Orginal Article

Comparison of Quality of Life Before and After Laparoscopic Cholecystectomy

Tanka Prasad Bohara, Adarsh Gurung, Ellina Dangol, Salina Neupane, Mukund Raj Joshi

Department of Surgical Gastroenterology, KIST Medical College, Imadol, Lalitpur, Nepal.

Article History
Recived: 17 December, 2023
Accepted: 15 January, 2024
Published: 31 January, 2024

Funding Sources: None

Conflict of Interest: None

Online Access

DOI:
https://doi.org/10.61122/jkistmc291

Correspondence
Tanka Prasad Bohara
Associate Professor, Department of Surgical Gastroenterology, KIST Medical College, Imadol, Lalitpur.
Email: tankaprasad.bohara@gmail.com

Citation: Bohara TP, Gurung A, Dangol E, Neupane S, Joshi MR. Comparison of Quality of Life Before and After Laparoscopic Cholecystectomy. J. KIST Med. Col. 6(11):68-72.

Abstract

Introduction: Laparoscopic cholecystectomy (LC) is a treatment of choice for symptomatic cholelithiasis. LC is one of the most commonly done operations in our country. Patient-reported quality of life is an important outcome measure following all medical and surgical interventions. However, there are only a few papers available addressing quality of life-issues following laparoscopic cholecystectomy. Hence, we conducted a study to compare the quality of life to compare before and after LC.

Methods: This is a longitudinal study. Patients who underwent laparoscopic cholecystectomy during the study period were included. Gastrointestinal quality of life (GIQLI) was measured before and six weeks after laparoscopic cholecystectomy.

Results: Seventy-two patients, 11 (15.28 %) males and 61 (84.72 %) females were included in the study. The mean age was 44.97 years and the mean duration of symptoms was found to be 5.20 months. No complications were recorded. There was a statistical increase in the mean total GIQLI before and after LC (111.625 Vs 133, $p < 0.0001$).

Conclusion: There was a significant increase in GIQLI after laparoscopic cholecystectomy in symptomatic patients.

Keywords: *Cholecystectom, GIQLI, laparoscopic cholecystectomy, quality of life*

Introduction

Laparoscopic cholecystectomy (LC) is a treatment of choice for symptomatic cholelithiasis. LC is one of the most commonly done operations in our country. LC has been described as the most significant major surgical advance of the 1990s which allows shorter hospitalization; rapid recovery and early return to work along with financial saving.[1] At present, in our institute, almost all cases of symptomatic cholelithiasis are done laparoscopically with a conversion rate of less than one percent. There are several papers describing the outcomes like pain, length of hospital stays, complications, etc. in various clinical settings and patient groups available.[2–7]

Patient-reported quality of life is an important outcome measure following all medical and surgical interventions.[8] However, there are only a few papers available addressing quality of life-issues following laparoscopic cholecystectomy.[8–16] Hence, we conducted a study to compare the quality of life to compare before and after LC.

Methods

A longitudinal study was conducted in KIST Medical College from April 2022

to October 2022; where patients undergoing Laparoscopic cholecystectomy for symptomatic cholelithiasis were included in the study. The convenience sampling method was used and a sample size of 72 was calculated using n=z2 (1−P)2 with a prevalence of 4.87%.[17]

Participants were interviewed in person with the Gastrointestinal Quality of Life (GIQLI) questionnaires before the surgery. Patients were again contacted 6 weeks after the surgery by telephone to assess postoperative GIQLI. Every participant was explained well about the aim, method and course of the study. Consent was taken from all patients before enrolling them in the study. Along with the data obtained from the use of the GIQLI questionnaire, variables such as name, age, sex, phone number, duration of pain, intended operative approach and final approach performed were also collected. The total GIQLI score of the responses was calculated and segregated as per the different domains and also compared between the scores calculated pre-surgery and 6 weeks after the surgery. Approval for the study was taken from the Institutional Review Committee of KIST Medical College and Teaching Hospital.

Categorical variables were expressed as absolute or relative frequencies and continuous variables will be expressed as mean ± 2SD. A paired t-test was used to analyze and compare continuous variables. A p-value of < 0.05 was considered statistically significant.

