

Evaluation of complications of Laparoscopic Cholecystectomy. A single centre analysis



Surgery

KEYWORDS: Calculus cholecystitis, laparoscopy, pneumoperitonium, Calot's triangle

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ABSTRACT

OBJECTIVE: To study and analyse the incidence of complications of laparoscopic cholecystectomy in different periods during and after surgery with respect to ease of access and vision, intra operative management, post operative recovery and complications. The study was conducted at a single laparoscopic surgical centre.

DESIGN: The study conducted was prospective (Canadian Task Force Classification II-I)

PATIENTS: The present study included 190 patients who were admitted to the surgery department of IMS Medical college & SUM Hospital, Bhubaneswar and who underwent laparoscopic cholecystectomy for calculus cholecystitis. The period of study was from September 2014 to September 2016 over a 2 year period.

Measurements and main results: All the surgeries were performed by the same surgical team using the same surgical technique that is laparoscopic Chole cystectomy. The medical records were reviewed, and data were collected with respect to age, site, previous surgery, intra-operative findings, operative time and post operative complications. Patient average age was 37.36 yrs. The female to male ratio was 6.03: 1 with a clear female preponderance. The average operative time was 110 minutes. Twenty six patients had other co morbid conditions. In all 63 patients had minor to major complications during and after the procedure. There were nine conversions to open surgery and nil mortality. The average hospital stay was 3 days.

CONCLUSION: In our experience of 190 patients who underwent Laparoscopic Cholecystectomy, 63 patients experienced surgery associated complications of which 19 were moderate to major complications. There was no mortality in our series. Rest all had a speedy and smooth recovery and were discharged from the hospital in 3 days. Thus laparoscopic cholecystectomy for the management of calculus cholecystitis can be performed safely and effectively in most cases and with complications that are comparable to the open procedure but at the same time offering the major advantages of a laparoscopic procedure.

Introduction

Laparoscopic cholecystectomy is one of the most commonly performed laparoscopic procedures the world over. It has become the gold standard in the treatment of calculus cholecystitis, both Acute and Chronic. The overwhelming acceptance of laparoscopic cholecystectomy over open cholecystectomy is due to the many advantages like less pain, wonderful cosmesis, less hospital stay and return to work and least infection. But like any surgery it has its share of complications which can range from trivial to serious and life threatening. The aim of this study is to evaluate the various complications that occurred both preoperative and postoperative due to this surgical procedure performed in our centre and their successful management.

Materials and Methods

This is a prospective study of 190 men and women who presented with acute and chronic calculus cholecystitis and underwent Laparoscopic Cholecystectomy between September 2014 and September 2016 over a 2 year period, performed by experienced laparoscopic surgeons at IMS & SUM Hospital, whose complications were studied. The complications were observed in intra operative, early postoperative (less than 2 weeks) and late (more than 2 weeks) periods. North American method of laparoscopic cholecystectomy was performed using standard 4 ports. This is a nonrandomised prospective study. The incidences of the complications were calculated on the study sample. The inclusion criteria in our study were **symptomatic gall stone disease and ultrasonographic proven gall stone disease**. The exclusion criteria being:

- **Less experienced (less than 50 lap chole.) surgeon**
- **Choledocholithiasis**
- **Gallbladder malignancy**
- **Acute cholecystitis of more than 72 hours**
- **First and third trimester of pregnancy**
- **Multiple previous abdominal surgery**
- **Cardio respiratory disease**
- **Coagulopathies**

- **Severe cirrhosis with portal hypertension**

Surgical Technique:

A total of 190 patients presented to our hospital with pain right upper abdomen and/or a prior diagnosis of (Ultrasonography) cholecystitis. After the relevant workup all underwent laparoscopic cholecystectomy under general anaesthesia. A four port North American approach was used in all the cases. The usual fundus traction and infundibular traction followed by dissection of Calot's triangle and individual clipping and transaction of the cystic artery and duct followed by separation of the gall bladder from the GB fossa was done or tried in all the cases to maintain standardization. The GB was removed through the umbilical port. followed by repeated suction and saline irrigation and the procedures completed. A drain to Morrison's pouch was given as per requirement. The average duration was 90 minutes. The patients were allowed oral intake the next day and discharged after 2 days.

Results

A total of 190 patients underwent laparoscopic cholecystectomy over a 2 year period at IMS and SUM Hospital, Bhubaneswar Odisha from September 2014 to September 2016. Analysis of the entire study reveals the following. The mean age of the patients was 37.3 years with a range of 17 to 70 years Table 1 [Fig.1]. There is a clear female preponderance of females affected by this condition with 163 females were operated and only 27 males during the period with a female to male ratio was **6.03:1**. Table 2 & [Fig.2] shows the preoperative complications and their relative incidences. It is observed that they are mostly of minor nature with bleed from the liver fossa being the most common. Conversion to open surgery was carried in 9 patients due to various reasons as shown in Table 3 & [Fig.3]. It was also found that the rate of conversion was greater in males [Table 4]. Shows the types of early (less than 2 weeks) post operative complications encountered, their nature and incidence. Undetected biliary and bowel injuries occurred which were managed by biliary enteric bypass and resection and anastomosis respectively and were perceived as major complications. Late (more than 2 weeks) post

operative complications are shown in [Table 5]. This is in accordance with the frequency given in the literature. The average operative time was 110 minutes which compares well with that of open surgery. All the patients had a smooth recovery and were discharged after 3 days of hospital stay

Table - 1

SL. NO.	Age group	No. Of Patients
1	< 20	11
2	21-30	48
3	31-40	74
4	41-50	34
5	51-60	18
6	61-70	5

