ORIGINAL RESEARCH PAPER

Surgery

"PROSPECTIVE STUDY OF PREDICTIVE FACTORS FOR CONVERSION OF LAPAROSCOPIC CHOLECYSTECTOMY TO OPEN SURGERY"

KEY WORDS: Gall stone diseases, Laparoscopic cholecystectomy, Conversion to open surgery

Dr Parth P Savani 3rd Year Resident of Department of General surgery G. K. General Hospital, Adani, Bhuj, Kutch.

Dr.Hiral R Rajde Asst. Professor , Department of General surgery G. K. General Hospital, Adani, Bhuj, Kutch.

ABSTRACT

BACKGROUND: Gallstone diseases are a common gastrointestinal illness in the general population which frequently requires hospitalization. The prevalence is around 11% to 36%. Today the standard treatment of choice for patients with Cholelithiasis is Laparoscopic cholecystectomy. However according to literature conversion rates of laparoscopic to open cholecystectomy of 2.6% to 14% had been described. The purpose of the study is to identify the predictive risk factors which are responsible for conversion to open surgery and minimizing the complications during management.

METHODS: A total of 100 patients presenting to G.K. general hospital with gall stone diseases from Oct 2020 – July 2021 were included in the study. Every patient included in the study was subjected to the following assessments which were regarded as risk factors for laparoscopic cholecystectomy: 1. Patient's characteristics 2. History and detailed Clinical examination 3. Radiological investigations 4. Operative findings.

RESULTS: In the present study of 100 patients gallstone diseases were more common in females than to males and most common age of presentation of gallstone diseases is 31-40 years. Out of the 100 cases 11 cases were converted to open procedure majority in females with multiple episodes and complicated gallbladder disease.

CONCLUSION: Laparoscopic cholecystectomy is a safe and reliable surgery almost in all cases and outcome of surgery is much better in comparison to open surgery, predictive factors responsible for conversion of laparoscopic to open cholecystectomy include difficult anatomy due to dense adhesions - the most important factor, history of comorbidities, females and recurrent attacks. With growing experience by the surgeons in laparoscopic technique, complications and conversion rate can be brought down to a minimum. And in patients with known risk factors the surgery can be supervised by the experienced surgeon.

INTRODUCTION

Gallstone diseases are a common gastrointestinal illness in the general population which frequently requires hospitalization. The prevalence is around 11% to 36%. The treatment of choice for patients with Cholelithiasis is Laparoscopic cholecystectomy. Previously Open cholecystectomy was frequently performed but that has been replaced by laparoscopic approach. The advantages of laparoscopic cholecystectomy are the avoidance of large muscle cutting incision causing abdominal wall muscle weakness, a shortened hospital stay and earlier recovery. The laparoscopic cholecystectomy is gold standard for gall stone disease[9].

The patient's condition, the surgeon's level of experience, technical factors and intra operative findings like complicated gall bladder diseases can play a major role in the decision for conversion. Inability to define the anatomy and difficult dissection are the leading cause for conversion followed by other complications like bleeding, perforation of gall bladder etc.[2,3,5]

The permission as taken ethical committee GAIMS

Conversion From Laparoscopic To Open Procedure

According to literature conversion rates of 2.6% to 14% had been described. With the experience and improved laparoscopic techniques the conversion rate has come down to1-6% a remarkably low level.[8]

Peters identified the following reasons for the conversion of LC to OC:[4,8]

Difficult in dissection due to dense adhesions, Severe inflammation encountered, Obscure anatomy and retraction difficulty, Common bile duct (CBD) problems like variation in anatomy and also includes abnormal laparoscopic intra-operative cholangiography (IOC), A Failed attempt at laparoscopic CBD exploration, A Failed attempt at IOC and other complications which includes bleeding due to injury to nearby adjacent vessels, Cystic duct avulsion Respiratory acidosis etc.

The demography of the patient, the level of experience of the surgeon, the spectrum of disease and associated pathology and technical factors all play a role in the decision to convert.

MATERIAL AND METHODS:

All patients admitted in Gujarat Adani institute of Medical sciences & G K General Hospital, Bhuj. A total of 100 patients presenting with gall stone diseases from Oct 2020 – July 2021 were included in the study. Patients included in the study were subjected to the following assessments which were regarded as risk factors for laparoscopic cholecystectomy:

- Patient's characteristics
- History and detailed Clinical examination
- Radiological investigations
- Operative findings.

Inclusion Criteria:

- Patients above the age of 18 years.
- Symptomatic and indicated patient having biliary colic, acute and chronic cholecystitis, Cholelithiasis
- Patients with Acalculous Cholecystitis.
- Patient willing for investigation and surgery.

Exclusion Criteria:

- Age < 18 years
- Gall Bladder Malignancy
- Adults with choledocholithiasis
- Patients unfit for General anesthesia
- Pregnant female

RESULTS AND DISCUSSION

Age Incidence:

The age group of the patients in this study ranged from 21 years to 79 years. The highest incidence is seen in the age group of 31-40 years.

