ORIGINAL ARTICLE

The Rationality of Mini-Cholecystectomy: A Study of 143 Cases at Pak Red Crescent Teaching Hospital

Abid Hussain[1], Aqeel Ahmad[2], Kishwar Naheed[3]

ABSTRACT

Objective: The study was conducted to assess the feasibility, safety, effectiveness, and postoperative complications of mini cholecystectomy in our setup.

Study Design: It was a descriptive observational study design.

Place and Duration of Study: This study was conducted from 02nd September 2013 to 30th September 2017 in the department of surgery, Pak Red Crescent Teaching Hospital, affiliated with Pak Red Crescent Medical & Dental College, Lahore.

Materials and Methods: A total of 143 symptomatic patients with cholelithiasis, irrespective of age and sex were included in this by convenient sampling. The data of all patients were collected for age, sex, size of incision, operation time, complication, postoperative hospital stay and analyzed with SPSS version 21.

Results: Out of 143 patients 132 (92.30%) were female and 11 (7.69%) were male. Mean age of the patients was 38±10.38 years. Average incision size was 4±0.65 cm. The mean operating time was 39.12±8.66 minutes. The mean hospital stay was 2 days. Minor post-operative complications like hemorrhage, minor biliary leak and superficial surgical site infection was seen in 7 patients.

Conclusion: The present study shows that mini-cholecystectomy is effective, safe procedure with short operating time, fewer complication, less postoperative stay and it is feasible not only in chronic cholecystitis, but also in an acutely inflamed gallbladder even in empyema.

Key Words: *Cholelithiasis, Cholecystectomy, Gall Bladder, Mini Cholecystectomy.*

Introduction

Cholecystectomy is one of the most common operations performed by departments of general or gastro-intestinal surgery worldwide.[1,2] Conventional cholecystectomy has enjoyed supremacy as treatment of choice for Gallstones almost more than a century.[3] The introduction of laparoscopy in 1990s opened up a new chapter in the surgical history.[4] The procedure progressed at such a speed that it has become the gold standard for management of cholelithiasis.[4] This procedure requires costly equipment[5] and need of additional training of the surgeon, moreover learning curve of this technique is very slow.[6] Due to these factors this procedure has still not replaced the open cholecystectomy in most parts of the third world countries.[4] In early 1990s, it was shown that the conventional large subcostal incision in cholecystectomy could be replaced by a much smaller incision, giving a shorter convalescence. This new modification was named as Mini-cholecystectomy. It was first described by Dubois and Berthelot,[7] and their favorable results were reported at the same time laparoscopic cholecystectomy was introduced into the UK in 1990.[8-10] Most of the previous studies on mini-cholecystectomy done on chronic cholecystitis and excluded acute cholecystitis patients. We decided to analyze the safety and feasibility results of this procedure both in chronic and acute cases. The objective of this study was to assess the feasibility, safety, effectiveness, and postoperative complications of mini cholecystectomy in our setup.

Materials and Methods

This Descriptive observational study was conducted from 02nd September 2013 to 30th September 2017 conducted in the department of surgery, Pak Red Crescent Teaching Hospital, affiliated with Pak Red Crescent Medical & Dental College, Lahore. The study was approved by the ethical review committee

[1,2]Department of Surgery/ Gynecology and Obstetrics[3]
Pak Red Crescent Medical and Dental College, Lahore

Correspondence:
Dr. Aqeel Ahmad
Assistant Professor, Surgery
Pak Red Crescent Medical and Dental College, Lahore
E-mail: aqeelsurg@yahoo.com

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of our institution. A total of 143 symptomatic patients with cholelithiasis, irrespective of age and sex were included in this by convenient sampling. Written informed consent was taken. Complete blood count, liver function test, viral screening and clotting profile were performed. A routine preoperative abdominal ultrasound scan was performed a day before surgery. Patients with CBD stones were excluded from the study.

All operations were performed under general anesthesia. An equal or less than 5 cm transverse skin crease incision was made, starting from the midline approximately two finger breadths below xiphisternum, extending laterally towards the right subcostal margin. After division of the subcutaneous tissue, anterior rectus sheath, medial part of the rectus muscle and post rectus sheath were divided in turn. The peritoneum was picked up with two clips and divided between them. Gall bladder was located and grasped. In case of distended gall blabber, it was aspirated because the empty gall blabber is easier to grasp for dissection. Abdominal pack was inserted over the omentum and transvers colon and with the help of small deaver retractor it was retracted towards the pelvis. A second deaver retractor was placed over the abdominal pack, medial to the gall bladder and is used to retract segment 4 of the liver upwards, thus exposing the common bile duct and porta hepatis. Any adhesions between Hartmann's pouch, omentum and duodenum was divided carefully under direct vision. The calot's triangle was then dissected and cystic duct and artery was skeletonized and divided between the ligatures. Gall bladder was removed from its bed. The gall bladder bed was checked for hemostasis and for any accessory bile duct. A subhepatic drain was left for 24 hrs. The wound was closed in layers.

