POST OPERATIVE OBSTRUCTIVE JAUNDICE

An Essay

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By

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بسم الله الرحمن الرحيم

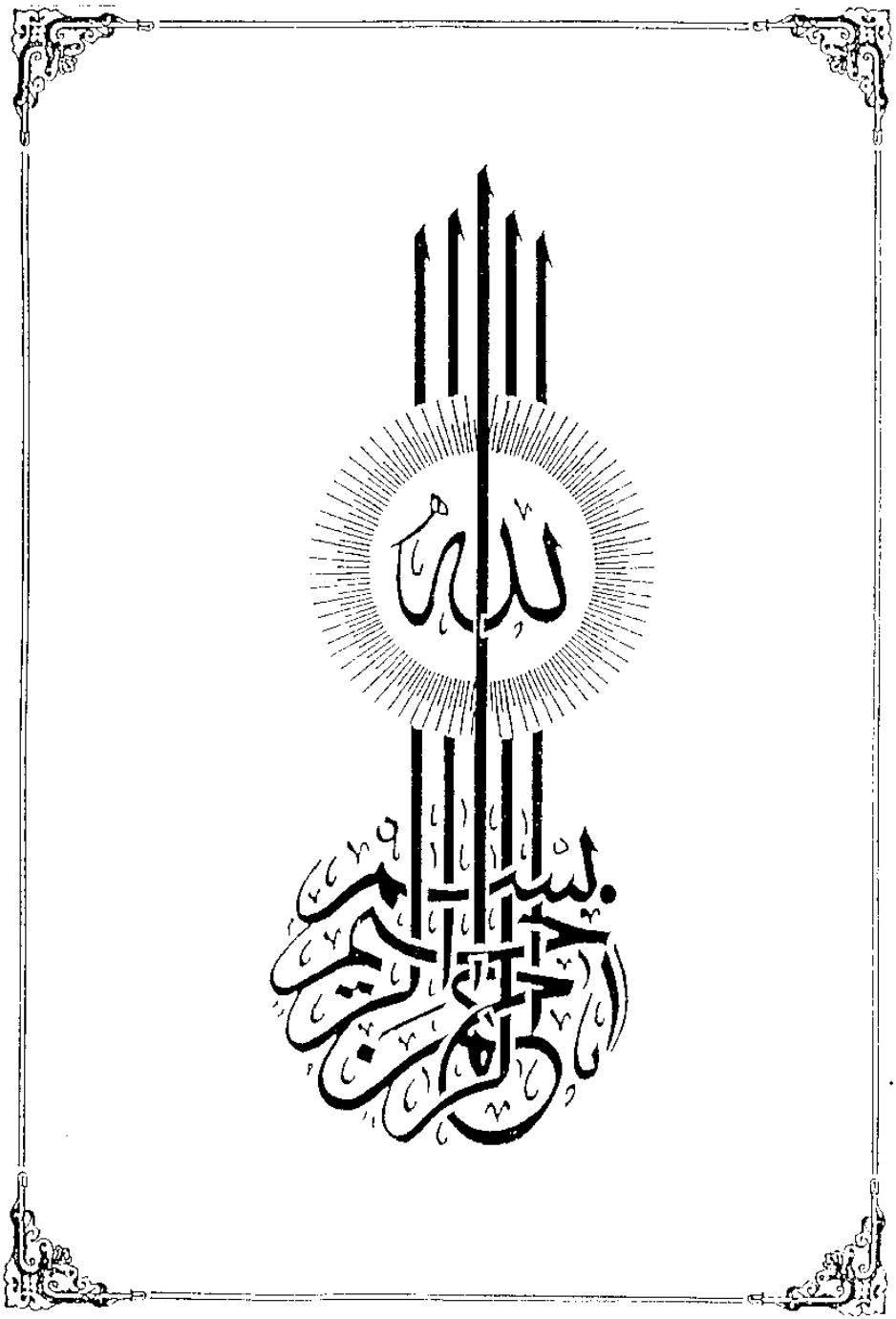
اقرأ باسم ربك الذي خلق

خلق الإنسان من علق

اقرأ وربك الأكرم الذي علم بالقلم

علم الإنسان ما لم يعلم

العلق ١-٥



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CONTENTS

INTRODUCTION

Hepatobiliary surgery is one of the most interesting fields of surgery.

One of the most common complications of this surgery is postoperative obstructive jaundice, which constitutes a major surgical challenge that surgeons face during their practice.

Solving this problem necessitates a proper understanding of the pathophysiology and surgical anatomy of this particular part of the body.

The last years have seen revolution as regards various therapeutic modalities which provide appropriate management.

This essay is intended to be a concised display of the various aspects of this rather common surgical problem aiming at a good approach to the subject from te different points of views.

ANATOMY OF THE BILIARY TRACT

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The biliary system and liver develop together from a diverticulum that arises in the embryo from the ventral floor of the foregut and extends into the septum transversum. The caudal portion becomes the gall bladder, cystic duct and the common bile duct whereas, the cranial portion develops into the liver and the hepatic bile ducts (Howell and Peckleman, 1976).

The gall bladder:

The gall bladder is a pear shaped organ that lies in a depression on the inferior or visceral surface of the right lobe of the liver (Goss, 1974). It consists of fundus, body, infundibulum, neck and ends by the cystic duct. The fundus projects beyond the liver. The body lies in a fossa on the inferior surface of the liver. The infundibulum is the part of the organ between the body and neck; it sage down as a pouch (Pouch of Hartmann) towards the duodenum. The neck leaves the upper part of the infundibulum and soon narrows to form the cystic duct (Decker et al., 1986).

