

# Outcome of patients Undergoing Laparoscopic Cholecystectomy with Previous Upper and Lower Abdominal Surgeries

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## ABSTRACT

**Background:** Laparoscopic cholecystectomy (LC), after its advent in 1987, rapidly established itself as the gold standard treatment of gallstones. The operation is not completely risk free, some incidents and complications being more frequent than with open cholecystectomy. However, there are still a substantial proportion of patients in whom LC cannot be successfully performed and conversion to open surgery is required.

**Aim:** To determine the outcome of patients undergoing laparoscopic cholecystectomy with previous upper and lower abdominal surgeries.

**Methods:** This descriptive case series study of 500 patients of both gender aged between 35-45 years was conducted in surgical units of Mayo Hospital, Lahore in one year duration from 01-01-2014 to 31-12-2014. The non-probability purposive sampling technique was used in this study. Written consent was obtained from the patients. Only the most senior consultants skilled in laparoscopic surgery were the part of team. Demographic profile was recorded including age, gender and address. Previous history of abdominal surgeries (type, duration and complication if any), operative time of LC, adhesions per operatively and hospital stay was recorded. Wound infection was assessed clinically by purulent discharge within 10 days post-operatively. Statistical analysis of data was done using SPSS v.17.0 for windows. Quantitative variables were presented in the form of mean $\pm$ SD and qualitative variables and type of previous abdominal surgeries was presented in the form of frequency and percentages.

**Results:** Among 500 patients, 255(51%) were male and 245(49%) female. The mean age of the patient was 39.78 $\pm$ 2.95 years, mean operative time 54.05 $\pm$ 8.75 minutes and mean hospital stay 3.42 $\pm$ 1.06 days. There were 275(55%) patients with previous lower abdominal surgery and 225(45%) with previous upper abdominal surgery. Adhesions was found in 325(65%) patients per operatively and 14(2.8%) had wound infection post operatively. By using t-test, there was significant difference between type of previous abdominal surgery and operative time (p-value=0.023) but insignificant difference between type of previous abdominal surgery and hospital stay (p-value=0.374). We also used chi-square test to check the association, there was no significant association between type of previous abdominal surgery and wound infection (p-value =0.479). Also no significant association between type of previous abdominal surgery and adhesions (p-value =0.48).

**Conclusion:** In spite of more adhesions and more operative time, it was found that wound infection and hospital stay was less in patient undergoing LC with previous abdominal surgeries. Hence LC is still the good choice in these patients.

**Keywords:** Laparoscopic cholecystectomy, upper abdominal surgery, lower abdominal surgery.

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## INTRODUCTION

Cholecystectomy is one of the most commonly performed abdominal surgical procedures, and in developed countries many are performed laparoscopically. As an example, 90 percent of cholecystectomies in the United States are performed laparoscopically<sup>1</sup>. Laparoscopic cholecystectomy after its advent in 1987 is considered the "gold standard" for the surgical treatment of symptomatic gallstones and chronic cholecystitis<sup>2,3,4</sup>. This

procedure results in less postoperative pain, better cosmesis, shorter hospital stays and disability from work than open cholecystectomy<sup>5-11</sup>. However, the overall serious complication rate in laparoscopic cholecystectomy remains higher than that seen in open cholecystectomy<sup>12,13</sup>. The indications for laparoscopic cholecystectomy are the same as for open cholecystectomy:

A matter of argument in laparoscopic era is pneumoperitoneum which is considered as the causative factor for postoperative nausea/vomiting and pain, especially shoulder tip following LC. However, there are still a substantial proportion of patients in whom LC cannot be successfully performed and conversion to open surgery is

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required. A number of relative contraindications such as morbid obesity, previous abdominal surgery and acute cholecystitis have been proposed in determining whether a patient is a candidate for laparoscopic cholecystectomy<sup>14,15</sup>. With growth in experience, criteria for selecting patients for LC have been liberalized<sup>[15-17]</sup>.

