost, long, learning curve and also postoperative complications. Incidence of CBD injury is found to be high in LC compared to conventional cholecystectomy. The advent of Mini Lap cholecystectomy (MLC) has brought down the cost, hospitalization stay early return to work, etc. Hence in resource poor countries, MLC is an acceptable alternative too LC, as it is done through a small 5–6 cm incision.

The advantages of performing cholecystectomy through a minimal incisions controversial. In view of the above the present study is taken up to evaluate the efficacy of Mini lap cholecystectomy.

Keywords: Mini lap cholecystectomy; cholelithiasis.

Introduction

Cholecystectomy is the commonest operation of the biliary tract and the second most common operative procedure performed today. Though the technique was developed a century ago by a German surgeon, Carl Johan August Langenbuch, it received little recognition till it became the gold standard for the definitive management of symptomatic cholelithiasis.

Though the main principles of minimally invasive surgery were established in the beginning of the last century, by D.O. Ott and G. Kelling, however due to technical limitations, these principles were only widely introduced in clinical practice starting in the 1980s. Laparoscopic and Mini laparotomy cholecystectomy are widely recognized as minimally invasive operations.

The advantages of LC over open cholecystectomy have been extensively reported and they included preservation of abdominal wall integrity, lower wound complications, faster, recovery and good cosmetic outcomes. And disadvantages are: lack of depth perception, hemorrhage, injury to abdominal viscera, biliary tree, etc. and steep learning curve. Most important factor is availability of high cost equipment and expert training.

Mini lap cholecystectomy has been suggested as an alternative procedure, which has many

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Received on 27.05.2019, Accepted on 11.07.2019

advantages, in resource poor countries, or in peripheral hospitals without the availability of expensive equipment. Mini laparoscopic cholecystectomy produces minimal trauma and it is believed that it has similar level of invasiveness to the laparoscopic approach. It can be carried out even in elderly people.

The present study is taken up evaluate the efficacy of mini lap cholecystectomy in the management of cholelithiasis.

Aims and Objectives

1. To study the feasibility of Mini lap cholecystectomy, in surgical treatment of cholelithiasis.
2. To study the efficacy of the same in terms of
 - A. Postoperative pain
 - B. Duration of need for analgesics
 - C. Hospital stay
 - D. Complications
 - E. Return to early physical activity

Materials and Methods

Study was taken up on patients who presented with symptomatic cholelithiasis to the department of General surgery, Narayana General Hospital from October 2014 to November 2016. Data of 30 cases were collected, analyzed and tabulated.

Diagnosis of symptomatic cholelithiasis was made by:

- (A) Detailed history taken from all the patients with special emphasis on symptoms related to cholelithiasis
- (B) Thorough physical examination
- (C) Ultrasonography of abdomen

Inclusion criteria

- (A) All patients with symptomatic cholelithiasis
- (B) Acute calculous cholecystitis

Exclusion criteria

- (A) Mucocoele of gallbladder
 - (B) Choledocholithiasis
 - (C) Carcinoma of gallbladder
- All the patients were admitted to general surgical

ward and evaluated on the same day.

Those patients who are febrile were started on appropriate antibiotics. Liver function tests were done in all cases. All patients were grouped into high risk and low risk according to ASA physical status classification system. Surgery was done electively as soon after admission as possible.

Surgical Technique

All cases were done under general anesthesia with a sand bag support under the right upper back. A 5–6 cm transverse incision made in the right subcostal region starting at midline and extending to the right. Rectus muscle divided and peritoneum opened. Duration of the surgery was recorded from the time of incision to the time of last stitch application. Narrow blade deep retractors are used and availability of ENT type head set light is of much use. Formal cystic duct first cholecystectomy was done rather than fundus first method, after identifying the Calot's triangle. After removal of gallbladder, hemostasis was ensured and wound closed in layers. Length of the wound closed is measured with a metal scale. Patients were put on I/V fluids and antibiotics for first 24 hours stated normal diet on first postoperative day and ambulated. Whenever patient's physical activity's found to be of preoperative level, he was put up for discharge. Duration of hospital stay was counted from first postoperative day to the day patient was considered to have reached preoperative physical activity level. Postoperative pain was studied by visual analogue scale on the evening of first postoperative day. Thereafter every morning until the patient was not in the need of analgesics.

Any complications arising intra-or postoperatively including conversion to conventional cholecystectomy was noted. Patients were put on regular follow up through out the period of 2 years and any complications that have aroused were evaluated, confirmed and tackled. The results were subjected to statistical analysis and conclusions derived.

Table 1: Agewise Distribution (N = 30)

| Age in Years | Number | Percentage |
|--------------|--------|------------|
| 21–30 | 2 | 6.66 |
| 31–40 | 8 | 26.66 |
| 41–50 | 15 | 50.0 |
| 51–60 | 3 | 10.0 |
| 61–70 | 2 | 6.60 |
| Total | 30 | 100 |

Present study shows a peak incidence in the age group of 41-50 years. Youngest patient was 25 years and oldest 68 years (Table 1).

