

Postoperative Outcomes after Laparoscopic Cholecystectomy in Elderly Patients

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ABSTRACT

Background: Age is a critical factor influencing the death and morbidities afterward cholecystectomy. It was revealed that laparoscopic cholecystectomy (LC) in the elderly has similar security and effectiveness to those in young people. The gold-standard in the management of cholelithiasis is LC. **Objectives:** This work was aimed to assess post-operative outcomes of LC between elderly cases and for comparing the post-operative outcome of LC among ages groups >60yrs and <60yrs. **Patients and Methods:** This prospective study conducted among 68 cases who experienced LC at Damanhur Medical National Institute Hospital. Cases were allocated into 2 groups according to ages: elderly (≥ 60 yrs, n= 38) and young (<60 yrs, n= 35). **Results:** 68 cases divided into two groups. The mean age is 68.4 ± 5.7 and 49.1 ± 10.5 among elderly and younger groups. There is significant difference between groups regarding age and comorbidities. The mean operative time was 62.8 ± 21.2 and 59.5 ± 18.7 among elderly and young groups. There is no statistically significant difference between two groups regarding intraoperative data. There is nonsignificant change regarding post-operative outcomes after LC. **Conclusion:** It could be concluded that laparoscopic cholecystectomy in elderly cases is similar with young cases. Consequently, LC is secure even in the elderly.

Keywords: LC, Elderly, Geriatric, Post-operative outcomes

INTRODUCTION

The occurrence of gallstone disorder in the aged people ranges between 14- 27% as stated by several reports. LC is known as the gold-standard for the operative managing of gallstone disorders. Operation for cholelithiasis is more frequent in elderly cases as the frequency of gallstones rises with age (13 to 50 %) ⁽¹⁾.

Age is a critical factor influencing the death and morbidities afterward cholecystectomy. The usage of laparoscopic procedures in aged cases can result in issues as co-morbid disorders are very mutual with advanced aged cases and can rise the post-operative side-effects and the incidence of conversions to open operations. It was stated that LC in the old aged cases has similar security and effectiveness to those in young aged cases ⁽²⁾. Though, no reports were stated in developing nations on the aged people yet.

Cholelithiasis is measured to be the commonest gallbladder disorder. Its prevalence is <5% between cases of <40-yrs, while the prevalence rises up to 30 % between people aged >80-yrs ^(3,4).

The gold-standard in the treating the cholelithiasis is LC. LC is more beneficial since it gives lesser pains, earlier discharging, early recover the normal activity, better cosmetic outcome, and it is economic. Because of a rise in the QoL, the aged cases progressively rise and henceforth, the prevalence of cholecystitis in the people as well rises. The age-dependending co-morbidities that may rise are the most significant parameter growing the opportunity of post-operative death and morbidities. Although gallstones occur in cases of any age, from newborn to the elderly, its prevalence increases markedly with age ⁽⁵⁾. Cholelithiasis influences 25-40% of the population in the seventh decade of life and approximately 50% of the persons of ages >80-yrs. In 2017, the United Nations estimated the world population aged 60 -yrs to be one billion, comprising 13% of the

global populations. Globally, population aged 60-yrs is rising at a rate of around 3 % yearly, faster than all younger groups. With the increasing of the population longevity, acute and chronic cholecystitis has become a frequent problem in this group ⁽⁶⁾. Currently, cholecystectomy for calculous cholecystitis is the commonest abdomen operation in the ageing. The natural history of symptomatic biliary lithiasis in the elderly is more severe than in younger cases and needs special considerations. The frequency of acute cholecystitis and its complications is elevated in the elderly. In addition, the surgical risk is increased due to comorbidities and reduced physiological reserve. Complications of surgical treatment of chronic cholecystitis and acute cholecystitis are worse in the elderly ⁽⁷⁻⁹⁾.

This work was aimed to assess the outcomes of LC in the elderly cases in comparison with young cases in developing states as Egypt with limited resources.

