

STUDY OF OPEN CONVERSION IN LAPAROSCOPIC CHOLECYSTECTOMY

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ABSTRACT

Background: Laparoscopic surgery has revolutionized the way it is performed for an increasing number of patients. In this study, we determined the various reasons for conversion of laparoscopic cholecystectomy in our setup.

Material & Methods: This was a descriptive study, conducted at Ghulam Muhammad Mahar Medical College Hospital and Hira Medical Centre, Sukkur, from January 2006 to June 2010. The study included 1224 patients with symptomatic cholelithiasis, who underwent laparoscopic cholecystectomy. All patients were operated by experienced laparoscopic surgeons with experience of more than 300 Laparoscopic cholecystectomies. Cases that required conversion from laparoscopic to open surgery were analyzed and the factors responsible for such conversion were studied.

Results: The mean age of patients was 45 years and male to female ratio 1:4. The mean operating time was 45 minutes and average hospital stay was 2 days. Out of 1224 patients, 8(0.65%) required open conversion. Factors responsible for open conversion were dense adhesions in 3(0.25%), fibrosed gall-bladder with cholecystoduodenal fistula in 1(0.081%), CBD injury 1(0.081%), Mirizzi's syndrome 1(0.081%), and instrument failure as well as power breakdown with backup failure in 2(0.16%) conversions.

Conclusion: Open conversion rate of laparoscopic cholecystectomy in this study was 0.65%. The commonest cause of conversion was dense adhesions around the gall-bladder. Preventable factors like instrument failure or power breakdown can be addressed by a reliable back up.

KEY WORDS: Laparoscopic cholecystectomy, Open conversion, Risk factors.

INTRODUCTION

Gall-stones are a major health problem worldwide. Laparoscopic surgery has revolutionized the way it is performed for an increasing number of patients. Laparoscopic cholecystectomy (LC) has almost replaced open cholecystectomy for the treatment of symptomatic cholelithiasis. It has proved to be an effective and safe procedure both in elective and emergency conditions; however, conversion to open surgery is inevitable in some difficult cases and is required for the safety of the patients.

The factors leading to conversion may be patient related such as distorted anatomy, uncontrollable bleeding, trauma to bile duct or other viscera; surgeon related such as less experience of difficult situations and equipment related like instrument failure or power break down with backup failure.

A conversion rate of 1.5 to 19% have been reported in different studies.¹ However the outcome of laparoscopic cholecystectomy is influenced

greatly by the training, experience, skills and judgment of the surgeon.²

In this study we determined the various reasons for conversion of laparoscopic cholecystectomy in our setup and recommended measures to reduce the conversion rate.

MATERIAL AND METHODS

This study was conducted at Ghulam Muhammad Mahar Medical College Hospital and Hira Medical Center, Sukkur, from January 2006 to June 2010.

All the patients who presented with cholelithiasis were included in the study. The patients having history of jaundice, common bile duct dilatation (>8mm in diameter on ultrasonography, choledocholithiasis and carcinoma gall bladder were excluded from the study.

Data of all the patients was recorded, including demographic information, past medical history, indications for operation, duration of operation, operative findings, reasons for conversion and postoperative complications.

Standard laparoscopic cholecystectomy was performed with four ports and Hassan's open technique. Adhesions of gall bladder were separated by blunt, sharp and hydro-dissection as well as with the help of suction cannula and gauze piece. Distended gall bladder (especially mucocoele and empyema) were decompressed by suction and aspiration, cystic duct and artery skeletonized, clipped and divided. Fundus first method and sub-total cholecystectomy at callot's triangle in patients with unclear callot's anatomy. Drains were kept selectively in difficult cases with the risk of postoperative bleeding or biliary leakage. Prophylactic antibiotics (2nd or 3rd generation cephalosporin) were used for initial two days (3 I/V doses). Details of patients who underwent conversion to open operation were analyzed and the factors responsible were noted.

RESULTS

The mean age of patients undergoing laparoscopic cholecystectomy was 45 years and male to female ratio was 1:4. The mean operating time was 45 minutes and average hospital stay 2 days.

Only 8 (0.65%) patients out of 1224 patients in the study had to be converted to open operation. Various reasons for open conversion are given in Table 1.

Thick dense adhesions were present in 3 (0.25%) patients all around the gall bladder and callot's triangle making dissection difficult and unsafe. CBD injury was recognized during surgery in 1 patient and was converted to open procedure and managed by T-tube placement. Instrument failure included failure of insufflators in 1 case

Table 1: Reasons for open conversion (n=1224).

