



A STUDY OF CAUSES OF CONVERSION OF LAPAROSCOPIC CHOLECYSTECTOMY TO OPEN CHOLECYSTECTOMY

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ABSTRACT

Introduction- Gall stone disease is a common disease affecting human beings. Laparoscopic cholecystectomy has become the gold standard. The conversion from laparoscopic to open cholecystectomy results in a significant change in outcome for the patient. **Method And Materials:** This was a prospective study of sample size 50 to assess the cause of conversion in laparoscopic cholecystectomy from 2019 to 2022 in J.A. Group of Hospital, Gwalior. Patients diagnosed as symptomatic gall stones disease clinically and by ultrasonic examination were included. **Results-** Majority (56%) of our study subjects were in the age group of 30 to 45 years with predominantly (80%) female preponderance. A large proportion of patients (32%) had their laparoscopic surgery converted in to open surgery mainly due to dense adhesions and disturbed anatomy in calot's triangle. Other reasons for the conversion to open cholecystectomy includes excessive bleeding, acute inflammatory changes, impacted stone, CBD injury CBD stone, Bowel injury etc is being present in very small proportion of cases. **Conclusion-** On comparison of this conversion in different age group, presence of dense adhesions and distortion of normal anatomy was statistically most significant in age group of 46-60 years. On comparison of conversion based on gender there was no significant difference seen among male and female gender.

KEYWORDS : Gallstone, Laparoscopic Cholecystectomy, Open Cholecystectomy, dense adhesion and disturbed anatomy

INTRODUCTION

Gall stone disease is a common disease affecting human beings. Langenbach in 1892 attempted first cholecystectomy but the credit of performing first successful laparoscopic cholecystectomy goes to Eric Muhe in 1985.¹ Later Philip Mauret worked on improving the procedure and in the last two decades, laparoscopic cholecystectomy has become the gold standard for the surgical treatment of gall stone disease.

The advantages of laparoscopic cholecystectomy over open surgery include shorter hospital stay, less postoperative pain, faster recovery, better cosmesis.² The complications encountered during laparoscopic cholecystectomy are numerous viz. related to this specific unique technique, complications related to anesthesia, peritoneal access, pneumoperitoneum and due to thrombocoagulation. Specific complications per se due to laparoscopic cholecystectomy are hemorrhage, gall bladder perforation, bile leakage, bile duct injury, biliary fistula, wound sepsis, hematoma and foreign body inclusions. Presence of one or more of these complications can necessitate the conversion to open cholecystectomy.³

However, the conversion from laparoscopic to open cholecystectomy results in a significant change in outcome for the patient because of the higher rate of postoperative complications such as prolonged hospital stay in addition to the effect and the long term sequel due to cause of conversion itself as bile duct injury.⁴ Conversion to open cholecystectomy is occasionally necessary to avoid or repair injury, delineate confusing anatomic relationships or treat associated conditions. This study was planned to identify the circumstances and the risk factors influencing the conversion from laparoscopic cholecystectomy to open procedure.

AIMS AND OBJECTIVES

To identify the risk factors predictive of conversion of laparoscopic cholecystectomy to open surgery.

MATERIAL AND METHODS

Study Centre

A prospective study was done in the Department of Surgery in

J.A. Group of Hospitals, Gwalior (M.P)

Sample Size

We recruited 50 patients according to inclusion and exclusion criteria for a time period from 2019 to 2022.

Inclusion Criteria

1. Patients with diagnosis of cholelithiasis
2. Patients in the age group of 18 to 70 years.
3. Patients willing to give informed consent.
4. Patient in whom intraoperative conversion was done from laparoscopic to open cholecystectomy.

Exclusion Criteria

1. Local and systemic infections.
2. Refusal to give consent.
3. Patient who were medically unfit for surgery.

METHODS

This was a prospective study to assess the causes of conversion to open from laparoscopic cholecystectomy from 2019 to 2022. For this purpose 50 cases were recruited in all surgical units of J. A. Group of Hospitals, Gwalior. All cases which were included in this study were diagnosed as symptomatic gall stones disease clinically and on ultrasonography.

All patients had no previous history of upper abdominal surgery and those with previous upper abdominal surgery were chosen for the open procedure. Cases that were admitted for laparoscopic cholecystectomy were prepared preoperatively by taking clinical history, doing the general investigations such as blood sugar, haemoglobin, renal function tests, liver function tests, ECG, chest x-ray and abdominal ultrasound. Post-operative antibiotics were used routinely. Additional information recorded during surgery, time duration from introduction of ports till the decision of conversion and the cause of conversion were recorded. Data sheet was prepared with the help of other team members. Standard technique for laparoscopic cholecystectomy was practiced; nasogastric tube was not used routinely but occasionally. After general anesthesia and positioning of the

patient and draping, insufflations were achieved through a Veress needle. Carbon dioxide was used as the insufflation gas. 30 degrees telescope was used through 10 mm port at umbilicus. Standard procedures were done through four ports technique. Graspers, dissectors, spatula, L-shaped cauterization tool, suction irrigation machine, Babcock forceps, and Veress needle were required for operative procedure. Per operative cholangiogram facilities were not available at our center.

