

# Association of the Laproscopic Cholecystectomy Outcomes with Operational Findings in Slums Area of Sanghar, Sindh

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## ABSTRACT

**Objective:** To find out the laproscopic cholecystectomy outcomes association with operational findings in rural area of district Sanghar, Sindh, Pakistan.

**Methods:** This longitudinal and interventional study was conducted in a private hospital of Tando Adam District Sanghar the rural area of Sindh, Pakistan from March 2013 to October 2019. Patients above 15 years of age from both genders were taken by using convenient sampling technique, having symptomatic gallstones, favorable or unfavorable anatomical conditions, acute and chronic cholecystitis. Patients with dilated common bile duct (>8 mm in diameter), jaundice, mass at porta hepatis and uncorrectable coagulopathy were excluded. SPSS-22 was used for the statistical analysis.

**Results:** This study included 28(13.9%) males and 173(86.1%) females. Mostly participants fall between the age of 30 to 39 years 65(32.3%). Significant association ( $p$ -value< 0.05) was found between the operational findings of the participants and there outcomes.

**Conclusion:** Most of the participants were female. Majority fall between the age range of 30 to 39 years. Many of them stayed in the hospital for up to 24 hours. Significant association was found between the operational findings of the participants and there outcomes.

**Keywords:** Laparoscopic cholecystectomy, Outcomes, Gall stones, operational findings

## INTRODUCTION

Generally experienced post-operative complications in subjects undertaking LC comprise of peripheral surgical site infection, wound infection, jaundice, biliary fistula, nausea/vomiting, biliary strictures, hemorrhage and incisional hernia.(1)Others include, change to open cholecystectomy (OC) , bile leakage and common bile duct (CBD) injury, bile duct injury (BDI), Gall bladder (GB) perforation , Vascular injury to liver bed, Sepsis and death. LC seems to be a harmless and efficient technique with lesser complications.(2)

Though, the frequency of postoperative nausea and vomiting (PONV) during first 24 h subsequent to LC vary from 38% to 60% and influences the individuals recovery, result in lengthy hospital sojourn. Infection, negative impacts of anesthesia, and carbon dioxide pneumoperitoneum also influences recovery.(3)After the establishment of LC numerous researches have been carried out to assess the safety, effectiveness and benefits like acceptable surgical scar, quick recovery, and a decreased hospital stay.(4)

Researches highlighted the mean operative time was  $40.1 \pm 6.9$  minutes which increased to  $75.12 \pm 8.9$  minutes in converted cases ( $p$ -value .000).(6) The duration of surgery is significantly more in patients with LC (mean 52.32 minutes) (22, 23) The mean hospital stay was ( $2.6 \pm 1.5$  days).(7) Mean hospital stay was  $1.89 \pm 1.1$  days that significantly increased in converted cases ( $5.7 \pm 1.6$

days) ( $p$ -value .000).(22, 24) Post-operative hospital stay was a mean of  $1.18 \pm 0.52$  days.(8)

Postoperative abdominal collection requiring drainage is reported to be lower in patients with no-drain, Length of stay (LOS) at hospital is significantly shorter in the no drain patients.(9) Despite the promising outcomes of LC, some patients experience unpleasant shoulder pain after surgery which is reported in 21–80% of LC cases. The pain appears 2–6 h after operation and its intensity increase gradually up to 24 h. This pain may be transient or lasting up to 10 days after the surgery.(10) LC has gradually replaced open surgical treatment to become one of the most common surgical procedure performed worldwide. Cholecystectomies that cannot be completed laparoscopically necessitate conversion to open surgery.(11)

The aim of this study was to find out the laproscopic cholecystectomy outcomes association with duration of hospital stay and operational findings in rural area of district Sanghar, Sindh, Pakistan.

## MATERIAL AND METHODS

This longitudinal and interventional study was conducted in a private hospital of Tando Adam District Sanghar the rural area of Sindh, Pakistan from March 2013 to October 2019. An estimated sample size of 201 participants was enrolled coming to the hospital with a diagnosis of Gall stones through ultrasonography investigation. Patients 10 years

and above from either gender were taken by using purposive sampling technique, having symptomatic gallstones, favorable or unfavorable anatomical conditions, acute and chronic cholecystitis were included. Patients with dilated common bile duct (>8 mm in diameter), jaundice, mass at porta hepatis and uncorrectable coagulopathy were excluded. Major variables included patient demographics, age, and gender, duration of hospital stay and outcomes of the participants. SPSS-22 was used for the statistical analysis.

