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Perioperative Outcomes after Laparoscopic Cholecystectomy in Elderly Patients

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Abstract

Background: Laparoscopic cholecystectomy is the gold standard for treating benign gallbladder problems (LC). Advanced age, as well as concurrent conditions, may be associated with more postoperative LC issues and a larger need for open surgery. The goal of this study was to investigate the Postoperative Outcomes of Laparoscopic Cholecystectomy in Elderly Patients.

Aim of Study: In this study we aimed to detect Perioperative Outcomes After Laparoscopic Cholecystectomy in Elderly Patients.

Patients and Methods: This was a prospective randomized clinical trial on 87 patients with suspected appendicitis. Study was performed in Al-Azhar University Hospitals and Al-Hussein Hospital from December 2018 to February 2021.

Results: There was significant increase in blood loss in Emergency LC group. Post operative waiting time in hospital was significantly longed in LC group. Regarding complications in both groups, there was significant increase in total complication occurrence in Emergency LC group as minor complication occurred significantly more higher in this group. There was no significant difference in major complications occurrence. There was a significant correlation between age and complication occurrence. Minor complication occurrence was more correlated with age.

Conclusion: This study consider that LC, especially in the elderly, is a safe and effective treatment for AC. Laparoscopic cholecystectomy is a safe procedure. We feel that surgery is more difficult in the elderly in some conditions, but we also believe that the laparoscopic technique is a safe and feasible operation in acute pathology, as well as a safe approach in the elderly. All older people who are surgically fit and have symptomatic gallbladder disease should be considered for LC.

Key Words: *Perioperative – Laparoscopic cholecystectomy – Elderly.*

Introduction

SINCE its introduction in 1988, laparoscopic cholecystectomy (LC) has swiftly supplanted open cholecystectomy (OC) as the operation of choice for patients with symptoms of gallstone disease **[1]**.

Laparoscopic cholecystectomy is the treatment of choice for patients with benign illness of the gallbladder (LC). Advanced age, in combination with concomitant disorders, may be connected with greater postoperative LC difficulties and more frequent conversion to open surgery **[2]**.

Age is a role in the prevalence of cholelithiasis, which climbs from 38 percent to 53 percent in individuals over 80. Elderly patients often have severe co-morbid disease and inadequate functional reserve, which might make the perioperative course more complicated **[3]**.

As a consequence, open biliary surgery in the elderly should be avoided due to the high mortality rates associated with both elective and emergency procedures (up to 2 percent and 10 percent, respectively). During the past decade, laparoscopic cholecystectomy (LC) has become the procedure of choice for symptomatic gallstone disease **[4]**.

Postoperative mortality after LC is greater in individuals who are older. Previous studies on older patients with LC revealed conversion rates to open cholecystectomy of more than 20 percent and death rates of greater than 5 percent **[5]**.

Material and Methods

This was a prospective randomized clinical trial on 87 patients with suspected appendicitis. Study was performed in Al-Azhar University Hospitals and Al-Hussein hospital from December 2018 to February 2021.

Ethical approval for the study was obtained from the hospital ethics committee.

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Inclusion:

Inclusion criteria were age more than 60 years, symptomatic cholecystitis, symptomatic gallstones, asymptomatic gallstones if consent for LC, gallbladder polypoid lesions larger than or equal to 10 mm, and gallbladder adenoma polyps verified by imaging tests.

Exclusion:

Exclusion criteria were suspected gallbladder malignancy, cholangiolithiasis, obstructive jaundice, acute cholecystitis, acute pancreatitis, acute cholangitis, comorbidities that prohibit general anaesthesia and LC, and an ASA score more than II.

Methods:

Demographic data and complete physical and laboratory examination was obtained from every patient. Ultrasound imaging was done for every patient.

A typical four-port approach was used for laparoscopic cholecystectomy. In patients with abnormal liver function tests, prior gallstone pancreatitis, or common bile duct dilatation, preoperative endoscopic retrograde cholangiopancreatography (ERCP) was used (seen on ultrasonographic imaging). Intraoperative cholangiography was not routinely used. The technique was chosen based on clinical parameters as well as the preferences of the individuals. Clinical assessments were undertaken by the attending surgeon and, if necessary, the attending anesthetist.