Table 2: Sexwise Distribution

| Gender | Number | Percentage |
|--------|--------|------------|
| Male | 12 | 40 |
| Female | 18 | 60 |
| Total | 30 | 100 |

In the present study, peak incidence is noted in the age group of 41-50 years and female predominance is noted with 60% patients being female (Table 2).

Table 3: Indications for Cholecystectomy

| Diagnosis | Number | Percentage |
|-------------------------------|--------|------------|
| Acute Calculous Cholecystitis | 6 | 20 |
| Biliary Colic | 24 | 80 |
| Total | 30 | 100 |

The most common indication for cholecystectomy was biliary colic in 24 patients (80%) (Table 3).

Table 4: Duration of Surgery

| Duration of Surgery | Number | Percentage |
|---------------------|--------|------------|
| < 60 Minutes | 18 | 60 |
| 60-90 | 11 | 36 |
| 90-120 | 1 | 3.33 |
| Total | 30 | 100 |

In the current study the mean operative time was 61.6 minutes (Table 4).

Table 5: Intraoperative Complications

| Complications | Number | Percentage |
|-----------------------|--------|------------|
| None | 26 | 86.66 |
| Present | 4 | 13.33 |
| a) Bleeding | 2 | 6.66 |
| b) CBD injury | 0 | 0 |
| c) Gallstone spillage | 2 | 6.66 |
| d) Visceral injuries | 0 | 0 |
| Total | 30 | 100 |

In the present study, the main complications noted were bleeding (2 cases-6.66%), and gallstone spillage 2 cases (6.66%). There was no instance of CBD or visceral injury noted (Table 5).

Table 6: Conversions

| Conversions | Number | Percentage |
|---------------|--------|------------|
| Converted | 2 | 6.66 |
| Not Converted | 28 | 93.33 |
| Total | 30 | 100 |

In the present study 2 patients (6.66%) underwent conversion to traditional cholecystectomy in view of hemorrhage (Table 6 and Graph 1).

Most of the patients 22(73.66%) had moderate pain on first postoperative day. The pain lasted for initial 2 days and subsided on 3rd day in 20 patients (66.66%) (Table 7).

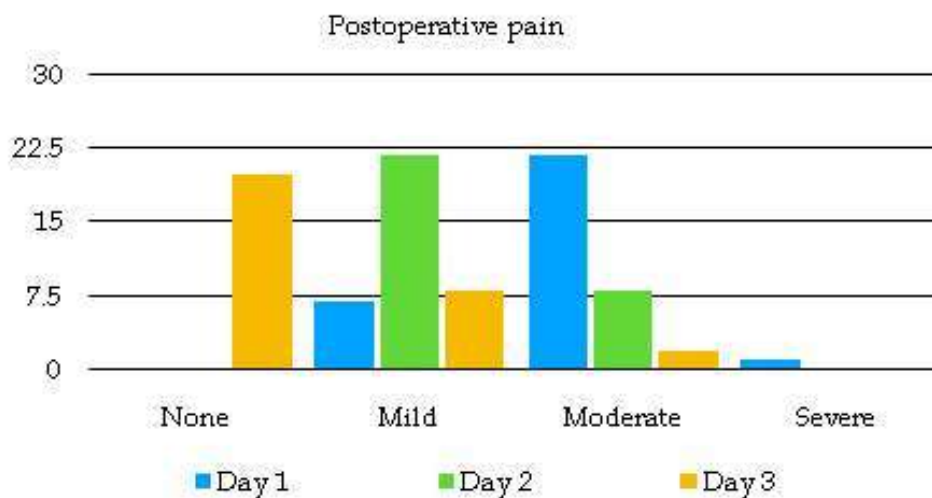


Table 7: Postoperative Pain (N = 30)

| Pain | Day 1 | Percentage | Day 2 | Percentage | Day 3 | Percentage |
|----------------|-------|------------|-------|------------|-------|------------|
| None | 0 | 0 | 0 | 0 | 20 | 66.66 |
| Mild (1-3) | 7 | 23.33 | 22 | 73.33 | 8 | 26.66 |
| Moderate (4-6) | 22 | 73.33 | 8 | 26.66 | 2 | 6.66 |
| Severe (7-10) | 1 | 3.33 | 0 | 0 | 0 | 0 |
| Total | 30 | 100 | 30 | 100 | 30 | 100 |

Table 8: Duration of Need for Analgesics

| Duration (in Days) | Number | Percentage |
|--------------------|--------|------------|
| 1-3 | 20 | 66.66 |
| 4-6 | 10 | 33.33 |
| >6 | 0 | 0 |
| Total | 30 | 100 |

Analgesics were used for 1-3 days in 20(66.66%) patients and for 4-6 days in 10 patients (33.33%) patients. The median duration need for analgesics was 3 days (Table 8).

