The Value of Preoperative Ultrasonography in Predicting Technical Difficulties during Laparoscopic Cholecystectomy

Thesis

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Candidate

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Conversion to open surgery . so presence these bactors orone

Key word:

Laparoscopic Cholecystctomy Gallbladder

Wall thickness ultrasonography Stones

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List of Abbreviations

Abbr.	Full-term

CBD : Common bile duct

CI : Confidence interval

CT : Computed tomography

GB : Gallbladder

HIDA : Hydroxyiminodiacetic acid

IOC : Intraoperative cholangiography

LC : Laparoscopic cholecystectomy

OR : Odds ratio

S : Significant

NS : Non significant

US : Ultrasound

β : Beta coefficient

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Introduction

In almost all sonographic surveys, gallstones are more frequent in women than in men and the majority of individuals were unaware of having gallstones. Gallstones may remain silent (asymptomatic) for a certain period of time or they can produce biliary pain by transient obstruction of the cystic duct. Furthermore, complications related to cholelithiasis may develop in some individuals, namely acute cholecystitis (including hydrop and empyema of gallbladder), choledocholithiasis with or without jaundice or cholangitis, gallstone pancreatitis, gallstone ileus, Bouveret's syndrome (a gastric outlet obstruction secondary to impaction of a gallstone in the pylorus or proximal duodenum. It is therefore a very proximal form of gallstone ileus according to *Bouveret (1893)* and even gallbladder carcinoma ***(Birbas et al., 2006).***

The findings of a physical examination are usually completely normal in patients with chronic cholecystitis, particularly between pain attacks. During an episode of biliary pain, mild right upper quadrant tenderness may be present. Liver function tests (LFTs) are also usually normal in patients with uncomplicated cholelithiasis ***(Birbas et al., 2006).***

The confirmation or exclusion of gallstone disease in patients with symptoms attributable to gallstones is achieved by ultrasonography which provides 95-98% sensitivity and specificity

for the diagnosis of gallstones greater than 2 mm in diameter ***(Shea et al., 1994).***

The treatment of choice for patients with symptomatic cholelithiasis is elective laparoscopic cholecystectomy (LC) ***(Shea et al., 1996).***

Assessment of the patient's general condition and anesthesia risk factors is crucial to the perioperative management of the patient. Equally important for the patient with gallstones is the attribution of atypical symptoms to gallstones or other possible causes, as they tend to persist after cholecystectomy ***(Lahmann et al., 2004).***

Transabdominal ultrasound is the radiologic procedure of choice for identifying gallstones and bile duct dilation. Ultrasound is noninvasive, inexpensive, and widely available. Patients should receive nothing by mouth for several hours prior to performing an ultrasound examination so that the gallbladder is fully distended. Gallstones create echoes that are reflected back to the ultrasound probe. The ultrasound waves cannot penetrate the stones; and therefore, acoustic shadowing is seen posterior to the stones. In addition, gallstones that are free-floating in the gallbladder will move to a dependent position when the patient is repositioned during scanning. When these two features are present, the accuracy of ultrasound at diagnosing gallstones approaches 100%.

Echoes without shadows may be caused by gallbladder polyps ***(Blakeborough et al., 2003).***

The pre prandial GB wall normally measures less than 3mm. Thickening of the GB wall doesn't have to be a sign of inflammation since it can be found in many conditions, including ascites, hypoalbuminemia, or right sided cardiac insufficiency.

Aim of the Work

The purpose of this study is to determine the value of three parameters detected by pre-operative ultrasonography namely gall bladder wall thickness, contracted gall bladder and impaction of gall stones at the neck of the gall bladder in predicting the success of laparoscopic cholecystectomy. Gall bladder wall thickness was chosen as it is easy to measure.

Embryology and Anatomy of the Biliary tract and the Gall Bladder

I. Embryology of the Biliary Tract

The liver and the biliary tract are derived from the distal part of the foregut.

The liver first appears in the 3 weeks embryo as a hollow endodermal bud from the foregut. This bud, the future hepatic diverticulum, consists of rapidly proliferating cells that penetrate into the septum transversum in the ventral mesogastrium. These cells eventually develop into the liver; the connection between the hepatic diverticulum and the foregut is preserved to form the bile duct. A ventral outgrowth of the bile duct gives rise to the gall bladder and the cystic duct. As the intestine rotates, the entrance from the bile duct into the duodenum moves to a posterior position and the common bile duct comes to lie behind the duodenum and the pancreas ***(Britton and Savage, 2004).***