Outcomes:

The primary objective was to get patients released from the hospital within 24 hours after surgery (D24). Perioperative deaths, readmissions within 30 days after discharge owing to difficulties, delayed discharges for psychological reasons, complications, delayed drainage or conversion to open surgery were the secondary outcomes apart from the main one. Discharge standards were completed by patients who were held for mental reasons, but they refused to depart within 24 hours following surgery.

Statistical analysis:

IBM SPSS version 24.0 was used to analyses computer-generated data. To express quantitative data, percentages and numbers were employed. Before utilizing the median in nonparametric analysis or the interquartile range in parametric analysis, it was required to perform Kolmogorov-Smirnov tests to ensure that the data were normal. We used the (0.05) significance threshold to establish the significance of the findings. The Chi-Square test is used to compare two or more groups. The Monte Carlo test may be used to adjust for any number of cells with a count less than 5. Fischer Chi-Square adjustment was applied to tables demonstrating non continuous data.

Results

Mean age of included subjects was 73.57 years with SD of 7.28. 50 (57.47%) and males were 37 (42.53%). Mean BMI was 24.93 with SD of 1.29. Gallstone was the most prevalent indication to surgery. Mean operation time was 51.07 with SD of 10.58 minutes. Mean blood loss was 8.51 with SD of 2.31. Most cases (72.41%) were discharged within 24 hours after surgery. 24 (27.59%) cases were delayed. Complication occurred in 17 (19.54%) cases.

Table (1): Patients basal characteristics.

	Value
Age (Years)	73.57±7.28
Sex:	
Male	37 (42.53%)
Female	50 (57.47%)
BMI	24.93±1.29
Indication to surgery:	
Gallstones	75 (86.21%)
Gallbladder polypoid lesions	9 (10.34%)
Acalculous cholecystitis	3 (3.45%)
Operation time (min)	51.07±10.58
Blood loss (g)	8.51±2.31
D24	63 (72.41%)
Delayed	24 (27.59%)
DP	8 (9.2%)
DC	8 (9.2%)
DD	5 (5.75%)
DCO	3 (3.45%)
Complications	17 (19.54%)

Table (2): Comparison between patients discharged within 24 hours after surgery and delayed discharge patients.

	D24 (n=63)	Delayed (n=24)	*p*-value
Age	73.75±7.24	73.13±7.41	0.72
Operative time	49.9±10.79	54.13±9.55	0.96
Blood Loss	8.03±2.33	9.75±1.75	0.002
Current smoker	43 (68.25%)	14 (58.33%)	0.38
Hypertension	36 (57.14%)	18 (75%)	0.12
T2DM	28 (44.44%)	8 (33.33%)	0.35
COPD	12 (19.05%)	6 (25%)	0.54
CAHD	8 (12.7%)	3 (12.5%)	0.98
Arrhythmia	4 (6.35%)	3 (12.5%)	0.35
Elective LC	52 (82.54%)	19 (79.17%)	0.72
Emergency LC	11 (19.05%)	5 (16.67%)	

There was no significant difference between patients discharged within 24 hours after surgery and delayed discharge patients except in blood loss, as, blood loss was significantly higher in delayed discharged patients.

Table (3): Comparison between patients treated with elective surgery and emergency LC.

	Elective LC (N=71)	Emergency LC (N=16)	*p*-value
Age	73.38±7.23	73.94±7.49	0.9
Operative time	49.36±10.6	54.16±9.99	0.068
Blood loss	8.05±2.41	9.32±1.9	0.0017
Post operative waiting time	15.3 ± 11.37	33.94±17.58	<0.0001
Drains	12 (16.9%)	9 (56.25%)	0.003
Post operative complications	11 (15.5%)	6 (37.5%)	0.045
Major complications	3 (4.23%)	1 (6.25%)	0.73
Minor complications	8 (11.27%)	5 (31.25%)	0.043

There was significant increase in blood loss in Emergency LC group. Post operative waiting time in hospital was significantly longed in LC group. Regarding complications in both groups, there was significant increase in total complication occurrence in Emergency LC group as minor complication occurred significantly more hire in this group. There was no significant difference in major complications occurrence.

