LAPAROSCOPIC COMMON BILE DUCT EXPLORATION WITH LAPAROSCOPIC CHOLYCYSTECTOMY AS A SINGLE-STAGE MANAGEMENT COMPARED TO ERCP AND LAPAROSCOPIC CHOLYCYSTECTOMY

Essay

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List Of Abbreviations

Abbrev. : Meaning.

CBD : Common bile duct.

CBDS : Common bile duct stones.

CT : Computerized tomography.

EHL : Electrohydraulic lithotripsy.

ERCP : Endoscopic retrograde cholangiopancreatography.

ES : Endoscopic sphincterotomy.

EUS : Endoscopic ultrasnoography.

IOC : Intraoperative cholangiography.

LCBDE : Laparoscopic CBD exploration.

MRCP : Magnetic resonance cholangiopancreatography.

PTC : Percutaneous transhepatic cholangiography.

US : Ultrasonography.

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Introduction

The incidence of common bile duct stones in patients having gall bladder stones varies between 8 and 20% ***(Girard, 2000)***, Choledocholithiasis complicates the workup and management of cholelithiasis, necessitates additional diagnostic and therapeutic procedures, and adds to the morbidity and mortality of gallstone disease ***(Alhayaf et al., 2008)***.

Several different modalities are available for the nonsurgical treatment of choledocholithiasis. The choices include ERCP, percutaneous extraction, and the remote consideration of lithotripsy ***(Donkervoort et al., 2009)***.

Surgical treatment may be required for CBD stones that are discovered preoperatively or intraoperatively. Retained stones in the CBD postoperatively are usually dealt with endoscopically or by interventional radiology. If both methods fail, operative management is contemplated ***(Donkervoort & Van Ruler, 2009)***.

Recently, laparoscopic common bile duct exploration emerges as a safe and effective therapy for CBD stones, Many stones can be quickly and simply cleared by transcystic means or through the CBD, providing patients with single stage

management and a recovery similar to laparoscopic cholycystectomy alone ***(Ahrendt & Pitt, 2004)***.

The advantages of laparoscopic CBD exploration are clear, the stones of the common bile duct & the gall bladder are taken care of simultaneously in a minimally invasive manner that leads to shorter hospital stays and less pain than the corresponding open procedure or laparoscopic cholecystectomy/ERCP combination ***(Ahrendt & Pitt, 2004)***.

However the technique requires advanced laparoscopic skills, including suturing, and the use of a choledochoscope, guidewires, dilators and dormia basket ***(Veccio & Macfadyen, 2002)***. On the other hand, it still carries the advantages of being done by the same treating physicion& eliminates the need for the presence or in some situations the referral of the patient to another center for an endoscopist for ERCP, more over it does not carry the hazards of the ERCP.

Aim of the Work

The aim of our work is to review the laparoscopic common bile duct exploration with laparoscopic cholycystectomy as a single-stage management compared to ERCP and laparoscopic cholycystectomy as two-stage management for treatment of a patient with common bile duct stones, regarding efficacy, safety, feasibility, short & long term outcome in the literature & the previous studies.

ANATOMY OF THE EXTRAHEPATIC BILIARY SYSTEM

Biliary exposure and precise dissection are the most important steps in any biliary operative procedure. A thorough anatomical knowledge is essential if optimal results are to be obtained ***(Blumgart and Hann, 2007)***.

The extrahepatic bile ducts are represented by the extrahepatic segments of the right and left hepatic ducts joining to form the biliary confluence and the accessory biliary apparatus, which constitutes a reservoir, comprising the gallbladder and the cystic duct ***(Blumgart and Hann, 2007)***.