Microsoft Excel was used for the analysis of the data.

Results

Seventy-nine consecutive patients were considered for the study. Seven patients were excluded from the study. Three of them did not give consent and four patients did not respond to the evaluation of post-operative GIQLI. A total of 72 cases who underwent Laparoscopic cholecystectomy in the hospital in the designated study duration was included in the study. Among them, 11 (15.28 %) were males and 61 (84.72 %) were females.(Figure1)The mean age was found to be 44.97 years. The average duration of pain abdomen among these patients was found to be 5.20 months. No complications were recorded during the study period.

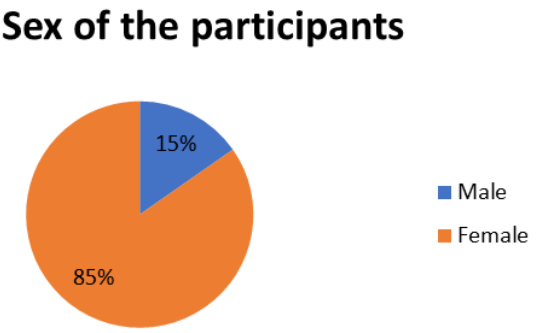


Fig1: Pie chart showing the percentage of different sexes participating in the study

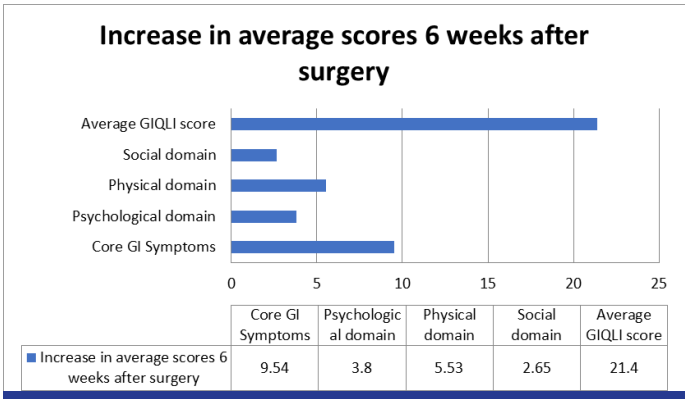
There was an increase in the mean of the total GIQLI score as well as in the means of domains of the GIQLI score (core symptoms, physical items, psychological items, social items) and the increase was statistically relevant. Table1.

Table1: Comparison of mean score of domains of GIQLI and total GIQLI score before and after Laparoscopic Cholecystectomy

	Mean GIQLI Score Before Laparoscopic Cholecystectomy	Mean GIQLI Score After Laparoscopic Cholecystectomy	P-value
Core Symptoms	60.05±19.8	69.60±4.24	< 0.0001*
Physical Items	14.83±14.14	18.63±7.07	< 0.0001*
Psychological Items	20.22±15.55	25.75±4.24	< 0.0001*
Social Items	16.51±4.24	19.16±1.41	< 0.0001*
Total GIQLI	111.62±14.31	133±16.97	< 0.0001*

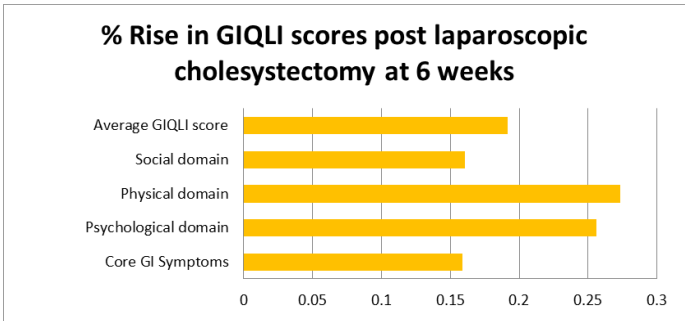
*Paired t test

The average total GIQLI score 6 weeks after surgery was found to have increased by 21.4 (19.17 %). The scores of each domain were found to be increased by: Core GI symptoms: 9.54 (15.88%), Psychological items: 3.8 (25.62%), Physical Items: 5.53 (27.34%) and Social items: 2.65 (16.05%).(Figure 2 and Figure 3)



