Feasibility of Mini-cholecystectomy Versus Laparoscopic Cholecystectomy

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ABSTRACT

INTRODUCTION: Currently, laparoscopic cholecystectomy is the gold standard for the treatment of symptomatic cholelithiasis with advantage in regard to complication, hospital stay, early returns to activities and cosmetic results. Similarly Open cholecystectomy in the form of mini-cholecystectomy may be an effective alternative for the management of symptomatic cholelithiasis. This study was done to compare the result of lap. Cholecystectomy and mini-cholecystectomy.

METHODS: This is a prospective study which was conducted between Jan 2012-Jan 13 in a total of 100 patients. The patients were were divided in 2 groups randomly: group A (50 patients) – laparoscopy Cholecystectomy (LC) and group B (50 patients)- mini cholecystectomy(MC). The outcome was compared with the age, sex, OT time, hospital stay, pain, nausea, CBD (common bile duct) injury, haemorrhage, surgical site infection (SSI).

RESULTS: Among 50 mini-cholecystectomy cases 48 were female, and 2 were male. The mean operating time was 45(30-65) minutes and mean hospital stay was 3-5 days. SSI was detected in 6% patients and pain, nausea in 6%. In a group B, there were 44 female and 6 male with mean OT time of 45 (30-90 minute) and mean hospital stay was 2 days. CBD injury was found in 2% and SSI in 2% patients, pain/nausea in 10%.

CONCLUSION: Mini-cholecystectomy is a safe procedure with shorter operative time, hospital stay and less complication. It is an effective alternative for laparoscopic Cholecystectomy where expertise and facilities are limited.

KEY WORDS: cholelithiasis, cholecystectomy, laparoscopic cholecystectomy, mini cholecystectomy

INTRODUCTION

Cholecystectomy is commonly performed surgical procedure for symptomatic gall bladder (GB) stone(1,2). Open cholecystectomy was the choice of treatment for GB stone for almost a century. Gradually surgeon started to minimize the incision and in early 1980’s Small incision Cholecystectomy, also known as mini-cholecystectomy was debuted. Patient found to have less complication in SIC compared to open cholecystectomy (OC) (1, 3).

Cholecystectomy using laparoscopic cholecystectomy in late 1980’s was well accepted by surgeons and patient as well (4, 5). Most studies focused on the comparison of LC and OC and emphasized the better outcome of LC. At present it is well understood that LC have a better and shorter recovery than OC (3, 4)

Several studies have compared the result of LC and SIC and reported less cost and shorter duration of operation in SIC compared to LC but mortality and morbidity is less in SIC compared to LC(4,5,6,7). The aim of the present study was to compare the advantage and disadvantage of LC and SIC and to recommend the safe and effective alternatives for laparoscopic cholecystectomy.

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METHODS

This study was conducted in the department of General Surgery, National Medical College, Birgunj from Jan 2012 to Jan 2013. This was a perspective study, 100 patient with USG confirmed diagnosis of cholelithiasis were included in this study after taking informed consent. The study protocol was approved by the Ethical committee IRC, NHRC(National Health Research Committee) Nepal. Patient confidentiality and respect to human beings was maintained.

In total 50 patients in Group- A and 50 patients in Group- B was selected for study. Data of the entire patient were analysed for age, sex, operation time, post-operative (post op) hospital stay and post-op complication. Patient with co-morbid condition, and any other associated hepato-biliary disease were excluded from study.

This was a minimally invasive open cholecystectomy in which 5cm transverse subcostal incision placed in the skin over the fundus of gall bladder marked with correspond to 9th costal margin. Separation of subcutaneous fat and transverse incision over ARS was given. Rectus muscles was divided. Posterior rectus sheath along with peritoneum was opened. The GB then usually visualize. The callot’s triangle was then dissected and cystic duct, cystic artery were identified separately and divided between ligature. Gall bladder was then separated from liver bed with electric cautery with influence of gentle traction. Hemostasis was then maintained and incision was closed in layers.

If the pain was intolerable to patient requiring analgesics was recorded as having pain. Visual Analogue Scoring System was not applied to categorized degree of pain.

RESULTS

In total 100 patients with cholelithiasis were studied in two different groups

| Table 1: Demographic data in both group |
|-------------------|---|---|
| Groups | LC | SIC |
| Female, n (%) | 44 | 48 |
| Male, n (%) | 6 | 2 |
| Total | 50 | 50 |
| Age (year) mean +/-SD | 22-60 | 25-65 |

Group A included 50 patients in which 44 (88%) female and 6 (12%) male with mean age of 48 (22-60) years.

