

Retrospective Study of Demographic Profile and Clinical Outcome Following Laparoscopic Cholecystectomy Over One Year at NMCH, Sasaram

Vikas Kumar¹, Seema Kumari²

¹Assistant Professor, Department of General Surgery, Narayan Medical College and Hospital, Sasaram, Bihar, India

²Senior Resident, Department of Obstetrics and Gynaecology, Narayan Medical College and Hospital, Sasaram, Bihar, India

Received: 10-05-2023 Revised: 15-06-2023 / Accepted: 22-07-2023

Corresponding author: Dr. Seema Kumari

Conflict of interest: Nil

Abstract

Aim: The aim of the present study was to evaluate the demographic profile and clinical outcome following laparoscopic cholecystectomy over one year at NMCH, Sasaram.

Methods: This study was a retrospective study included 100 patients with gall stones and gall bladder-related disease who were admitted in the Department of General Surgery, Narayan Medical College and Hospital, Sasaram, Bihar, India for the period of one year.

Results: The mean age of study population was 42.00 ± 12.00 years with a range of 20 years–80 years, median age being 40 years. Of the included patients 65 (65%) were male and 35 (35%) were female. All patients fell under an ASA2 (95%) or ASA3 category (5%). Co-morbidities outlined in table 2 from most to least common include: hypertension (32%), diabetes (30%), anticoagulant therapy (18%), respiratory disease (14%), chronic kidney disease (9%) and myocardial infarction (2%). The mean duration of symptom onset to date of surgery was 180 days. Of the 100 patient records screened, two elective laparoscopic cholecystectomies were converted to open surgery. Both of these patients were male and required open surgery due to difficulties in safely delineating the anatomy via a laparoscopic approach. Mean operative duration was 106 minutes (range: 32-280). A surgical drain was left in situ in 20% of cases and subsequently removed in all cases prior to discharge.

Conclusion: The recent literature demonstrates that LC is a feasible and safe procedure in elderly patients and, whenever possible, LC should be performed during the same hospitalization like definitive treatment of gallstone disease. Elective LC could be recommended when repeated gallstone symptoms have occurred in the elderly patient and dedicated surgical team experienced in gallbladder and biliary tract disease should treat these pathologies.

Keywords: laparoscopic cholecystectomy, demographic profile, clinical outcome

This is an Open Access article that uses a funding model which does not charge readers or their institutions for access and distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>) and the Budapest Open Access Initiative (<http://www.budapestopenaccessinitiative.org/read>), which permit unrestricted use, distribution, and reproduction in any medium, provided original work is properly credited.

Introduction

Laparoscopic cholecystectomy (LC) was first introduced in the mid-1980s for symptomatic gallstones. Currently, it is the gold standard treatment for symptomatic gallstones. [1] In the initial decades, laparoscopic procedures were only restricted for well-experienced senior surgeons, however, studies gradually showed how the level of surgical expertise and the duration of practice did not impact the patient outcome in laparoscopic procedures. LC is a safe procedure commonly performed by surgical residents under the supervision of their attending. [2] Good procedure outcome and the reduced in-hospital stay have aided the dramatic shift from open to laparoscopic approach to gallstones. More than 90% of the

830,000 cholecystectomy in the US are performed using a laparoscopic approach. [3] Advantages of the laparoscopic approach include better recovery, lower morbidity, and lower postoperative pain, shortened duration of hospital stay, and lower mortality rate. However, intraoperative bleeding was seen to be unaffected by the selection of operative technique. [4] The incidence of major complications with LC remains as low as 5%. [5] There may be several factors contributing to the risk of conversion to an open procedure. Distorted anatomy, excessive bleeding, visceral injury, adhesion, equipment failure and surgeons expertise are all factors that increase conversion from LC to

open approach. [6] The frequency of conversion has been reported to be 5%. [7]

