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The Enormous Size of the Gallbladder-A Reason for Conversion to Open Surgery in Acute Cholecystitis

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Abstract - Laparoscopic cholecystectomy is considered the treatment of choice for cholelithiasis. Laparoscopic cholecystectomy can be safely performed in patients with acute cholecystitis, but there is a difference between conversion rates in patients operated within 72 hours from the onset of the symptoms and those after. The main reason for conversion on early laparoscopic cholecystectomy is the inflammation that interferes and makes the anatomy of the Calot's triangle less visible, while other factors for the conversion of laparoscopic cholecystectomy in acute cholecystitis are the timing of the operation, age, BMI, CRP, white blood cell count (WBC), fever, tenderness in the right upper abdomen and ultrasonographic finding of extremely thickened gallbladder wall, close relation of the Hartmann's pouch with hepaticoduodenal ligament, the gallbladder size and the number and size of stones. Case presentation: Here we present a case of 74 year old female patient, who presented at our institution with 6 day history of abdominal pain, nausea and fever, with physical, laboratory and ultrasound signs of acute cholecystitis.

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The Enormous Size of the Gallbladder –A Reason for Conversion to Open Surgery in Acute Cholecystitis

Rexhep Selmani^α & Arben Karpuzi^σ

Abstract - Laparoscopic cholecystectomy is considered the treatment of choice for cholelithiasis. Laparoscopic cholecystectomy can be safely performed in patients with acute cholecystitis, but there is a difference between conversion rates in patients operated within 72 hours from the onset of the symptoms and those after. The main reason for conversion on early laparoscopic cholecystectomy is the inflammation that interferes and makes the anatomy of the Calot's triangle less visible, while other factors for the conversion of laparoscopic cholecystectomy in acute cholecystitis are the timing of the operation, age, BMI, CRP, white blood cell count (WBC), fever, tenderness in the right upper abdomen and ultrasonographic finding of extremely thickened gallbladder wall, close relation of the Hartmann's pouch with hepaticoduodenal ligament, the gallbladder size and the number and size of stones. Case presentation: Here we present a case of 74 year old female patient, who presented at our institution with 6 day history of abdominal pain, nausea and fever, with physical, laboratory and ultrasound signs of acute cholecystitis. She underwent an laparoscopic exploration of abdominal cavity in order to perform laparoscopic cholecystectomy. Because of extremely large and thickened gallbladder wall and short xyphoid-umbilicus distance, conversion was mandated. Conclusion: The enormous size of gallbladder in patients with acute cholecystitis, accompanied with short xyphoid-umbilicus distance can be a reason for conversion to open surgery during laparoscopic cholecystectomy.

Keywords : acute cholecystitis, laparoscopic cholecystectomy, size of the gallbladder, conversions.

I. INTRODUCTION

Mouret introduced laparoscopic cholecystectomy in 1987. It has rapidly replaced open cholecystectomy as the standard treatment (1). Laparoscopic cholecystectomy is considered the treatment of choice for cholelithiasis. It has advantages over traditional open cholecystectomy in terms of minimal post operative pain, shorter hospital stay, better cosmesis and earlier recovery (2,3). With growing experience and overcoming the learning curve, a selection criterion has become more liberal. Most of the previous contraindications such as morbid obesity,

previous upper abdominal surgery and acute cholecystitis are no longer absolute. Attempts can be made in all cases of gall stone diseases with laparoscopic procedure except for patients with bleeding diathesis, carcinoma gallbladder and patient not fit for general anaesthesia(4). However, of all LC 1-13% requires conversion to an open if the anatomy of Calot's triangle is not clear or an uncontrolled bleeding occurs (5).

Laparoscopic cholecystectomy can be safely performed in patients with acute cholecystitis; however, the rate of conversion remains higher when compared with patients having chronic cholecystitis(6,7), but without statistically significant difference(8). However, there is a difference between conversion rates in patients operated within 72 hours from the onset of the symptoms and those after (8). Adhesions are amongst the common reasons for conversion of laparoscopic cholecystectomy(9). The main reason for conversion on early laparoscopic cholecystectomy is the inflammation that interferes and makes the anatomy of the Calot's triangle less visible (8,10). Thus, for surgeons it would be helpful to establish criteria that would assess the risk of conversion preoperatively. The preoperative predictive factors for the conversion of laparoscopic cholecystectomy in acute cholecystitis are the timing of the operation, age, BMI, CRP, white blood cell count (WBC), fever, tenderness in the right upper abdomen and ultrasonographic finding of extremely thickened gallbladder wall, close relation of the Hartmann's pouch with hepaticoduodenal ligament, the gallbladder size and the number and size of stones (5,8).

