

## Relative Contraindications for Laparoscopic Cholecystectomy

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### Summary:

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**Background:** Acute cholecystitis, morbid obesity and previous upper abdominal surgery have been reported as relative contraindications to laparoscopic cholecystectomy. An analysis of 1150 laparoscopic cholecystectomies performed by our surgical team were undertaken to determine if these relative contraindications led to increased morbidity, an increased rate of conversion to the open technique or longer operating time.

**Methods:** Four hundred thirty four patients (37.7%) had acute cholecystitis, thirty eight patients (3.3%) with upper abdominal surgery and twenty two patients (1.9%) presented with morbid obesity.

**Results:** Morbidity was not increased significantly in these risk factors, but conversion to open cholecystectomy was required in a greater percentage of patients with acute cholecystitis and to a lesser extent in patients with upper abdominal surgery.

**Conclusion:** We favor an attempt of laparoscopic cholecystectomy in patients with these risk factors; however we should keep in our mind the increased possibility of conversion to open cholecystectomy.

**Key Words:** Laparoscopic cholecystectomy - Relative contraindications - Acute cholecystitis - Morbid obesity - Previous upper abdominal surgery.

### Introduction

Laparoscopic cholecystectomy has rapidly gained popularity among surgeons and patients throughout the country. A major concern with any new operative procedure is whether it can be performed safely, particularly when compared with the corresponding open technique.

An estimated 600,000 cholecystectomies are performed annually in the United States. The percentage of these patients who are candidates to laparoscopic cholecystectomy has been a subject to debate. Do the good results from early reports on laparoscopic cholecystectomy reflect a selection bias for patients who have the most favorable anatomy, minimal inflammation and no other co morbid conditions?

A number of relative contraindications have been proposed in determining if a patient is a candidate for laparoscopic cholecystectomy. These include acute cholecystitis, morbid obesity, previous upper abdominal surgery, common bile duct stones, liver cirrhosis and other causes like portal hypertension and pregnancy<sup>(1)</sup>.

Acute cholecystitis, morbid obesity and previous upper abdominal surgery were encountered with some frequency, and patients with these conditions serve as the basis for this report.

### Patients and Methods

This study included 1150 patients who had laparoscopic approach to cholecystectomy; the majority were from my private work and some from my team work in Medical City Hospital.

The study started on October 1999 and stopped on November 2004. Patients characteristics, history of previous surgery, sonographic findings of the gallbladder, the difficulties of the surgical technique, operating time, conversion to the open technique and the intraoperative and postoperative complications were recorded.

All patients who required cholecystectomy underwent an attempt at the laparoscopic procedure. If at any point during the operation, the surgeon thought that the patient would be better served with an open technique, conversion to open cholecystectomy was performed.

No strict criteria were imposed for conversion to open surgery other than the judgment of the operating surgeon.

Three of the relative contraindications were encountered on a regular basis: acute cholecystitis, morbid obesity and previous upper abdominal surgery. Patients were included in the

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category of previous upper abdominal surgery when surgical scars were present from the umbilicus to the xiphoid process. Morbid obesity was defined as patients weighing in excess of 50Kg over the ideal body weight. Acute cholecystitis was defined from the gross operative findings starting from the simple to the severe findings and these include: hyperaemia, oedema, thick wall, fragility, mucocele, empyema and gangrenous wall. Each of these groups was compared with a group of patients with none of these risk factors.

**Table 1: Relative contraindications to L.C. in 1150 patients\***

	Morbidity (%)	Conversion to open cholecystectomy (%)	Operating time (minutes)
No risk factor (656 patients)	3.5	1.6	28
Previous upper abdominal surgery (38 patients)	5	5	46
Morbid obesity (22 patients)	4	0	42
Acute cholecystitis (434 patients)	6	9	58

### Results

During the 5-year study, 1150 laparoscopic cholecystectomies were performed including 213 men and 937 women, with a mean age of 49 years. 38 had undergone previous upper abdominal surgery, 22 patients met the criteria for morbid obesity and 434 patients presented with acute cholecystitis. This left 656 patients with no risk factors whom constituted the most favorable group.

