ROLE OF TRANSJUGULAR INTRAHEPATIC PORTO SYSTEMIC SHUNT IN TREATMENT OF PORTAL HYPERTENSION

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of Master Degree in General Surgery

By

Hamdy mohamed abd el-Halem Anter

M.B. B.ch

Ain Shams University

Supervised By

Prof. Dr. Mostafa Adly Helmy

Ass. Prof. of General surgery

Ain Shams University

Assisted by

Prof. Dr. Ahmed El-Dorry

Ass. Prof of Radiology

Ain Shams University

Dr. Refaat El-Fiky

Lecturer of general surgery

Ain Shams University

Faculty of Medicine

Ain SAhams University

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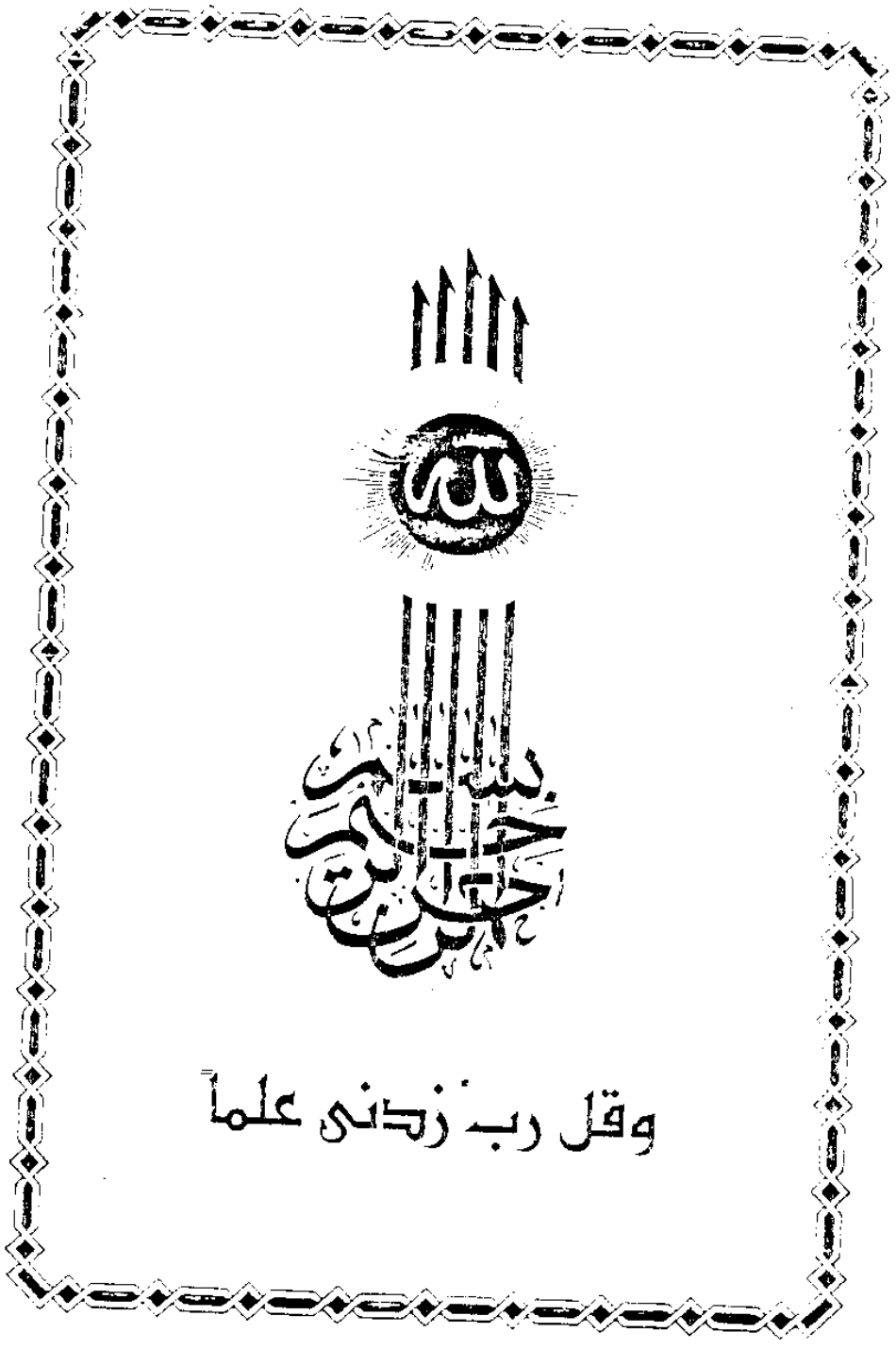

