

## ORIGINAL ARTICLE

## COMPARISON OF OPERATIVE TIME AND LENGTH OF HOSPITAL STAY IN LAPAROSCOPIC CHOLECYSTECTOMY IN ACUTE VERSUS CHRONIC CHOLECYSTITIS

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**Background:** The laparoscopic surgery has opened a new era in the field of surgery. Currently, it is accepted as the “gold standard” in the treatment of symptomatic cholelithiasis. However, laparoscopic cholecystectomy (LC) performed for acute cholecystitis is technically difficult because of severe inflammatory adhesions and distortion of the biliary anatomy. The objective of this study was to compare the frequency, mean operative time and length of hospital stay in patients of acute and chronic cholecystitis undergoing laparoscopic cholecystectomy. **Methods:** This prospective comparative study was carried out in the department of General Surgery Jinnah Postgraduate Medical Centre (JPMC) Karachi, from March to September 2013. During this period 233 patients underwent laparoscopic cholecystectomy (54 cases of acute and 179 cases of chronic cholecystitis respectively). The patients who were pregnant, diagnosed with gall bladder mass on ultrasound, carcinoma gall bladder, acute pancreatitis, and those with co-morbid like diabetes mellitus/cardiovascular disorders were excluded. **Result:** A total of 233 patients were admitted for laparoscopic cholecystectomy. Fifty four (54) patients in Group A (acute cholecystitis) and 179 patients in Group B (chronic cholecystitis) with female: male 2.8:1 and 4:1 in Group A and B respectively. Operative time was longer for group A. Six cases of conversion to open procedure one (1) in Group A and 5 in Group B respectively. **Conclusion:** Laparoscopic cholecystectomy is safe and efficient for both acute and chronic cholecystitis.

**Keywords:** Laparoscopic cholecystectomy, acute cholecystitis, chronic cholecystitis

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### INTRODUCTION

The laparoscopic surgery has opened a new era in the field of surgery in the last 20 years. Currently, it is accepted as the “gold standard” in the treatment of symptomatic cholelithiasis. However, laparoscopic cholecystectomy (LC) performed for acute cholecystitis is technically difficult because of severe inflammatory adhesions and distortion of the biliary anatomy.

Philippe Mouret in 1987 was the first to perform laparoscopic cholecystectomy in Lyon, France.<sup>1,2</sup> Initial learning curve for the cholecystectomy procedure complications were much higher than open procedure, that let many to believe that acute cholecystitis is best managed conservatively and cholecystectomy needed to be delayed for 6 weeks till the oedema subsided and settled. A study done in Kuwait has reported proportion of 18.6% with acute and 81.4% with chronic cholecystitis.<sup>3</sup> Sharp KW has reported 20% acute cholecystitis in all admissions.<sup>4</sup> Pessaux P *et al* reported 132 (16.6%) acute Cholecystitis out 796 patients who underwent LC.<sup>5</sup>

Early LC (within 72 h) in acute cholecystitis is associated with a shorter hospital stay.<sup>6</sup> In a comparative study, Pessaux P *et al*<sup>5</sup> reported that the length of surgery was longer in AC (150.3 minutes vs. 107.8 minutes;  $p < 0.001$ ), also longer

postoperative length of hospital in (7.9 days vs. 5 days ( $p < 0.001$ )). Early laparoscopic cholecystectomy can reduce both the conversion rate and the total hospital stay but may be preferred within 48–72 hours of diagnosis. In the study of Shaheed A *et al*<sup>3</sup>, LC took an average of  $89 \pm 21.2$  minutes for AC and  $57 \pm 33.4$  minutes for CC ( $p = < 0.05$ ). The average hospital stay was  $2.4 \pm 1.75$  (Range=1–8) days in the AC group and  $1.89 \pm 1.50$  (Range=1–7) days in the CC group. Furthermore it is believed that acute cholecystitis is associated with technical difficulties, higher conversion rates and complications.<sup>3,7</sup>

Keeping in view the mixed findings related with the outcome of acute and chronic cholecystitis in reported studies, we planned this study for comparing operative time and postoperative length of hospital stay following laparoscopic cholecystectomy for acute and chronic cholecystitis. Results of this study will be useful for those contemplating providing medical and economic benefits for the patient.

