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## «Fundus First» Laparoscopic Cholecystectomy\*

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### Abstract

Five cases of «fundus first» laparoscopic cholecystectomy were studied. There is controversy about using fundus first technique in dissecting the gall bladder in both open and laparoscopic surgery. The indication for using this technique was due to the inability to start dissection in Calot's Triangle safely, because of its obscure anatomy, inability to retract the liver up in cases of cirrhotic liver, big empyema of the gall bladder and reduced peritoneal cavity in obese patients. The average operative time was 110 min. No mortality or morbidity were recorded apart from one case of post-operative obstructive jaundice released by E.R.C.P. sphincterotomy. The author concluded that with appropriate experience «fundus first» laparoscopic cholecystectomy can be done safely in difficult laparoscopic cholecystectomy when indicated. But no structure should not be divided before the clear dissection of the cystic duct and artery.

### Introduction

**LAPAROSCOPIC** cholecystectomy has rapidly become the procedure of choice for most patients of symptomatic gall bladder diseases[1]. Patients with palpable, tender, right-upper quadrant masses suspected of empyema or acute cholecystitis are refused the chance to undergo laparoscopic cholecystectomy for fear of intraoperative technical difficulties[2]. Wilson et al.[5] thought that these patients with severe acute cholecystitis should not be denied the benefits of laparoscopic

cholecystectomy in centers with appropriate experience.

In conventional open cholecystectomy the gall bladder may be removed by starting the dissection from the fundus (retrograde dissection) or from the cystic duct end[3].

In open cholecystectomy, the major indication for carrying the dissection from above down is a situation in which the gall bladder is so inflamed that it is difficult to identify the location of the cystic artery and common bile duct and

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in which there is a possibility of damaging these ducts[4]. In the this work, the author is studying 5 cases of laparoscopic cholecystectomy done by the fundus first method of dissection.

### Material and Methods

Between January 1992 and October 1993 several attempts of laparoscopic cholecystectomy in 200 patients with gall bladder diseases were done. The author attempted the fundus first technique, used in open surgery, in dissecting and removal of the gall bladder in 5 patients. The patients were 3 males and 2 females. Their ages ranged from 33 : 56 years average 46 y. All had calcular cholecystitis.

Pre-operative liver function tests were within normal. Laparoscopic cholecystectomy was attempted under general anaesthesia with placement of laparoscope canulae in the standard position as shown in Fig. (1). No additional canulae were needed.

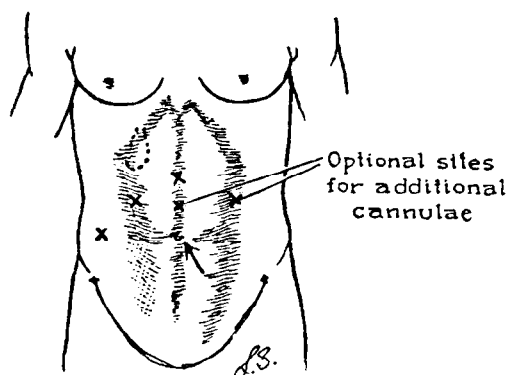


Fig. 1. The Standard positions of the cannulae (Quoted from Zucker et al, 1992).

The gall bladder in the 5 cases was dissected retrograde from the fundus to the cystic duct and dissected lateral to medial using the hook or spatulated cautery introduced from the midclavicular porte and blunt dissection by a gauze piece on a grasper forceps from the midline porte.

Bleeding from liver bed was controlled by tamponading using the gall bladder itself or a piece of gauze. Complete or even partial mobilization of gall bladder from liver bed provides clear access and exposure to the cystic duct which was clipped and cut easily. The gall bladder is removed as usual.

### Results

The operative findings at laparoscopy were as follows :

#### Case 1 :

Presented clinically by acute cholecystitis. The liver was cirrhotic with perihepatic adhesions, inflamed gall bladder with thick wall, the liver could not be retracted up by the fundal grasper.

#### Cases 2 & 3 :

Empeyema of the gall bladder was seen in both cases with difficulty in grasping the fundus and visualization of Calot's Triangle area.