Previous Abdominal Surgery like ventral hernias, appendectomy, laparotomy, pelvic surgery results in adhesions and makes the laparoscopic surgery difficult and increases the operative time and complications rate. Previous abdominal surgery particularly is associated with difficulty placing the initial trocar and obtaining adequate exposure to the gallbladder. The potential risk for injury of organs adherent to the abdominal wall during

Veress needle or trocar insertion as well as the necessity for adhesiolysis and its attendant complications are the two major specific problems constraining surgeons from performing laparoscopic cholecystectomy in patients with previous abdominal surgery. With increasing experience, however, many surgeons have felt that laparoscopic cholecystectomy is feasible for such patients. There have been limited reports on the impact of previous abdominal surgery on its safety<sup>18,19,20,21,22</sup>. As a result we reviewed our database specifically to investigate the effect of previous intraabdominal surgery on laparoscopic cholecystectomy.

## METHODOLOGY

This study was conducted on 500 patients in surgical units of Mayo Hospital, Lahore in 1 year duration from 01-01-2014 to 31-12-2014. It was a descriptive case series by design and patient selection was non probability purposive sampling. All patients both male and female of age 35-45 years with single/multiple calculi greater than 3cm in the gall bladder on USG and having previously abdominal surgery (Hernia, Appendectomy, Laparotomy etc) were included in the study. Pt with chronic liver disease (coarse texture, portal vein diameter more than 10 mm and splenomegaly on USG) and chronic kidney disease (serum creatinine more than 1.0 mg/dl) were not included in the study.

Written consent was obtained from the patients. Only the most senior consultants skilled in laparoscopic surgery were the part of team. All the routine investigations like CBC, RFT's, serum electrolytes, blood sugar random, chest X ray, ECG was performed for fitness and rule out risk of surgery. Demographic profile was recorded including

age, gender and address. Previous history of abdominal surgeries (type, duration and complication if any), operative time of LC, adhesions per operatively and hospital stay was recorded. Wound infection was assessed clinically by purulent discharge within 10 days post-operatively.

Statistical analysis of data was done using SPSS v.17.0 for windows. Variables included in the study were analyzed using the simple descriptive statistics. Quantitative variables like age, operative time and hospital stay was presented in the form of mean  $\pm$  SD and qualitative variables like gender, wound infection, adhesions and type of previous abdominal surgeries was presented in the form of frequency and percentages. Post-stratification Chi-square test was used for wound infection and adhesions and t-test for mean operative time and mean hospital stay. A p-value  $\leq$  0.05 was considered significant

## RESULTS

Total 500 cases were enrolled in this study. 255(51%) were male and 245(49%) female. Minimum age of the patient recorded was 35 years and maximum 45 years, mean  $\pm$  standard deviation was calculated as 39.78  $\pm$  2.95 years. Similarly minimum operative time was 35.60 minutes and maximum 72.40 minutes, mean  $\pm$  standard deviation was calculated as 54.05  $\pm$  8.75 minutes. Similarly minimum hospital stay was 2 days and maximum 5 days, mean  $\pm$  standard deviation was calculated as 3.42  $\pm$  1.06 days (Table 1).

There were 275(55%) patients with previous lower abdominal surgery and 225(45%) with previous upper abdominal surgery. Adhesions were found in 325(65%) patients per operatively, 175(35%) patients with previous lower abdominal surgery and 150(30%) patients with previous upper abdominal surgery. Chi-square test showed no significant association between type of previous abdominal surgery and adhesions (p-value=0.48) (Table 2).

14(2.8%) patients had wound infection post operatively, 9(1.8%) with previous lower abdominal surgery and 5(1%) with previous upper abdominal surgery. Chi-square test showed no significant association between type of previous abdominal surgery and wound infection (p-value=0.479) (Table 3).

By using t-test, there was significant difference between type of previous abdominal surgery and operative time (p-value= 0.023) but insignificant difference between type of previous abdominal surgery and hospital stay (p-value= 0.374).