Gallstones disease has been a major cause of global morbidity with varying degree of prevalence based on the geographical, racial, and ethnic parameters. Gallstones are at least three to four times more common in females. The incidence of gallstones increases with advancing age and are rare before 20 years of age. [8] The laparoscopic technique has many advantages over the open approach such as decrease in post-operative pain, reduction of postoperative complications, shorter hospitalization with earlier mobility and return to normal work activity, and better cosmetic results. The duration of LC has continuously decreased as a result of increasing the learning curve of surgeons. [9] In spite of these advantages, OC still has a place in the laparoscopic surgery era. [10,11] OC is principally preserved for the challenging cases in which laparoscopy fails. [10] Most OCs are performed as a result of conversion from LC. [12] The outcome of laparoscopic cholecystectomy in literature has been assessed by many different outcomes measures: bile duct injuries, conversion rates, morbidity and mortality. However, there remains considerable debate which measures should be used to reflect surgical quality, as the various measures have strengths and weaknesses. [13]

The aim of the present study was to evaluate the demographic profile and clinical outcome following laparoscopic cholecystectomy over one year at NMCH, Sasaram.

Materials and Methods

This study was a retrospective study included 100 patients with gall stones and gall bladder related disease who were admitted in the Department of General Surgery, Narayan medical College and Hospital, Sasaram, Bihar, India for the period of one year.

Inclusion Criteria

The following criteria were included in the study:

- Acute cholecystitis
- Chronic cholecystitis
- Cholelithiasis
- Gangrenous gall bladder
- Mucocoele and empyema of gall bladder.

Exclusion Criteria

- Choledocholithiasis
- Carcinoma of gall bladder
- Perforated gall bladder
- Uncontrolled coagulopathy and end stage liver disease.

Statistical Analysis

All statistical analyses were performed using IBM SPSS v.20 software. $P < 0.5$ will be considered statistically significant. The Shapiro–Wilk test is used to assess normality of data. Numerical data are presented as means and standard deviations or as medians with ranges. Chi-square test and Mann–Whitney U test are used when appropriate.

Results

Table 1: Patient demographics, ASA status and co- morbidities

Patient demographics	Total number 100	
Gender (male: female)	65:35	
Age (years, mean)	42.00 ± 12.00	
ASA grade	I	0
	II	95 (95%)
	III	5 (5%)
	IV	0
Comorbidities		
Hypertension	32 (32%)	
Diabetes	30 (30%)	
Anticoagulant therapy	18 (18%)	
COPD/Asthma	14 (14%)	
CKD	9 (9%)	
MI	2 (2%)	

The mean age of study population was 42.00 ± 12.00 years with a range of 20 years–80 years, median age being 40 years. Of the included patients 65 (65%) were male and 35 (35%) were female. All patients fell under an ASA2 (95%) or ASA3 category (5%). Co-morbidities outlined in table 2

from most to least common include: hypertension (32%), diabetes (30%), anticoagulant therapy (18%), respiratory disease (14%), chronic kidney disease (9%) and myocardial infarction (2%). The mean duration of symptom onset to date of surgery was 180 days.

Table 2: Intraoperative details

Operation duration mean(Range)	106 minutes (32-280)
Laparoscopic procedure	98 (98%)
Laparoscopic converted to open	2 (2%)
Surgical drain	20 (20%)
Mean LOS (range)	2.5 (1-4)
30-day mortality	0
30 -day readmission	8 (8%)
Complications	
Wound infection	3 (3%)
Chest infection	2 (2%)
CBD stone	2 (2%)
Bile leak	1 (1%)
Intraabdominal collection	1 (1%)
AF	1(1%)

Of the 100 patient records screened, two elective laparoscopic cholecystectomies were converted to open surgery. Both of these patients were male and required open surgery due to difficulties in safely delineating the anatomy via a laparoscopic approach. Mean operative duration was 106 minutes (range: 32- 280). A surgical drain was left in situ in 20% of cases and subsequently removed in all cases prior to discharge. 10 patients (10%) experienced post-operative complications. 3 patients had an umbilical port site infection all were managed with antibiotics and discharged within 6 days of their operation. 2 had chest infections, all successfully managed with antibiotics and discharged within 4 days. Two patients had retained CBD stones, both of which re-presented within 30 days of surgery with pain and jaundice and were successfully managed with ERCPs. One patient developed intra-abdominal collections and had a CT abdomen to confirm diagnosis and was managed conservatively on antibiotics. One patient had a bile leak which required a laparoscopy followed by a wash out and one patient had atrial fibrillation who was managed by the medical team and discharged on day 3.