No.	Reasons for conversion	Number	Percentage
1	Dense adhesions	3	0.25
2	Instrument / power failure	2	0.16
3	Common bile duct injury	1	0.08
4	Mirizzi's syndrome	1	0.08
5	Fibrosed gall bladder with cholecystoduodenal fistula	1	0.08
	Total	8	0.65

and the failure of camera due to repeated disruption of power supply with back up failure in 1 case. Mirizzi's syndrome and cholecystoduodenal fistula found in 2 patients and managed by open conversion. Rest of the cases had laparoscopic cholecystectomy with success and minimal complications.

DISCUSSION

Laparoscopic cholecystectomy is a revolution in the field of modern surgery and is considered as the gold standard treatment for gall stones. Conversion to open technique is a major morbidity of laparoscopy as it loses its supremacy over open technique once the conversion takes place. With growing experience of LC and completion of the learning curve, the indications for LC have been extended approaching that of open cholecystectomy. Complications of LC have been minimized to as low as 2-6%.³ However, a substantial proportion of patients had to be converted to open operation because of technical difficulties or intra-operative complications.⁴ The conversion rate of LC has been reported in different studies from 2 to 15%.⁵⁻⁷ The conversion rate in the present study was 0.65% which is less than the conversion rates reported in the literature.⁸⁻¹⁰ However the rate of conversion is high in studies from the Asian countries as compared to those from western world.¹¹

The factors predisposing to conversion from laparoscopic to open cholecystectomy have been explored in different studies.^{12,13} In our study the most common cause of open conversion was dense adhesions (0.25%), while other causes found in this study were the fibrosed gall-bladder with cholecystoduodenal fistula (0.08%), CBD injury (0.08%) and Mirizzi's syndrome (0.08%). Singh and Ohri¹⁴ in their study reported adhesions as the cause of conversion in 16.7%, empyema gall-bladder in 2.05% and contracted gall-bladder in 1.4% cases. With more experience and technical advances intra-operative bleeding and CBD injuries are being increasingly managed laparoscopically. If CBD stones would not be managed laparoscopically, the ERCP retrieval of stones is the best option.

Jaffary et al in their study of 93 patients undergoing LC found a conversion rate of 7.53%, instrumental failure being the commonest cause and instruments that failed during surgery included insufflators, camera, and clip applicator.¹⁵ In our study, only 0.16% cases were converted to open operation due to instrument (camera and insufflator) failure.

Most conversions occurred after a simple inspection or a minimum dissection. The decision to convert should be considered as a sign of sur-

gical maturity rather than a failure. Conversion should be opted in the beginning at the time of recognition of a difficult dissection rather than after the occurrence of complications.^{16,17} It is vital for the surgeons and patients to appreciate that the decision to go for conversion is not failure but rather implies safe approach and sound surgical judgment.

But measures should be taken to decrease the open conversion in certain cases. Experience of surgeon is directly proportional to conversion.^{18,19} More conversions occur during learning phase or when experienced laparoscopic surgeon is not present in the back up. Difficult dissection due to dense adhesions is the commonest cause of open conversion.

Adhesions could be separated laparoscopically by means of blunt and sharp dissection with the help of cautery, harmonic scalpel, suction nozzle or gauze dissection. We did so in many cases successfully in this study. We had 53 patients with unclear Callot's anatomy who were managed by laparoscopic sub-total cholecystectomy as done by Mahmud S et al²⁰ and Chowbey et al.²¹

Previous abdominal surgery can also be a cause of conversion. We had 47 patients with history of previous lower abdominal surgery and 9 patients with upper abdominal surgery. We did not encounter any difficulty in access in these patients except a female patient who had been operated for para-umbilical hernia with sublay mesh. We always used Hassan's open technique for insertion of first port and gained initial access through upper quadrant in these patients.

Morbid obesity is considered as a contraindication and can contribute to open conversion. We did LC in many obese patients in our study with no conversion. We placed operating ports 3-5 cm above the umbilicus in the midline without using extra long trocars or graspers.

Wide cystic duct could be a cause of conversion. We managed wide cystic duct by knotting and suturing alone and there was no open conversion.

Spillage of stones as a cause of conversion was observed by Frazee RC et al.²² We used self-designed retriever bag (hand glove) for retrieval of stones and gall-bladder, so there was no spillage of stones in our study.

Only 1 patient with CBD injury was converted to open procedure in our study. Bile duct injury can be prevented by lateral retraction of the infundibulum, precise identification of the cystic duct

junction with the gall bladder or the CBD, dissection of the gall-bladder neck from the liver towards the cystic duct, avoidance of blind use of clips and the use of a bipolar cautery or harmonic scalpel for hemostasis to prevent thermal injuries.

Equipment/instrument failure and power breakdown should be prevented and managed by proper back up.

CONCLUSION

In this study only 0.65% open conversion rate was found and the commonest cause of conversion was the presence of dense adhesions around the gall-bladder. Certain preventable factors like instrument failure and power breakdown can be addressed by a reliable back up.

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