International Journal of Medical and Health Research

Volume: 1, Issue: 1, 25-27
Aug 2015
www.medicalsjournals.com
ISSN: 2454-9142

Jatinkumar Bipinchandra Modi
Department of surgery, GMERS medical College, Gotri, Vadodara, Gujarat, India.

Type of manuscript: Original research article

Correspondence
Jatinkumar Bipinchandra Modi
Department of surgery, GMERS medical College, Gotri, Vadodara, Gujarat, India.

A randomized study of patients undergoing cholecystectomy either open or laparoscopic method

Jatinkumar Bipinchandra Modi

Abstract
Background and Objectives: To compare the results of open with laparoscopic cholecystectomy regarding their operative time, postoperative parameters and morbidity
Methods: A Retrospective chart review was conducted of 100 patients, which were randomized select patients undergoing cholecystectomy. The materials for the clinical study were collected from cases admitted in Smt. NHL Municipal Medical College and Smt. SCL Hospital during the period from May 2011 to October 2013. Patients were belonged to any age groups. The cases were compared for operative time and various postoperative parameters in order to assess the advantages and disadvantages of each procedure. The patients were divided into three groups, group OC for open, group LC for laparoscopic cholecystectomy and group LC->OC for laparoscopic convert to open method.
Results: Out of 100 patients, laparoscopy was the method used in 73 patients among whom 12 had to be converted to open surgery intra-operatively and 61 were completed by laparoscopy and 27 of the patients were offered open cholecystectomy primarily. The timing of operation to be completed post-induction of anesthesia was considerably longer in laparoscopy (average 1.9 hours) as compared to open surgeries (average 0.99 hours). Those converted from laparoscopy to open surgeries had significantly higher time (average 2.25 hours), which is explainable by maneuvers to correct the pathology both by laparoscopy and open methods. In post operative complication wound infection occurred 6% in open case (1% case included in which laparoscopic method convert to open) compare 0% in laparoscopic cases. Hospital stay was shorter in laparoscopic group (2-4 days) compare to open group (4-6 days).
Conclusion: Laparoscopy continues to be the gold standard operative procedure for cholecystectomy, with 3/4th patients being primarily offered laparoscopy. The laparoscopic cholecystectomy is superior to open cholecystectomy due to short operative time, early mobilization and fast recovery, less postoperative pain and complications, short hospital stay and early return to work.

Keywords: Cholecystectomy, open, laparoscopic

1. Introduction
Gastrointestinal surgery has undergone radical changes in the recent years with the advent of laparoscopic techniques [1]. Now, modern surgical methods are aimed at minimal invasive techniques keeping the safety of the patient in mind. Cholelithiasis, which continues to be one of the commonest digestive disorders present, was traditionally dealt by open or conventional cholecystectomy [2].
Laparoscopic cholecystectomy is safe and easy as it can be performed with better magnification and minimal of tissue loss with lesser chances of trauma to the normal anatomy [3]. However, inspite of being less morbid, associated with lesser hospital stay and lesser post operative discomfort along with cosmetic advantage, questions remain unanswered regarding its preference over the gold standard open cholecystectomy [4].
Laparoscopic cholecystectomy causes increased incidence of common bile duct injury, according to various surveys as compared to open cholecystectomy. Due to the absence of tactile impulses, the palpation of Common Bile Duct is not possible, leading to missing of a calculus retained in CBD. Also, the magnified vision being misleading to an inexperienced surgeon, it may cause inadvertent injury to the bile duct resulting in accidental opening of the bile duct. The incidence of bile duct injury following cholecystectomy remains 0.2% to 0.5% with a peak in the early 90s attributed to the learning curve of laparoscopy [5].
About 70-80% of cholecystectomies are done laparoscopically [6] whereas 20-30% are still completed by open cholecystectomy often performed in elderly patients, cardiopulmonary compromised patients and patients with complicated gallstones where laparoscopic procedure

is not feasible [7]. However, it can safely be performed in cirrhotic patients [8] and in cases of acute cholecystitis [9] by an experienced surgeon. Also clinically and financially laparoscopic cholecystectomy has advantages over open cholecystectomy [10] and has become a popular alternative to open procedure [11] due to many advantages, including shorter operative time, early recovery, shorter hospital stay, low morbidity, and low cost [12].

