
Difficulties in Laparoscopic Cholecystectomy, Local Experience

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Abstract:

A retrospective review is aimed to evaluate the difficulties encountered during laparoscopic cholecystectomy (LC) and local factors influencing the conversion. The data collected from 300 patients had LC over one year period, in relation to clinical presentation. Twenty two cases were converted to open cholecystectomy. The reasons for conversion were difficult anatomy in 50%, bleeding 41%, and 9% due to individual center related factors. It was evident that the conversion rate was high especially in cases with acute cholecystitis and post biliary pancreatitis.

In conclusion, a learning curve is required to build up the experience and it should be organized and phased. Laparoscopic surgery should be done in an optimized environment. LC for acute cholecystitis must not be delayed beyond 72 hours.

Key words: Difficult laparoscopic cholecystectomy; Conversion; Acute pancreatitis, Acute cholecystitis; Technical difficulties.

Introduction:

Cholecystectomy is one of the common operations performed by surgeons for the last 20 years. Laparoscopic cholecystectomy was first performed in France in 1987 but was not widely publicized until it was performed in USA 1988. Laparoscopic cholecystectomy diminishes postoperative pain, morbidity and duration of hospitalization and it has rapidly become the gold standard treatment of cholelithiasis.^{2,6,8,9} The indications for laparoscopic cholecystectomy should be the same for open cholecystectomy. Moreover, contraindications of employing laparoscopic approach have diminished considerably as experience has been gained, thus absolute contraindications are almost similar to those for open cholecystectomy.

Conversion of the operation to an open approach is not considered as a complication. It is rather a wise decision by the surgeon to prevent further damage if Laproscopy proceeds. The reasons of conversion generally include technical difficulties due to adhesions or inflammation, namely, acute cholecystitis and pancreatitis, that interfering with a clear view of the operative field or intra operative complications.

Prediction of the risk of conversion or a difficult laparoscopic procedure would allow efficient arrangement of the operative schedule

and ensure the availability of experienced laparoscopic surgeons for the procedure. Moreover, it would also facilitate an earlier intra operative decision to convert in the event of difficulty thus lowering the risk of iatrogenic laparoscopic complications as bile duct injury.^{4,7,10,12,14}

The aim of this study therefore, is to analyze the factors attributed to convert laparoscopic cholecystectomy, and hence predicting the conversion rate generally. Furthermore to assist the safety of performing laparoscopic cholecystectomy in acute pancreatitis and cholecystitis.

Patients and methods:

Between 1-02-2006 to 30-12-2006, 300 laparoscopic cholecystectomies were carried out at the department of general surgery I "Tripoli Medical Center".

The data were collected retrospectively from 300 patients. Information regarding the age, sex and clinical presentation was analyzed.

The Patients were classified according to the clinical presentation into, chronic cholelithiasis, biliary colic, acute cholecystitis and other conditions. All patients underwent routine blood testing before surgery including liver biochemical assessment and abdominal ultrasonography of the hepatobiliary system.

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In those patients with history of obstructive jaundice, pancreatitis, elevated bilirubin or alkaline phosphatase and in cases where ultrasound revealed dilated biliary ducts or suspicion of common bile duct stones MRCP was performed. If there was a calcular obstruction, ERCP with papillotomy then performed and the patient planned for a laparoscopic cholecystectomy.

Laparoscopic operations were carried out by senior surgeons using the standard four port, two hand technique. The data regarding the

reasons for conversion from laparoscopic cholecystectomy to an open approach were analyzed.

Also auditing the complications including the hospital stay of emergency cholecystitis in contrast with elective operations

Results:

Out of 300 patients there were 32 male and 268 female (Fig. 1) with male to female ratio 1:9, and mean age of 46 (range 27-65) years.

