ORIGINAL ARTICLE

LAPAROSCOPIC AND OPEN CHOLECYSTECTOMY: A COMPARATIVE STUDY DONE IN A SMALL CITY - BIDAR

Yogesh G. Biradar¹, Nagraj Mitra²

HOW TO CITE THIS ARTICLE:

Yogesh G. Biradar, Nagraj Mitra. "Laparoscopic and Open Cholecystectomy: A Comparative Study Done in a Small City - Bidar". Journal of Evolution of Medical and Dental Sciences 2015; Vol. 4, Issue 07, January 22; Page: 1166-1172, DOI: 10.14260/jemds/2015/164

ABSTRACT: Cholecystectomy is one of the most frequently performed operations. This study was undertaken to compare the results of Laparoscopic Cholecystectomy (L C) with Open Cholecystectomy (O C). In this study total 275 patients underwent cholecystectomy, of which 110 patients underwent by laparoscopic and remaining 165 patients underwent by open method. In this study duration of surgery, length of hospital stay, postoperative pain, postoperative complications and cost of surgery were compared in two groups. Duration (period) of hospital stay, post-operative pain and post-operative complication were much less in case of laparoscopic group, whereas duration of surgery and cost of surgery are slightly higher in laparoscopic group when compared to O C group. L C is a safe and valid alternative to O C. This technique has low rate of complications, implies a shorter hospital stay and offers the patient a more comfortable post-operative period than O C.

KEYWORDS: Laparoscopic cholecystectomy, Open cholecystectomy, Post-operative complications.

INTRODUCTION: Gall stones are one of the major causes of morbidity in the society. Until the end of 1980 Open Cholecystectomy (O C) was the gold standard treatment for the stones in the gall bladder. Laparoscopic Cholecystectomy (L C) was introduced in 1985 and rapidly become the method of choice for surgical removal of gall bladder. No other surgical procedure has had such a dramatic and pivotal impact on abdominal surgery as L C. Since its introduction L C is considered as the gold standard operation for symptomatic Cholelithiasis.

The indications of L C are same as that of for O C. The advantages to the patients in terms of pain stay in the hospital, recovery time, costs and cosmetic results are considerable. With increasing popularity of L C the surgical community became concerned about increase in complications that were even more pronounced with less surgical experience and training.

PATIENTS AND METHODS: This comparative study was conducted in Bidar Institute of Medical Sciences (BRIMS) Hospital Bidar and Sushruta Nursing Home Bidar between Jan-2007 to Dec-2010. In this study 110 patients underwent L C and 165 patients underwent O C.

Age group in years	L C	O C
21-40	34	53
41-60	71	106
61-80	05	06
Total	110	165

The age of the patient ranged from 21 to 80 years with a median age of 50 years

ORIGINAL ARTICLE

Sex	L C	O C
Male	12	17
Female	98	148

The female to male ratios were 8.17:1 in L C group and 8.7: 1 in O C group

All patients underwent routine investigations including liver function tests. The main diagnostic investigations was Ultrasonography (USG) of the abdomen to conform cholelithiasis or other abnormalities in the gall bladder and the biliary tree. Only peptic ulcer disease suspected patients underwent upper GI endoscopy. Patients with comorbid conditions such as diabetes, hypertension, chronic pulmonary disease, cardiac illness etc were excluded from the study. Patients with jaundice and of biochemical or radiological evidence of stones in the Common Bile Duct (CBD) were excluded from the study.

Clinical presentation (Symptoms)	Number of cases
Right hypochondriac pain	120
Post prandial fullness	76
Nausea	42
Vomiting	30
Heart burn	32
Belching	31
Fever	23
The indications for L C were same as that of O C	

Most of the patients had chronic calculus cholelithiasis both in laparoscopic and open group. 20 cases in L C and 24 cases in O C group had acute cholelithiasis.

