STUDY OF NEW TRENDS IN MANAGEMENT OF HEPATIC MALIGNANCIES

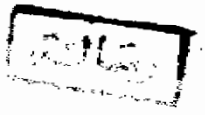
ESSAY

SUBIMTTED IN PARTIAL FULFILMENT
OF MASTER DEGREE IN
GENERAL SURGERY

BY

MOHAMMED HAZEM EL-ZEMITY

UNDER SUPERVISION OF



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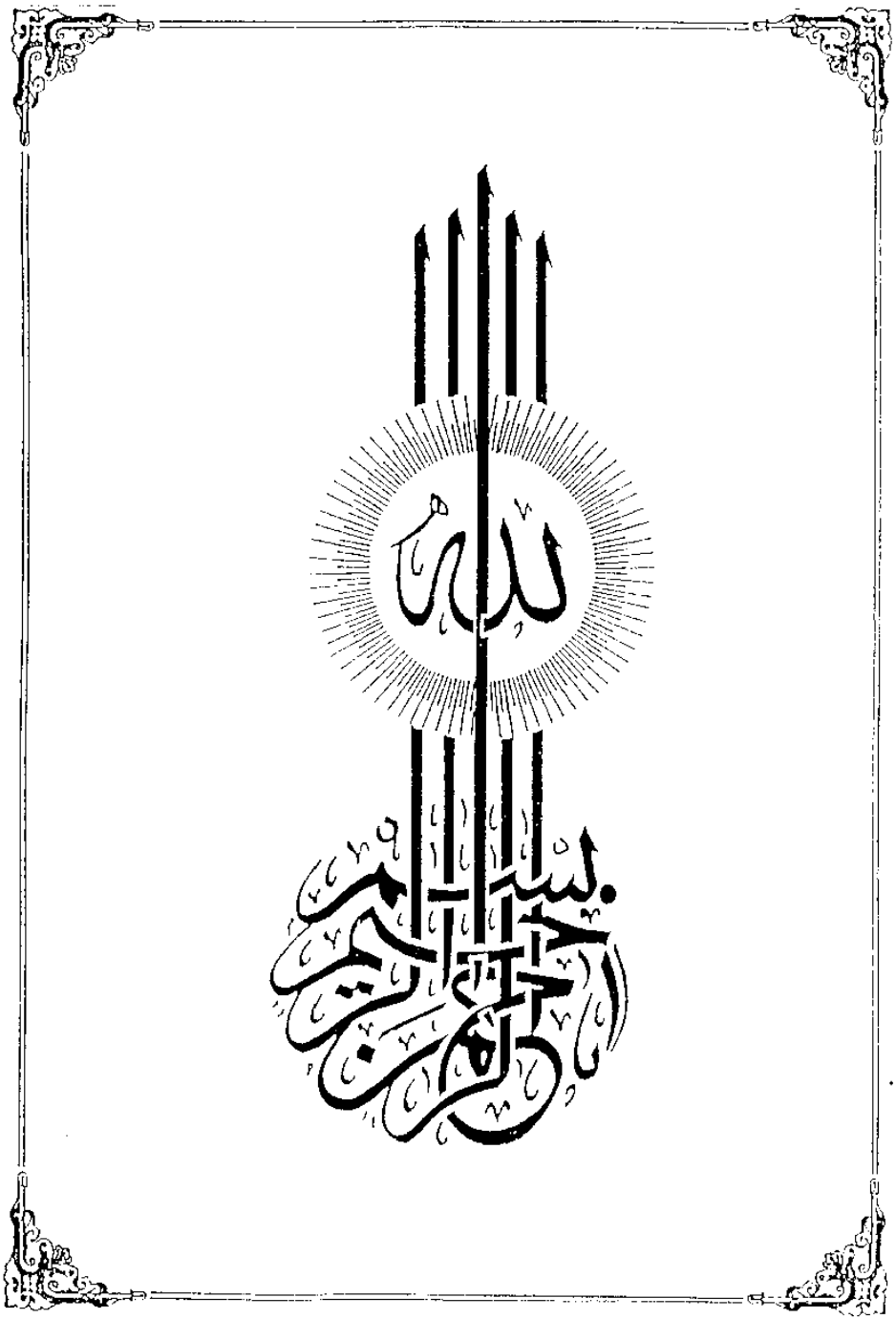
1988

TO : MY WIFE

MY DAUGHTERS : REEM AND RANA.



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CONTENTS

ANATOMY

ANATOMY OF THE LIVER

Liver anatomy can be described according to two different aspects : (1) morphological anatomy and (2) functional anatomy (Bismuth, 1986).

Morphological Anatomy :

The liver is a large solid organ which normally weighs about 1500 gm. It is roughly wedge-shaped and mostly lies in the upper right portion of the abdominal cavity although the thin end of the wedge extends across to the left (Hallcraggs, 1985).

The greater part of the liver is situated under cover of the ribs and costal cartilages and is in contact with the diaphragm, which separates it from the pleura, lungs, pericardium, and heart. The convex upper surface of the liver is molded to the under surface of the domes of the diaphragm (Snell, 1981).

Surfaces :

The liver presents diaphragmatic and visceral surfaces. The diaphragmatic surface, smooth and convex, is separated in front and below from the visceral surface by the sharp inferior border. The visceral surface faces downward, backward, and to the left. It is related to the right colic flexure, right kidney, duodenum and stamach. The visceral surface presents an H-shaped series of grooves. The limbs of the H are (1) the fissure for the ligamentum teres, which contains that ligament (oblitrated left umbilical vein), (2) the fissure for the ligamentum venosum, which contains that ligament (oblitrated ductus venosus), (3) the fossa for the gall bladder, which contains that organ, and (4) the sulcus for the vena cava, which lodges the inferior vena cava. The cross-bar of the H is the porta hepatis (O'Rahilly, 1983).