Table 1: Age Incidence

Age Group	No. of Patients	Percentage (%)
21-30	14	14%
31-40	33	33%
41-50	29	29%
51-60	12	12 %
61-70	9	9 %
71-80	3	3%

Sex Incidence:
In 100 cases, 32 were males and 68 were females. The ratio of males to females 1:2.

The data mentioned in table 2 shows that gall bladder diseases have a higher incidence in female than in males and more rates of perforation amongst females.

Sex And Surgery Outcome:
Table 2: Sex and Surgery Outcome

SEX	No. of Patients	SURGERY OUTCOME			
		Successful		Converted	
		No. of Patients	Percentage	No. of Patients	Percentage
MALE	32	30	93.75	2	6.25
FEMALE	68	59	86.76	9	13.24

Clinical Presentation And Associated Symptoms:
Out of 100 patients, 58 patients (58%) had a chief complaint of pain in the right hypochondrium, 34 patients (34%) presented with epigastric pain and the remaining 8 patients (8%) were asymptomatic (incidental Cholelithiasis), 48 patients presented with nausea along with abdominal pain and 35 patients presented with nausea and vomiting. Jaundice was seen in 7 patients.

Pre-operative Diagnosis:
Table 3: Pre-operative diagnosis.

Indications	No. of Patients	SURGERY OUTCOME			
		Successful		Converted	
		No. of Patients	Percentage	No. of Patients	Percentage
Cholelithiasis	66	62	93.93	4	6.06%
Acute Cholecystitis	34	27	79.41	7	20.58

Reasons For Conversion:
Total laparoscopic cholecystectomies performed-100
Total cases converted to open procedure – 11(11%).

Table 13: reasons for conversion.

Reason for conversion	No. of cases	Percentage %	
Difficult anatomy due to:			
-Dense adhesions of Calot's triangle	4	36.36%	54.54%
- Anatomical variation	2	18.18%	
Bleeding from:			
- Calot's triangle (Cystic artery)	3	27.27%	27.27%
- Injury to right hepatic artery	0	0%	
Common bile duct injury	2	18%	18%

CONCLUSION
The present study of 100 patients has shown that gallstone diseases were more common in females than to males with a ratio of 1:2.

The most common age of presentation of gallstone diseases is 31-40 years (33% of the patients presented in this group).

Most of the patients presented with pain abdomen of the right hypochondrium as the chief complaint.

Patients who presented on admission with acute cholecystitis had a higher conversion rate to open procedure as compared to those who presented with only Cholelithiasis.

The main cause for conversion from laparoscopic cholecystectomy to open procedure was difficulty in identifying the anatomy at the Calot's triangle.

Laparoscopic cholecystectomy is a safe and reliable surgery. With growing experience by the surgeons in laparoscopic technique, complications and conversion rate can be brought down to a minimum.[1.]

According to the present study it has been shown that we have a lower conversion rate comparing with literature in last 5 years. While many reasons have led to conversion and influence conversion rate, the most important factor for conversion was difficulty to define anatomy due to dense adhesions.[2,3.]

REFERENCES

1. Butt AU, Sadiq I. Conversion of laparoscopic to open cholecystectomy-six years experience at Shalamar Hospital , Lahore. Ann King Edward Med Coll 2006;12:536-8.
2. Nagral S. Anatomy relevant to cholecystectomy. J Minim Access Surg. 2005;1(2):53-58. doi:10.4103/0972-9941.16527
3. Ding YM, Wang B, Wang WX, Wang P, Yan JS. New classification of the anatomic variations of cystic artery during laparoscopic cholecystectomy. World J Gastroenterol. 2007; 13(42):5629- 5634. doi:10.3748/wjg.v13.i42.5629
4. Peters JH, Krailadsiri W, Incarbone R, Bremner CG, Froes E, Ireland AP, Crookes P, Ortega AE, Anthone GA, Stain SA. Reasons for conversion from laparoscopic to open cholecystectomy in an urban teaching hospital. Am J Surg. 1994 Dec;168(6):555-8; discussion 558-9. doi: 10.1016/s0002-9610(05)80121-7. PMID: 7977995.
5. Ravi S.Chari and Shimul A.Shah. Biliary system. In, Townsend (ed). Sabiston Textbook of Surgery Volume 2, 18th edition, South Asia edition. Philadelphia,Saunders Publishers, 2009;1558-62.
6. Wang D and Afdhal N.Gallstone disease,in Sleisenger and fordtran s Gastrointestinal Surgery,9th Edition,saunders Elsevier,Philadelphia. Pp.1106-11
7. Berggren U, Gordh T,Grama D, et al. Laparoscopic versus open cholecystectomy: hospitalization, sick leave, analgesia and trauma responses. Br J Surg 1994;81:1362–5.
8. Jeremy M. Lipman MD, Jeffer A. Claridge MD et al: Preoperative findings predict conversion from laparoscopic to open cholecystectomy. Surgery Volume 142, Issue 4, October 2007, pages 556-565.
9. Palanivelu C. Laparoscopic cholecystectomy. In: Palanivelu C (ed). Textbook of Surgical Laparoscopy. Coimbatore: Gem Digestive Diseases Foundation, 2002: 121-138.