	Core GI Symptoms	Psychological domain	Physical domain	Social domain	Average GIQLI score
Increase in average scores 6 weeks after surgery	9.54	3.8	5.53	2.65	21.4

Fig 2: Bar Graph showing the increase in average scores of various domains as well as the total GIQLI before and after laparoscopic cholecystectomy



	Core GI Symptoms	Psychological domain	Physical domain	Social domain	Average GIQLI score
% Rise in GIQLI scores post laparoscopic cholesystectomy at 6 weeks	0.1588	0.2562	0.2734	0.1605	0.1917

Fig 3: Bar Graph showing the percentage increase in the average scores of various domains as well as the total GIQLI scores before and laparoscopic cholecystectomy

Discussion

Quality of life is a multi-dimensional concept that includes multiple aspects of life. The WHO defines Quality of Life as: "An individual's perception of their position in life in the context of the culture in which they live and in relation to their goals, expectations, standards and concerns."[18] Understanding the concept of Health-Related Quality of Life (HRQoL) is crucial for making informed decisions about a patient's relief, care, and rehabilitation. It helps in identifying problems and modifying treatment and care.[19]

Gastrointestinal Quality of Life (GIQLI) is a potentially useful tool to assess the HRQoL of patients with gastrointestinal diseases. It helps to measure the subjective perception of the well-being of a patient. This tool assesses five different items: core gastrointestinal symptoms, physical items, psychological items, social items, and disease-specific items where feasible or included in the gastrointestinal symptom with the help of a structured questionnaire consisting of 36 different questions. Each question consists of 5 different responses ranging from the most desirable to the least desirable, among which the participant must choose. The most desirable option is awarded 4 points whereas the least desirable option consists of 0 points. The maximum score the participant can acquire at the end of the questionnaire is 144, whereas the lowest score is 0.[20]

This study found that there is a statistically relevant increase in GIQLI score following laparoscopic cholecystectomy in symptomatic patients. There is a significant increase in overall all GIQLI scores and all the domains of GIQLI scores.

A review article on patient-reported outcome measures and quality of life in patients undergoing LC, found that there was a lack of consistency in the study designs and patient-related outcomes. Up to 2017, they found that 57 studies evaluated HRQoL out of which 6 of these were identified as validation studies researching the psychometric properties of patient-reported outcome.[12]

In a study, 205 patients were divided into two subgroups of severe gallstone symptoms consisting of 158 patients and asymptomatic gallstones group consisting of 47 patients. It was found that 84.9% of the symptomatic group experienced an improvement in their health condition and 5.7% remained unchanged. Only 53.2% of patients reported improvement among the asymptomatic group and 44.7% reported no changes ($p<0.001$). Despite the perception of health conditions between subgroups, the overall assessment of GIQLI did not differ significantly, except for social functioning where symptomatic gallstones were assessed better (8.9 +/- 1.5 Vs 8.11 +/- 2.08, $p=0.004$). The preoperative GIQLI was assessed retrospectively in this study might have resulted in bias and could have resulted in no change in the overall GIQLI score even in symptomatic patients.[9]

Lambert et al studied 342 patients using GIQLI. QoL was assessed before and 12 weeks after cholecystectomy. They reported that higher pre-operative GIQLI scores, duration of pain of less than 1 year and episodic pain were significantly associated with post-operative absence of pain, but not with improved abdominal symptoms of positive surgery results. [15] A similar result was found by Wennmacker et al who reported that post-operative absence of pain was associated with less than one year of symptoms and a high baseline GIQLI score.[21] Bűlent Mentes et al did a prospective evaluation at admission and 4 months after LC. Significant increase in total GIQLI in both symptomatic (113.42 +/- 21.9 Vs 80.32 +/- 19.9 $p<0.05$) and the asymptomatic group (96.37 ± 14.26 vs 113.30 ± 15.22; $p<0.05$). Subgroup analysis showed significant improvement in core, physical, psychological, and disease-specific items but only the symptomatic group achieved significant improvement

in social items.[16] The increase in postoperative GIQLI score in symptomatic patients is similar to our finding.