Ethical approval from the hospital was taken and after describing the process and purpose of study informed consent from the patients was taken subsequent to which surgical procedures were performed. Descriptive statistics mean and standard deviation were calculated for the quantitative variables, frequency and the percentage were calculated for qualitative variables. For the association of the variables Chi-square test was applied, the  $P < 0.05$  was considered significant. SPSS-22 was used for the statistical analysis. Frequency, percentages and level of significance were found with the help of p-value.

**RESULTS**

Table 1: Descriptive statistics of the duration of operation in minutes

	N	Minimum	Maximum	Mean	Std. Deviation
Duration of operation in minutes	201	20.00	100.00	34.7264	10.31018

The duration of operation in minutes for 201 participants was 20 minutes minimum and 100 minutes maximum. The average duration of operation in minutes was 34.7264 ±10.31018 months.

Table 2: Descriptive statistics of the age of the in years, gender and duration of hospital stay

Age of patients in Years	Frequency	Percentage
10 to 29	33	16.4
30 to 49	123	61.2
50 to 69	34	22.4
Gender of Patients		
Male	28	13.9
Female	173	86.1

Table 2 shows that in sample the minimum age of the patients was 10 years and maximum was 69 years. Among them 86.1% were females and 13.9% were males.

Table 3: Cross tabulation between outcome and Duration of hospital stay

Outcome of Laparoscopic cholecystectomy	Duration of hospital stay				P- Value
	Up to 24 hours	25 to 48 hours	49 to 72 hours	More than 96 hours	
Drain	24	5	1	0	0.195
No Drain	97	29	2	1	
Drain and Bleeding from GB	13	9	0	0	
Drain and Right shoulder pain	5	1	0	0	
GB Perforation and Drain	6	3	1	0	
Converted to open cholecystectomy	1	2	1	0	

Table 3 indicates that 97 patients did not require any drain post-operatively. 24 required drain just for first 24 hours. P-value between outcome and duration of hospital stay was insignificant that is 0.195.

Table 4: Cross tabulation between operational findings and outcomes of the surgery

Operational findings of the participants	Outcomes of the surgery						P-Value
	Drain	No Drain	Drain and Bleeding from GB	Drain and Right shoulder pain	GB Perforation and Drain	Converted to open cholecystectomy	
Multiple Stone, Thin wall GB	2	27	2	0	4	0	<0.05
Single stone, Thin wall GB	3	65	1	2	0	0	
Multiple Stone, Empyema GB	1	4	0	1	0	0	
Multiple stone Thick wall GB	7	16	8	2	3	0	
Single stone Thick wall GB	0	1	0	0	0	0	
Multiple stone, Thick wall, Bleeding from GB	1	0	1	0	0	0	
Multiple Stones, Thick wall, Difficult dissection at Callot	0	2	1	0	1	0	
Single Stone, Mucocele	1	4	0	0	1	0	
Multiple Stone, Mucocele	1	1	0	0	0	0	
Multiple stones, Acute Cholecystitis	9	3	1	0	0	0	
Multiple Stone, thick wall, Empyema G.B	0	0	1	0	0	1	
Multiple Stone, Thick wall, Adhesion at fundus	0	0	1	0	1	0	
Multiple Stone, Dense Adhesion, Difficult dissection at Callot Triangle	3	2	5	1	0	3	
Others	2	4	1	0	0	0	

Table 4 demonstrates that operational findings of 65 patients were that they had single stone, thin wall GB and required drain post-operatively. P-Value between operational findings and outcomes is significant that is less than 0.05.