PATIENTS AND METHODS

This prospective study included a total of 68 cases underwent LC, attending at Damanhur Medical National Institute Hospital. This study was conducted between . October 2019 till October 2020.

Cases were allocated into 2 groups according to ages: elderly (≥ 60 -yrs, n= 38) and young (<60-yrs, n= 35). Cases demographic data and operative data were investigated. All cases were assessed with abdominally US and baseline examinations needed for operation. Magnetic resonance cholangio-pancreatography (MRCP) has been done only in particular cases with assumed gallstones or with expanded biliary duct in US. Pre-operative endoscopic retrograde cholangio-pancreatography (ERCP) has been employed in cases with common bile duct stones. The timing of LC in cases presented with acute stage was after the resolutions of



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signs. Most of these cases have been managed with conservative method, discharged, and re-admitted for elective operation. Per-operative antibiotic prophylaxis with generation two cephalosporin has been applied to all cases. LC was accomplished by the typical 4-port method. We utilized the open method to introduce a subumbilical cannula. We had mono-polar electrocautery to dissect the gall bladder from the liver bed. We repeatedly put titanium clips for cystic duct and cystic artery ligations. Repetitive intra-operative cholangio-graphy wasn't accomplished. A closed suction drain has been put in selected cases with needs.

Per-operative information counting conversion rates, surgical period, post-operative side-effects, ordinary diet resume, and hospitalization period were documented. Biliary drain with raised bilirubin in the drain was described as biliary leakages. Surgical-site-infection (SSI) was described based on SSI guidelines. Intraabdominal abscess (IAA) was described as culture positive purulent collections.

Ethical approval:

The Ethics Committee of the Damanhur Medical National Institute Hospital approved the study protocol, and all patients gave a written informed consent for participation in this study. This work has been carried out in accordance with The Code of

Ethics of the World Medical Association (Declaration of Helsinki) for studies involving humans.

Statistical analysis: All continuous variables have been presented as median or mean and SD and comparison done using independent -testing or Mann–Whitney testing as feasible, based on distribution normality. Chi-square testing or Fisher’s exact testing has been utilized for categorical values as suitable, statistical analysis done using SPSS-22.0 (USA). At P < 0.05 the result was significant.

RESULTS

The mean age was 68.4± 5.7 and 49.1± 10.5 among elderly and younger groups respectively. There were 57.9% males and 42.1% females among elderly group while among the younger group there were 42.9% males and 57.1% females. There were 39.5% and 22.9% non-smokers among elderly and younger groups respectively. Regarding ASA there were 39.5% and 34.3% classified as ASA II among elderly and younger groups respectively. According to co morbidities there were 39.5% and 31.4% had diabetes mellitus among elderly and young groups. There is significant difference between groups regarding age and comorbidities but there is no significant difference regarding other variables. **Table (1), Figure (1)**

Table 1 Sociodemographic data among the two studied groups

Items	Elderly (≥60 -yrs) n= 38	Younger (< 60) n= 35	P value
Age (years)			
Mean± SD	68.4± 5.7	49.1± 10.5	0.001*¹
Range	29 (60, 89)	27 (32, 59)	
Gender			0.529 ²
Male n (%)	22 (57.9)	15 (42.9)	
Female n (%)	16 (42.1)	20 (57.1)	
BMI (kg/m²)			0.684 ²
<25 n (%)	5 (13.2)	12 (34.3)	
-30 n (%)	22 (57.9)	19 (54.3)	
-35 n (%)	8 (21.1)	3 (8.6)	
>35 n (%)	3 (7.9)	1 (2.9)	
Smoking			0.188 ²
Non-smoker n (%)	15 (39.5)	8 (22.9)	
Ex-smoker n (%)	9 (23.7)	10 (28.6)	
Current smoker n (%)	14 (36.8)	17 (48.6)	
ASA			0.915 ²
I	12 (31.6)	17 (48.6)	
II	15 (39.5)	12 (34.3)	
III	9 (23.7)	6 (17.1)	
IV	2 (5.3)	0 (0)	
Comorbidities			<0.001*²
Diabetes mellitus n (%)	15 (39.5)	11 (31.4)	
Hypertension n (%)	18 (47.4)	9 (25.7)	
Hyperlipidemia n (%)	12 (31.6)	8 (22.9)	
Cardiovascular disorders n (%)	9 (23.7)	7 (20)	
Renal disorders n (%)	8 (21.1)	2 (5.7)	
Neurological problems n (%)	3 (7.9)	0 (0)	