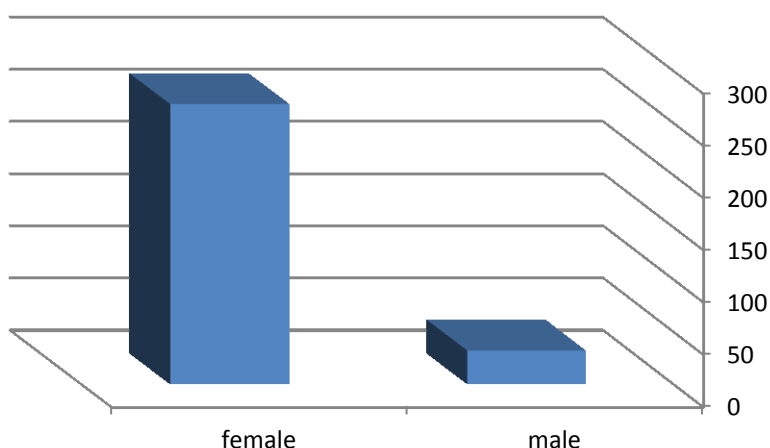


Fig. 1: The number of patients according to their gender.

The 300 patients, presented with the following conditions (Fig. 2):

1. gall bladder stones with vague symptoms of dyspepsia or mild right hypochondrial pain

2. aggravated by fatty meals (180 patients)
2. biliary colic (66 patients)
3. acute cholecystitis (44 patients)
4. other conditions (10)

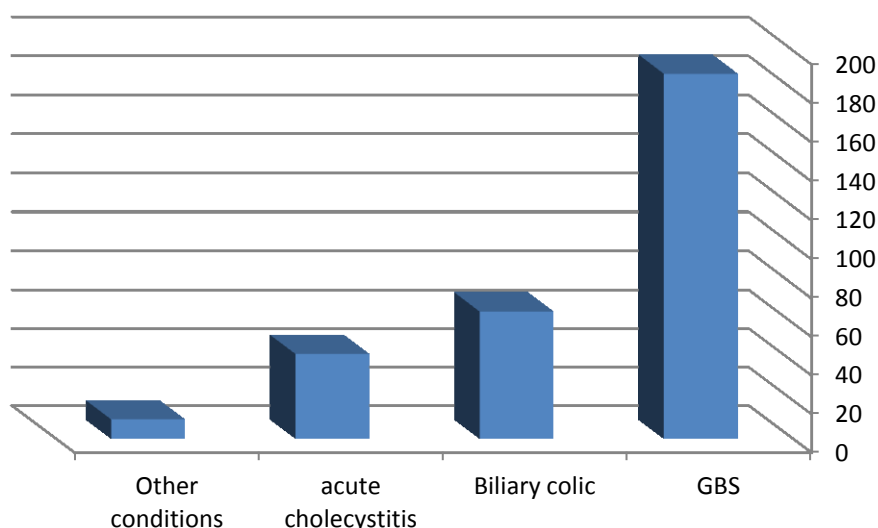


Fig. 2: The clinical presentation of the patients.

Patients mentioned under the category of other conditions represent 10 patients who had an attack of biliary pancreatitis treated in the Gastroenterology department where they underwent ERCP with sphincterotomy and after the improvement of their condition they had laparoscopic cholecystectomy in the same admission.

Twenty two patients underwent conversion, 20 of them were females and two males with a mean age of 46 years.

Reasons for conversion from laparoscopic to open cholecystectomy were (table 1):

1. Inability to define anatomy with inflamed edematous gall bladder and dense adhesion of the gall bladder to either duodenum or the CBD in (11) patients.
2. Laparotomy was required to avoid or for the management of intra-operative complications in (11) patients; nine of whom had intra operative bleeding & two of whom due to laparoscopic technical cause.

Table (1) Reasons for conversion to open cholecystectomy in selected 300 patients.

The reasons of conversion	No. of the patients
1- Severe inflammation or dense adhesions	11
2- Bleeding	9
3- Technical cause	2

Out of the 44 patients operated due to acute cholecystitis 11 cases converted to open cholecystectomy due to sever inflammation and adhesions in 6 cases, and bleeding in 5 cases (table 2).

The conversion rate in the 180 patients who had GBS was low, and only in 5 patients, one patient because of adhesions, 3 patients due to bleeding and one case due to technical cause, which was unavailability of the proper instruments (table 2).

In patients admitted with biliary colic, also the rate of conversion was low and out of the 66

cases, 3 patients the laparoscopic procedure was converted to open, in one case due to adhesions, a second patient because of bleeding and the last case due to technical error (Table 2).

In patients under the category of other conditions, and as previously mentioned all of them were post-biliary pancreatitis managed in gastroenterology where they had ERCP and papillotomy, the 10 patients underwent laparoscopic cholecystectomy, three of them converted to open cholecystectomy due to adhesions (Table 2).