The patients were assigned to one of the groups at random. All the patients were operated after informed consent under general anesthesia. The O C was performed through a 12 to 15 cm right sub costal incision which involved cutting of rectus muscle to give access to the peritoneal cavity. In L C a standard 4 ports technique was used in all patients. Endo diathermy was used for haemostasis and liga clips were used for cystic duct and cystic artery occlusion. The gall bladder was dissected from the liver bed with diathermy and removed via the epigastric port site with endobag. Pre or per operative cholangiogram was not done in any of the cases. Three doses of prophylactic antibiotics in the form of third generation cephalosporins were used. Drains were kept in the gall bladder bed in only selective cases.

RESULTS: In this study 110 patients underwent L C and 165 patients underwent O C Majority of the cases were females and in the age group 41 to 60 years. The operating time for L C was more as compared to O C

ORIGINAL ARTICLE

Graph I: Operating time

Form L C group 6 cases had to be converted O C. Out of 6 cases 3 cases were due to continuous haemorrhage from the cystic artery due to slippage of clips, in 2 cases there was biliary leakage from the sloughed off stump of cystic duct and in one case the CHD was injured due to electrocautery during the dissection.

Drain (Duration)	L C	O C
No drain	50	22
< 12 hours	18	35
12-24 hours	35	93
24-40 hours	07	15

Duration of drain kept (Table I)

Graph II: Hospital stay

ORIGINAL ARTICLE

The average analgesic dosage administered on demand was used as an index of post-operative pain. The average dosage of Tramadol hydrochloride and Diclofinac Sodium were lower after L C (40mg Tramadol HCl and 300mg of Diclofinac Na) than in O C (120 mg Tramadol HCl and 675 mg of Diclofinac Na).

Drains were less frequently required in L C (Table I). The duration of hospital stay was also less in L C as compared to O C (Graph II). The comparison of complications between the two groups are mentioned in Graph III. There was no mortality in our series.

The mean cost of per patient for open cholecystectomy O C was estimated at Rs.17, 750 and for L C was Rs. 21, 350. This cost was from the time of admission till the time of discharge.

DISCUSSION: Carl Langenbuch stated that gall bladder should to removed not because it contains stones, but because it forms them.^[1] The goal of both laparoscopic and open techniques is to safely remove the gall bladder with low mortality, little morbidity and early recovery.^[2] L C is a minimal invasive procedure where by gall bladder is removed using laparoscopic technique. The indication are same as for O C. A successful outcome is dependent on proper patients selection, meticulous technique and a positive attitude towards conversion to O C.^[3]

Laparoscopic technique is difficult to master provided that one has had sufficient experience in open biliary surgery and has additional training in laparoscopic surgery. It is important to be fully familiar with the instruments and technique Complications during such an operation.^[4] L C may be safely performed in patients with acute Cholecystitis irrespective of the time since the onset of symptoms.^[5]

Most of the contraindications for laparoscopic procedure are now relative because of improvements and refinements in techniques and instruments which allow laparoscopic exploration of common bile duct. Contraindication for L C are inability to tolerate general anaesthesia, end stage liver disease with portal hypertension, precluding safe portal dissection and coagulopathy. Severe COPD (Chronic Obstructive Pulmonary Disease) and congestive heart failure are considered relative contraindications.^[6]

ORIGINAL ARTICLE

Mean operative time in our series was significantly longer in L C group. This is because the surgery and operative team must get used to managing the laparoscopic material and need time to master the laparoscopic technique. The average operative time L C was comparable to other modern series.^[7,8,9,10]

In this series there were 6 conversions from laparoscopic to open procedure. In 3 cases clip was slipped off from the cystic artery causing profuse bleeding and the patient had to be converted to O C. In 2 cases there was biliary leakage due to sloughed off cystic duct stump which was open and in 1 case there was biliary leakage due to common hepatic duct injury which was managed by putting a T tube in. The complications that occur with L C may occur with O C also but their frequency very.^[11]

Such complications include hemorrhage, bile duct injury, over looked CBD stones, bile leak, perihepatic collection and infection.^[12]