Where as in Group B 48 (96%) female and 2 (4%) male with mean age (25-65) 46 years. So, mean age and sex ratio is nearly same in both group.

There were no differences in operating time in both group. Group A 45 (30-90) min, Group B 45 (30-65) min. There was slightly longer hospital stay observed in group B. In Group A mean hospital stay was 2.0 (1-5) days where as in Group B mean hospital stay 3.5 (3-5) days.

Regarding post operative complication, in Group A- CBD injury in 1 (2%) cases, SSI in 2 (4%) cases, pain/nausea in 5(10%) and conversion in 2 (4%) case. Whereas in Group B SSI in 2 (4%) cases and post-op pain/nausea 3 (6%) cases.

| Table 2: Operative and post-operative variables evaluate in both groups. |
|-------------------|---|---|
| Groups | LC | SIC |
| Operation time, mean+- SD | 45(30-90) min | 45(30-65) min |
| Pain, mean+- SD | 3(6%) | 5(10%) |
| Nausea, n (%) | 2(4%) | 2(4%) |
| Vomiting, n (%) | 3(6%) | 2(4%) |
| Hospital stay (day) mean +SD | 2.0(1-5) days | 3.5(3-5) days |
| SSI, n (%) | 1(2%) | 3(6%) |
| Conversion | 2(4%) | 0 |

DISCUSSION

This study shows many similarities with other studies but some differences were observed as well. Gall Stone Disease is more prevalent among women reported by ROS, by Kens and by Watanape (2, 4, 10). Another point noticed in this study is duration of operation. The duration was shorter in mini-cholecystectomy group compared to Lap Cholecystectomy. The result obtained by ROS and Kens are also indicating that the duration of operation in Mini cholecystectomy 12-14 min shorter than that of Lap. Cholecystectomy (MC-94 and LC=108 min). MC-60 min, LC-72 min) respectively (4). In all studies, MC had a shorter duration compared to LC and is Advantage of MC over LC (2, 11, 12).

In this study, patients in LC group had a shorter hospital stay which was in agreement with ROS (2). In general, most study reported shorter hospitalizations in LC group (11, 16). Some studies reported similar hospitalisation in both MC and LC (4, 9). According
kens and Mc Gine states hospital stay was shorter in MC group (3.7 versus 4.1 days) (4,13).

Most studies found similar results although LC is more costly (6, 7, 9). It should be mentioned that most cholecystectomy patients are housewives, therefore getting back to work as soon as possible is not an issue for them but spending more money on their operation can cause financial problems for them. This issue has been discussed in western countries as well (7, 9, 12).

Bile duct injury is an important complication of cholecystectomy. Based on most studies, this complication is less in MC. There is always a high risk of bile duct injury during LC technique (3, 15). In this case, there was one case of bile duct injury in LC group. ROS reported high incidence of complication in LC group (2). Therefore, a higher frequency of complications is more likely to occur in LC (7, 12, 16).

Post operative pain, 24 hours after the surgery was not significantly different in two groups. However the highest frequency and the mean pain score were greater in MC group. In ROS study, level of pain after the operation was greater in MC group (2).

LC is costly and requires expensive equipments whereas, open surgery does not require expensive equipment. University and teaching hospitals are potentially affiliates to the governmental sector and are on budget. Therefore, cost effectiveness of a procedure is an important issue for them (9, 12, 18).

In another study, Niell reported MC was 29% less expensive than LC but they suggest that cost to patient and society as well as time lost away from work may be lower for mini-cholecystectomy (19).

Many studies showed that MC and LC is not significantly different in terms in post-operative complications, mortality and recovery period (8, 10, 12). MC Mohan found that LC was more costly but after 3 months there were no significant differences between the MC and LC (20).

MC can be regarded as a proper alternative for LC, it is an easy operation and also imposes less injury to the bile duct. In university hospitals, learning open cholecystectomy to residents is an essential part of surgical training. So, surgical residents should learn open cholecystectomy completely before starting to learn LC.

**CONCLUSION**

Outcome and surgical complication of MC are comparable with LC. It can be recommended to use MC in the educational hospitals as the method of choice for most of the patients. LC may be confined to those who need to return to work more quickly or young patient for whom aesthetic is an important concern.

**REFERENCES**