There was a significant correlation between age and complication occurrence. Minor complication occurrence was more correlated with age.

Table (4): Correlation between patients parameters and each other.

	Age	Elective	Emergency	Major	Minor
Elective surgery:					
Correlation	–.044				
p-value	.688				
Emergency surgery:					
Correlation	.044	–1.000**			
p-value	.688	.000			
Major complications:					
Correlation	.217*	.049	–.049		
p-value	.043	.654	.654		
Minor complications:					
Correlation	.263*	–.131	.131	–.096	
p-value	.014	.225	.225	.376	
Total complications:					
Correlation	.351**	–.094	.094	.430**	.857**
p-value	.001	.387	.387	.000	.000

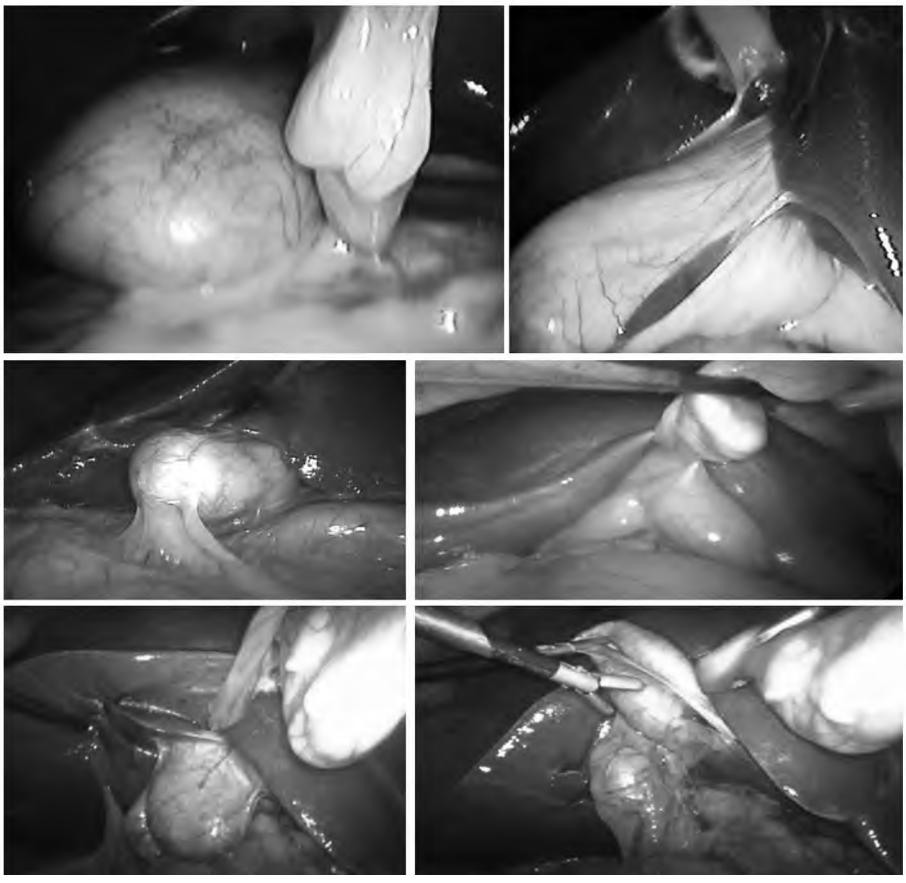

Fig. (1): Intraoperative pictures of the 6 patients during laparoscopic cholecystectomy showing an abnormal position of the gall bladder being positioned in the med-line under the falciform ligament.