This study has been able to show that L C allows faster patient recovery and early discharge from the Hospital than after O C. The speed of recovery is similar to that reported by other European studies for laparoscopic surgery.^[13,14,15]

In L C the post-operative pain and analgesics required was much lesser compared to O C because in L C pain symptoms are usually minor and localized at the port points and in the shoulder which is due to irritating action of CO₂ on the diaphragm. In O C analgesics are administered for longer duration as the procedure itself is more traumatizing. This is in comparison with other studies.^[16]

In our study post-operative complications in O C are much higher than in the L C group. Similar figures were reported in many of the series.^[9,10,17,18]

In a series as studied by Strasberg, pulmonary complications were twice as common after O C.^[19] In our series L C was costing more compared to O C. This is due to operation theatre costs and equipment costs which are higher in L C group. This is in comparison with many of the western study series in which O C was costlier due to very high nursing and hospital stay (bed) charges in comparison to Indian scenario.^[20,21]

Our experience like other authors^[22,23,24,25] reveal shorter hospital stay, early recovery, faster return to work and fewer complications in patients of L C. This accounts for lesser cost of L C although the operation expenses are more because of expensive instruments.

CONCLUSION: L C is a safe and valid alternative to O C. This technique has a low rate of complications, implies a shorter hospital stay and offers the patient a more comfortable post-operative period than in O C. L C has proven to be a safe procedure with low morbidity and on equal mortality rate as compared to O C. In small places like Bidar where most of the patients are from rural areas with low socio-economic and literacy status; people should be made aware of advantages of laparoscopic procedure such as early discharge from hospital, early recovery and return to normal work by which number of working days/ per day per capita income can be saved. By this, the little extra cost of laparoscopic procedure can be made easily acceptable. Over a period of time as the operating surgeon becomes more expert, duration of surgery factor can be overcome.

ACKNOWLEDGEMENT: With profound sense of gratitude and with utmost reverence, I take this opportunity to thank Dr. R.G. Gudsoorkar Rtd. Professor & HOD of Surgery. Bidar Institute of Medical Sciences, Bidar, who with his divine ability has helped me in preparing this research article.

ORIGINAL ARTICLE

I also take this opportunity to thank all my colleagues, resident doctors and house surgeons of Department of Surgery and Dr. Dilip Rathod Assistant Professor, Department of PSM for their valuable suggestion, co-operation and help.

I am grateful to my father Dr. G.S. Biradar and my wife Dr. Gayathridevi for their constant encouragement and inspiration

Lastly I am thankful to Mr. Rajkumar Kamble for his excellent effort in composition of this Article.

REFERENCES:

1. Oslen D O (1993). Mini versus Lap cholecystectomy. *Am J Surg*.165:440-443.
2. Dirksen CD, Schmitz RF, Hans KM. Nieman FH, Hooqenboom L. J. GOPM (2001) Ambulatory Laparoscopic Cholecystectomy is as effective as Hospitalisation from a social perspective and less expensive. *Ned Jijdschr Geneesh* 15:2434-2439.
3. Lan CM, Murray FE, Cuscheiri A. (1996) Increased Cholecystectomy rate after the introduction of Laparoscopic Cholecystectomy in Scotland. *Gut* 38:282-284.
4. Dent LT, (1991) Training, crendentia and granting of clinical privileges for Laparoscopic general surgery. *Am J Surg* 161(3): 399-403
5. Baiju Senadhipan, Sreekanth S Kumar, Srikanth Damodaran Pillai. (2013) Laproscopic Cholecystectomy for Acute Cholecystitis: Does timing matter? *Indian J Surg* 75(4):268-270
6. Patrick G. Jackson and Steven R.T. Evans (2012) Biliary System. *Sabiston Textbook of Surgery* 2.1491-1492.
7. Mitchell DIG, Du Quesnay DR. McCartney T, Bhoorasingh. P (1996) Laparoscopic Cholecystectomy in Jamica. *West Indian Med J* 45:85-88.
8. Talamini. M, Gadacz T (1992) Laparoscopic approach to cholecystectomy. *Advances in Surgery* 25:01-21.
9. Soper NJ, Flye MW, Brunt LM, Stockmann PT, Sicard GA, Picus D et al. (1993) Diagnosis and management of biliary complications of laparoscopic cholecystectomy. *Am J. Surg*165:663-669.
10. Peters J H, Ellison EC, Innes JT, Liss JL, Nichols KE, Lomano JM et al. (1991) Safety and efficacy of laparoscopic cholecystectomy. A prospective analysis of 100 initial patients. *Ann Surg* 213:03-12.
11. Deziel DJ, Millikan KW, Econnomou SG. (1993) Complication of Laparoscopic Cholecystectomy. A national survey of 1, 292 hospitals and an analysis of 77, 604 cases. *Am J Surg*: 165-169.
12. Zucker KA, Bailey RW, Gadacz TR, Imbembo AL, (1991) Laparoscopic Cholecystectomy *Am J Surg*.161: 36-34.
13. Olsen DO (1991) Laparoscopic Cholecystectomy *Am J Surg*.161:339-344.
14. Neugebauer E, Troidl H, Spangenberger W, Dietrich A, Lefring R and the Cholecystectomy study Group (1991) Conventional versus Laparoscopic Cholecystectomy and the randomized trial *Br. J Surg*.78: 150-154.
15. Grace Pa, Quereshi A, Coleman J et al. (1991) Reduced Postoperative hospitalization after laparoscopic cholecystectomy. *Br.J Surg*. 78. 160-162.
16. Lorente J (1992) Laparoscopic Cholecystectomy in the ambulatory surgery setting. *J. Laparoendosc Surg*.2:23.
17. Gadacz TR (2000) Update on laparoscopic Cholecystectomy, including clinical pathology *Surg Clin North Amer*.80:1127-1149.

ORIGINAL ARTICLE

18. The Southern Surgeon's Club (1991) A prospective analysis of 1518 laparoscopic cholecystectomies N Engl J. Med: 324: 1073-1077.
19. Strasberg SM (1999) Laparoscopic biliary surgery. Gastroenterol Clin North Amer. 28: 117-132.
20. Fullarton GM, Darling K, Williams J, Macmillan R and Bell G (1994) Evaluation of the cost of laparoscopic and open cholecystectomy Br J. Surg, 81: 124-126.
21. I Gangan, S.Duca, Ovidiu Bala, Nadim AL Hajjar, A. R. Cota (2004) Acute Cholecystitis, Laparoscopic Cholecystectomy versus open Cholecystectomy. Timisoara Medical Journal 1: 01-05.
22. Gerlad ML et al (1992) Multipractice analysis of Laparoscopic Cholecystectomy in 1983 patients Am J. Surg: 163-221.
23. Berggeren U. et al (1994) Laparoscopic versus Open Cholecystectomy. Hospitalization, sick leave, analgesic and trauma response. Br. J. Surg. 81:1362-1365.
24. White J (1993) Laparoscopic Cholecystectomy and new and evolving Laparoscopic techniques Am J. Surg. 165: 536-540.
25. Shamim M, Dahri MM, Memon AS (2006) Complications of Laparoscopic Cholecystectomy. Pak J. Surg.22: 70-77.

AUTHORS:

1. Yogesh G. Biradar
2. Nagraj Mitra

PARTICULARS OF CONTRIBUTORS:

1. Assistant Professor, Department of Surgery, Bidar Institute of Medical Sciences, Bidar.
2. Senior Resident, Department of Surgery, Bidar Institute of Medical Sciences, Bidar.

NAME ADDRESS EMAIL ID OF THE CORRESPONDING AUTHOR:

Dr. Yogesh G. Biradar,
H. No. 08-06-35,
J. P. Nagar, Behind Government
Medical College,
Bidar-585401.
E-mail: ybiradar01@gmail.com

Date of Submission: 03/01/2015.
Date of Peer Review: 04/01/2015.
Date of Acceptance: 13/01/2015.
Date of Publishing: 20/01/2015.