RESULTS

Table 1: Age wise distribution of study participants

Age group (yrs)	n	%
<30	5	10%
30-45	28	56%
46-60	12	24%
>60	5	10%
Total	50	100%

Table 2: Gender wise distribution of participants

Gender	n	%
Male	10	20%
Female	40	80%
Total	50	100%

Table 3: Distribution of study participants according to causes of conversion to open surgery of laparoscopic surgery cases.

S.No.	Causes of conversion to open surgery	n	%
1.	Dense Adhesion and Disturbed Anatomy	16	32%
2.	Acute Inflammatory conditions of calot's triangle	6	12%
3.	Bleeding	6	12%
4.	Impacted Big Stone in Hartman's Pouch	3	6%
5.	CBD Injury	2	4%
6.	CBD Stone	2	4%
7.	Bowel Injury	3	6%
8.	Instrumental Failure	1	2%
9.	Acute Inflammatory Changes + Dense Adhesion and Disturbed Anatomy	2	4%
10.	Bleeding with Acute Inflammatory Changes in calot's	1	2%
11.	Bleeding with Dense Adhesion and Disturbed Anatomy	1	2%
12.	CBD Stone with CBD Injury	1	2%
13.	Dilated Cystic Duct with Acute Inflammatory Changes	1	2%
14.	Dilated Cystic Duct with Acute Inflammatory Changes with Dense Adhesion and Disturbed Anatomy	2	4%
15.	Dilated Cystic Duct with Dense Adhesion and Disturbed Anatomy	1	2%
16.	Instrumental Failure with Bleeding	1	2%
17.	Instrumental Failure with Dense Adhesion and Disturbed Anatomy	1	2%
	Total	50	100%

DISCUSSION

Cholelithiasis is a very common disease entity. Complications of cholelithiasis are frequent and serious and this has made it an most important surgically correctable diseases. Open cholecystectomy has been the gold standard treatment for gallbladder diseases for more than 100 years since Carel Johann Langenbuch performed first open cholecystectomy in 1882.⁶ The first laparoscopic cholecystectomy was performed in human being in 1987 by Dr. Philip Mouret. It has become the new gold standard treatment and almost replaced open cholecystectomy for the treatment of gallstone disease.⁶ The first laparoscopic cholecystectomy was performed in India at the J J Hospital, Mumbai in 1990, followed by few months later in Pune by Dr. Jyotsna Kulkarni.

It is important to keep in mind that conversion from laparoscopic surgery to open surgery should not be seen as a complication, but rather a matter of sound surgical judgment as safety of the patient is of foremost importance.

In our study, maximum incidence of gall stone disease were seen in the age group 30-45 year (56%) followed by 46-60 year (24%), youngest being 25 year and oldest 68 year.

Similar peak incidence in the in the 4th and 5th decade have been reported by studies by **Thomas B Hugh et al⁸** and **R Schtmitz et al⁹**.

In our study, female preponderance (80%) were observed which are very similar to study observed by **Fraze and et al¹⁰** and **U Berggren et al¹¹**. The reason for high incidence in females could be that pregnancy and child birth have a direct influence on biliary stasis, weight gain and consequently hypercholesteremia.

Conversion to open procedure is considered a major morbidity of laparoscopic cholecystectomy as it loses its supremacy over open cholecystectomy once the conversion takes place.

In the study 16 out of 50 patients i.e. 32% had Dense adhesions and disturbed anatomy which was the most common cause leading to conversion from open to laparoscopic, 6(12%) had acute inflammatory changes and 6 (12%) had bleeding 3 patients had impacted stone in Hartmans pouch 2 had CBD injury 2 had associated CBD stone 3 (6%) had came about with Bowel injury and 1 had developed instrumental injury, 11 had multiple causes for conversion .In this 2 had acute inflammatory changes with dense adhesion and disturbed anatomy, 1 had CBD stone with CBD injury, 1 patient had Dilated cystic duct in addition to acute inflammatory changes ,2 had Dilated cystic duct with acute inflammatory changes and disturbed anatomy 1 had Dilated cystic duct with dense adhesion and disturbed anatomy 1 had Instrumental injury along with bleeding and 1 had instrumental injury with dense adhesion and disturbed anatomy.

In study by **Ibrahim et al¹²**, **Al Salamah¹³** and **Bingener et al¹⁴** found that difficult anatomy as the most common reason for conversion to open procedure observed in 41.5%, 48.5% and 50% of the patients respectively. **Waseen Memon et al¹⁵** and **Saeed Hadi et al¹⁶** claimed that the most common cause of conversion was frozen Calot's triangle. Frozen Calot's triangle is defined as dense adhesion around the Calot's triangle. **Al-Saigh et al¹⁷** and **Meshikhes et al¹⁸** from Saudi Arabia reported a conversion rate of 11% in their study, the commonest cause of conversion being difficult anatomy.

CONCLUSION

1. Most common age group of presentation of gallstone was found to be 30-45 years.
2. The present study on 50 patients has shown that gall stone disease were more common in females than males.
3. The main cause for conversion from laparoscopic to open procedure was dense adhesions and distorted anatomy.

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