Table 2: The reasons for conversion in relation to the gallbladder disease

	GBS	Biliary colic	Acute cholecystitis	Other conditions	Total
Adhesions	1	1	6	3	11
Bleeding	3	1	5	0	9
Technical causes	1	1	0	0	2
Total	5	3	11	3	

The mean hospital stay post laparoscopic cholecystectomy was 3 days.

Discussion:

Until relatively recently, traditional "open" cholecystectomy was the preferred therapy for gallstone disease. The morbidity of this operation, however, led to a search for other means to manage gallstones. The recent introduction of "minimally invasive" techniques to remove the gallbladder has revolutionized the surgical approach to

cholelithiasis as well as to other abdominal diseases.^{2,6,8,10,11,13}

Laparoscopic cholecystectomy enabled a more rapid return to normal activities than open cholecystectomy.

In this study most of these patients were females (90%) their mean age was 46 years, this is well correlated to the results of other studies worldwide taking in mind the fact that gallbladder disease is common in middle age females. Sixty percent of the patients presented

with fatty dyspepsia and gall bladder stones proved by ultrasound examination, and most of the surgeons worldwide advice laparoscopic cholecystectomy for these patients which is very safe in these patients and the rate of conversion is low, in this study it was 2.7% in other studies the rate was 0.5 to 5% depending on the experience of the center performing laparoscopic cholecystectomy.

The reasons for conversion in this group were inability to identify anatomical structures correctly secondary to severe inflammation or dense adhesion in one patient 0.5%, three patients due to bleeding 1.6%, and in one patient 0.5% because of poor instrumental surgical technique. It is wise to mention that these patients are not uncommon by operated by the beginners in laparoscopic surgery which might influence the conversion rates.

Twenty two percent of the patients presented with biliary colic. The conversion rate was high (4.5%), the reasons for conversion were; adhesions in one case, the other one due to bleeding and the last case due to instrumental failure. In this group the incidence of the causes necessitated conversion were the same (1.5%). This can be attributed to the quite small number of the patients. In the literature the incidence of conversion is low (2%).^{4,13,14}

Patients diagnosed as acute cholecystitis were 14.6%, and the incidence of conversion was 25% which is considered high, although in other studies it is still high but not more than 15%. The main reason for conversion was unclear anatomy due to severe adhesions in 13.6%, bleeding in 11.4%. In many studies it was proved that laparoscopic cholecystectomy for acute cholecystitis is quite difficult especially if it is performed after 72 hours from admission, and many studies have shown that performing surgery as soon as possible can minimize the need for conversion. Delay in performing laparoscopic cholecystectomy can result in dense adhesions with fibrosis and contracted gall bladder with thickening of the wall that make dissection and identification of the normal anatomy more difficult and associated with increase risk of complication. In these situations it is better to treat the patient conservatively, and to do laparoscopic cholecystectomy after six weeks. But if the patient was operated in for acute cholecystitis, It should be performed by experienced laparoscopic surgeons and it is un-wise to try

to complete the operation laparoscopically if the anatomy was unclear, putting the patients under the risk of serious intra-abdominal injuries. So conversion in these cases can lead to avoidance of unwanted morbidity.^{1,5,7,12-15}

The last 10 patients who were operated after an attack of biliary pancreatitis and after ERCP with sphincterotomy, the conversion to open cholecystectomy noted in 30% all of them due to adhesions which obscured the normal anatomy especially at Calot's triangle. It is agreed world wide the association between an attack of biliary pancreatitis and adhesions which make laparoscopic cholecystectomy difficult.

From the above mentioned information, it is clear that adhesions were the commonest reason for conversion 50% and this is mainly related to difficult orientation to the anatomy and it is better to convert a laparoscopic procedure to an open one in the favor of decreasing the morbidity which is related to iatrogenic injuries. The second common cause was bleeding 41% and here again it is better to stop the source of bleeding under complete vision than to endanger the patient health. 9% of the patients who had converted to open cholecystectomy, the reason was instrumental cause and it is advised by many authors to revise the whole laparoscopic unit before operation avoiding in this way unnecessary conversion to open cholecystectomy.