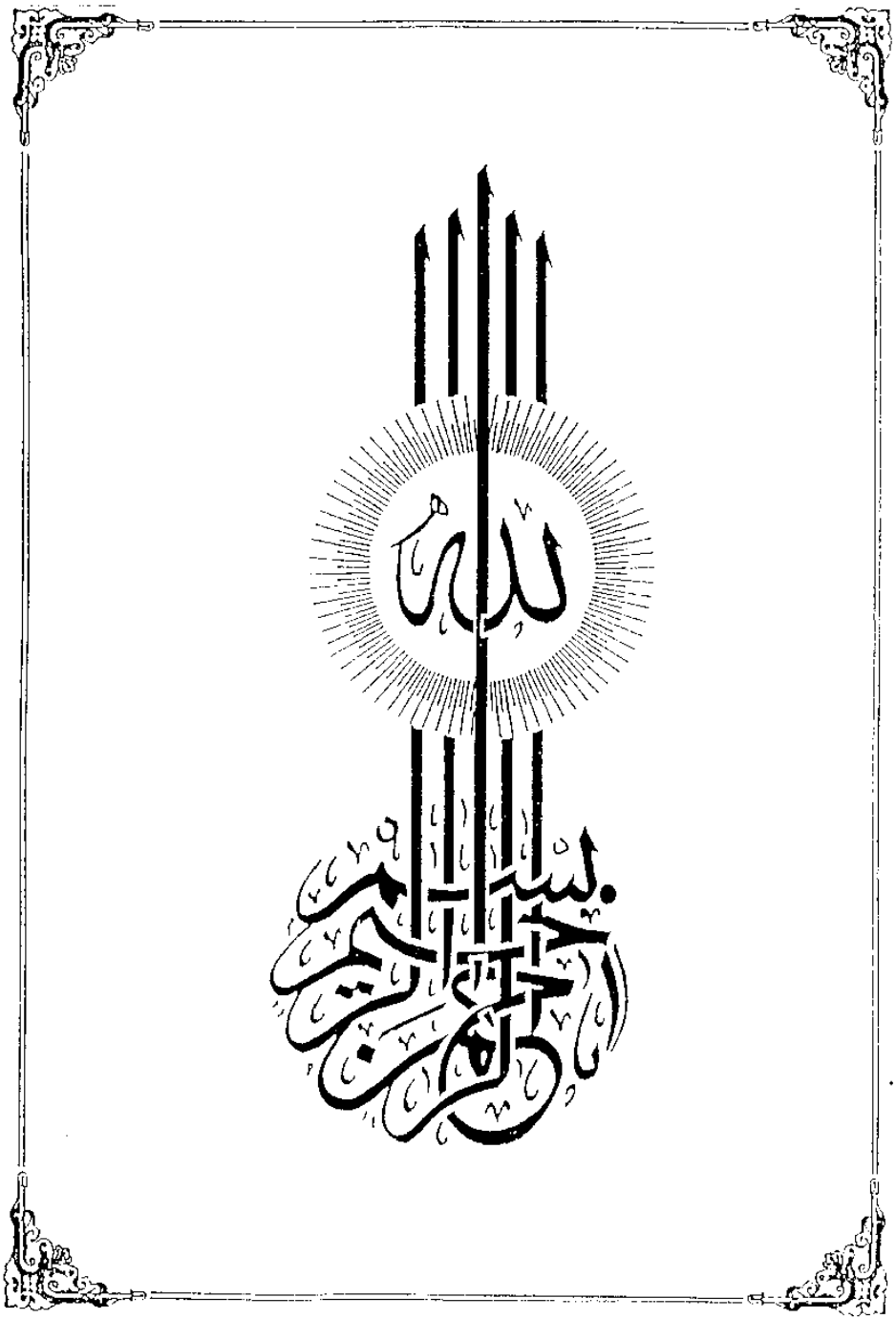

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Hamdy Mohamed Anter

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Introduction

Portal hypertension with impending active variceal haemorrhage is serious complication of liver cirrhosis. There are three major complications associated with portal hypertension, variceal haemorrhage and ascites can be treated effectively by various types of portal decompresion surgary but these procedures invariably decrease hepatic flow and hence worsen the function of an already compromised liver.

The management of patients with variceal haemorrhage has changed considerably over the past few years. Sclerotherapy has become the primary treatment for active variceal hemorrhage as well as for prevention of future variceal bleeding. Surgical portosystemic shunts play a critical role in the treatment of patients with bleeding oesophageal bleeding and serveral surgical options are available.

Different studies have found various degrees of operative mortality and postoperative shunt thrombosis, encephalopathy and recurrent bleeding.

Unfortunately, this approach has done little to improve survival of patients with advanced liver disease.

Transjuglar intrahepatic portosystemic shunt is a new, promising interventional procedure for the treatment of portal hypertension, also used in patient prepared for liver transplantation.

In the practical management of portal hypertension liver transplantation often becomes the only reasonable therapeutic option for the the patient with advanced liver disease , either before or after portosystemic shunt (Surgical or nonsurgical).

Aim of Essay

To review the subject of surgical treatment of portal hypertension and to Discuss the subject of transjugular intrahepatic portosystemic shunt and its role in treatment of portal hypertension.

Chapter (I)

Surgical Anatomy of the liver and portal circulation

SURGICAL ANATOMY

