Recent Trends in Management of Operative Bile Duct Injury

Essay

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List of Abbreviations

Abbrev	
AC	Acute cholecystitis
BDI	Bile duct injuries
CBD	Common bile duct
CD	Cystic duct
CDI	Common bile duct injury
CHD	Common hepatic duct
CT	Computed tomography
CUHK	Chinese university of Hong Kong
ERCP	Endoscopic retrograde cholangiopancreatography
HP	Hartman pouch
HPB	Hepaticopancreatic biliary
IBDI	Iatrogenic bile duct injuries
IOC	Intraoperative cholangiography
LC	Laparoscopic cholecystectomy
LHD	Left hepatic duct
MC	Mini-cholecystectomy
OC	Open cholecystectomy
PTBD	Percutaneous transhepatic biliary drainage

PTC	**Percutaneous transhepatic cholangiography**
RHD	**Right hepatic duct**
SBC	**Secondary biliary cirrhosis**
Tx	**Transplantation**

Introduction

Bile duct injuries are frequently iatrogenic, being associated with surgery for gallbladder stones ***(Kang et al., 2008)***.

Cholecystectomy is one of the most commonly performed abdominal surgeries in which bile duct injury and bile leaks are the most important complications ***(Balakrishnan et al., 2008)***.

Laparoscopic cholecystectomy has gained worldwide acceptance and considered to be as "gold standard" in the surgical management of symptomatic cholecystolithiasis. However, the incidence of bile duct injury in laparoscopic cholecystectomy is still two times greater compared to classic open surgery. The mostly blamed causative factor is the misidentification of the anatomy ***(Sari et al., 2005)***. The frequency of bile duct injuries associated to laparoscopic cholecystectomy is about 0.3-0.6% ***(Mercado et al., 2008)***.

The key to prevention of iatrogenic Bile duct injuries is to follow the "identifying-cutting-identifying" principle during cholecystectomy ***(Wu et al., 2007)***.

Routine intraoperative cholangiography (IOC) has been advocated as a viable strategy to reduce common bile duct injury (CDI) during cholecystectomy ***(Livingston et al., 2007)***.

Most iatrogenic bile duct injuries are recognized in the early postoperative period. These patients usually have additional complications such as subhepatic collections and external biliary fistula ***(Mercado et al., 2005)***.

Endoscopic Retrograde Cholangiopancreatography (ERCP) is an effective and safe method for diagnosis and management of bile leakages after cholecystectomy. Stricture development in the main bile duct leakages is an important complication ***(Parlak et al., 2005)***.

The ease of management, operative risk, and outcome of bile duct injuries vary considerably, and are highly dependent on the type of injury and its location ***(Lau et al., 2007)***.

Most of the minor bile duct injuries, including cystic duct leaks and bile duct strictures, are well treatable with endoscopic techniques, whereas most of the major injuries require operative treatment, which at optimal circumstances gives good results ***(Karvonen et al., 2007)***. Bile duct injury should be managed in a specialist unit where surgeons skilled to perform such repairs should undertake definitive treatment ***(Tsaalis et al., 2005)***.

Aim of the Work

This essay aims to discuss the recent trends on diagnosis and management of operative bile duct injury, also how to prevent its occurrence.

Surgical Anatomy of Gall Bladder and Biliary Radicals

The anatomy of the bile duct follows that of the portal system and segmentation of the liver. A bile duct is part of the portal triad, which enters the liver through invagination of Glisson's capsule at the hilum. According to the vascular anatomy, the right and left hemiliver are drained by a right and a left hepatic duct, respectively. Segment 1 is drained by several ducts joining both the right and left ducts close to the biliary confluence at the hilum **(fig. 1)** ***(Castaing, 2008)***.