Objectives of the Study:

To compare open and laparoscopic surgeries

To compare which procedure is better in terms of post-operative management

To compare post-operative morbidity in both procedures

Inclusion criteria: All patients undergoing cholecystectomy, by open and laparoscopic methods in the time frame mentioned above.

Exclusion criteria: Those patients that underwent elective Common Bile Duct exploration alongside cholecystectomy for various reasons like lower CBD growth, lower CBD stricture, lower CBD stone, pancreatic head carcinoma, T tube cholangiogram etc.

Results and Discussion

Out of 100 patients, 72 were female and 28 were male with female: male ratio of 2.57:1. Maximum patients occur in the age group of 31-40 in males (32.15%) and in women most patients occur in the age group between 41 to 60 years (48.6%). The average age of patients undergoing surgery was 42.74 years. It was slightly earlier in males (36.8 years) while in females it was 44.40.

The presenting complaint of all patients was abdominal pain (100). While only about 1/4th patients had associated vomiting or fever. On examination, 17 patients had pallor, 8 had icterus. On abdominal palpation, tenderness in Right Hypochondrium was present in 85 patients while 15 patients had soft, non-tender abdomen.

UltraSonography, which is the gold standard investigation in diagnosing Gall Bladder pathologies, was performed and pathology was decided on the basis of that. In the standard clinical practice, Ultra-sonography is the sole investigation used as it is sensitive and specific, thus being highly accurate, and is cost effective, without the exposure to radiation. On the basis of sonography, majority of patients were found to have chronic calculous cholecystitis (74%), while 18 had acute cholecystitis. A few patients were also found to have other pathologies-empyema (5%), GB polyp (2%) and perforated GB (1%). Thus, most patients had symptomatic gall stone disease since a period of time which led them to operation.

Laparoscopy was the method used in 73 patients among whom 12 had to be converted to open surgery intra-operatively and 61 were completed by laparoscopy. The conversion was due to intra-operative events such as excessive bleeding, slippage of ligature, adhesions of gall bladder, which could not be separated, non-visibility of the Calot's triangle in its entirety etc. 27 of the patients were offered open cholecystectomy primarily, because they either had acute complaints of cholecystitis or were suspected of having lump formation for which dissection might have been difficult in laparoscopy. A few poor risk patients like those having diabetes, hypertension, poor, non-compliant lungs were also offered open method as laparoscopy would have led to intra-operative and post-operative morbidity.

Table 1: Type of surgery offered on the basis of pathology

Pathology/Type of surgery	Laparoscopy	Open	Lap->open	Total
Chronic	50	13	11	74
Acute	9	9	0	18
Perforated	0	1	0	1
Empyema	0	4	1	5
Polyp	2	0	0	2
	61	27	12	100

Most cases of chronic calculous cholecystitis were offered laparoscopy (61 out of 74), which is the gold standard method for cholecystectomy. Even in acute cholecystitis, half of the patients were successfully operated laparoscopically (50%), while 50% were directly operated by open method. This shows that most patients of chronic cholecystits can be operated laparoscopically, barring any pre-operative morbidity or suspected lump formation. In case of intra-operative accidents, conversion to open procedure can be done easily and rapidly. In cases of acute cholecystitis, open and laparoscopic method was decided on individual choices, disease status, presence of peritonitis and localized lump formation, if any. Based on this, 50% cases were operated laparoscopically and 50% by open method. In cases of pyogenic cholecystitis, like perforated gall bladder or empyema, open method was preferred in most cases. In 1 case of empyema, where laparoscopy was attempted, it failed and conversion to open method was required due to excessive adhesions and friable tissue in the Calot's triangle. In cases of gall bladder polyp, there was no inflammation, so lesser chances of adhesion. So, in both cases, laparoscopic cholecystectomy was achieved, with no injury.

In our study, there was a higher conversion rate to open cholecystectomy. However, keeping in mind the fact that conversion is better than over-enthusiastic dissection that leads to biliary tract injury, the decision can be explained by the cautious approach surgeons cultivate in a general hospital. Conversion is not a failure; it is merely acceptance of the fact that dissection is difficult, or a preventive measure for injury to the biliary tract or the vessel.

Table 2: Average time taken in hours for completion of procedures

Method	Operation timing
Open	0.99
Laparoscopic	1.9
Lap->open	2.25

The timing of operation to be completed post-induction of anaesthesia was considerably longer in laparoscopy (average 1.9 hours) as compared to open surgeries (average 0.99 hours). Those converted from laparoscopy to open surgeries had significantly higher time (average 2.25 hours), which is explainable by maneuvers to correct the pathology both by laparoscopy and open methods. In our study the time for laparoscopic procedure was significantly longer, which can be explained by the learning curve of the surgeons, and instrumental excellence.