## DISCUSSION

Gallstone disease is a global health problem.(12) Laparoscopic cholecystectomy contemporarily become the gold standard treatment for patients with gallbladder disease with decreased postoperative pain, reduced hospital stay, quicker recovery and earlier return to usual state of health compared with open surgery. (13)Duration of operative time might work as a marker of proficiency in the operating room and can consequently deliver parsimony. In this study, mean all-case operating time was 34.7 minutes in contrast to a study conducted in 2018 which reported 52.5 minutes as mean time. (14) Another study reported the mean operating time  $40.52 \pm 6.97$  minutes.(15)

Bleeding has been noted in many series with a frequency of up to almost 10%. A study conducted in Shaheed Zulfiqar Ali Bhutto Medical University in 2020 stated bleeding in 5.3% patients.(30) The reported incidence of uncontrollable bleeding in LC can be up to 2% (0.03-10%). In 1.8% cases' bleeding was encountered. (16) Bleeding from GB was 22(10.89)% which was found to be insignificant with P-value  $>0.05$  which is in line with a study about the impact on outcomes of LC that showed insignificant results of uncontrolled bleeding in only 2% patients.(17)

Langenbuch named the earliest cholecystectomy without drain a superlative technique in Germany which was conducted in 1919. Shoulder pain after LC surgery is a main complication occurring in 30-50% of patients. Similar to the findings of this study a study carried out by Vafaei et al, showed no significant association among LC outcome and duration of hospital stay, it reported shoulder pain without drain in 50% cases and 30% in cases with drain 6 hours subsequent to surgery. (26)

Gallbladder perforation (GBP) is a rare disorder with probable death rate. Preceding studies have testified an incidence of about 2–11% and it endures to be a noteworthy issue. The result of the present study shows shorter period of hospital stay than that in the previous researches (9.5 days) which is consistent with a research conducted in 2017 by Sahbaz et al, at Bakirkoy Dr. Sadi Konuk Training and Research Hospital, Istanbul, Turkey. The likely cause for this decrease in the hospital stay duration might be the accessibility of home care and follow-up of the patients. (18)

In previous studies, the rate of conversion from LC to OC varies from 2.6 to 7.7%. Conversion results in a noteworthy variation in the outcome of the patients because of greater occurrence of postoperative problems and extended hospital stay. This study reports, the conversion rate of LC to OC 1.99%, and was insignificant with P-value  $>0.05$ , this conversion is due to the anatomical variations, difficult dissection in Calot's triangle and uncontrolled bleeding.(19)

Understanding outcomes is key to advancing health care. It is one of the more unpredictable operations in general surgery, due to the variable operative findings. (33) In the current study some cases 78(38.80%) had single stone and are significantly associated ( $P < 0.05$ ) with the outcomes it is not in line with a study in which 71% had single stone and significant ( $P=0.02$ ) association of

outcome of surgery with calculi was reported.(34) In another study 17% cases reported single stone operational finding. (18)

Majority of the patients in this study had multiple stones in the gallbladder. This was comparable to other studies. Multiple calculi in 80.48% and in 87.5% of patients reported by Niaz et al., and Ahmad et al., respectively. (35, 36) In contrast to the present research a study published by Kumar et al., in 2020 reported significant association ( $P=0.02$ ) among multiple stone operational finding and outcomes of the surgery.(20)

Gallbladder Wall Thickness (GWT) might aid as an impartial indicator of LC difficulty. (37) Most of the cases in study had thick walled GB 23.38% and 52.73 had thin walled GB this was in comparison with thick gall bladder wall in 25% cases and in 75% cases thin gall bladder wall reported by Pathak et al., (38) and also with Niaz et al., which reported 43% cases had thick gall bladder wall while 48.7% cases had thin gall bladder wall. In the present study 7.96% cases had adhesions and they were significantly associated with outcomes of the surgery ( $P < 0.05$ ). 50% of the cases reported adhesion in the study conducted by Kumar et al.,(34) In this study mucocele was observed in 4.477% cases and showed significant association with outcomes of the surgery which is contrary to the operational findings of a study conducted by Kumar et al., that reported insignificant association of mucocele with outcomes of the surgery ( $P=0.68$ ).

**Conclusion and recommendations:** Most of the participants were female. Majority of the participants were female falling between the ages of 30 to 39 years. Many of them stay up to 24 hours in the hospital. However, non-significant association has been found between the duration of the hospital stay and outcome of laparoscopic cholecystectomy. Whereas, significant association was found between the operational findings of the participants and the outcomes of LC surgery.

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