Table 1: Descriptive statistics

	Min.	Max.	Mean	Std. Deviation
Age	35.00	45.00	39.78	2.95
Operative Time (Min)	35.60	72.40	54.05	8.75
Hospital stay (Days)	2.00	5.00	3.42	1.06

Table 2: Cross tabulation between type of previous abdominal surgery and adhesions

	Adhesions		Total
	Yes	No	
Lower Abdominal Surgery	175(35%)	100(20%)	275(55%)
Upper Abdominal Surgery	150(30%)	75(15%)	225(45%)
Total	325(65%)	175(35%)	500

P-value = 0.48

Table 3: Cross tabulation between type of previous abdominal surgery and wound infection

Type of Previous Abd. Surgery	Wound Infection		Total
	Yes	No	
Lower abdominal surgery	9(1.8%)	266(53.2%)	275(55%)
Upper abdominal Surgery	5(1%)	220(44%)	225(45%)
Total	14(2.8%)	486(97.2%)	500

P-value = 0.479

## DISCUSSION

In the present research we have studied the patients undergoing laparoscopic cholecystectomy with previous upper and lower abdominal surgeries. There were some common complications of LC in patients with previous upper and lower abdominal surgeries like wound infection and adhesion. Operative time and hospital stay after laparoscopic cholecystectomy were also calculated to determine the difference between types of previous (upper and lower) abdominal surgeries.

Existing literature showed that, out of 1638 patients 28.9% had undergone previous abdominal surgery: 58 upper and 415 lower abdominal operations. The 262 patients who had undergone only a previous appendectomy were excluded from further analysis. Adhesions were found in 70.7%, 58.8% and 2.1% of patients respectively, who had previous upper, lower or no previous abdominal surgery with adhesiolysis required, respectively, in 78%, 30% and 0% of these cases (i.e., adhesions were found in both upper and lower previous abdominal surgeries in patients i.e., 64.75%)<sup>23</sup>.

In the present study there was significant difference found between type of previous abdominal

surgery and operative time of laparoscopic cholecystectomy with (p-value= 0.023). There was no significant difference between type of previous abdominal surgery and hospital stay of laparoscopic cholecystectomy with (p-value= 0.374).

A previous study exposed that adhesions were found in 90.2%, 75% and 1.4% of patients, respectively, who had previous upper, lower, or no previous abdominal surgery. No statistically significant difference was noted between group 2 and group 3 with respect to the mean adhesion grades (P>0.05). Patients with previous upper abdominal surgery had the longest mean operative time 57 +/- 9.8 min, mean time of hospital stay was 2.2 +/- 1.1<sup>24</sup>.

In the present research we also used chi-square test to check the association, there was no significant association between type of previous abdominal surgery and wound infection having p-value = 0.479. There was no significant association between type of previous abdominal surgery and wound infection having p-value = 0.48.

Existing literature showed that patients with previous upper abdominal surgery had a longer operating time (66.4+/- 34.2 min), a higher incidence of postoperative wound infection (5.2%), and a longer postoperative stay (3.4+/- 2.1 days) than those who had undergone previous lower abdominal surgery (50.8 +/- 24 min, 3.3%, 0.7%, and 2.6+/- 1.4 days, respectively) and those without prior abdominal surgery (47.4±25.6 min, 5.4%, 1.2%, and 2.8±1.9 days, respectively). Mean operative time was 58.6±29.1 mins, mean hospital stay 3+/- 1.75 and wound infection was 3% in patients with previous upper and lower abdominal surgeries<sup>[23]</sup>. So it was noticed by conducting this study that adhesions were more common difficulties in Laparoscopic cholecystectomy in patients having previously abdominal surgeries than wound infection. On the other hand significant difference was found between type of previous (upper and lower) abdominal surgery and operative time of laparoscopic cholecystectomy with (p-value= 0.023).

## CONCLUSION

It was observed that adhesions were commonly found in patients having previously abdominal surgeries and very low percentage of wound infection was observed. The mean operative time was more in patients with previous abdominal surgery whereas mean hospital stay was lesser in patients with previous abdominal surgery. Thus laproscopic cholecystectomy is still the good choice in experienced hand and should be opted for cholecystectomy.

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