Post-operative patients were encouraged to be ambulant and pass urine. All the patients were reassessed in the morning for any post-operative complication. Drain was removed 24 hrs after the operation. Oral fluid was allowed if there was no nausea and on adequate bowel sounds. On second post-operative day soft diet was allowed and patient was discharged. They were called back on the 8th post-operative day for skin suture removal and reviewed fortnightly thereafter for one month. The data of all patients were collected for age, sex, size of incision, operation time, complication, postoperative hospital stay. Data were analysed using SPSS version 21. Descriptive statistics were applied. Frequency and percentage were calculated for categorical variables like gender whereas mean and standard deviation were calculated for numerical variables like age and incision size.

Results

Out of 143 patients, 132 (92.30%) were females and 11 (7.69%) were males. Mean age of the patients was 38 ± 10.38 years. Youngest patient was 16 years old and eldest was 70 years old. The minimum incision size was 3 cm and the maximum size was 5 cm. Average incision size was 4 ± 0.65 cm. The procedure was performed safely in all the cases and none of the patient was converted to conventional cholecystectomy. The mean operating time was 39.12 ± 8.66 minutes. The mean hospital stay was 2 days. During dissection dense Adhesions was found in 13 patients (9.09%) and obscure anatomy was encountered in 9 patients (6.29%), which were handled safely with meticulous dissection. Perioperative findings are given in Table I.

Table I: Perioperative Findings

Perioperative Findings	Patients	%
Acute Cholecystitis	17	11.89
Chronic Cholecystitis	107	74.83
Empyema	12	8.39
Mucocele	7	4.90
Total	143	100.00

Table II: Postoperative Complication

Postoperative Complication	Patients	%
Minor Ooze (Hemorrhage)	3	2.10
Minor Bile Leak	2	1.40
Major Bile Leak	0	0.00
Subhepatic Collection	0	0.00
Gut Injury	0	0.00
Wound Infection	2	1.40
Total	7	4.90

Post-operative complications were seen in 7 patients (4.90%) the details are given in Table II.

Post-operative minor ooze (hemorrhage) from gall bladder bed was stopped spontaneously. Post-operative minor biliary leak was managed conservatively. Wound infection was treated with removal of sutures and wound irrigation along with

antibiotics. Delayed primary closer was done in all these cases.

Discussion

More than 2000 cases of mini laparotomy cholecystectomy have been reported worldwide without any deaths or major common bile duct injuries since the first report in 1982.[8-10] Many authors reported that, it is a safe[3,11] procedure and it can be an alternative to laparoscopic cholecystectomy.[1,12] Mini-cholecystectomy produces ''minimal trauma'' to the patients.[1] It has a similar level of invasiveness to the laparoscopic approach.[13,14] Amount of trauma inflicted by surgeon is directly proportional to the length of incision and division of muscles.[15] Many studies show small transverse incision for gall bladder surgery have proved to be less painful than vertical incision.[16] This reduction of abdominal wall trauma by use of short incision should be accompanied by rapid recovery.[17] We used transverse incision in our study, and in most of the cases the size was less than ≤ 5 cm which is comparable with other studies.[17,18,19] Most of the previous studies on mini-cholecystectomy excluded acute cholecystitis patients. However, we were able to perform the procedure in cases of acute inflammation, mucoceles and empyema. We performed decompression of gallbladder as a routine in all cases to facilitate the visualization and dissection of the triangle of Calot's. The present study shows clearly that mini-cholecystectomy is effective, safe and feasible not only in chronic cholecystitis, but also in an acutely inflamed gallbladder even in empyema. Watanapa P. also found mini-cholecystectomy is an effective surgical procedure for an inflamed gall bladder regardless of the degree and type of inflammation.[20] Operative time was longer at the initial phase of the study but, as we went through the learning curve, the operative time decreased sharply. The average operating time in our study was comparable with local[21] and international data.[17,22,23]

Assalia and colleagues compared mini-lap cholecystectomy with conventional open cholecystectomy and showed no differences with regard to operative time, operative difficulty or complication rate.[24] However, significantly lower analgesic requirements as well as shorter hospital stay were found in the mini-lap cholecystectomy group. Shorter hospital stay also decreases the overall cost of the mini-cholecystectomy when compared with traditional open cholecystectomy.[25,26] Motivated (Encouraging) early mobilization can reduce hospital stay significantly. In our study the average hospital stay was two days which is consistent with local [3,17,27] and international data.[18,19] The wound infection rate in our study was well below with published regional data.[28]

Many studies found, it is a cost-effective procedure.[23,5] It is found more cost-effective than Laparoscopic cholecystectomy[29] and even from conventional open cholecystectomy.[30,31] Nevertheless, mini- cholecystectomy is not appropriate for obese patients, they are more suitable candidates for laparoscopic cholecystectomy.[1]

More effort should be put in to improve the mini-cholecystectomy technique rather than by-passing it especially in centers where laparoscopic cholecystectomy is not available. With this technique we can still offer to the patients of rural population better cosmetically accepted scar, less morbidity and cost-effective procedure.

Conclusion

The present study shows clearly that mini-cholecystectomy is effective, safe procedure with short operating time, fewer complication, less postoperative stay and it is feasible not only in chronic cholecystitis, but also in an acutely inflamed gallbladder even in empyema. It may be recommended as a procedure of choice especially in rural centers, where laparoscopic facilities are not yet available.

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