### MATERIAL AND METHODS

This descriptive case series was conducted in the department of General Surgery JPMC (A tertiary care hospital) Karachi. A total of 233 patients were included selected by purposive sampling technique. Patients of ages 16–60 years of both genders,

admitted with symptomatic cholelithiasis (presenting with pain in right upper quadrant, fever (>100°F) and vomiting irrespective of duration, confirmed on the basis of abdominal ultrasound showing stones) and conforming to American Society of Anaesthesia (ASA) classes I & II. Patients with pregnancy, gall bladder mass on ultrasound, acute pancreatitis, carcinoma of gall bladder, previous abdominal surgery, diabetes mellitus, hypertension and other cardiovascular diseases were excluded from the study.

After taking informed consent patients were prepared. Laparoscopic cholecystectomy was performed by standard 3 and 4-port technique. All the patients received standardized pre-operative and post-operative care. A single dose of IV antibiotics was given prior to induction of anaesthesia. All the patients were followed up in OPD at first and fourth week of discharge from the hospital. All the data was recorded on a *pro forma*. SPSS-17.0 was used to analyse data.

**RESULTS**

A total of 233 patients with symptomatic gallstones were admitted over the study period. Out of 233, 54 patients (23.17%) were diagnosed as acute cholecystitis (AC) and were labelled as Group A, while 179 patients (76.68%) were diagnosed as chronic cholecystitis (CC) and were labelled as Group B. The mean age was 46.5 and 40.86 years for Group A and B respectively. The female patients were dominant in both the groups, with female to male ratio (F: M) 2.8:1 and 4:1 in Group A and B respectively.

The operative time was longer in Group A (AC) in some cases. The mean operative time for Group A (AC) was 58 minutes compared to 45 minutes for Group B (CC). Drains were frequently used in acute cases. There were six (6) cases of conversion to open cholecystectomy (OC) in our study among which five belonged to group B and one from Group A.

**Table-1: Demographic characteristics**

Patient character	Group A (n=54)	Group B (n=179)
Mean Age (years)	46.50	40.86
Gender:		
✓ Male	14	35
✓ female	40	144
✓ F:M	2.8:1	4:1

**Table-2: Operating time**

	Group A (n=54)	Group B (n=179)
Upto 20 mins	-	-
21-40 mins	18 (33.33%)	40 (22.34%)
41-60 mins	20 (37.03%)	108 (44.69%)
61-80 mins	13 (24.07%)	22 (12.22%)
>80 mins	3 (5.55%)	9 (5.02%)

**Table-3: Conversion rate and length of hospital stay among the two groups**

	Group A n=54	Group B n=179
Conversion rate	1 (1.8%)	5 (2.8 %)
Length of hospital stay		
✓ 2 days	22 (40.74 %)	70 (39.10%)
✓ 3-4 days	22 (40.74 %)	70 (39.10%)
✓ 5-6 days	7 (12.90%)	30 (16.75%)
✓ >6days	3 (5.55%)	9 (5.02%)

**DISCUSSION**

Laparoscopic cholecystectomy has become the first line surgical treatment for symptomatic gallstone disease and its benefits over the open procedure are well known.<sup>8-10</sup> It's widely believed that acute condition of gallbladder (AC) is associated with high complications rates.<sup>11-14</sup> Until recently AC was considered as a contraindication for LC due to higher incidence of complications like bile duct injury.<sup>15,16</sup>

In many series it has been seen that laparoscopic cholecystectomy encounters technical difficulties when done in acute conditions, but it have low complication rates when done in the first two days (early) of acute cholecystitis. There are six (6) cases of conversion in our study five (5) of which belongs to CC (Group B) where else the remaining one (1) case belongs to AC (Group A) and this result is supported by research conducted by Atef Shaheed and colleagues<sup>3</sup> Our result of conversion rate are inconsistent with reports of other studies conducted by Bass<sup>17</sup> and Fried<sup>18</sup> who considered AC to be cause of conversion to open surgery. Our study postulates that with experience, careful dissection, patience and identification of vital anatomical structures the LC can be safely completed in almost all the cases of AC. The most important cause of conversion is the presence of dense and severe adhesions.<sup>19,20</sup> It has also been documented that early stage of AC the adhesions are less and easily separated due to the presence of oedematous plane around the gallbladder on the other edge of the picture in CC the inflammation and oedema have been replaced by dense fibrotic adhesions making LC technically difficult.<sup>21</sup>

However, performing LC in acute condition takes more time and needs modifications of operative techniques like decompression of tensely distended gallbladder or need of additional ports. A study conducted by Saeed<sup>6</sup> supports our results in terms of operative time. Furthermore study by Omar Khattab<sup>22</sup> also favours our results. However the length of hospital stay was the same in both the groups.

**CONCLUSION**

Laparoscopic Cholecystectomy can be safely performed in both acute and chronic cholecystitis by an experienced surgeon. LC significantly reduces the operative time, and length of hospital stay.

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