

## ORIGINAL ARTICLE

## MINI-CHOLECYSTECTOMY: A FEASIBLE OPTION

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**Background:** In standard or conventional cholecystectomy gallbladder is approach through a subcostal incision of 7–10 Cm. New technique and procedures have evolved, aiming at decreased tissue damage, pain, hospital stay and complications. This study was conducted to assess cholecystectomy through 5 Cm mini-laparotomy. **Methods:** This study was conducted at Department of General Surgery, Ward-26, Jinnah Postgraduate Medical Centre, Karachi from January, 2008 to January, 2009. Both sexes irrespective of age were included in this study. Ninety cases were females and 10 were male. Mean age of the patients was 48 years. Mini-cholecystectomy was performed on patients and results evaluated as percent and frequency. **Results:** This study included 100 patients with cholelithiasis. Mini-cholecystectomy was possible in 95% cases, and in 5 cases incision had to be extended to conventional cholecystectomy. The average operating time was 50 minutes and postoperative hospital stay was 2-days and postoperative complications like minor biliary leak, haemorrhage and wound infection was seen in 10 cases. **Conclusion:** Mini-cholecystectomy is a safe procedure with shorter operative time, fewer complications, better prognosis, and less of postoperative hospital stay. It may be recommended as a procedure of choice where laparoscopic facilities are not available.

**Keywords:** Gallbladder, Cholelithiasis, Mini-cholecystectomy, Mini-laparotomy

## INTRODUCTION

Biliary diseases constitute a major portion of digestive tract disorders world over, with cholelithiasis being the fore-runner and causing general ill-health requiring surgical intervention for total cure.<sup>1,2</sup>

For last more than 100 years cholecystectomy has enjoyed supremacy as treatment of choice for Gallstones. The credit of performing first ever cholecystectomy goes to Carl Langenbuch, who performed it on 15 July 1882 at the Lazaruskrankenhaus in Berlin on a 42 years old man.<sup>3</sup>

Historically cholecystectomy has been done through an T-shaped 7–10 Cm incision that cuts the majority of rectus muscle. Since then seven further incisions for cholecystectomy have been described, of these most commonly used are the right paramedian and Kocher sub-costal incision.<sup>4</sup> Mini-cholecystectomy was first described more than two decades ago by Dubois and Berthelot<sup>5</sup> and their favourable results were reported at the same time. Laparoscopic cholecystectomy was introduced in 1990.<sup>6,7</sup> Since then laparoscopic cholecystectomy has become a gold standard treatment for cholelithiasis, but overall benefits of less postoperative pain, early ambulation, less conspicuous scar and early return to work, this technique is tedious and team work is required, moreover expenditure is high as it involves sophisticated expensive instruments which may not be available in most hospitals. A period of specialist hand on training is mandatory as short courses are generally unhelpful. Besides, it should only be practiced by those proficient in open biliary surgery. Familiarisation with special instruments is crucial. The surgeon has to learn to operate from a two-dimensional

television image with lack of depth or tactile stimulus. Significant number of complications is also associated with laparoscopic cholecystectomy, Deziel *et al*<sup>8</sup> reported 1.2% of complications requiring laparotomy (0.6% rate of common bile duct injury).

Mini-cholecystectomy implies performing a cholecystectomy through 4–6 Cm incision subcostal rectus sparing incision.

The objectives were to assess the cholecystectomy through 5 Cm incision in terms of length of surgery, complications and hospital stay.

## MATERIAL AND METHODS

This study was conducted in the Department of General Surgery, Ward-26, Jinnah Postgraduate Medical Centre, Karachi from January 2008 to January 2009. This study was a prospective study. The data of all the patients was analysed for age, sex, operating time, postoperative hospital stay and postoperative complications. After taking informed consent, 100 patients having cholelithiasis diagnosis confirmed with ultrasound were included in this study. Those having other co-morbid like diabetes mellitus, hypertension or deranged liver function tests, coagulation abnormalities, acute cholecystitis and choledocholithiasis were excluded from the study.

All the baseline investigations, cardiac, and anaesthetics clearance were taken a day before surgery and after the surgical procedure was explained to patients.

This was a minimally invasive open cholecystectomy in which a small transverse subcostal incision around 5cm is placed in this skin overlying the fundus of the gallbladder. As the

fundus correspond the tip of 9<sup>th</sup> costal cartilage so the mark is placed just below it. After incising the skin the subcutaneous fat is retracted with the help of retractors. The anterior rectus sheath is incised transversally and the muscle fibres are separated. The posterior rectus sheath and the parietal peritoneum is then incised, after which the gallbladder is usually visualized and adhesions or other anomalies are ruled out. The Calot's triangle is then dissected and cystic duct and cystic artery are identified and divided between ligatures. The gallbladder is next separated from the liver using electrocautery. The operative area is finally checked for bleeding and accessory cystic ducts and the wound closed in layers.