II. CASE PRESENTATION

Here we present a case of 74 year old female patient, who presented at our institution with 6 day history of abdominal pain, nausea and fever. She was 153 cm tall and she weight 45 kg. Physical examination showed an abdomen with a palpable tender mass in the lower right quadrant with positive Murphy's sign and rebound tenderness. Laboratory blood tests revealed a leukocytosis of $14.1 \times 10^9/L$, C-reactive protein of 48 mg/L and normal kidney and liver function tests. Abdominal ultrasonography showed a enormously enlarged gallbladder with thickened and stratified

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(Figure 1), with fluid supra- and sub-hepatically. Free air within the gallbladder wall was not seen. She was admitted to our hospital with the diagnosis of acute cholecystitis.



Figure 1 : Ultrasound image of the gallbladder acquired at presentation of the patient in the emergency department. The gallbladder is shown with a thickened wall suggesting inflammation.

Although 6 day of history of abdominal pain the laparoscopic cholecystectomy was considered the treatment of choice. After short preoperative preparation the patient was sent to operating theatre. The laparoscopy revealed enormously large, strongly dilated and empyematic gallbladder extending down to the right iliac fossa, with thickened wall very difficult for grasping. We punctuate the gallbladder and evacuated more than 150 ml of fluid to be able to grasp the gallbladder. Because of extremely large gallbladder and patient's relatively short xiphoid-umbilicus distance of 12,7 cm, grasping the gallbladder, making the cephalic traction over the surface of the liver and handling with laparoscopic instruments was practically impossible.



Figure 2 : Intraoperative Findings

As the critical level of safety was obtained, we converted to open surgery. Cholecystectomy was performed. Gallbladder was 19.5 cm in length whereas pathohistology revealed acute cholecystitis. Postoperatively the patient recovered well and she was discharged from the hospital on the fifth postoperative day.



Figure 3 : Extracted Specimen

III. DISCUSSION

Conversion rates of 2.6% to 14% had been described in literature (6,11). During the first 3 days of the onset of symptoms the conversion rate is significantly lower than in patients operated after 72 hours of the beginning of the disease(8). The main reason for the conversion at early laparoscopic cholecystectomy is the inflammation that covers the view to triangle of Callot(12), while at delayed cholecystectomy those are the fibrotic adhesions(12,13). Severe inflammation accompanied with fibrosis leads to greater chance of biliary tract lesions (14).

Conversion was necessary because of abnormal anatomy in meaning of disproportion between the size of the gallbladder and the size and the configuration of the patient's abdomen making grasping and handling the tense and thickened gallbladder, practically impossible. The gallbladder measured 19,5 cm, with very thick gallbladder wall, which was stiff, with fibrotic changes. Patients with enormous gallbladder size and acute cholecystitis tend to impose technical difficulties during laparoscopic cholecystectomy. In around 87% of the patients with gallbladder wall thickening (>4 millimeter) surgeons encountered surgical difficulties (15,16). Sonographic parameters like size of gall bladder and wall thickness are statistically significant factors for conversion to open cholecystectomy, while preoperative sonographic signs can predict the difficulty in laparoscopic cholecystectomy(5).

The additional difficulty for the conversion in our case was very short xiphoid-umbilicus distance of 12.7 cm only, including the enormous gallbladder size, creating the difficulty in positioning of the trocars and their angulation which led to poor visualization of the operative field. The average distance from the xiphoid to umbilicus in cadaveric study, was reported to be 18.2 ± 1.27 cm (17).

IV. CONCLUSION

Apart from the most common and well known reason for conversion to open surgery of laparoscopic cholecystectomy in patients with acute cholecystitis, the enormous size of the gallbladder can also be the reason. The additional difficulty in conversions with enormous size of gallbladder can be the short xiphoid-umbilicus distance.

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