1 Mann Whitney U test, 2 Chi square tests , *n= number, *P is significant at <0.05

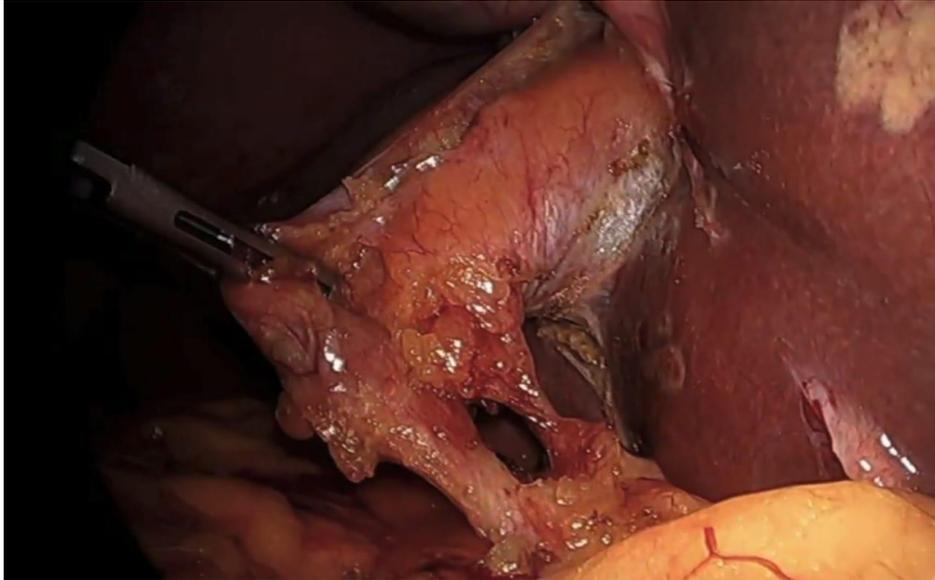


Figure 1: Intraoperative view after achievement of critical view safety

There were 28.9% and 39.5% diagnosed as biliary colic and chronic calculous among elderly group while there were 28.6% and 37.1% diagnosed as biliary colic and chronic calculous cholecystitis among young groups. There was no significant difference between groups regarding diagnosis. **Table (2), Figure (2)**

Table 2 Diagnosis for LC among the two studied groups

Diagnosis	Elderly group	Younger group	P value
Acute biliary pancreatitis	2 (5.3)	3 (8.6)	0.952
Acute calculous cholecystitis	1 (2.6)	1 (2.9)	
Chronic calculous cholecystitis	15 (39.5)	13 (37.1)	
Biliary colic	11 (28.9)	10 (28.6)	
Mucocele of gall bladder	3 (7.9)	4 (11.4)	
Empyema gall bladder	4 (10.5)	3 (8.6)	
Polyp with gall stone	2 (5.3)	1 (2.9)	

