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Original Article

Association of the Laparoscopic Cholecystectomy Outcomes with Duration of Hospital Stay In Rural Areas of District Sangar, Sindh, Pakistan

Syed Moin Islam Shah[1], Muhammad Sikander Ghayas Khan[2], Ghulam Mustafa Hingoro[1], Ruhamah Yousaf[3], Bareera Saeed*[2], Madiha sikander[4], Malik Muhammad Qasim[4], Muhammad Shazaib khan[5] and Qasima Agha[6]

[2]Sulaman Roshan Medical College, Tandoadam, Pakistan
[2]Department of Rehabilitation Sciences, Faculty of Allied Health Sciences, The University of Lahore, Lahore, Pakistan
[3] Department of Health Professional Technologies, Faculty of Allied Health Sciences, The University of Lahore, Lahore, Pakistan
[4]Department of Biochemistry, Faculty of Allied Health Sciences, The University of Lahore, Lahore, Pakistan
[5]Sports and Physical Education, The University of Lahore, Lahore, Pakistan
[6]University of Baluchistan, Quetta, Pakistan

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***Corresponding Author:**
Bareera Saeed
Department of Rehabilitation Sciences, Faculty of Allied Health Sciences, The University of Lahore, Lahore, Pakistan
bareera.saeed@dhpt.uol.edu.pk

ABSTRACT

Laparoscopic cholecystectomy (LC) is the most usual laparoscopic surgery (LS) carried out globally **Objective:** To find out the laproscopic cholecystectomy outcomes association with duration of hospital stay 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%). 146(72.6%) participants stayed in the hospital for up to 24 hours. Non-significant association (p-value> 0.05) was found between the duration of the hospital stay and outcome of laparoscopic cholecystectomy. **Conclusion:** Non-significant association was observed between duration of the hospital stay and outcome of laparoscopic cholecystectomy

INTRODUCTION

Laproscopy is a common surgical procedure with minimal invasion in abdomen [1]. It is most contemporary as well as advanced procedure of surgical intervention. During 1910 in Sweden the earliest human laparoscopy was carried out by von Jacobeus, to detect ascites [2]. LC was launched in 1980's and illustrated on non-cirrhotic subjects considerable benefits over open cholecystectomy (OC) giving smaller recuperation and rehabilitation duration along with shorter hospital sojourn. Thus, LC developed as the standard intervention for many cholecystectomies [3]

In 1985 LC was fundamentally carried out by Eric Muhe (under direct scope vision). Afterwards, in 1987 the similar method by means of a video-laparoscope, that is utilized currently, was performed by Mouret, and was outspread universally [4]. Gallstone formation occurs in gallbladder by precipitated bile elements. The word cholelithiasis denotes to appearance of gallstones or to any ailment instigated through gallstones, and choledocholithiasis denotes to appearance of drifted gallstones in bile ducts[5]. Gallstone ailment is a usual reason for admission

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to hospital and surgical emergency globally. It is a noteworthy burden for the health care setup [6]. Patients having gallstones frequently develop Acute cholecystitis (AC) almost 70% to 80% of individuals having AC progress to surgery, whereas the others are managed with medical therapy [7]. Researches have verified that the occurrence of gallstones is 10– 15% in western states, and is 3–5% in African and Asian population. Greater than 80% of gallstones are made up of cholesterol [8]. The prevalence of gall stones ranges from 10-20% [9]. The incidence of biliary stones is between 10% and 15% of the adult population. Gallstone disease occurrence increases with age (13–50%), but one quarter of women over the age of 60 present it [10]. While maturing, the incidence augments from 4% in thirty years to 27% in seventy years of life [11]. In the geriatric population the incidence ranges from 14% to 27%. The use of a laparoscopic method in elderly patients may cause complications as comorbid conditions are very common and may increase the postoperative complications along with the frequency of conversion to open surgery [12]. For management of symptomatic gallstones LC is the gold standard, attributable to lesser disease, reduced pain post-operatively along with hospital stay, improved cosmesis with prompt restoration to usual pursuit [13]. LC is specified for the management of cholecystitis (acute/chronic), symptomatic cholelithiasis, biliary dyskinesia, acalculous cholecystitis, gallstone pancreatitis, and gallbladder masses/polyps [14]. 15% incidence, via significant reasons of critical disease, like 0.22% incidence to demise. 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 [15]. 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.(16) 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 [17]. 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 [18]. Researches highlighted the mean operative time was 40.1± 6.9 minutes which increased to 75.12 ± 8.9 minutes in converted cases (p-value .000). the duration of surgery is significantly more in patients with LC (mean 52.32 minutes) [22,23]. The mean hospital stay was (2.6±1.5 days). Mean hospital stay was 1.89 ± 1.1 days that significantly increased in converted cases (5.7 ± 1.6 days) (p-value .000) [22,24]. Post-operative hospital stay was a mean of 1.18±0.52 days [19]. 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.(20) 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 [21]. 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 [22]. Literature shows that if the surgeon is skilled the efficacy of this surgical procedure is augmented which will result in brief hospital stay with no obvious influence on the procedural strain or postoperative problems. Outcomes of surgery performed by different surgeons should be compared [23]. The aim of this study was to find out the laproscopic cholecystectomy outcomes association with duration of hospital stay 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. 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

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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 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. The minimum duration of hospital stay was up to 24 hours whereas maximum was more than 96 hours. 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.

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

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

Age of patients in Years	Frequency	Percentage
10 to 19	4	2.0
20 to 29	29	14.4
30 to 39	65	32.3
40 to 49	58	28.9
50 to 51	34	16.9
60 to 69	11	5.5
Gender of Patients		
Male	28	13.9
Female	173	86.1

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

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.

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: Cross tabulation between outcome and Duration of hospital stay

DISCUSSION

Gallstone disease is a global health problem [24] 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 [25]. 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 [26]. Another study reported the mean operating time 40.52 ± 6.97 minutes [27]. 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 [22]. 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 [27]. 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 [27]. 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 [21]. 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

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with P-value >0.05, this conversion is due to the anatomical variations, difficult dissection in Calot's triangle and uncontrolled bleeding [27].

CONCLUSION

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.

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