

A STUDY OF PRE-OPERATIVE FACTORS INFLUENCING CONVERSION IN LAPAROSCOPIC CHOLECYSTECTOMY

Ravi Teja Mullangi¹, Kiran Kumar K. M²

¹Junior Resident, Department of General Surgery, Sri Siddhartha Medical College, Tumakuru, Karnataka, India.

²Professor, Department of General Surgery, Sri Siddhartha Medical College, Tumakuru, Karnataka, India.

ABSTRACT

BACKGROUND

Laparoscopic Cholecystectomy has now become the Gold Standard treatment for cholelithiasis. The aim of this study is to know the role of pre-op risk factors involved in the conversion of laparoscopic cholecystectomy to open cholecystectomy.

METHODS

This was a longitudinal study conducted in surgical unit of Sri Siddhartha Medical College. All the patients who had right hypochondriac pain and diagnosed with cholelithiasis on USG were included in the study. All the patients have been operated by surgeons who had at least 10 years of experience and/or performed more than 25 laparoscopic cholecystectomies at Sri Siddhartha Medical College Hospital and Research Centre, according to the inclusion & exclusion criteria mentioned below.

RESULTS

Among 90 patients included in the study who were admitted for laparoscopic cholecystectomy. 9 (10%) had undergone conversion. Four out of seventy two patients whose age was below 50 years had undergone conversion and rest had undergone successful laparoscopic cholecystectomy. Five out of eighteen patients whose age was above 50 years had undergone conversion and the rest had undergone successful laparoscopic cholecystectomy. Six out of thirty five male patients had undergone conversion and the rest had successful laparoscopic cholecystectomy. Three out of fifty five female patients had undergone conversion. Three out of five obese patients have undergone conversion while six out of eighty five non-obese patients had undergone conversion. Three out of seventeen patients with characteristics of cholecystitis underwent conversion while six out of seventy three patients underwent conversion. Two out of seven patients with concurrent choledocholithiasis underwent conversion while seven out of eighty three patients without choledocholithiasis underwent conversion.

CONCLUSIONS

Male sex, age >50 yrs., obesity (BMI>35 Kg/m²), cholecystitis and concurrent choledocholithiasis are considered to be the risk factors for conversion of laparoscopic cholecystectomy to open cholecystectomy.

HOW TO CITE THIS ARTICLE: Mullangi RT, Kumar KKM. A study of pre-operative factors influencing conversion in laparoscopic cholecystectomy. J. Evolution Med. Dent. Sci. 2019;8(14):1103-1106, DOI: 10.14260/jemds/2019/244

BACKGROUND

Gastro-intestinal surgery has undergone a revolution in the recent years by the introduction of laparoscopic techniques. The concept of "keyhole surgery" created an immediate disparity between the potential of the new technique and training of surgeons to perform it. Now modern surgical methods are aimed at giving cure along with minimal invasive techniques with patient in mind, safety never being compromised. Cholelithiasis, which continues to be one of the most common digestive disorders encountered, was traditionally being dealt by conventional or open cholecystectomy. With the introduction of laparoscopic cholecystectomy, the surgical community witnessed a revolution in basic ideology and the importance of minimal access surgery has suddenly impacted. Pre-operative ultrasound is the gold standard investigation for patients undergoing a cholecystectomy as it provides as sensitive approach for analysing characteristics of gallbladder.

Laparoscopic cholecystectomy (LC) stands for a gold standard for the treatment of gall stone disease. Open cholecystectomy has been the gold standard of treatment for cholelithiasis for more than 100 years. Since then, due to growing experience and development of specially adapted laparoscopic instruments the technique has improved immensely.¹

The difficult gall bladder is the most common difficult laparoscopic surgery being performed by general surgeons all over the world and the potential one that places patient at significant risk. LC has revolutionized our approach to a number of problems and caused a re-evaluation of clinical strategies. It is associated with minimal risk to the patient and a high degree of relief from symptoms. Now it has become the standard therapy for symptomatic gall stone disease, particularly in elective setting.² However, in the case of intra-abdominal adhesions, perforated gallbladder, atypical uncertain anatomy, or when intra-operative complications occur and it's impossible to manage them laparoscopically, open method is still indicated.^{3,4} In our study, we have made an attempt to know the role of pre-op factors involved in conversion of laparoscopic cholecystectomy.

Aim and Objectives

The aim of this study is to study the role of preoperative factors involved in conversion of laparoscopic cholecystectomy.

'Financial or Other Competing Interest': None.
 Submission 10-03-2019, Peer Review 29-03-2019,
 Acceptance 01-04-2019, Published 08-04-2019.

Corresponding Author:

Dr. Kiran Kumar K. M,

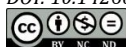
Professor, Department of General Surgery,

Sri Siddhartha Medical College,

Tumakuru, Karnataka, India.

E-mail: reddyteja65@gmail.com

DOI: 10.14260/jemds/2019/244



The objectives of the study are to know the role of gender, age, obesity, cholecystitis, choledocholithiasis in conversion of Laparoscopic cholecystectomy.