In the patients with no risk factors, the 10-day postoperative morbidity was 3.5%, conversion to open cholecystectomy was 1.6% and the average operating time was 28 minutes (table 1).

Patients with previous upper abdominal surgery had a morbidity of 5%, a conversion rate of 5% and an average operating time of 46 minutes.

Patients with morbid obesity had a morbidity of 4%, no conversion to open cholecystectomy and an average operating time of 42 minutes.

Patients with acute cholecystitis had a morbidity of 6%, a conversion rate of 9% and an average operating time of 58 minutes.

One patient died on the 4th postoperative day with myocardial infarction.

Morbidity included wound infection, pyrexia, chest infection, nausea, abdominal pain, bile leakage and arrhythmia. No common bile duct injury occurred in this study, although I had two

cases of common bile duct injury before this study started.

The indications for conversion from laparoscopic to open cholecystectomy included: Adhesions of omentum, colon or duodenum to the gallbladder and liver, difficulty in grasping the infundibulum either due to impacted stone or unclear anatomy, Mirrizi syndrome (very short cystic duct with common bile duct adherent to the gallbladder neck), bleeding after adhesion release, callot's triangle inside the liver, gallbladder very thick and containing very big stones, adhesions around the infundibulum and callot's triangle and unsuspected tumour of the pancreas with liver metastases.

### Discussion

Elective cholecystectomy has long been considered the treatment of choice for symptomatic cholelithiasis. Since Langenbuch(2) performed the first cholecystectomy in 1882 and Mirrizi(3) popularized operative cholangiography in 1932, there have been few advances in the technique of cholecystectomy.

Large series have demonstrated the safety of laparoscopic cholecystectomy with an operative mortality ranging from 0.2% to 0.25% (4,5). Despite the efficacy and safety of cholecystectomy, a number of procedures have been developed as an alternative therapy for cholelithiasis including gallstone dissolution, percutaneous transhepatic cholecystostomy and extracorporeal shock wave lithotripsy(6,7,8). These and other therapies have the disadvantage of leaving the diseased gallbladder in situ, thus placing the patient at risk for recurrent stone formation.

As with any procedure, there tends to be some patient selection, while the surgeon gains experience and confidence with the new equipment and technique. My philosophy is to try laparoscopic cholecystectomy in all patients. Conversion to the open technique was performed whenever the surgeon believed to be in the best interest of the patient.

A number of absolute or relative contraindications have been cited in regard to laparoscopic cholecystectomy. Previous upper abdominal surgery has been listed as a concern because of adhesion formation, which causes bowel or other abdominal structures to adhere to the undersurface of the abdominal wall and to the gallbladder and liver.

The potential for bowel injury during trocar placement or difficulty in visualization of the hepatobiliary structures has stopped some surgeons from using the laparoscopic procedure in patients with previous upper abdominal surgery(9,10), 38

patients in our series had undergone previous upper abdominal surgery.

Difficulty was significant in patients who undergone surgery for hydatid cyst of the liver especially to visualize the hepatobiliary structures.

We believe that putting the verus needle at a site far from the scar of previous surgery or using Hasson procedure will minimize the risk of injury and also good dissection will make laparoscopic approach less risky.

Morbid obesity is a second relative contraindication. The thickness of the abdominal wall makes trocar placement more difficult, and the presence of a fatty omentum and mesentery leads to impaired visualization of the gallbladder. Many operations in morbidly obese patients are associated with a higher morbidity. An increased incidence of cardiac, pulmonary, wound and gastrointestinal complications have been reported after surgery in the morbidly obese patient. 22 patients met the criteria for morbid obesity in our series. The rates of morbidity and the conversion to open cholecystectomy were not significantly higher when compared with those of the patients with no risk factors. Length of surgery was slightly longer averaging 42 minutes.