Quintana et al evaluated the factors affecting QOL after laparoscopic cholecystectomy. They found that patients with low surgical risk and more severe symptoms benefit most from the operation.[22] Ross Mudgway et al compared robotic cholecystectomy and LC in 122 patients, 93 in the robotic and 29 in the laparoscopic group. No overall significant increase in GIQLI was found. Retrospective evaluation of preoperative GIQLI might have resulted in bias.[8] Another study evaluated the quality of life after a single incision and four-port LC and found that postoperative QOL did not differ substantially between the two groups.[13]

In summary, it can be said that there is an increase in GQLI scores in patients who undergo laparoscopic cholecystectomy for symptomatic cholelithiasis. The strength of the current study is the prospective evaluation of the GIQLI score before and after laparoscopic cholecystectomy. The limitation of this study is a single-center study with a limited number of patients; hence the result of the study may not be generalized.

Conclusion

There is a statistically relevant increase in GIQLI score following laparoscopic cholecystectomy in overall score and each domain of GIQLI.

References

1. Sadler GP, Shandall A, Rees BI. Laparoscopic cholecystectomy. Br J Hosp Med. 1992 Oct 21-Nov 3;48(8):462-71. PMID: 1422557. Available from: https://pubmed.ncbi.nlm.nih.gov/1422557/

2. Gurusamy K, Junnarkar S, Farouk M, Davidson BR. Meta-analysis of randomized controlled trials on the safety and effectiveness of day-case laparoscopic cholecystectomy. Br J Surg. 2008 Feb;95(2):161-168. DOI: 10.1002/bjs.6105 PMID:18196561

3. Laurence JM, Tran PD, Richardson AJ, Pleass HCC, Lam VWT. Laparoscopic or open cholecystectomy in cirrhosis: a systematic review of outcomes and meta-analysis of randomized trials. HPB (Oxford). 2012;14(3):153-161. DOI: 10.1111/j.1477-2574.2011.00425.x PMID: 22321033 PMCID: PMC3371197

4. Prasanth J, Prasad M, Mahapatra SJ, Krishna A, Prakash O, Garg PK, et al. Early Versus Delayed Cholecystectomy for Acute Biliary Pancreatitis: A Systematic Review and Meta-Analysis. World J Surg. 2022 Jun 1;46(6):1359-1375. DOI: 10.1007/s00268-022-06501-4 PMID:35306590

5. Cassinotti E, Baldari L, Boni L, Uranues S, Fingerhut A. Laparoscopic Cholecystectomy in the Cirrhotic: Review of Literature on Indications and Technique. Chirurgia (Bucur). Chirurgia (Bucur). 2020 Apr 1;115(2):208-212. DOI: 10.21614/chirurgia.115.2.208 PMID: 32369724

6. Bittner R. The standard of laparoscopic cholecystectomy. Langenbecks Arch Surg. Langenbecks Arch Surg; 2004. 389(3):157-163. DOI: 10.1007/s00423-004-0471-1 PMID: 15188083

7. Al Talhi Y, Shirah BH, Altowairqi M, Yousef Y. Laparoscopic cholecystectomy for cholelithiasis in children with sickle cell disease. Clin J Gastroenterol. 2017 Aug 1;10(4):320-326. DOI: 10.1007/s12328-017-0750-3 PMID: 28555355

8. Mudgway R, Tran Z, Quispe Espíritu JC, Bong W Bin, Schultz H, Vemireddy V, et al. A Medium-Term Comparison of Quality of Life and Pain after Robotic or Laparoscopic Cholecystectomy. J Surg Res. 2023 Mar 1;295:47-52. DOI: 10.1016/j.jss.2023.08.031 PMID: 37988906

9. Gach T, Bogacki P, Markowska B, Bonior J, Paplaczyk M, Szura M. Quality of life in patients after laparoscopic cholecystectomy due to gallstone disease - evaluation of long-term postoperative results. Pol Przegl Chir. 2021 Oct 20;93(0):19-24. DOI: 10.5604/01.3001.0015.4213 PMID: 35384862