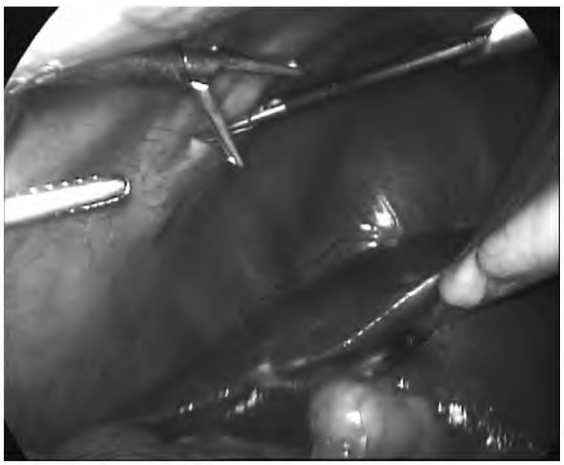

Fig. (2): Intraoperative picture showing the position of the ports after placing them in the conventional positions which makes dissection very difficult.

Fig. (3): Showing the port sites during the operation placing one of the ports inthe left hypochondrial region in the midclavicular line.

Discussion

As the population's average age grows, so will the number of older persons with symptomatic gallstones **[6]**. LC has been observed to have a shorter hospital stay, less postoperative physiologic dysfunction, and a quicker return to daily activities than open cholecystectomy **[7]**. These results are particularly sought in the senior patient group. In this study, the most common cause of LC was chronic cholecystitis. 47 percent of cholecystectomies were done due of complications associated to gallstones, which included acute cholecystitis, pancreatic gallstone disease, and choledocholithiasis. In the elderly, gallstone disease is more common and more severe, which may explain the 11-22% reported conversion rates to open cholecystectomy. Extensive fibrosis, gallbladder inflammation or perforation, and common bile duct illness have all been connected to such high conversion rates **[8]**.

Fortunately, no one was killed in the incident. However, postoperative mortality after LC is uncommon, with rates ranging from 0 percent to 0.15 percent. Patients over the age of 65 who undergo LC are at risk of a mortality rate ranging from 1% to 3%. However, the postoperative death rate in patients aged 80 and beyond is reported to be more than 5 percent. According to current data, the majority of postoperative deaths are attributable to combined cardiorespiratory illness and septic complications associated with acute or severe gallstone disease. Percutaneous cholecystostomy has been advised for selected elderly individuals with acute cholecystitis.

The average age of the included individuals was 73.57 years, with a standard deviation of 7.28 years. There were 50 females (57.47 percent) and 37 males (42.53 percent). Average BMI was 24.93, with 1.29 for the standard deviation. Gallstones were the most prevalent cause for surgery. With a standard deviation of 10.58 minutes, the average operation time was 51.07 minutes. The average blood loss was 8.51mL, with a 2.31mL standard deviation. The great majority of sufferers (72.41 percent) were discharged from the hospital within 24 hours following surgery. In 24 (27.59 percent) of the instances, incidents were postponed. In 17 cases, complications occurred (19.54 percent).

The percentage of surgical discharge within 24 hours in ALC patients of all ages has been reported to be between 72 and 92 percent **[9,10,11]**. The amount of blood lost was comparable to earlier research **[12]**.

Even in people with no obvious underlying illnesses, ageing is associated with a continuous decrease in reserve capacity. This effect is most obvious following surgery, when older people's ability to cope with stress is reduced **[13]**. Furthermore, intraperitoneal CO_2 insufflation to create pneumoperitoneum has been associated to an increased incidence of arrhythmia and cardiac arrhythmias **[14]**. In terms of arrhythmia, LC combined with an abdominal wall lift is less risky than intraperitoneal CO_2 insufflation **[15]**. Some elderly patients who have LC may benefit from a few days of postoperative hospitalisation to help with their psychological rehabilitation.

Blood loss was much greater in patients who were delayed in being discharged, most likely due to intra- or perioperative issues that might cause an increase in blood loss.

The Emergency LC group saw a considerable increase in blood loss. The time spent in the hospital after surgery was much longer in the LC group. In terms of complications in both groups, the Emergency LC group had a significant rise in overall complication incidence because moderate difficulties occurred considerably more often in this group. In terms of the occurrence of major difficulties, there was no statistically significant difference.