The reported incidence of bile duct injuries with laparoscopic cholecystectomy has been as high as 0.7%, a rate greater than that accepted for open cholecystectomy, which has ranged from 0.1% to 0.2%. It has been proposed that these injuries are attributable to the "learning curve" and that the incidence of laparoscopic bile duct injury should ultimately approach that of open cholecystectomy. In this study, bile duct injury was not diagnosed in any patient intra operatively also it was not the reason for conversion in any case. This can be explained by the fact that more than 90% of bile duct injuries are discovered in the post operative period.

The mean hospital stay was three days, and as compared to other studies it is still long, many centers perform laparoscopic cholecystectomy as one day surgery. In this study the delay is attributed to the longer period of stay for patients who were operated because of acute

cholecystitis or post biliary pancreatitis (around five days).

Conclusions:

- Laparoscopic cholecystectomy provides a safe and effective treatment for most patients with cholelithiasis, and has distinct advantages over open surgery.
- Patients with acute cholecystitis can be managed by laparoscopic cholecystectomy, especially within the first 72 hours period.
- Experienced laparoscopic surgeon should operate on the patients with acute cholecystitis to decrease the iatrogenic associated morbidity and the rate of conversion to open surgery.

References

1. Addison NV, Finan PJ. Urgent and early cholecystectomy for acute gallbladder disease. *Br J Surg*. 1988; 75: 141-143.
2. Berkun JS, et al. Laparoscopic vs. open cholecystectomy: The Canadian experience. *Am J Surg* 1993; 165: 455-458.
3. Geoghegan JG, Keane FBV. Laparoscopic management of complicated gallstone disease. *Br J Surg*. 1999; 86(2): 145-146.
4. Ishizaki Y, Miwa K, Yoshimoto J, Sugo H, Kawasaki S. Conversion of elective laparoscopic to open cholecystectomy between 1993 and 2004. *Br J Surg* 2006; 93:987-991.
5. Knight JS, Mercer SJ, Somers SS, Walters AM, Sadek SA, Toh SK. Timing of urgent laparoscopic cholecystectomy does not influence conversion rate. *Br J Surg* 2004; 91:601-604
6. McMahon AJ, Baxter JN, O'Dwyer PJ. Preventing complications of laparoscopy. *Br J Surg* 1993; 80: 1593-1594.
7. Papi C, Catarci M, D'Ambrosio L, Gili L, Koch M, Grassi GB et al. Timing of cholecystectomy for acute calculous cholecystitis: a meta-analysis. *Amj Gastroenterology* 2003; 99: 147-155.
8. Schwesinger WH, Diehl AK. Changing indications for laparoscopic cholecystectomy. *Surg Cl of North America* 1996; 76(3): 493-504.
9. Soper NJ, et al. Laparoscopic cholecystectomy: The new "gold standard" *Arch Surg* 1992; 127: 917-921.
10. Widdison AL, Norton S, Armstrong CP. Open cholecystectomy in the age of the laparoscope. *Annals of the Royal College of surgeons of England* 1995; 77: 256-258.
11. Schirmer BD, Edge SB, Dix J, et al. Laparoscopic cholecystectomy : treatment of choice for symptomatic cholelithiasis. *Ann Surg* 1999; 213: 665-6770
12. Koo KP, Thirlby RC. Laparoscopic cholecystectomy in acute cholecystitis. *Arch Surg* 1996;131: 540-545.
13. Scott M, Wiesen, Stephen W. Unger, Jamie S. Barkin, et al. Laparoscopic cholecystectomy: the procedure of choice for acute cholecystitis. *Am J Gast*. 1993;88: 334-337.
14. Rattner DW, Ferguson C, Warshaw A. Factors associated with successful laparoscopic cholecystectomy for acute cholecystitis. *Ann Surg* 1993;217: 233-236.
15. Zuker KA, Flowers JL, Baily RW, et al. Laparoscopic management of acute cholecystitis. *AM J Surg* 1993;165: 508-514.
16. McSherry CK, Ferstebgerg H, et al. The natural history of diagnosed gallstone disease in symptomatic and asymptomatic patients. *Ann Surg* 1985;202:59.
17. Seifert E. Endoscopic papillotomy and removal of gallstones. *Am J Gastroenterol* 1988;69:154.