10. Matovic E, Hasukic S, Ljuca F, Halilovic H. Quality of life in patients after laparoscopic and open cholecystectomy. Med Arh. 2012;66(2):97-100. DOI: 10.5455/medarh.2012.66.97-100 PMID: 22486139

11. 11. Atif QAA, Khan MA, Nadeem F, Ullah M. Health-Related Quality of Life After Laparoscopic Cholecystectomy. Cureus. 2022 Jul 11;14(7). DOI: 10.7759/cureus.26739

12. Daliya P, Gemmill EH, Lobo DN, Parsons SL. A systematic review of patient reported outcome measures (PROMs) and quality of life reporting in patients undergoing laparoscopic cholecystectomy. Hepatobiliary Surg Nutr. 2019 Jun;8(3):228-245.
DOI: 10.21037/hbsn.2019.03.16
PMID: 31245403 PMCID: PMC6561890

13. Ito E, Takai A, Imai Y, Otani H, Onishi Y, Yamamoto Y, et al. Quality of life after single-incision laparoscopic cholecystectomy: A randomized, clinical trial. Surgery. 2019 Feb 1;165(2):353-359.
DOI: 10.1016/j.surg.2018.08.004
PMID: 30314725

14. Carraro A, El Mazloum D, Bihl F. Health-related quality of life outcomes after cholecystectomy. World J Gastroenterol. 2011;17(45):4945-4951.
DOI: 10.3748/wjg.v17.i45.4945
PMID: 22174543 PMCID: PMC3236586

15. Lamberts MP, Den Oudsten BL, Gerritsen JJGM, Roukema JA, Westert GP, Drenth JPH, et al. Prospective multicentre cohort study of patient-reported outcomes after cholecystectomy for uncomplicated symptomatic cholecystolithiasis. Br J Surg. 2015 Oct 1;102(11):1402-1409.
DOI: 10.1002/bjs.9887
PMID: 26201942

16. Bülent Mentes B, Akin M, Irkörücü O, Tatliciolu E, Ferahköe Z, Yildinm A, et al. Gastrointestinal quality of life in patients with symptomatic or asymptomatic cholelithiasis before and after laparoscopic cholecystectomy. Surg Endosc. 2001;15(11):1267-1272.
DOI: 10.1007/s00464-001-9015-8
PMID: 11727131

17. Jaisawal R, Mishra C, Panthee MR, Pathak YR, Acharya A. Prevalence of gall stone disease in nepal: multi center ultrasonographic study. Post-Graduate Medical Journal of NAMS. 2007;7:45-9.

18. The World Health Organization quality of life assessment (WHOQOL): Position paper from the World Health Organization. Soc Sci Med. Pergamon. 1995 Nov 1;41(10):1403-1409.
DOI: 10.1016/0277-9536(95)00112-K
PMID: 8560308

19. Haraldstad K, Wahl A, Andenæs R, Andersen JR, Andersen MH, Beisland E, et al. A systematic review of quality of life research in medicine and health sciences. Qual Life Res. 2019 Oct 1;28(10):2641-2650.
DOI: 10.1007/s11136-019-02214-9
PMID: 31187410 PMCID: PMC6761255

20. Eypasch E, Williams JI, Wood-Dauphinee S, Ure BM, Schmulling C, Neugebauer E, Troidl H. Gastrointestinal Quality of Life Index: development, validation and application of a new instrument. Br J Surg. 1995;82(2):216-222.
DOI: 10.1002/bjs.1800820229
PMID: 7749697

21. Wennmacker S, Lamberts M, Gerritsen J, Roukema JA, Westert G, Drenth J, et al. Consistency of patient-reported outcomes after cholecystectomy and their implications on current surgical practice: a prospective multicenter cohort study. Surg Endosc. 2017 Jan 1;31(1):215-224.
DOI: 10.1007/s00464-016-4959-x
PMID: 27194258 PMCID: PMC5216116

22. Quintana JM, Aróstegui I, Cabriada J, López De Tejada I, Perdigo L. Predictors of improvement in health-related quality of life in patients undergoing cholecystectomy. Br J Surg. 2003 Dec;90(12):1549-1555.
DOI: 10.1002/bjs.4345
PMID: 14648735