In postoperative complication, wound infection was occurred in 6 patients who were undergoing open method when one patient included in group LC->OC had wound infection. There was no mortality in any groups.

In hospital stays

Table 3: Duration of hospital stays

Duration	Open	Laparoscopy	LC->OC
2-3 days	0	27	0
3-4 days	0	30	0
4-5 days	7	4	3
5-6 days	15	0	6
>6 days	5	0	3

Duration of hospital was more in open method compare with laparoscopic method.

Conclusion

Laparoscopy continues to be the gold standard operative procedure for cholecystectomy, with 3/4th patients being primarily offered laparoscopy. Most common pathology in gall bladder disease is chronic calculous cholecystitis, which accounts for 3/4th of the disease incidence. Patients with chronic cholecystitis who have adhesions in Calot's triangle are more at risk of biliary tract injury.

Laparoscopy takes more time in comparison to open surgery. There is a much higher incidence of injury to the bile duct in laparoscopy than in open surgery. Conversion to open surgery at the first instance of difficulty in laparoscopy results in safer procedure.

Laparoscopic cholecystectomy is getting popular because of its good results in terms of a short stay in hospital, early mobilization and return to work, good cosmetic results and good media coverage. Laparoscopic cholecystectomy has proven to be a safe procedure with low morbidity and an equal mortality rate as compared to open cholecystectomy.

References

1. Conlon K. The gallbladder and bile ducts. In Russel RCG, Williams NS, Bulstrode CJK editors. Baily and loves short practice of surgery 25th ed Arnold international students edition 2008; 2:1119.
2. Cuschieri AS. Disorders of biliary tree. In Cuschieri AS, Steele RJC, Moosa AR editors. Essential. Surgical Practice, 4th ed, Arnold Euston Road London NW 2002; 13 BH:II(I):406.
3. Keus F, De Jong JA, Gooszen HG, Van Laarhoven CJ. Laparoscopic versus small incision cholecystectomy for patients with symptomatic cholecystolithiasis. Cochrance Database Sys Rev 2006; 18(4):CD006229.
4. Syrakos T, Antonitsis P, Zacharakis E, Takis A, Manuousari A, Bakogiannis K *et al.* Small incision (Mini-Laparotomy) versus laparoscopic cholecystectomy: A retrospective study in a University Hospital. Langenbecks Arch Surg 2004; 389(3):172-177.
5. Johansson M, Thune A, Nelvin L, Stiernstan M, Westman B, Lundell L. Randomised clinical trial of open versus laparoscopic cholecystectomy for acute cholecystitis. Br J Surg. 2005; 92(1):44-49.
6. Livingstone EH, Rege RV. A nationwide study of conversion from Laparoscopic to open cholecystectomy. Am J Surg. 2004; 188:205-211.
7. Meyer C, De Mamzini N, Rohr S, Thiry CL, Perim-Khalil FC, Bachellier-Billot C. 1000 cases of cholecystectomy 500 by laparotomy versus 500 by laparoscopy. J Chir (Paris). 1993; 130(12)501-506.
8. Poggio JL, Rowland CM, Gores GJ, Nagorney DM, Donohue JH. A comparison of laparoscopic and open cholecystectomy in patients with compensated cirrhosis and symptomatic gallstones. Surgery 2000; 127(4):405-411.
9. Chau CH, Tang CN, Sui WT, Ha JP, Li MK. Laparoscopic cholecystectomy versus open cholecystectomy in elderly patients with acute cholecystitis retrospective study. Hong Kong Med J. 2002; 8(6):394-399.
10. Schietroma M, Carlei F, Liakos C, Rossi M, Carloni A, Enang GN *et al.* Laparoscopic versus open cholecystectomy an analysis of clinical and financial aspects. Pannienerva Med 2001; 43(4):239-242.
11. Zacks SL, Sandler RS, Rutledge R, Brown RS. Jr. Laparoscopic cholecystectomy and open cholecystectomy. Am J Gastroenterol. 2002; 97(2):334-340.
12. Attwood SE, Hill AD, Mealy K, Stephens RB. A prospective comparison of Laparoscopic versus open cholecystectom. Ann R Coll Surg Engl 1992; 74(4):397-400.