

FACTORS RESPONSIBLE FOR CONVERSION OF LAPAROSCOPIC CHOLECYSTECTOMY

SYED NIZAMUDDIN, SAJJAD ASHRAF, UMAIR-UL-ISLAM

Department of Surgery, Surgical Unit III, Dow University of Health Sciences & Civil Hospital, Karachi

ABSTRACT

Objective: To evaluate the possible risk factors responsible for Conversion of laparoscopic to open Cholecystectomy

Study Design: Descriptive case series.

Setting & Duration: Secondary and Tertiary Care Hospitals, Karachi from April 2004 to March 2008.

Patients: Medical records of 305 patients who were diagnosed of gall bladder disease were evaluated retrospectively

Methodology: Complete data of patients who were treated for inflammatory gall bladder disease were studied so as to predict risk factors which compel a surgeon to convert laparoscopic to open Cholecystectomy.

Results: Out of 305 patients in whom laparoscopic Cholecystectomy was attempted, 20(6.5%) required conversion to open surgery. The most common reason for conversion was dense adhesion in 10 cases. Uncontrollable bleeding occurred in 3 cases; 2 of them from cystic artery and one from gall bladder bed. Bile duct injury occurred in 2 cases, dense unseperable adhesion 2 cases, inability to define Anatomy in Callot's triangle resulted in conversion in 3 cases, choledochodudenal fistula 1 case and lost gall bladder after it fell into the peritoneal cavity was the cause of conversion in one patient.

Conclusion: The conversion rate is decreasing mainly because of the experience the surgeon community has gained during last three decades and advancement in the quality of instruments.

KEY WORDS: Laparoscopy, Minimal Access Surgery, Cholecystectomy

INTRODUCTION

Cholelithiasis is known to affect mankind for ages, and since 1892 when the first Cholecystectomy was done by Langenbach, practically nothing changed in the operative methods, the most favored treatment was removal of the gallbladder by open Cholecystectomy. However, constant progress in medicine and the introduction of new surgical methods, mainly minimally invasive ones, contributed to a change in the standards of treatment of cholelithiasis.¹ In 1985 Erich Mühe performed the first laparoscopic Cholecystectomy.² Two years later, this method was improved by Philip Mauret.³ Today, laparoscopy is a gold standard in the treatment of cholelithiasis.³ The main advantage of this type of operation is maintaining continuity of the abdominal wall, which

decreases tissues damage. It shortens hospitalization time and enables the patient to return quickly to full life activity. An additional benefit is reduced post-operative pain and a much better cosmetic effect.^{3,4} The disadvantages are few and with increasing experience are decreasing in number and many of the previous criteria like obesity, acute inflammation, adhesions are now not absolute contraindications.⁵ More over in cases of difficulties in laparoscopic Cholecystectomy, the only way of resolving the problem and to save the patient from possible complications and threat to life is conversion, i.e. a change to the traditional open Cholecystectomy.⁵

METHODOLOGY

The medical records of 305 patients clinically diagnosed with gall bladder diseases at different secondary and tertiary care hospitals of Karachi between April 2004 and March 2008 were retrieved. There were 61 males (20%) and 244 females (80%) ranging in age from 16 to 76 years (mean 40.2 years). Gall bladder disease was diagnosed on the bases of history, clinical examination and ultrasound examination. All patients had routine basic preoperative tests; including liver function tests (serum alanin transaminase, aspartate transaminase, alkaline phosphatase, gamma-glutamyl transpeptidase,

Correspondence:

Dr. Syed Nizamuddin, Associate Prof. Surgery,
Surgical Unit III, Civil Hospital, Karachi.

Res: 1-E, 10/8, Nazimabad, Karachi.

Phones: 021-6602631, 0300-8245319.

E-mail: s.nizam@duhs.edu.pk

and bilirubin) The indications for surgery included chronic calculus cholecystitis in 270(88.5%) cases, chronic acalculus cholecystitis (cholecystosis) 3(1%) cases and acute calculus cholecystitis in 32(10.5%) cases. Laparoscopic Cholecystectomy was performed electively in all. Despite the improvement in the equipment and the advancement in surgeon's experience all patients undergoing LC were informed of the possibility of converting the procedure to OC. The 273 cases of chronic cholecystitis were operated on first operation lists where as patients with acute cholecystitis after being stabilized on conservative therapy were discharged and readmitted on the average 6 weeks later for surgery. In our series 28 patients had previous abdominal surgery, mainly appendectomies, umbilical hernia repairs and caesarean sections. Prophylactic antibiotics (third generation cephalosporins) were given to all patients immediately before the induction of anesthesia, and a nasogastric tube was inserted routinely in all patients during the perioperative period. Laparoscopic Cholecystectomy was performed using four ports with insufflation of CO₂ through the umbilicus to establish the pneumoperitoneum. Exposure of the Calot's triangle as well as dissection of the gall bladder was done using a curved hook with monopolar coagulation current. Intraoperative cholangiogram was done only in 12(3.94%) cases when raised liver enzymes were present. The postoperative hospital stay ranged from 1 to 20 days (mean 1.43 days). Our policy was aimed to discharge patients on the 1st postoperative day. This was achieved in 215 patients (10.5%), 65 patients (21.3%) were discharged after 2 days. The remaining 25 (8.2%) were discharged on the 3rd day or soon after following surgery, except for one 1 patient who had bile leakage and remained hospitalized for 20 days.