## RESULTS

Out of patients 90 were female and 10 were male and their ages ranged between 25–70 years. The mean operating time for minicholecystectomy was 50 minutes ranges from 34–70 minutes. The mean hospital stay was 2 days and complications seen in 10 cases in which 2 had biliary leak (2%) managed conservatively, 1 had subhepatic collection (1%) and 2 had wound infections (2%) and in 5 (5%) cases the incision were converted to larger conventional due to haemorrhage (2%) and unclear anatomy (3%), Table-1 and 2.

**Table-1: Postoperative Complications**

Complications	Patients	%
Haemorrhage	2	2
Biliary leak injury	2	2
Subhepatic collection	1	1
Injury to gut	0	0
Unclear anatomy	3	3
Wound infection	2	2

**Table-2: Reasons for conversion to open cholecystectomy**

Reason for conversion	Patients	%
Adhesion	0	0
Unclear anatomy	3	3
Haemorrhage	2	2
CBD	0	0
Accidental larger incision	0	0

## DISCUSSION

Gallbladder disease continues to be one of the most common digestive system disorders encountered by surgeons. Cholecystectomy in fact, is the commonest surgical procedure in the abdomen worldwide. Today despite many recent innovations in the treatment of gallstones, cholecystectomy remains the treatment of choice for symptomatic patients.<sup>9</sup> Currently laparoscopic cholecystectomy is the most viable and indeed the preferred alternative to the 'gold standard' open cholecystectomy. Among the drawbacks of laparoscopic cholecystectomy cited in the introduction, it is pertinent to point out that surgeons already

experienced in abdominal and biliary surgery still require being trained, credentialed, and privileged to perform laparoscopic cholecystectomy but mini-cholecystectomy does not require expensive technology and special skills, associated with less abdominal wall trauma, shorter hospital stay, early return to work and few complications.

For the past few years there were studies comparing laparoscopic cholecystectomy with mini-cholecystectomy and found mini-cholecystectomy comparable with laparoscopic cholecystectomy.<sup>9-11</sup> The mini-laparotomy incision that just split the right rectus abdominal muscle is alternative to the laparoscopic technique.<sup>12</sup> Khan N *et al*<sup>13</sup> found in their study that average operating time for mini-cholecystectomy was 62 minutes and blood loss approximately 100ml and a few complications like wound bleeding in 1%, wound infection in 3% of cases, paralytic ileus in 2% of the cases.

Seale and Ledet<sup>14</sup> used a transverse incision 4–7 Cm long, preserving the rectus muscle as much as possible, they had 1,207 mini-cholecystectomy patients, of whom 89% were discharged in less than 12 hours after operation. In this series, there was a low complication rate 0.2% and only 0.3% of the day surgery patients were re admitted.

Thomas *et al*<sup>15</sup> used a short (mean 8 Cm) long right subcostal incision in their study. They had 30 consecutive patients, of whom 73.35% were discharged on the operating day. Neither complications nor re-admission occurred in this study. The length of incision was 5 Cm in our study but it varies in different studies, a few studies used 5 Cm mini-cholecystectomy incision.<sup>16-18</sup>

The average operating time of 50 minutes in our study was in accordance with that in previous reports of 40–74 minutes.<sup>19-22</sup>

A shorter hospital stay of 2 days and few complications seen in this present study and there were no bile duct injury or mortality in our study as reported by Ahmed *et al*<sup>23</sup> in their study.

In a Study conducted by Khan N<sup>24</sup> incision had to be extended in 10 out of 100 cases and the reason of conversion varies in different studies, it may be due to haemorrhage, anatomical variations, unclear anatomy, bile duct injuries, common bile duct stones and rate of conversion in studies conducted by Mc Mohan 10%<sup>19</sup> and o' Dwyer 9%.<sup>6</sup> While in present study only 5% cases were converted into conventional cholecystectomy due to bleeding and unclear anatomy.

Mini cholecystectomy does not require any major change in equipment or theatre facilities and require less training than laparoscopic cholecystectomy.<sup>25</sup>

Mini-cholecystectomy denotes suitable duration in surgery, smaller complications rate, lesser

analgesic requirement, quicker recovery, excellent cosmetic results and relative cost-effectiveness.<sup>26</sup>

## CONCLUSION

Cholecystectomy through mini-laparotomy is a safe procedure with shorter operating time, fewer complications, better cosmetics results and less postoperative stay. It may be recommended as a procedure of choice where laparoscopic facilities are not available.

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