Qualitative data represented as frequency and percentage
Fisher Exact test

*P is significant at <0.05

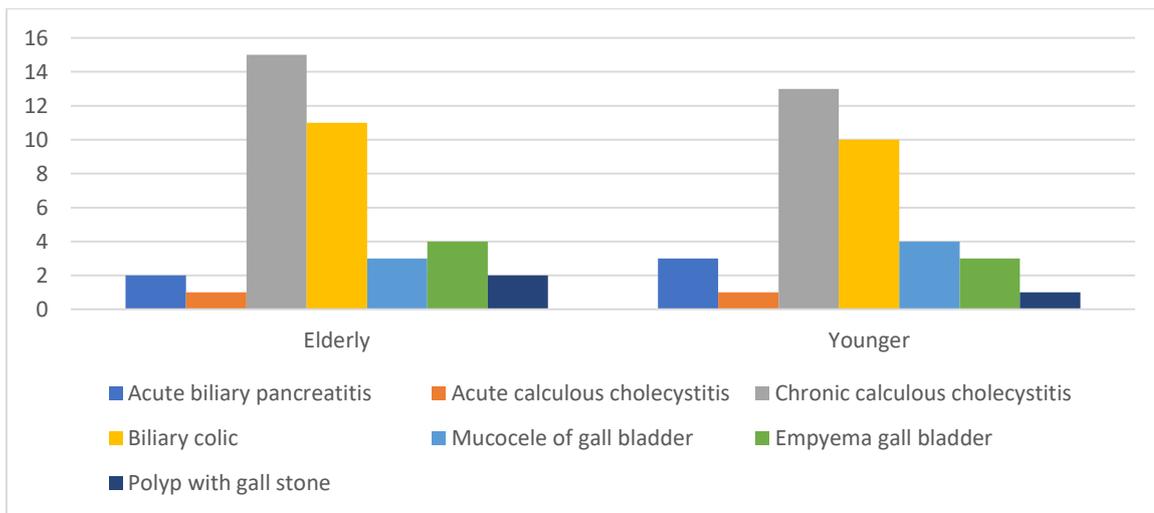


Figure 2 Clinical and pathological diagnosis for LC

The intraoperative data between two groups the mean operative time is 62.8± 21.2 and 59.5± 18.7 among elderly and young groups. There is no statistically significant difference between two groups regarding intraoperative data. **Table (3)**

Table 3 Intraoperative data of the two studied groups

Variables	Elderly	Younger	P value
Operative time (min)			
Mean± SD	62.8± 21.2	59.5± 18.7	0.429 ¹
Range	101 (29, 130)	80 (35, 115)	
Conversion to open cholecystectomy n (%)	8 (21.1)	6 (17.1)	0.923 ²

1 Mann Whitney U test, 2 Fisher Exact test, *P is significant at <0.05

There is no statistically significant difference regarding post-operative outcomes after LC. **Table (4)**

Table 4 Post-operative outcomes among the two studied groups

Variables	Elderly	Younger	P value
Complications number (%)			
Respiratory infection	3 (7.9)	2 (5.7)	0.421 ¹
Urinary tract infection	2 (5.3)	1 (2.9)	
Wound infection	3 (7.9)	4 (11.4)	
Bile leak	1 (2.6)	1 (2.9)	
Hemorrhage	2 (5.3)	0 (0)	
Abscess	1 (2.6)	1 (2.9)	
Time to resumption of normal diet			
Range (days)	1 (1, 2)	1 (1, 2)	0.690 ²
Hospital stay			
Range (days)	14 (1, 15)	14 (1, 15)	0.882 ²

1 Mann Whitney U test, 2 Fisher Exact test, *P is significant at <0.05

DISCUSSION

Over the last few decades, the perception of frailty has become progressively known as a distinctive health state connected to the aging progression. It is a multi-dimensional syndrome involving losses of energy, physical abilities, cognition, and health and signifies the general consequence of reduced physiological assets across multiorgan system. The weakening of the physiological reserves is a result of aging and the accompanying co-morbidities ⁽⁹⁾.

Around 10 % of cases with ages ≥ 65-yrs existing with frailty and this rate increases up to 50 % in those with age's ≥85-yrs. The pheno-type of frailty was reliably accompanying with elevated morbidities and mortalities in ageing cases a relation that makes it a respected adjunct in the pre-operative valuation ⁽¹⁰⁾.

With elderly people, strains for surgeries are predictable to increase over the next decade with accompanying growing frailty. In corresponding, it is assessed that growing numbers of ageing cases will existing with gallstone disorder, and it is supposed that cases with ages 80 to 89-yrs were around 28 % and 42% of males and females cases, resp ⁽¹¹⁾.