Discussion

Gall stone disease is a common health problem. The management of symptomatic gall stone disease was improved by the introduction of laparoscopic cholecystectomy (LC). [14] Nowadays, LC is considered the gold standard for the treatment of symptomatic gallbladder stones and has replaced the traditional open cholecystectomy (OC). [15,16] Predictive factors of conversion to open cholecystectomy include male gender, previous abdominal surgery, acute cholecystitis, dense adhesions and fibrosis in Callot triangle, anatomical variations, advanced age, comorbidity, obesity, suspicion of common bile duct stones, jaundice, and decreased surgeon experience. [17]

The mean age of study population was 42.00 ± 12.00 years with a range of 20 years–80 years,

median age being 40 years. A recent study by Nielsen LBJ et al [18] concluded the age per se plays a role for poorer outcome independently from pre-operative comorbidity and complicated disease. In cited study older age is also associated with higher preoperative comorbidity (ASA). For some reason the frequency of primary open cholecystectomy is higher among the elderly. Nielsen LBJ et al. explain that previous abdominal surgery and perioperative cardiopulmonary complications during laparoscopy could be a reason of their higher conversion rate. On the contrary in our current study the conversion rate for LC doesn't increase significantly with age. Of the included patients 65 (65%) were male and 35 (35%) were female. All patients fell under an ASA2 (95%) or ASA3 category (5%). Co-morbidities outlined in table 2 from most to least common include: hypertension (32%), diabetes (30%), anticoagulant therapy (18%), respiratory disease (14%), chronic kidney disease (9%) and myocardial infarction (2%). The mean duration of symptom onset to date of surgery was 180 days.

Biliary injuries continue to be a significant problem following LC; most studies showed an increase in the incidence of these injuries. With the advent of laparoscopy, the rate of serious bile duct injuries after cholecystectomy increased up to 0.8%, whilst the one related to the open route remained between 0.2–0.3%. [19] The intraoperative detection of bile leak is around 40%, resulted mainly from failure to define the anatomy of Calot's triangle. Endoscopic interventions have essentially replaced surgery as first line treatment for most of the biliary injuries following LC. [20] Of the 100 patient records screened, two elective laparoscopic cholecystectomies were converted to open surgery. Both of these patients were male and required open surgery due to difficulties in safely delineating the anatomy via a laparoscopic approach. Mean operative duration was 106 minutes (range: 32-280). A surgical drain was left in situ in 20% of

cases and subsequently removed in all cases prior to discharge.

10 patients (10%) experienced post-operative complications. 3 patients had an umbilical port site infection all were managed with antibiotics and discharged within 6 days of their operation. 2 had chest infections, all successfully managed with antibiotics and discharged within 4 days. Two patients had retained CBD stones, both of which re-presented within 30 days of surgery with pain and jaundice and were successfully managed with ERCPs. One patient developed intra-abdominal collections and had a CT abdomen to confirm diagnosis and was managed conservatively on antibiotics. One patient had a bile leak which required a laparoscopy followed by a wash out and one patient had atrial fibrillation who was managed by the medical team and discharged on day 3. The post-operative complication rates were consistent with other series for patients of this age group, indicating that elderly patients with higher ASA grades correlated with greater risk of post-operative complications. [21,22]

Conclusion

The recent literature demonstrates that LC is a feasible and safe procedure in elderly patients and, whenever possible, LC should be performed during the same hospitalization like definitive treatment of gallstone disease. Elective LC could be recommended when repeated gallstone symptoms have occurred in the elderly patient and dedicated surgical team experienced in gallbladder and biliary tract disease should treat these pathologies.