METHODS

This was a longitudinal study conducted in surgical unit of Sri Siddhartha Medical College. All the patients who had right hypochondriac pain and diagnosed with cholelithiasis on USG were included in the study. All the patients have been operated by surgeons who had at least 10 years of experience and/or performed more than 25 laparoscopic cholecystectomies at Sri Siddhartha Medical College Hospital and Research Centre, according to the inclusion & exclusion criteria mentioned below.

Inclusion Criteria

All patients diagnosed with symptomatic acute cholelithiasis and are willing to undergo surgery i.e. laparoscopic cholecystectomy at Sree Siddhartha Medical College, Agalakote, Tumakuru.

Exclusion Criteria

Patients who are not fit for General Anaesthesia and thus Laparoscopic cholecystectomy and patients who had undergone previous laparotomy are excluded from the study.

Written informed consent was obtained from all the patients before their enrolment in the study.

The patients was interviewed for a detailed clinical history according to the proforma. All the patients was examined and subjected to routine blood investigations & abdominal ultrasonography.

All operations was done under General Anaesthesia.

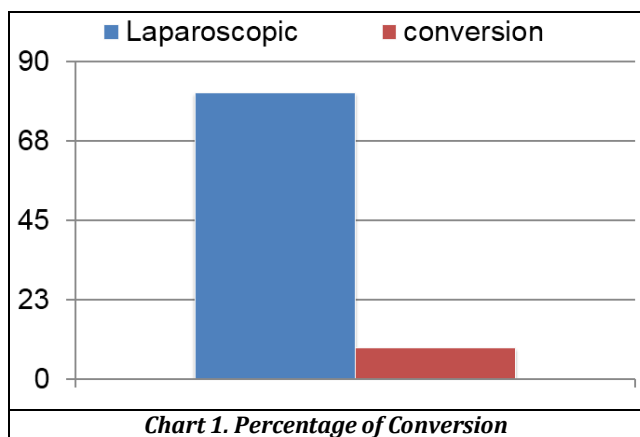
Sample Size was taken based on the Convenience of the Study

Statistical Methods

Statistical analysis was done using chi square test. The collected data was entered in Microsoft excel, and analyzed using statistical package for social sciences (SPSS Program v17) software.

RESULTS

Out of total 90 patients included in the study 81 patients had underwent successful Laparoscopic cholecystectomy and 9 patients needed conversion to open cholecystectomy. The conversion rate is 10% which is consistent with the other studies.



Four out of seventy two patients whose age was below 50 years had undergone conversion and rest had undergone successful Laparoscopic cholecystectomy. Five out of eighteen patients whose age was above 50 years had undergone conversion and the rest had undergone successful laparoscopic cholecystectomy.

Age in Years	Total	Conversion		p-Value
		Yes	No	
<50	72	4 (5.6%)	68 (94.4%)	0.014
>50	18	5 (27.8%)	13 (72.2%)	
Total	90	9	81	

Table 1. Age

Six out of thirty five male patients had undergone conversion and the rest had successful laparoscopic cholecystectomy. Three out of fifty five female patients had undergone conversion.

Gender	Total	Conversion		p-Value
		Yes	No	
Male	35	6 (17.1%)	29 (82.9%)	0.076
Female	55	3 (5.5%)	52 (94.5%)	
Total	90	9	81	

Table 2. Gender Distribution

Three out of five obese patients have undergone conversion while six out of eighty five non-obese patients had undergone conversion.

Obesity	Total	Conversion		p-Value
		Yes	No	
Non-Obese	85	6 (7.1%)	79 (92.9%)	0.006
Obese	5	3 (60.0%)	2 (40.0%)	
Total	90	9	81	

Table 3. Obesity

Three out of seventeen patients with characteristics of cholecystitis underwent conversion while six out of seventy three patients underwent conversion.

Cholecystitis	Total	Conversion		p-Value
		Yes	No	
Yes	17	3 (17.6%)	14 (82.4%)	0.225
No	73	6 (8.2%)	67 (91.8%)	
Total	90	9	81	

Table 4. Cholecystitis

Two out of seven patients with concurrent choledocholithiasis underwent conversion while seven out of eighty three patients without choledocholithiasis underwent conversion.

Choledocholithiasis	Total	Conversion		p-Value
		Yes	No	
Yes	7	2 (28.6)	5 (71.4)	0.144
No	83	7 (8.4)	76 (91.6)	
Total	90	9	81	

Table 5. Choledocholithiasis

Duration of Surgery

Risk Factors	N	Percentage	Duration of Surgery
Age >50 Yrs.	72	80	57+/-5.37
Age <50 Yrs.	18	20	52+/-6.41
Male Sex	35	28.8	62+/- 10.14
Female Sex	55	71.2	49+/-6.36
Obese	5	5.45	66+/- 7.42
Non-Obese	85	96.55	55+/-8.67
Cholecystitis	17	11.76	69+/-8.91
choledocholithiasis	9	10	71+/-8.45

Table 6

Mortality and Morbidity

There was nil morbidity and few patients had minor complications like nine surgical site infections and three port site hernias.