Since age is accompanying with presence of several co-morbidities and decreased functional reserves, it is thought that operations on ageing cases can be accompanying with an elevated danger of side-effects ^(12,13). In spite of this, ageing cases might still experience LC. Several reports assessing LC outcome in their definition of ageing cases vs. young cases have shown that growing age causes elevated converting rates, more side-effects and an extended hospitalization ⁽¹⁴⁾.

Despite this, existing literature on description of an ageing people in respect to LC outcome is haeterogeneous. Hence, therapy ageing cases concerning morbidities and death of LC is hard ⁽¹⁵⁾.

Life expectance of persons has improved even in the developing states over few decades, may be because of progressing level of primary preventions and advancements of medical caring. For the developing states, the WHO has defined the ageing as persons aging from ≥60 and ≥65 for developed states ⁽¹⁾.

As we are based in a developing state, we comprised ≥60-yrs as the elderly people in our work. As life expectance of the people is growing, the operative desires of aging cases are growing. The growing age of the individuals has result in a growing prevalence of gallstones; consequently, cholecystectomy is a mutual operation in old aged cases ⁽²⁾.

Currently, cholecystectomy for calculous cholecystitis is the commonest abdomen operation in the old aged. The natural history of symptomatic biliary lithiasis in the elderly is more severe than in younger cases and needs special considerations. The frequency of acute cholecystitis and its complications is higher in the elderly. In addition, the surgical risk is increased due to comorbidities and reduced physiological reserve. Complications of surgical treatment of chronic cholecystitis and acute cholecystitis are worse in the elderly ⁽³⁾.

In comparison to open surgeries, LC has the profits of fewer pains, rapider hospitalization, and earlier returning to activity. Age shouldn't be measured as a contraindication for LC, although the laparoscopy operation was primarily reserved for lower-risk cases ⁽⁴⁾.

In our results the mean age is 68.4 ± 5.7 and 49.1 ± 10.5 among elderly and younger groups. There were 57.9% males and 42.1% females among elderly group while among the younger group there were 42.9% males and 57.1% females. There were 39.5% and 22.9% were non-smokers among elderly and younger groups respectively. Regarding ASA there were 39.5% and 34.3% classified as ASA II among elderly and younger groups respectively. According to co morbidities there were 39.5% and 31.4% had diabetes mellitus among elderly and young groups. There is significant difference between groups regarding age and comorbidities but there is no significant difference regarding other variables.

Also, a study conducted to compare between old aged and young aged groups they didn't find significant changes in the mean surgical period, complication rates, and conversions to open surgery among both groups. There was as well nonsignificant change in the median time to ordinary diet resume and hospitalization period among both groups. This goes with our results we found that There is nonsignificant change among both groups regarding intraoperative data⁽¹⁴⁾.

There was no death in both group, while the stated morbidities and mortalities for LC in the ageing cases vary between 5 & 15% and 0 & 1%, resp⁽¹⁶⁾.

In our study there were 28.9% and 39.5% diagnosed as biliary colic and chronic calculous among elderly group while there were 28.6% and 37.1% diagnosed as biliary colic and chronic calculous cholecystitis among young groups. There was nonsignificant change among groups as regard diagnosis.

In addition to our results there is a study conducted among geriatric found that the mainstream of cases experienced LC for re-current biliary colic and chronic signs that are identical to the ones stated⁽¹⁷⁾.

Our findings of LC in elderly cases are similar with those formerly stated reports. The limitations of the current work were the small sample size. We as well recognize our limitation of not being capable to make comparisons between outcomes of LC and open cholecystectomy in the ageing cases.

CONCLUSION

It could be concluded that laparoscopic cholecystectomy in elderly cases is similar with young cases. Consequently, LC is secure even in the elderly.

Declarations:

Consent for Publication: I confirm that all authors accept the manuscript for submission

Availability of data and material: Available

Competing interests: none

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