References

1. Coccolini F, Catena F, Pisano M, Gheza F, Fagioli S, Di Saverio S, Leandro G, Montori G, Ceresoli M, Corbella D, Sartelli M. Open versus laparoscopic cholecystectomy in acute cholecystitis. Systematic review and meta-analysis. *International journal of surgery*. 2015 Jun 1; 18:196-204.
2. Vollmer CM, Callery MP. Biliary injury following laparoscopic cholecystectomy: why still a problem? *Gastroenterology*. 2007 Sep 1; 133(3):1039-41.
3. Ahmed W, Iqbal M, Ahmed I. Is there any Change in Demographic Pattern of Patients with Cholelithiasis? *Isra Medical Journal*. 2017 Mar 1;9(2).
4. Parikh SP, Szczech EC, Castillo RC, Moskowitz R, Zuberi J, Sori A, Elsayy O. Prospective analysis of laparoscopic cholecystectomies based on postgraduate resident level. *Surgical laparoscopy, endoscopy & percutaneous techniques*. 2015 Dec 1;25(6):487-91.
5. Dalwan AG, Shaikh R, Das K, Devrajani T, Shah ZA, Shah A. Complications of laparoscopic cholecystectomy at Liaquat University, Jamshoro. *World App Sci J*. 2013; 23(6):808-11.
6. Rashid T, Naheed A, Farooq U, Iqbal M, Barakat N. Conversion of laparoscopic cholecystectomy into open cholecystectomy: an experience in 300 cases. *Journal of Ayub Medical College Abbottabad*. 2016 Mar 14; 28(1):116-9.
7. Sakpal SV, Bindra SS, Chamberlain RS. Laparoscopic cholecystectomy conversion rates two decades later. *JSL: Journal of the Society of Laparoendoscopic Surgeons*. 2010 Oct;14(4):476.
8. The growing global burden of gallstone disease. (2016).
9. Rajabi-Mashhadi MT, Abdollahi A, Tavassoli A, Forghani MN, Shabahang H, Nooghabi AJ, et al. Laparoscopic cholecystectomy: A retrospective four year study. *J Minim Invasive Surg Sci* 2015;4: e25253.
10. Shukla A, Seth S, Ranjan A. A comparative study between laparoscopic and open cholecystectomy in cases of cholecystitis with cholelithiasis: one year experience in tertiary care center. *International Surgery Journal*. 2017 Feb 25;4(3):903-7.
11. Dhaigude BD, Chaturvedi V, Chand A. A comparative study of open versus laparoscopic cholecystectomy. *Indian J Appl Res*. 2016; 6(4):22-4.
12. Parambil SM, Matad S, Soman KC. Epidemiological, demographic and risk factor profile in patients harbouring various types of gallbladder calculi: a cross sectional study from a south Indian tertiary care hospital. *International Surgery Journal*. 2017 Jan 25;4 (2):525-8.
13. Veen EJ, Bik M, Janssen-Heijnen ML, De Jongh M, Roukema AJ. Outcome measurement in laparoscopic cholecystectomy by using a prospective complication registry: results of an audit. *International Journal for Quality in Health Care*. 2008 Apr 1;20(2):144-51.
14. Russell RC, Williams NS, Bulstrode CJ. *Bailey and Love Short Practice of Surgery*. 24th ed. London: Hodder Arnold; 2004.
15. Oddsdottir M, Pharm TH. Gall bladder and the extra hepatic biliary system. In: Brunicaudi FC, Andersen DK editors. *Schwartz's Principles of Surgery*. 9th ed. USA: McGraw-Hill Professional; 2009. p. 1151-52.
16. Goco IR, Chambers LG. Dollars and cents: mini cholecystectomy and early discharge. *Southern Medical Journal*. 1988 Feb 1;81(2) :161-3.
17. Duncan CB, Riall TS. Evidence-based current surgical practice: calculous gallbladder

- disease. *Journal of Gastrointestinal Surgery*. 2012 Nov; 16:2011-25.
18. Nielsen LB, Harboe KM, Bardram L. Cholecystectomy for the elderly: no hesitation for otherwise healthy patients. *Surgical endoscopy*. 2014 Jan; 28:171-7.
 19. Wu YV, Linehan DC. Bile duct injuries in the era of laparoscopic cholecystectomies. *Surgical Clinics*. 2010 Aug 1;90(4):787-802.
 20. Duman K, Halil SK, Yilmaz F, Akin ML. The clinical outcome of traditional laparoscopic cholecystectomy. *Gaziantep Medical Journal*. 2013 Jan 1;19(1):35-9.
 21. Shi HY, Lee KT, Uen YH, Chiu CC, Lee HH. Changing approaches to cholecystectomy in elderly patients: a 10-year retrospective study in Taiwan. *World J Surg*. 2010;34(12):2922-31.
 22. Novacek G. Gender and gallstone disease. *Wiener Medizinische Wochenschrift*. 2006;156 (19-20):527-33.