DISCUSSION

Traditional cholecystectomy is an integral part of every surgical training programme and is performed by most general surgeons. The advent of laparoscopic cholecystectomy has created an excitement and a flurry of activity in the medical community.

This study showed that the conversion rate of laparoscopic cholecystectomy is 10%. The operating time was more when the patients were male sex, obese, calculous cholecystitis and choledocholithiasis. This is comparable with that of U Jethwani and Janindu Goonawardhena.⁵ This “learning curve” represents adapting to operating in the 2-D screen, becoming familiar with the instrumentation and becoming accustomed to the technique. a

In our study, there were no major complications and some minor complications like wound infection in nine cases and port site hernia in three cases. There was no peri-operative mortality and no CBD injury. Other studies also reported similar results.

Study	Country	Sample Size	Conversion
Lim et al	Singapore	149	11.5%
Ishizaki et al	japan	1179	5.3% (10.6% in difficult cases)
Bakos et al	Slovakia	1535	5.7%
U Jethwani et al	India	200	5%
Our study	India	90	10%

Table 7

Among 90 patients included in the study who were admitted for laparoscopic cholecystectomy. 9 (10%) had undergone conversion. Seventy two (80%) patients were above 50 years and Eighteen (20%) were below 50 years of age. Rate of conversion was high in patients who were above 50 years (27.8%) compared to that of patients below 50 years (5.6%). P-value was 0.014 which was 0.076 which is statistically not significant.

Fifty five (61.11%) patients were females and thirty five (38.88%) were males, with an average age of 41.91 years (range 23 to 80 years). Rate of conversion was high in males (17.1%) compared to females (5.5%) as males have narrow coastal angle which makes dissection difficult P value was which is not significant.

The BMI ranged from 16.7 to 41.4 kg/m². 5 (5.55%) patients were considered obese whose BMI was more than 35. Rate of conversion was more in obese (60%) patients compared to that of non-obese (7.1%) because of thick abdominal wall and distant operative site from the wall which makes the surgeon feel difficult and strain his hands. P value was 0.06 which is statistically not significant. Access to peritoneal cavity was difficult in 4 obese cases due to thick abdominal wall.

Seventeen patients were diagnosed with cholecystitis in which acute were 9 (52.9%) and chronic were 7 (47.05%).Rate of conversion was high in patients with cholecystitis (17.6%) when compared to that of patients without cholecystitis (8.2%) due to difficulty in identifying anatomy during dissection because of oedematous gall bladder and inflamed Calot’s triangle in acute cholecystitis, scarred and fibrosed gall bladder in chronic cholecystitis. P-value was 0.225 which is statistically not significant.

Seven (7.77%) patients had concurrent choledocholithiasis who underwent ERCP (Endoscopic retrograde cholecysto-pancreatography) stone retraction. Rate of conversion was high in patients with post ERCP for concurrent choledocholithiasis (28.6%) compared to that of patients without choledocholithiasis (8.4%) due to inflamed CBD which rendered dissection difficult. P-value was 0.144 which is statistically not significant.

In this study the operative time ranges from 39 min to 162 min. prolonged operative time was observed in cases with thick walled GB, Male sex, Concurrent choledocholithiasis and contracted GB.

CONCLUSIONS

In the perspective of LC being the gold standard treatment of symptomatic cholelithiasis, pre-op prediction of risk of conversion is an important aspect in planning LC. Several studies have been published in the past years to assess the risk factors for difficult LC. The clinical profile of a patient can predict a difficult gall bladder surgery. With the advancement in equipment and gaining experiences in laparoscopy, most of the difficult gallbladders can be dealt laparoscopically. Conversion to open surgery is an indication of sound judgement of the surgeon in view of safety of the patient.

Male sex, age >50 yrs., obesity (BMI>35 Kg/m²), cholecystitis and concurrent choledocholithiasis are considered to be the risk factors for conversion of laparoscopic cholecystectomy to open cholecystectomy. These factors can predict difficulty to be encountered during surgery and help in making a decision for conversion thus shortening the duration of surgery and preventing unnecessary complications.

REFERENCES

- [1] Hasukić Š, Mešić D, Kadrić N, et al. Complications in laparoscopic surgery. Med Arh 1998;27(1-2):103-8.
- [2] Hasukić Š, Mešić D, Dizdarević E, et al. Reasons for reoperation after laparoscopic cholecystectomy. Med Arh 2000;54(1):25-7.
- [3] Keus F, De Jong JA, Gooszen HG, et al. Laparoscopic versus open cholecystectomy for patients with symptomatic cholelithiasis. Cochrane Database of Systematic Reviews 2006;(4): Art. No. CD006231.

- [4] Cawich SO, Mitchell DIG, Newnham MS, et al. A comparison of open and laparoscopic cholecystectomy done by a surgeon in training. *West Indian Med J* 2006;55(2):103-9.
- [5] Goonawardena J, Gunnarsson R, de Costa A. Predicting conversion from laparoscopic to open cholecystectomy presented as a probability nomogram based on preoperative patient risk factors. *Am J Surg* 2015;210(3):492-500.