Patients with acute cholecystitis will sometimes have distended oedematous gallbladder which makes it difficult to grasp the gallbladder for retraction. In addition, especially in acute on chronic inflammatory process which can lead to adhesions from omentum or bowel or gallbladder bed, also sometimes the portal triad is thickened and firm. All of these factors lead to problems with exposure, greater blood loss and an increased risk. On the other hand acute cholecystitis in the early stage can sometimes allow very easy cholecystectomy plus removal of the gallbladder from it's bed easier than in the normal gallbladder.

In a survey of 7 European centers involving 20 surgeons all participants agreed that severe acute cholecystitis with patchy gangrene or empyema of the gallbladder is a contraindication to the use of the laparoscopic technique and this was more than 10 years ago(20). 434 patients in our series had acute cholecystitis. Morbidity was not significantly higher in this group of patients, indicating that the procedure can be safely performed in this subset of patients.

Open cholecystectomy was required in 9% of patients due to either difficulty of dissection or bleeding. This reflects a 5 fold increase compared with patients with no risk factors.

Operating time averaged 58 minutes, which also was a significant increase over the operating time for patients with no risk factors. Other authors have demonstrated success with laparoscopic cholecystectomy in the presence of acute cholecystitis.

Decompression of the gallbladder, meticulous haemostasis and dissection from the fundus down to the common bile duct are helpful steps in performing safe laparoscopic cholecystectomy during acute cholecystitis.

Gadacz and Talamini(10) stated that "the contraindications to laparoscopic cholecystectomy are becoming fewer and depend upon the experience of the surgeon as well as the preoperative and intraoperative conditions". We conclude with this statement and believe that safety should be the foremost consideration in performing laparoscopic cholecystectomy.

Based on our review, laparoscopic cholecystectomy can be safely performed in patients with previous upper abdominal surgery, morbid obesity or acute cholecystitis.

An attempt at laparoscopic cholecystectomy can be undertaken in patients with these relative contraindications; however, patients should be counseled as to the increased risk of open technique in the presence of acute cholecystitis.

## References

1. Moosa A.R., *Random thoughts on laparoscopic cholecystectomy; is it an advance or a gimmick?*. *Ann. Surg.* 1991; 215:540-3.
2. Langenbuch C. *Ein fall von extirpation der gallerblase wegen chronischer cholelithiasis.* *Klin Wochensh.* 1882; 19: 725-8.
3. Mirrizi PL. *La cholangiographia durante las operaciones de las vias biliares.* *Bal Soc cir Buenos Aires.* 1932; 16: 1133-5.
4. McSherry CI. *Cholecystectomy: the gold standard.* *Am. J. Surg.* 1980; 158: 174-8.
5. Martin JK., Van Heerden JA. *Surgery of liver, biliary tract and pancreas.* *Mayo clinic Proc.* 1980; 55: 333-7.
6. Gilliland T.M., Traverso LW. *Modern standards for comparison of cholecystectomy with alternative treatments for symptomatic cholelithiasis with emphasis on long term relief of symptoms.* *Surg. Obstet. Gynaecol.* 1990; 170: 39-44.
7. O'Donnel LOS, Heaton KW. *Recurrence and re-recurrence of gallstones after medical dissolution: a long term follow up.* *Gut.* 1988; 29: 655-8.
8. Frazee RC., Roberts JW., Ofeson G. et.al. *Open versus laparoscopic cholecystectomy, a comparison of postoperative pulmonary function.* *Ann. Surg.* 1991; 231: 651-3.
9. Schirmer B.D., Edge SB., Dix J., Hyson MJ., Hanks JB., Jones RS. *Laparoscopic cholecystectomy.* *Ann. Surg.* 2001; 213: 655-64.
10. Gadacz TR., Talamini MA. *Traditional versus laparoscopic cholecystectomy.* *Am. J. Surg.* 1994; 161: 336-8.
11. Cuschieri A., Dubois F., Mouiel J. et al. *The European experience with laparoscopic cholecystectomy.* *Am. J. Surg.* 1996; 161: 385-7.