The arterial supply is via the cystic artery, which usually arises from the right hepatic artery in Calot's triangle. Venous drainage is via vessels running directly into the liver and several veins which join the pericholedochal plexus (Northover and Terblanche, 1982).

The right and left hepatic ducts:

In each individual liver segment, the small bile ducts unite to form a single channal called the segmental bile duct. Rarely do two ducts drain one liver segment. The right and left hepatic ducts are formed by the confluence of the segmental ducts within the substance of the hepatic lobes (Lindner, 1987).

In about 95% of cases, the righ and left hepatic ducts unite in an extrahepatic position just inferior to porta hepatis. In the remainder, their union is intra hepatic. The usual extrahepatic length of each hepatic lobar duct varies from 0.5 to 1.5 cm (Lindner, 1987). The extrahepatic segment of the right duct is short but the left duct has a much longer extrahepatic course, the length of which is reflected by the width of the base of the quadrate lobe. If the quadrate lobe has a broad base then the left hepatic duct has a long and rather transverse course (Blumgart and Thompson, 1987). The right and left hepatic ducts may join at a wide or an acute angle, or they may descend parallel to each other for a variable distance before joining. Usually, however, the two ducts unite about 1 cm below the porta hepatis to form the common hepatic duct (Lindner, 1987).

The right hepatic duct is readily approached by dividing the peritoneum and fat overlying it in the porta

hepatis. The right hepatic artery usually runs inferior to it, while the right branch of the portal vein lies posterior to these two structures (Northover and Terblanche, 1982). In about 20% of cases, the right anterior and right posteior ducts do not join to form the right hepatic duct. Instead, the right posterior duct joins the left hepatic duct and the right anterior duct joins distally. In these instances, there are three ducts emerging from the porta hepatis (Lindner, 1987).

The left lobar segmental bile ducts join in one of two fashions. In 80% of cases, the left medial and left lateral segmental bile ducts join to form the left hepatic duct. In 20% of cases, two or three ducts may drain the left medial or the lateral segment. However, no matter what the pattern of union of the segmental ducts, the left lobe is drained functionally by a single duct, the left hepatic duct (Lindner, 1987). The left hepatic duct courses to the hilus together with the left branch of the portal vein and hepatic artery, within a peritoneal reflection of the gastrohepatic ligament, which fuses with Glisson's capsule on the undersurface of the quadrate lobe (Blumgart and Thompson, 1987). The left hepatic artery usually runs below or behind the left hepatic duct, while the left branch of the portal vein may, unlike the right branch, partly spiral around the upper border of its hepatic duct to form an anterior relation to the latter as the two structures pass into the

liver substance (Hobsley, 1958). The vessels and accompanying left hepatic duct enter the umbilical fissure of the liver, at limits of which the vessels divide to supply the left lobe (Segment II and III) and the quadrate lobe (Segment IV)(Blumgart and Thompson, 1987).

The ligamentum teres in the lower edge of the falciform ligament traverses the umbilical fissure of the liver, which is usually bridged in its lowermost part by a tongue of liver tissue joining the left lobe segment III to the base of segment IV. The ligament joins the umbilical portion of the left portal vein as it curves anteriorly, giving off branches to segment II and III of the left lobe. At the base of the ligamentum teres, and on its upper surface, the umbilical portion of the left portal vein branches over the bile ducts to supply segment III and segment IV (Blumgart & Thompson, 1987).

The common hepatic duct:

It is formed by confluence of the right and left hepatic ducts. It varies in length from 2 to 6.5 cm (Lindner, 1987). It lies in the right edge of lesser omentum, with the common hepatic artery to its left and the portal vein situated posteriorly. In about 90% as cases, the right hepatic artery passes behind the duct, while in the rest it passes infront and hence is more prone to accidental injury (Michels, 1955).

The cystic duct:

The gall bladder joins the common duct system by means of the cystic duct that has a variable length (depending upon the type of union with the common hepatic duct), averaging 4 cm. It joins the common hepatic duct at an acute angle, and the right branch of the hepatic artery resides immediately behind it (Schwartz, 1985). The cystic artery usually runs transversely just superior to the cystic duct (Lindner, 1987).

Calot's triangle:

The triangle of Calot is bounded on the left by the common hepatic duct, on the right by the cystic duct, and superialy by the hilum of the liver. The apex of the triangle is the most critical area, since in it are usually the cystic artery, the right hepatic artery, 95 per cent of acessory right hepatic arteries, and 90 per cent of acessory bile ducts (Lindner, 1987).

The Common bile duct:

The common bile duct is formed by the junction of the common hepatic duct with the cystic duct. It may be as short as 5 cm and as long as 17 cm. Its normal diameter is 9 to 11 mm (Dowdy et al., 1962).

For purposes of description, the common bile duct is

divided into four segments:

1) Supraduodenal segment:

It lies within the right free border of the hepatoduodenal ligament. The ascending hepatic artery lies on the same plane as the duct and slightly to the left of it. The portal vein lies dorsal to the duct, separated from it by a varying amount of loose areolar tissue. Multiple lymph nodes lie close to the supraduodenal portion of the common bile duct and when enlarged they may be mistaken for gall stones when the duct is palpated (Dowdy et al., 1962).

2) Retroduodenal segment:

It passes behind the firt part of the duodenum where now the gastroduodenal artery lies to its left and retroduodenal artery lies in front. The retroduodenal artery arises from the gastroduodenal artey which runs parallel to the duct behind the duodenum, about 1 cm to its left or it arises from the inferior parcreatico-duodenal artery; this constant relation aids avoidance of the duct during gastrectomy (Bernard and Hand, 1987).

This portion of the common bile duct descends anterior to the inferior vena cava and to the right of the portal vein.