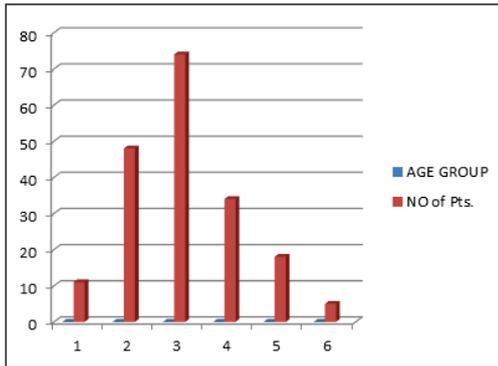


Fig. 1

TABLE - 2

Per-operative complications	Total	Percentage
Trocar Induced Injury	1	0.53%
Pneumoperitonium related	0	0%
Port site bleed	4	2.10%
Intra-abdominal bleed	13	6.84%
Biliary injury	3	1.58%
Bowel injury	1	0.53%
Liver injury	24	12.6%
Lost stone	6	3.16%

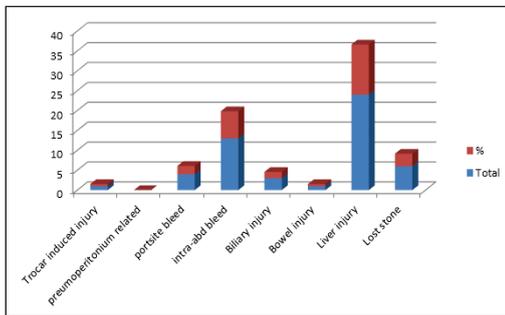


Fig. 2

TABLE 3 Conversion to open surgery

CAUSE	NUMBER	PERCENTAGE (relative)
Uncontrolled bleeding	3	33.2
Dense Adhesions or unclear anatomy	3	33.3
Mirrizi's Syndrome	1	11.1
Biliary injury	1	11.1
Abnormal Anatomy	1	11.1

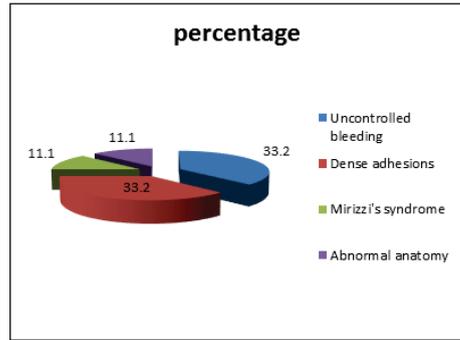


Fig. 3

Table 4 Early post operative complications

PNEUMONIA	0
MINOR BILIARY INJURY	1
MAJOR BILIARY INJURY	1
POSTOPERATIVE BLEEDING	1
WOUND INFECTION	2
DEEP VEIN THROMBOSIS	0
TOTAL	5 (2.6%)

Table 5 Late post operative complications

INTRA ABDOMINAL INFECTION	0
BILIARY STRICTURE	1
PORT SITE INFECTION	1
PORT SITE METASTASIS	0
PORT SITE HERNIA	2

DISCUSSION

The various complications that occur in course of performing laparoscopic cholecystectomy are discussed below. Trocar and veress needle insertion injury incidence is about 0.25% of all laparoscopies with a mortality of 10% [1]. An open method of trocar insertion is safe and should be encouraged. Port site bleed is a frequent but minor complication (1-2% of all laparoscopies) that can be managed by putting compression to the port site by various methods [2]. Bile duct injury is a serious complication that is specific to laparoscopic cholecystectomy with an association in the range of 0.2% to 2% [3], in contrast to open procedure which has an incidence of 0.5 to 0.6%.[4]. This has been attributed to the "learning curve" of the surgeon[5]. Risk factors for biliary injury during LC are inexperience, aberrant anatomy. Dense adhesions and bleeding [6]. Haemorrhage in LC is mostly due to injury to cystic artery or slippage of the cystic artery stump and occurs mostly during Calot's triangle dissection. This is the major reason for conversion to open procedure. This can be avoided by proper case selection where surgery is avoided between second and third weeks on account of a frozen Calot's due to adhesions and meticulous dissection[7]. A better way is to remain on the posterior aspect of the Gab during dissection to avoid injury. Bleeding also occurs during removal of gall bladder from liver [8]. Bowel injury during LC mostly goes undetected only to manifest later as peritonitis. Duodenum followed by the transverse colon is the parts most likely to be injured 34. The incidence of bowel injury is around 0.4% [9]. Bowel injury can be avoided by a low threshold to conversion when there is apprehension of it.. Conversion rate in our series was 4.4%. About 59% were elective conversions while 41% were emergency conversions due to the development of some complication that could not be managed laparoscopically. Conversions were higher in males (9.2%) than females (3.6%) [10]. Amongst the late complications port site herniation is a frequent complication and we had 2 patients in our series. Laparoscopic port site hernias have an incidence of 0.02% to 5% [11]. These are to be dealt with like any other hernia repair. It is generally agreed that defects greater than 8 mm. are to be closed while smaller defects can be left open. We had no mortality in our

series but the mortality from LC is reported to be about 0.2%.[12]

Conclusion

The application of minimally invasive surgery continues to evolve and is making rapid strides. Laparoscopic cholecystectomy has become the gold standard for symptomatic cholelithiasis. New problems have been identified and with improved techniques and instrumentation laparoscopic cholecystectomy can be safely performed with least morbidity and mortality similar to or less than open cholecystectomy. However occasionally anatomical or physiological considerations will hinder or preclude the minimal access approach and conversion to an open operation in such cases reflects sound clinical judgement and should not be considered as complication.

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