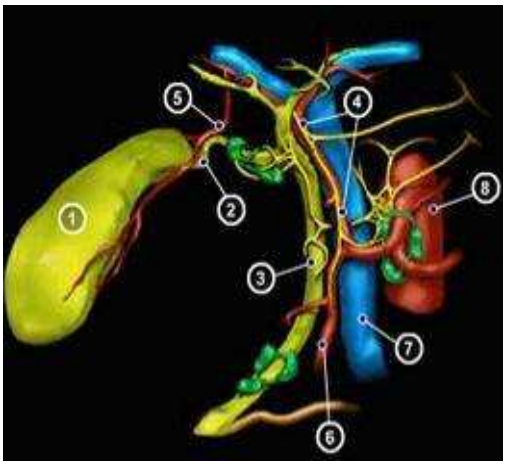

Figure (1): Anatomy of extrahepatic biliary tract

1- Gallbladder
2- Cystic duct
3- Common bile duct
4- Hepatic artery
5- Cystic artery
6- Gastroduodenal artery
7- Portal vein
8- Coeliac trunk

(Available at: **http://www.websurg.com/ref/laparoscopic*)***

The right and left hepatic ducts emerge from the right and left lobes of the liver in the porta hepatis. After a short course, the hepatic ducts unite to form the common hepatic duct ***(Mary and Klingensmith, 2008)***.

Anatomical Description:

The Left Hepatic Duct:

It drains three segments (2, 3 and 4) which constitute the left liver. It traverses beneath the left liver at the base of segment 4, just above and behind the left branch of the portal vein, crosses the anterior edge of that vein and joins the right hepatic duct to constitute the hepatic ductal confluence ***(Blumgart and Hann, 2007)***.

- The Right Hepatic Duct:

It drains segments 5, 6, 7 and 8 of liver segments it is short and joins the left hepatic duct to constitute the confluence lying in front of the right portal vein, forming the common hepatic duct ***(Blumgart and Hann, 2007)***.

The left duct is longer (1.7 cm, average) than the right duct (0.9 cm, average). The junction of these two ducts lies0.25-2.5 cm from the surface of the liver ***(Skandalakis et al., 2000)***.

- The Main Bile Duct:

The main bile duct, the mean diameter of which is about 6 mm, is divided into two segments: the upper segment is called the common hepatic duct and is situated above the cystic duct, which joins it form the lower segment, which is called the common bile duct ***(Blumgart and Hann, 2007)***.

- The Common Hepatic Duct:

The common hepatic duct is about 1.5 in. (4 cm) long and descends within the free margin of the lesser omentum. It is joined on the right side by the cystic duct from the gallbladder to form the bile duct.

The common hepatic duct courses downwards anterior to the portal vein in the free edge of the lesser omentum and is closely applied to the hepatic artery which runs upwards on this left, giving rise to the right branch of the hepatic artery, which crosses the duct usually posteriorly, though in about 20% of cases anteirorly ***(Blumgart and Hann, 2007)***.

- The Common Bile Duct:

The length of the common bile duct varies from 5 to 15 cm. depending on the position of the entrance of the cystic duct. The duct may be divided arbitrarily into four portions :

1- Supraduodenal: Average length 2cm, ranges from 0-4cm.

2- Retroduodenal: Average length 1.5cm, ranges from 1.0-3.5cm.

3- Pancreatic: Average length 3cm, ranges from 1.5-6cm.

4- Intramural: Average length 1.1cm ranges from 0.8-2.4cm.

(Skandalakis et al., 2009)

The supraduodenal portion lies between the two leaves of the hepatoduodenal ligament, in front of the foramen of Winslow, to the right of the hepatic artery, and anterior to the portal vein ***(Skandalakis et al., 2009).***

The retro duodenal portion lies between the superior margin of the first part of the duodenum and the superior margin of the head of the pancreas. The gastro duodenal artery is to the left and the posterior superior pancreatico-duodenal artery crosses first anterior to the bile duct and then posterior to the duct just before it enters the duodenum ***(Skandalakis et al., 2009).***

Pancreatic portion: The common bile duct may be partly covered by a tongue of pancreas (44%), completely within the pancreatic substance (30%), uncovered on the pancreatic surface (16.5%) or completely covered by two tongues of pancreas (9.5%) ***(Skandalakis et al., 2009).***

Intramural portion passes obliquely through the duodenal wall together with the main pancreatic duct. Within the wall,