Morphological anatomy of the liver :

The liver as it appears at laparotomy is divided by the umbilical fissure and by the falciform ligament into two lobes, a large right lobe and a small left lobe. At the inferior surface of the right lobe is the transverse hilar fissure which constitutes the posterior limits of this surface. The portion of the right lobe, located anteriorly to this fissure is called the quadrate lobe, limited on the left by the umbilical fissure and on the right by the gall bladder fossa. Posterior to the hilar transverse fissure is a fourth lobe (spigel) or caudate lobe, which is limited on the right side by the groove for the inferior vena cava, on the left side by the fissure for ligamentum venosum, inferiorly by the porta hepatis, and superiorly by the left hepatic vein and the ligamentum venosum as it curves to join the inferior vena cava. Thus the liver is comprised of two main lobes and

two accessory lobes which are individualised by visible well defined fissures. ***(Bismuth, 1988)***

Functional and segmental anatomy of the liver :

The study of the functional anatomy of the liver permits the description of the hepatic segmentation based upon the distribution of the portal radicles and location of the hepatic veins. The three main hepatic veins divide the liver into sections. The scissura containing the hepatic veins are called portal scissura, while the scissura containing portal pedicles are called hepatic scissura. According to the functional anatomy, the liver appears to be separated into two livers, the right and left livers, by the main portal scissura, also called Cantlie's Line, which goes from the middle of the gall bladder bed anteriorly to the left side of the vena cava posteriorly. The right and left livers individualised by the main portal scissura are independant as regards the portal and arterial vascularisation and the biliary drainage. The middle hepatic vein follows this main