Gall bladder:

The gall bladder is a reservoir of bile in the shape of a piriform sac partly contained in a fossa on the inferior surface of the right hepatic lobe. It extends from the right extremity of the porta hepatis to the inferior border of the liver. It is 7 to 10 cm long and 3 to 4 cm broad at its widest part, and can hold from 30 to 50 ml. The gall bladder is divided into a fundus, body, infundibulum and neck **(fig. 2).**

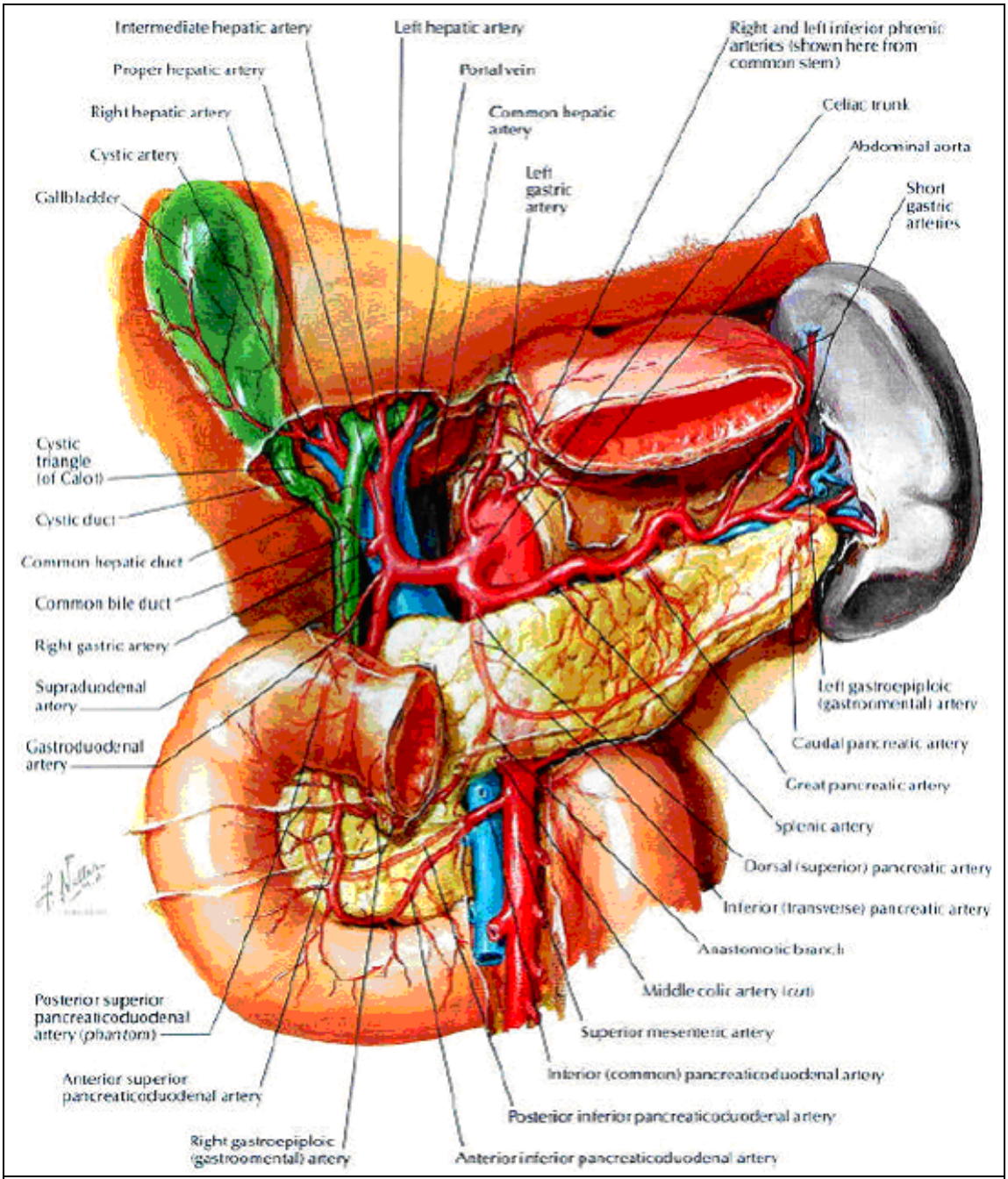

Figure 1: Normal Anatomical relations of the biliary apparatus ***(Netter, 1997)***.