https://doi.org/10.29309/TPMJ/2024.31.02.7885

The Professional Medical Journal
www.theprofesional.com
2024, Volume, 31 Issue, 02

ORIGINAL ARTICLE

Comparative study of morbidity of open cholecystectomy vs laparoscopic cholecystectomy in complicated gall stone disease.

Usama Shabbir[1], Jamal Anwar[2], Shahbaz Hussain[3], Mubashar Abrar[4], Ayesha Akram[5], Muhammad Ahsan[6], Ameer Afzal[7]

Article Citation: Shabbir U, Anwar J, Hussain S, Abrar M, Akram A, Ahsan M, Afzal A. Comparative study of morbidity of open cholecystectomy vs laparoscopic cholecystectomy in complicated gall stone disease. Professional Med J 2024; 31(02):160-164. https://doi.org/10.29309/TPMJ/2024.31.02.7885

ABSTRACT… Objective: To evaluate the resist of minimally invasive surgery i.e. laparoscopic cholecystectomy versus open cholecystectomy in cases with complex gallstone diseases. **Study Design:** Prospective study. **Setting:** North Surgical Ward, Mayo Hospital Lahore. **Period:** 11th July 2020 till 10th January 2021. **Material & Methods:** A total of 372 patient's fulfilling the criterion was included for study in group-A Laparoscopic cholecystectomy was done. In group B open cholecystectomy was done which includes 86 patients. The entire patient received injection Ketorolac 30 mg i.e. 8 hourly and postoperative injection Nelbufin 6 mg i.v.12hourly as standard in all patients and Post-operative pain was assessed Visual analogy scale after 24 hours. **Results:** The mean age of patients in open group was 41.28 ± 13.75 years and in Laparoscopic group was 43.46 ± 13.90 years. In Open group there were 80(43%) male and 106(57%) female cases while in Laparoscopic group there were 65(34.9%) male and 121(65.1%) female cases. The mean hospital stay was statistically shorter in Laparoscopic group (3.80 ± 1.37 days) as compared to Open group (5.12 ± 1.58 days), p-value <0.001. In open group 77(41.4%) cases had post-operative pain and in Laparoscopic group 27(14.5%) cases had post-operative pain. The post-operative pain was statistically higher in open groups, p-value < 0.001. **Conclusion:** Laparoscopic is an ideal treatment option in terms of less pain and shorter duration of hospital stay as compared to open cholecystectomy for patients with complicated gallstone disease.

Key words: Cholecystectomy, Complicated Gallstone, Hospital Stay, Infection, Laparoscopy, Post-operative Pain.

INTRODUCTION

Concretions in the Gall bladder is one of the main etiology with which a Large number of patients mostly females present in the surgical outpatient department all over the world. In developed countries of the world, Cholelithiasis is seen in around 24% of the patients presenting.[1]

Complications later on which can further raise the associated morbidity included chronic inflamed GB, gangrenous GB or empyema of the GB. These conditions make the dissection process done during the surgery of the gall bladder more difficulty, especially when dissecting around Calot's triangle, risking injury to the common bile duct, hepatic artery or its branches.[2]

Cholecystectomy is now the standard treatment modality for gall stone disease.[3] After multiplied episodes of acute cholecystitis, gall bladder removal is the main treatment, which can be done with Laparoscopy. The decision of time of surgery is crucial and opinion of surgeons varies around the globe.[4] Laparoscopic cholecystectomy (IC) has been regarded as best possible management and standard of care of symptomatic gall stone disease.[5] Laparoscopic surgery has revalorized the management of cholelithiasis. Open Surgical procedure is the Last step in the management of symptomatic GB disease if Lithotripsy and Laparoscopic cholecystostomy is not successful (5). In patients with complicated inflammatory GB disease, subtotal cholecystectomy is safe and easy for the surgeons.[6]

1. MBBS, FCPS, District Consultant Surgery, THQ Hospital, Hasilpur.
2. MBBS, FCPS, Senior Registrar Surgery, Mayo Hospital, Lahore.
3. MBBS, FCPS, Consultant Anesthesia, PKLI.
4. MBBS, Registrar Surgery, Nusrat Faeteh Ali Khan Hospital, Faisalabad.
5. MBBS, Medical Officer Surgery, CMH Kharian Medical College, Kharian.
6. MBBS, PGPN, Medical Officer Pediatrics, Nusrat Faeteh Ali Khan Hospital, Faisalabad.
7. MBBS, FCPS, Professor Surgery, Mayo Hospital, Lahore.