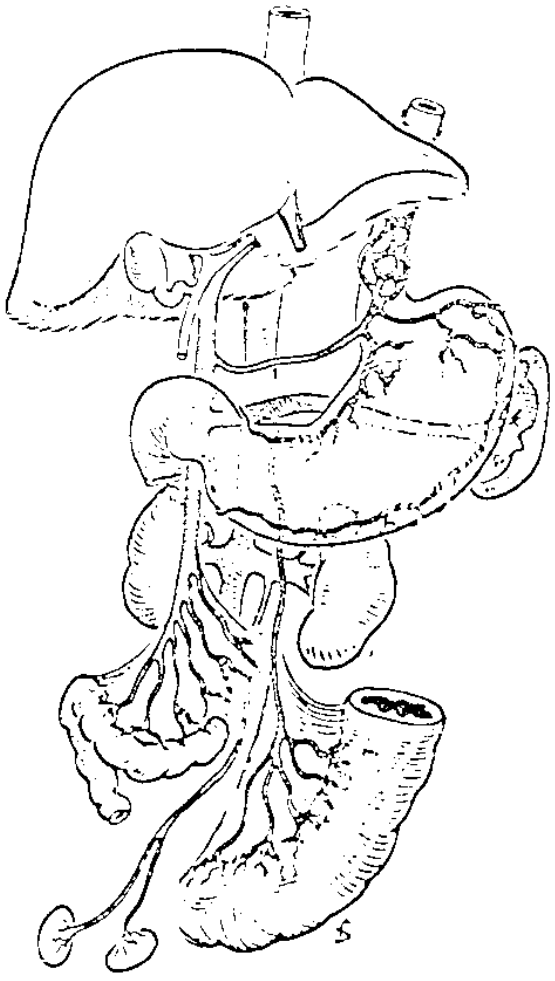
portal scissura. The right and left livers themselves are divided into two parts by two other portal scissura. ***(Bismuth, 1988)***

The right portal scissura divides the right liver into two sectors; anteromedial or anterior and posterolateral or posterior. Each of these two sectors is divided into two segments; anterior sector - segment V inferiorly and segment VIII superiorly, and the posterior sector - segment VI inferiorly and segment VII superiorly. The exact location of the right portal scissura is not well defined. According to Couinaud, it extends at the anterior surface of the liver at the middle of the distance between the right angle of the liver and right side of the gall bladder fossa, to the confluence between the inferior vena cava and the right hepatic vein. The left portal scissura divides the left liver into two sectors; anterior sector and posterior sector. The anterior sector is divided by the umbilical fissure into two segments; medially segment IV, the anterior part of which is the quadrate lobe, and laterally segment III which is the

anterior part of the left lobe. The posterior sector is comprised only of one segment, segment II which is the posterior part of the left lobe. The left portal scissura is located posteriorly to the ligamentum teres and is found inside the left lobe where the left hepatic vein runs. The spigel lobe on segment I must be considered from the functional point of view as an autonomous segment, for its vascularization is independant of the portal division and of the three main hepatic veins. ***(Bismuth, 1988)***

Anatomy of the portal circulation :

The portal system includes all the veins draining the abdominal part of the digestive tube (except the lower anal canal) spleen, pancreas and gall bladder. From these viscera blood is conveyed by the portal vein to the liver where it ramifies like the hepatic artery, ending in the sinusoids from which blood again conveys to reach the inferior vena cava via the hepatic veins. The blood therefore passes through two sites of exchange vessels which are capillaries of the



Anatomy of the portal system. The coronary vein or the left gastric vein drains into the oesophageal plexus and the fundic portion of the stomach.The short gastric veins are not seen as they course into the spleen; these and the left gastroepiploic veins drain into the splenic circulation.

Fig (1-2)
Anatomy of portal system

digestive tube, spleen, pancreas, gall bladder and hepatic sinusoids.*(William, 1989)*

The portal vein is about 8 cm long. It begins at the level of the second lumbar vertebra by fusion of the superior mesenteric and splenic veins, anteriorly to the inferior vena cava and posteriorly to the neck of pancreas. It ascends behind the superior part of the duodenum, bile duct and gastroduodenal artery and is here directly anterior to the inferior vena cava. However, it enters the right border of the lesser omentum, ascending anterior to the epiploic foramen to the right end of the porta hepatis, dividing into right and left divisions which accompany the corresponding branches of the hepatic artery into the liver. ***(Ratych & Smith, 1991)***

The right branch enters the right hepatic lobe and as the left branch is longer it branches into caudate, quadrate and left lobes. As it enters the left lobe it is joined by the paraumbilical veins and the ligamentum teres, the latter is a