Table 9: Postoperative Complications (N = 30)

| Complications | Number | Percentage |
|-------------------------|--------|------------|
| None | 28 | 93.33 |
| Present | 2 | 6.66 |
| Surgical site infection | 2 | 6.66 |
| Wound dehiscence | 0 | 0 |
| Incisional hernia | 0 | 0 |
| Total | 30 | 100 |

Postoperative complications were minimal-2 (6.66%) patients had surgical site infection. There was no instance of wound dehiscence or incisional hernia (Table 9).

Table 10: Duration of Hospital Stay

| Duration of Stay in Days | Number | Percentage |
|--------------------------|--------|------------|
| 1-3 | 4 | 13.33 |
| 4-6 | 6 | 20 |
| >6 | 20 | 66.66 |
| Total | 30 | 100 |

In the present study the mean duration of hospital stay was 6.8 (3-12) days (Table 10).

Table 11: Time Taken to Returning to Physical Activity

| Time Taken | Number | Percentage |
|------------|--------|------------|
| 1-7 | 10 | 33.33 |
| 8-14 | 20 | 66.66 |
| >14 | 0 | 0 |
| Total | 30 | 100 |

In the present study 22(73.33%) patients returned to preoperative physical activity in 8-14 days with a mean of 8.06 (Table 11).



Fig. 1: Oblique incision in subcostal region. Skin, subcutaneous tissue cut.



Fig. 2: Kelly's being used for tying the cystic duct



Fig. 3: Gallbladder being dissected out



Fig. 4: Postoperative view of incision

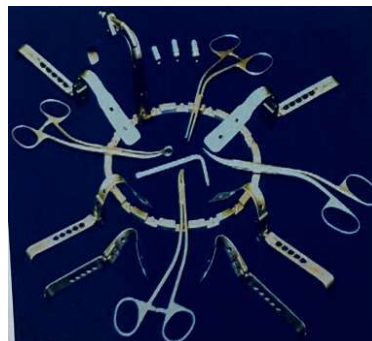


Fig. 5: Surgical tool kit "Mini-assistant" for mini-laparotomy cholecystectomy

Discussion

Cholelithiasis is a common disease entity. Frequent occurrence and serious complications of cholelithiasis have made this one of the most surgically correctable diseases.

Cholecystectomy is major surgical procedure and although has a proven safety and efficacy, this procedure is associated with a long postoperative hospital stay of 7-9 days, significant morbidity in terms of pain at the operative site and a long time off from work due to excessive dissection and lengthy muscle cutting incision. Recently much interest has developed in minimally invasive surgery with the introduction of laparoscopic cholecystectomy. These advances have resulted in marked postoperative pain, hospital stay, etc., however, this has brought increased cost of surgery and increased number and type of postoperative complications.

Limitations of laparoscopy:

- * Equipment is costly.
- * Prolonged learning curve.
- * Two-dimensional vision and parallax problems resulting in slightly increased incidence of CBD injuries.

This has resulted in the emergence of Mini lap cholecystectomy wherein the procedure is performed through a small 5-6 cm transverse incision placed in the right subcostal begin starting from midline and extending to right. Rectus abdomen is divided and peritoneum is entered.

The major disadvantages of small incision are the accessibility which has been overcome by means of use of narrow but deep retractors.

Benefits of Mini lap cholecystectomy:

- (a) No need for costly equipment.
- (b) Presence of three-dimensional vision.
- (c) Presence of tactile feedback.
- (d) Short learning curve and residents can be trained easily.

The present study was conducted to know the feasibility of mini lap cholecystectomy in the treatment of symptomatic cholelithiasis, and to study the efficacy in terms of:

- (a) Postoperative pain.
- (b) Duration of need for analgesics.
- (c) Duration of hospitalization.
- (d) Complications like CBD injury, wound infection, etc.

The present study was conducted in Narayana Medical College and Hospital Nellore.

Conclusion

A prospective study of 30 cases of symptomatic cholelithiasis were admitted to Narayana Medical College Hospital, Nellore during October 2014 and November 2016 was done.

The age and sex distribution of the whole series corresponded fairly well with usual age and sex affection of gallbladder disease.

Overall there was a female preponderance (60%) and the peak age group affected was 41-50 years (50%).

The most common indication for surgery was biliary colic (80%).

Two cases were converted to conventional cholecystectomy in view of the hemorrhage (6.66%).

The mean operative time was 61, 66 ± 17.23 minutes in present study.

There were no major complications like CBD injury in the current study. The only complications were bleeding (6.66%) and gallstone spillage (6.66%).

Postoperative SSI was noted in 2 cases who improved on regular dressings.

Most of the patients (22) had moderate pain for 1-3 days requiring analgesics for 1 the mean duration of the hospital stay was 6.8 (3-12) days.

The mean time taken to return to preoperative physical activity was 8.06 (5-14) days.

No mortality was seen in this study.

In conclusion it can be stated that Mini lap cholecystectomy is a feasible and acceptable alternative to laparoscopic cholecystectomy especially in resource poor countries as it is cost effective and safe which can be taken up in small peripheral hospitals.

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