According to Cao et al., the risk of complications, conversion to open surgery, and readmission is not greater in the elderly than in the non-elderly. Male gender, octogenarian status, increased operation duration, arrhythmia, type 2 diabetes mellitus, a prior upper abdominal surgery, acute gallbladder inflammation, and a gallbladder wall thicker than 3mm are risk factors for delayed release following ALC in senior patients.

Prior research compared elective LC data to emergency LC data in the elderly and found no statistically significant difference, except for the total hospital stay time, which was greater for emergency patients. In terms of time, conversion rate, or difficulty, there was no discernible difference between the two groups. It didn't matter how much experience various surgeons had when compared their success rates. They also indicated that patients can be operated on after a gap of 73 hours and up to 9 days and achieve the same advantages as if the therapy had been done earlier **[16].**

There was a significant correlation between age and the occurrence of problems. The occurrence of mild problems was shown to be more directly related to age. Postoperative complications grow more likely as patients become older. Patients are more trustworthy as they get older, but they are also more prone to problems after surgery **[17].**

Conclusion:

A safe and effective therapy for AC, particularly in the elderly, is LC. Laparoscopic cholecystectomy is a risk-free surgery to undertake. Laparoscopic surgery is a safe and viable operation in acute pathology and a method that can be safely used by the elderly in certain cases, but we also believe that it is more difficult in others for the elderly. It is advised that all elderly adults with gallbladder disease and who are surgically fit be screened for LC.

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النتائج المحيطة بالجراحة بعد استئصال المرارة بالمنظار فى المرضى كبار السن

الخلفية : استئصال المرارة بالمنظار هو المعيار الذهبى لعلاج مشاكل المرارة الحميدة. قد يترافق تقدم العمر، وكذلك الحالات المصاحبة، مع المزيد من مشاكل بعد الجراحة والحاجة الأكبر للجراحة المفتوحة. كان الهدف من هذه الدراسة هو التحقيق فى نتائج استئصال المرارة بالمنظار بعد الجراحة فى المرضى المسنين.

الطريقة : كانت هذه تجربة سريرية عشوائية مرتقبة على ٨٧ مريضاً يشتبه فى إصابتهم بالتهاب الزائدة الدودية. تم إجراء الدراسة فى مستشفيات جامعة الأزهر ومستشفى الحسين من ديسمبر ٢٠١٨ إلى فبراير ٢٠٢١.

النتائج : كان هناك زيادة كبيرة فى فقدان الدم فى مجموعة استئصال المرارة الطارئ بالمنظار. كان وقت الانتظار بعد الجراحة فى المستشفى يتوق بشكل كبير فى مجموعة استئصال المرارة بالمنظار. فيما يتعلق بالمضاعفات فى كلا المجموعتين، كانت هناك زيادة كبيرة فى حدوث المضاعفات الكلية فى مجموعة الطوارئ استئصال المرارة الطارئ بالمنظار حيث حدثت المضاعفات الطفيفة بشكل أكبر بشكل ملحوظ فى هذه المجموعة. لم يكن هناك فرق كبير فى حدوث المضاعفات الرئيسية. كان هناك ارتباط كبير بين العمر وحدوث المضاعفات. كان حدوث المضاعفات الطفيفة أكثر ارتباطاً بالعمر.

الخلاصة : نحن نعتبر أن استئصال المرارة بالمنظار، وخاصة عند كبار السن، هو علاج آمن وفعال لمكيفات الهواء. استئصال المرارة بالمنظار إجراء آمن. نشعر أن الجراحة أكثر صعوبة عند كبار السن فى بعض الحالات، لكننا نعتقد أيضاً أن تقنية المنظار هى عملية آمنة ومجدية فى علم الأمراض الحادة، فضلاً عن نهج آمن عند كبار السن. يجب أن يؤخذ فى الاعتبار جميع كبار السن الذين يتمتعون بلياقة جراحية ولديهم أعراض مرض المرارة.