RESULTS

Of the 305 patients in whom laparoscopic Cholecystectomy was attempted, 20(6.5%) required conversion to open surgery. The most common reason for conversion was dense adhesions due to previous surgeries in 10 cases. Inability to define anatomy in patients with inflamed contracted gallbladder resulted in conversion in 3 patients. Laparoscopically uncontrollable bleeding occurred in 3 cases 2 of them from cystic artery and one from gall bladder bed. Bile duct injury occurred in 2 cases, one of this occurred due to the use of diathermy near the duct and other occurred while separating adhesions. In one case the gall bladder fell into the abdominal cavity and could not be visualized thus to locate it umbilical port was enlarged to 5cm incision in transverse direction and lost gall bladder was easily retrieved. In the last remaining case a Cholecystodeudnal fistula was found and open surgery had to be performed. No significant relation was found between the likelihood of conversion and any of the following: age, concomitant disease, history of pancreatitis, and preoperative abnormal liver function test results. Significant predictors of conversion to open Cholecystectomy were male gender, previous abdominal surgery, acute cholecystitis, and history of jaundice, obesity, suspicion of common bile duct stones, uncontrolled bleeding and thickened gallbladder wall. There was no mortality. Conversions were more in the first 150 cases, as compared to the next 150 in the ratio of 11 to 7.

DISCUSSION

Since, the first laparoscopic cholecystectomy performed in 1987 there is continuous adoption of this procedure

Table I. Conversion rate in World Literature

Authors	Year	Country	Total Patients	No.	%
Tariq S. Mufti et al ²¹	2007	Pakistan	60	3	5
Mehmet K et al ²²	2007	Turkey	300	23	7.7
Ishiazaki Y et al ¹⁵	2006	U.K	500	32	6.4
Nachnani J et al ²⁵	2005	India	105	12	11.4
Wael F Hasaniah et al ²⁴	2002	Kuwait	2750	150	3.8
Bakos E et al ⁵	2008	Slovakia	1535	89	5.7
Kama N A et al ⁶	2001	Turkey	1000	48	4.8
Ciesieczy B et al ²³	2008	Poland	765	106	13.8
Tarcoveanu E et al ¹⁰	2005	France	900	144	16
Current Study	2008	Pakistan	305	20	6.5

and down word trend for open cholecystectomy. In developed countries less than 20% of the total Cholecystectomys are performed by open method.^{7,8} In Pakistan and other developing countries the procedure is still common due to lack of skill and apparatus.^{7,8,9} Morbid obesity had been considered as a contraindication, and can contribute to conversion.¹⁰ We had 6(2.01%) obese patients in this study but we did not face any difficulty in operating on them.

Previous abdominal surgery with its contribution of adhesions has been described as a cause of conversion in all studies.^{11,12} We had 87(87.5%) patients with adhesions. Adhesions could be separated successfully laparoscopically in 77(25.2%) patients by means of blunt and sharp dissection, and by means of diathermy, irrigation and suction, wherever necessary, in the remaining 10 patients conversion had to be done. Cystic artery bleeding has been reported as a cause of conversion^{13,14}, Cystic artery injury occurred in 5(1.65%) cases in this study. Bleeding was effectively controlled in 3(1.00%) cases whereas 2(0.65%) cases were converted. Significant bleeding from liver bed occurred in 3(4.55%) cases in this study. This bleeding was managed in 2 (2.84%) cases by means of compression with gallbladder, sponge and/or sponge stone application. But in 1 case bleeding from liver bed couldn't be controlled and the procedure had to be converted to open Cholecystectomy. Uncontrolled bleeding as a cause of conversion has also been reported in other studies.^{15,16} Spillage of stones as a cause of conversion has been reported by many surgeons,¹⁷ in this study, spillage of stones occurred in 15(4.9%) cases. In these patients most of the stones were retrieved in finger stall of a surgical glove followed by saline irrigation and suction. Drain tubes were kept in all of these cases. In these cases patience and meticulous search always proved rewarding. Instrument/Equipment failure has also been described as a cause of conversion.¹⁸ We were able to replace failed or broken instruments with new one and no conversion required for this problem. We noticed common bile duct injury in 1(0.65%) patient who required conversion. Bile duct injury can be prevented by precise identification of the cystic duct junction with the gallbladder at one end and with common bile duct at the other and by avoiding blind use of clips, diathermy etc.¹⁹⁻²¹

We had 11(3.35%) patients with unclear calot's triangle anatomy. All these patients previously had attacks of acute cholecystitis, empyema gall bladder, obstructive jaundice etc. Many in this group had contracted gallbladders 3(1.00%) of them had to be converted.²²⁻²⁵ This entity is well documented in literature.²⁰ Comparison of our study with results of other researchers is given in Table I.

CONCLUSION

With passage of time conversion rate is decreasing mainly due to the experience the surgical community has gained during last three decades and advancement in the instruments used in the laparoscopic surgery.

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