Correspondence Address:
Dr. Usama Shabbir
District Surgeon
THQ Hospital Hasilpur.
usama229@ gmail.com

Article received on: 26/09/2023
Accepted for publication: 29/11/2023

In one of the studies done in Pakistan, post-operative pain was 38% in open cholecystectomy patients and 24% in Laparoscopic cholecystectomy patients (p- 0.005), wound sepsis was seen in 30% patients in OC Vs. 16% patients in IC group as port site sepsis. The mean hospital stay in OC group was 5.96±3.20 days and IC group was 3.5±2.50 (p=0.001) days.[7]

The aim of this study was to compare the outcome of open versus Laparoscopic cholecystectomy in patients with complicated gallstone disease as local data is lacking.[8] It can help in early discharge of the patient from the hospital, decreasing the nosocomial infection, work load to the hospital, economic burden and quantity of analgesia needed in post-operative days.

MATERIAL & METHODS

This research was conducted in North Surgical ward, Mayo hospital Lahore, six months after approval from the hospital ethical review committee via letter number 330/RC/KEMU. Patient of either gender age group 18 – 65 years and patients with complicated gallstone disease. Outcome of this study was determined in terms of post-operative pain and mean hospital stay. Post-operative Pain was measured on visual analogue score (VAS) varying from 0-10 (0 shows no pain and 10 shows worse pain) and was assessed on 24 hours, pain was considered if > 3. Hospital stay was measured once patient was shifted in ward after surgery till his discharge, in days. All patients were discharged once they were oral and tolerating oral diet. Patient with comorbid features (previous history of diabetes, hypertension, cardiac or CVA), carcinoma gall bladder, obstructive jaundice acalculus cholecystitis and pancreatitis and not giving informed consent.

After approve from hospital ethical committee (330/RC/KEMU), patients fulfilling incision criteria was admitted from out-patient department and emergency department. The diagnosis of complicated gallstone disease was made on the basis of history, clinician examination and ultrasonography. Total of 372 patients fulfilling the criteria was included for study. A written informed consent was taken from every patients participating in this study.

The patient was randomly divided into two equal groups. In group-A Laparoscopic cholecystectomy was done. Each patient of both the groups received identical general anesthesia. At introduction, it is 1to 2 ml/kg propofol, 0.05 mg/kg atracurium. During reversal, 2.5-5.0 mg neostigmine and 1.2-2.4 mg atropine was used. In group B open cholecystectomy was done which includes 86 patients. The surgery was performed in North Surgical ward by consultant surgeon. Injection Ceftriaxone 1 gram I.V. was given half hour before surgery and then surgery was performed according to the randomization. Patients received injection Ketorolac 30 mg i.v. 8 hourly and postoperative injections Nelbufin 6 mg i.v.12hourly as standard in all patients and Post-operative pain was assessed Visual analog scale after 24 hours. Patients were discharged according to the hospital guidelines for discharge of the patient. All the patients were folioed up in OPD on 7th day for post-operative compilations observation, monitoring and biopsy report. Data was entered in SPSS-20 version.

RESUITS

The mean age of patients in open group was 41.28 ± 13.75 years and in Laparoscopic group was 43.46 ± 13.90 years. Table-I

Groups	Age (years)			
	Mean	S.D	Minimum	Maximum
Open	41.28	13.75	18.00	65.00
Laparoscopy	43.46	13.90	18.00	65.00
Total	42.37	13.85	18.00	65.00

Table-I. Descriptive statistics of Age (years) in both study groups

In Open group there were 80(43%) male and 106(57%) female cases while in Laparoscopic group there were 65(34.9%) male and 121(65.1%) female cases. Table-II

		Groups		total
		Open	Laparosco-py	
Gender	Male	80(43.0%)	65(34.9%)	145(39.0%)
	Female	106(57.0%)	121(65.1%)	227(61.0%)
Total		186(100.0%)	186(100.0%)	372(100.0%)

Table-II. Gender distribution in both study groups

The mean hospital stay was statistically shorter in Laparoscopic group (3.80 ± 1.37 days) as compared to Open group (5.12 ± 1.58 days), p-value <0.001. Table-III

Groups	Hospital Stay (days)			
	Mean	S.D	Minimum	Maximum
Open	5.12	1.58	3.00	8.00
Laparoscopy	3.80	1.37	2.00	7.00
Total	4.46	1.62	2.00	8.00

Table-III. Showing mean Hospital Stay in both the study groups
t- Test = 8.60 p-value < 0.001

In open group 77(41.4%) cases had post-operative pain and in Laparoscopic group 27(14.5%) cases had post-operative pain. The post-operative pain was statistically higher in open groups, p-value < 0.001. Table-IV

		Groups		total
		Open	Laparoscopy	
Pain	Yes	77(41.4%)	27(14.5%)	104(28.0%)
	No	109(58.6%)	159(85.5%)	268(72.0%)
Total		186(100.0%)	186(100.0%)	372(100.0%)

Table-IV. Showing pain score in both the study groups
Chi-square = 33.367 P-value ≤ 0.001q

When data was stratified for age, gender, types of complicated disease, duration of disease and BMI, the mean duration of hospital stay and post-operative pain was statistically lower in Laparoscopic group as compared to open group, p-value < 0.05.