#### Case 4 :

The patient was an obese muscular man. There was a hepatomegaly probably fatty infiltration and a big sizable omentum reducing the peritoneal cavity. On grasping the fundus of the gall bladder it was not possible to retract the liver up completely to visualize the Calot's Triangle.

*Case 5 :*

The author was in doubt about the precise anatomy in Calot's Triangle as the cystic duct was obviously wide.

Intra operative bleeding was minimal so there was no need for blood transfusion in the 5 patients. Operative time ranged from 60 : 160 minutes (average 110 min). No mortality was recorded and no postoperative complications in the first 4 cases. The fifth patient had abdominal pain and chemical jaundice on the 5th postoperative day. E.R.C.P. revealed a stone in common bile duct which was removed by E.R.C.P. sphincterotomy.

### Discussion

Laparoscopic cholecystectomy is increasingly accepted as the treatment of choice in the elective management of symptomatic cholelithiasis[5]. The rate of the conversion to open laparotomy differs according to the skill of the surgeons. In different series, it was 12% [6]; 3% [7] & 55% [8]. Francia et al.[9] converted 10 cases to open laparotomy in his series of 250 lap. cholecystectomy (4%). He stated that 8 of these converted cases were in the first 100 patients learning phase which suggests that the need for such conversion decreases with experience.

After gaining reasonable experience in lap. chol., the author tried the fundus first technique and lateral to medial dissection in some difficult cases.

Cooperman[2] reported using the dissection of the gall bladder from the fundus

to cystic duct «retrograde» in the laparoscopic management of acute severe gangrenous cholecystitis.

The author thinks the main indication of laparoscopic fundus first technique is the inability to see Calot's Triangle area because of the big sized empyema, inability to retract the liver up as in cirrhotics with perihepatic adhesions, obscure anatomy and decreased peritoneal space in obese patients with hepatomegaly.

Obese women tend to carry their obesity in the abdominal pannus whereas obese men often have a great deal of fat in the peritoneal cavity e.g. omentum and triangle of Calot[10].

Oedema of the gall bladder wall in cases of acute cholecystitis or empyema helps in finding the proper plane between the gall bladder and liver bed.

The most difficult technical point, when the technique of laparoscopic fundus first is used, is bleeding from liver bed. By using meticulous spatulated electrocautery and following Airon's and Ko[4] manoeuvre who stated that when bleeding emanates from the liver bed, one may tamponade this by pressing the gall bladder into the liver bed, switching the fundal grasper to Harman's pouch, and using this latter grasper as a mean of pressing against the bleedign area.

Controversy exists over whether dissection of the gall bladder should proceed from the fundus to the cystic duct or in the opposite directions both in open and laparoscopic cholecystectomy.

In conventional open cholecystectomy while White[4] stated that he removes about 1/2 of the gall bladders from below up and the others from above down, Warren[12] disagrees with this view saying that he is reluctant to accept the premise that it is safe to remove the gall bladder from above downwards, leaving the identification of the vital structures until the region of the common duct has been approached.

Zucker et al.[1] gave a comment on the lap. fundus 1st technique : «This is not practiced by our group and it is our impression that if the ductal and vascular structures are so obscured by dense inflammation as to preclude a safe retrograde dissection, the procedure should be converted to an open laparotomy».

The author agrees with Cooperman[2] in stating that if hilar dissection cannot be done safely the gall bladder can be dissected retrograde from fundus to cystic duct or dissected lateral to medial, starting in the mid gall bladder, and even if the gall bladder is not completely freed from the liver bed, this degree of mobilization provides clear access and exposure to the cystic duct. But still the author prefers antegrade dissection of the gall bladder if it can be done easily and safely.

The author stressed that : any structure should not be divided before the clear dissection of the cystic duct and artery in Calot's Triangle and converting the case to open cholecystectomy or cholecystostomy must not be considered to be a failure but any patient with choledithiasis should not deny the advantages of lap.

chole. whenever the procedure can be done safely.

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