DISCUSSION

Formations of stones inside the gall bladder can lead to significant morbidity. Around 4.3% of the total population is affected by this condition.[9] Open cholecystectomy, first performed in 19th century by Carl August Langenbuch as the treatment of gall stone disease.[10] Various methods including some oar medicines which help in the dissolving the stones inside the gall bladder and lithotripsy exist for management of this condition.[11] Open surgery has been the gold standard treatment in the management of gall stones but with the advancement of the Laparoscopy, IC has become the ideal treatment, and it is now performed very commonly all around the globe.[12] With the advancement of Laparoscopy, the technique has improved along with patient satisfaction. With better pain relief, minimum requirement of post-op analgesic, small hospital stay, and early return of the patient to routine Life, IC has improved outcome when compared to OC.[13]

Still there are some pitfalls in this technique. These included 3-D perception is Limited because of the monocular image generated on the display screen and difficulty in the control of beading during the surgery disturbing the surgery and outcome of the procedure.[14] Direct visualization of the structures make surgery more easy in open chole as compared to IC.[15] One of the major complications that is difficulty to control during the IC is bile Leakage and bile duct injury. Success rate and better outcome of IC are directly proportional to the surgeon Learning curve. Along with knowledge, comparatively a higher cost of the setup for IC is also a point of comparison of IC and OC.[16] In the areas where mature and advanced setups are difficult to manage, OC is still the preferred procedure. Studies should be done in under-developed and developing countries, comparing all the variables affecting the outcome of these two procedures.[17]

In the current study, the mean age of patients in the open group was 41.28 ± 13.75 years and in the Laparoscopic group was 43.46 ± 13.90 years. The mean age in both groups is almost the same. A study reported that out of 100 patients there was female preponderance with a male to female ratio of 1:1.5 in group A and 1:3.5 group B.[18] We also found that in the Open group there were 80(43%) male and 106(57%) female cases while in the Laparoscopic group there were 65(34.9%) male and 121(65.1%) female cases. The findings regarding a higher female ratio are similar in both studies.

A study done on complicated gallstone disease reported that the meantime in OC group was 54.90±15.90 minutes and IC group was 48.30±12.96 minutes (p 0.026). No mortality was reported in this series. Thus, it can be concluded that IC is safe, effective and comparatively better technique for complicated cases of gall bladder. The mean operation was not our core variable

so, in current study the mean hospital stay was statistically shorter in Laparoscopic group (3.80 ± 1.37 days) as compared to Open group (5.12 ± 1.58 days), p-value <0.001. In the current study, 77(41.4%) cases in open group had post-operative pain and in Laparoscopic group 27(14.5%) cases had post-operative pain. The post-operative pain was statistically higher in open groups, p-value < 0.001. Another study reported almost similar findings, i.e. post-operative pain was 38% in open cholecystectomy patients and 24% in Laparoscopic cholecystectomy patients (p- 0.005), wound sepsis was seen in 30% of patients in OC Vs. 16% patients in IC group as port site sepsis. The mean hospital stay in OC group was 5.96±3.20 days and IC group was 3.5±2.50 (p=0.001) days.

Another study concluded mean post op hospital stay of patients with IC was 1.8 days and 4.8 days among the patients of OC. Patients resumed normal routine diet in around 2.1 days in patients operated for OC and around 1.2 days in the patients operated for IC. Prevalence of surgical site infection (SSI) was more in patient's operated of OC as compared to IC.

After all this discussion and from the results of our study, IC leads among all the management options of gall bladder disease and it can be recommended to all the surgeons as a preferred choice with better cosmetic results, lesser pain, lesser post-operative hospital stay and fewer incidence of surgical site infection.

CONCIUSION

Through the findings of this study it is concluded that Laparoscopic is an ideal treatment option in terms of less pain and shorter duration of hospital stay as compared to open cholecystectomy for patients with complicated gallstone disease. By opting Laparoscopic treatment option we can decrease the nosocomial infection, work load to the hospital, economic burden and quantity of analgesia needed in post-operative days.

REFERENCES

1. Dimou FM, Adhikari D, Mehta HB, Riall TS. **Trends in foiiow-up of patients presenting to the emergency department with symptomatic choieiithiasis.** Journal of the American College of Surgeons. 2016; 222(4):377-84.
2. Bansal VK, Misra MC, Agarwal AK, Agrawal JB, Agarwal PN, Aggarwal S, et al. **SEISI Consensus statement for safe cholecystectomy — prevention and management of Bile Duct Injury — Part A.** Indian Journal of Surgery. 2019; 83(8).
3. Igwe PO, Diri ON. **Laparoscopic cholecystectomy for giant gall stone: Report of two cases.** Int J Surg Case Rep. 2020; 67:207-10.
4. Peel JK, Schlachta CM, Alkhamesi NA. **A systematic review of the factors affecting choice of surgery as a career.** Canadian journai of Surgery Journal Canadien de Chirurgie. 2018; 61(1):58-67.
5. Taki-Eldin A, Badawy A. **Outcome of Laparoscopic cholecystectomy in patients with gallstone disease at a secondary ievei care hospital.** Arq Bras Cir Dig. 2018; 31(1):e1347-e.
6. Shin M, Choi N, Yoo Y, Kim Y, Kim S, Mun S. **Clinical outcomes of subtotal cholecystectomy performed for difficult cholecystectomy.** Ann Surg Treat Res. 2016; 91(5):226-32.
7. Barazanchi AWH, MacFater WS, Rahiri JI, Tutone S, Hill AG, Joshi GP, et al. **Evidence-based management of pain after Laparoscopic cholecystectomy: A PROSPECT review update.** British journal of anaesthesia. 2018; 121(4):787-803.
8. Pisano M, Ceresoli M, Cimbanassi S, Gurusamy K, Coccolini F, Borzellino G, et al. **2017 WSES and SICG guidelines on acute calcolous cholecystitis in elderly population.** World Journal of Emergency Surgery. 2019; 14(1):10.
9. Bilal M, Haseeb A, Saad M, Ahsan M, Raza M, Ahmed A, et al. **The prevaience and risk factors of gallstone among aduits in Karachi, South Pakistan: A Population-Based Study.** Global Journal of Health Science. 2016; 9:106.
10. Tang CI, Schlich T. **Surgical innovation and the muitipie meanings of randomized controiied triais: The first RCT on minimaiiy invasive cholecystectomy (1980-2000).** J Hist Med Allied Sci. 2017; 72(2):117-41.
11. Portincasa P, Ciaula AD, Bonfrate I, Wang DQ. **Therapy of gallstone disease: What it was, what it is, what it will be.** World J Gastrointest Pharmacol Ther. 2012; 3(2):7-20.

12. Shojaiefard A, Esmaeilzadeh M, Ghafouri A, Mehrabi A. **Various techniques for the surgicai treatment of common biie duct stones: A meta review.** Gastroenterol Res Pract. 2009; 2009:840208.

13. Mandrioli M, Inaba K, Piccinini A, Biscardi A, Sartelli M, Agresta F, et al. **Advances in Laparoscopy for acute care surgery and trauma.** World J Gastroenterol. 2016; 22(2):668-80.

14. Bloch E, Uddin N, Gannon I, Rantell K, Jain S. **The effects of absence of stereopsis on performance of a simulated surgical task in two-dimensional and three-dimensional viewing conditions.** The British journai of ophthaimoiogy. 2015; 99(2):240-5.

15. Gupta V, Jain G. **Safe Laparoscopic cholecystectomy: Adoption of universal culture of safety in cholecystectomy.** World J Gastrointest Surg. 2019; 11(2):62-84.

16. Rosenmüller MH, Nilsson E, lindberg F, Åberg S-O, Haapamäki MM. **Costs and quality of life of small-incision open cholecystectomy and Laparoscopic cholecystectomy - an expertise-based randomised controlled trial.** BMC Gastroenterol. 2017; 17(1):48.

17. Musbahi A, Abdulhannan P, Bhatti J, Dhar R, Rao M, Gopinath B. **Outcomes and risk factors of cholecystectomy in high risk patients: A case series.** Ann Med Surg (lond). 2020; 50:35-40.

18. Bazoua G, Tilston MP. **Male gender impact on the outcome of laparoscopic cholecystectomy.** JSIS: Journal of the Society of laparoendoscopic Surgeons. 2014; 18(1):50-4.

AUTHORSHIP AND CONTRIBUTION DECLARATION

No.	Author(s) Full Name	Contribution to the paper	Author(s) Signature
1	Usama Shabbir	Data entry/ Analysis, Data collection.	
2	Jamal Anwar	Data entry, Review of paper.	
3	Shahbaz Hussain	Data analysis, Review of Discussion.	
4	Mubashar Abrar	Paper writing & Analysis.	
5	Ayesha Akram	Data entry & Analysis.	
6	Muhammad Ahsan	Data analysis, Paper writing.	
7	Ameer Afzal	Supervision of article write & research.	