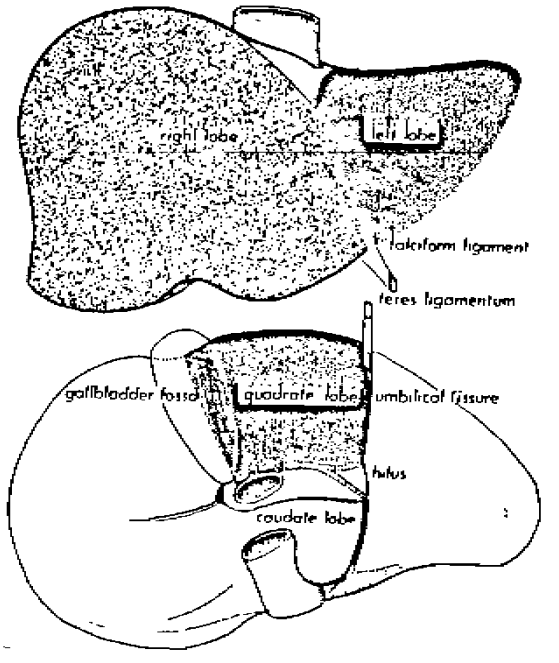
The Porta Hepatis :

Is a deep fissure on the visceral surface of the liver. It is here that the left and right branches of the hepatic

artery and portal vein enter the liver and the right and left hepatic ducts leave to form the common hepatic duct. The anterior and posterior layers of the lesser aomentum are reflected around the lips of the fissure and it is in the free border of this ligament that these vessels and duct travel (Hall-Craggs, 1985).

Lobes of the Liver :

The liver can be divided into right and left lobes along the left-hand limb of the H and by the attachment of the falciform ligament on the diaphrapmatic surface (O'Rahilly,1983). The visceral surface from the sharp lower border to the porta hepatis, between ligamentum teres and gall bladder, is named the quadrate lobe. The visceral surface behind the porta hepatis, enclosed by the ligamentum venosum and its attached lesser omentum, is named the caudate lobe. It is joined by an ismuth of liver surface to the right lobe. The ismuth is called the caudate process, it lies at the upper limit of the epiploic formaen, between the porta hepatis and the groove for the inferior vena cava (Last, 1984).



Morphologic aspect of the liver.

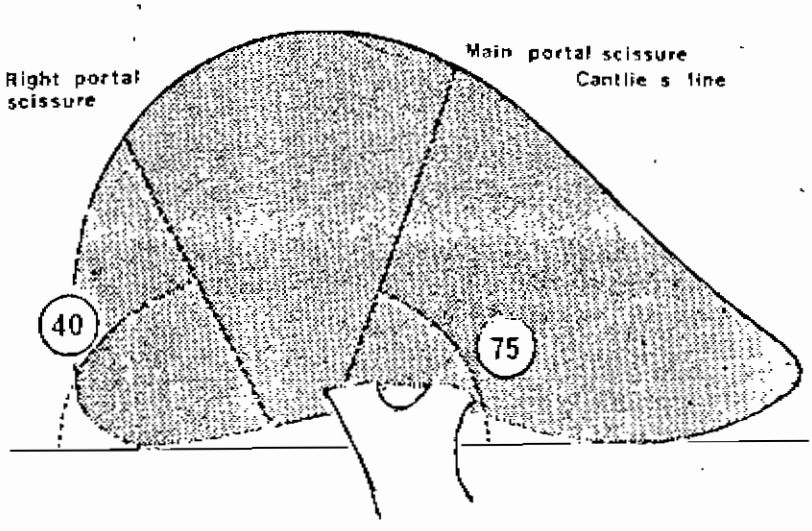
Ligaments of the Liver :

The falciform ligament is a thin, sickle-shaped antero-posterior fold consisting of two apposing layers of peritoneum. One of its three borders is attached to, and reflected over, the anterior surface of the liver. Another border is attached to, and reflected over, the diaphragm and the anterior abdominal wall to the level of the umbilicus, while the third inferior border is free and encloses the ligamentum teres. At the upper extent of the border of the falciform ligament attaching to the anterior surface of the liver, the peritoneal layers diverge laterally and reflect onto the diaphragm. The right reflection forms the anterior layer of the coronary ligament, which passes laterally to bend sharphy at the right triangular ligament, where it becomes the posterior layer of the coronary ligament. The peritoneum forming the coronary ligament reflects from the liver onto the diaphragm to enclose an area devoid of peritoneum. Here the liver is in direct contact with the diaphragm and is designated as the "bare area". The left divergence of the falciform

ligament, the left triangular ligament, reflects onto the left lobe corresponding to, and continuous posteriorly with the posterior layer of the coronary ligament. The two folds of peritoneum composing this left divergence are not widely separated (Christensen, and Telford, 1982).

Functional anatomy :

The study of the functional anatomy of the liver permits the representation of a hepatic segmentation based upon the distribution of the portal pedicles and the location of the hepatic veins. The three main hepatic veins divide the liver into four sectors, each of which receives a portal pedicle, with an alteration between hepatic veins and portal pedicles. ~~the four sectors individualized by the three hepatic veins~~ are called portal sectors. The scissurae containing the hepatic veins are called portal scissurae, while the scissurae containing portal pedicles are called hepatic scissurae. According to this functional anatomy, the liver appears to be separated into two livers (or hemilivers), the right and left livers, by the main portal scissura. The main portal scissura



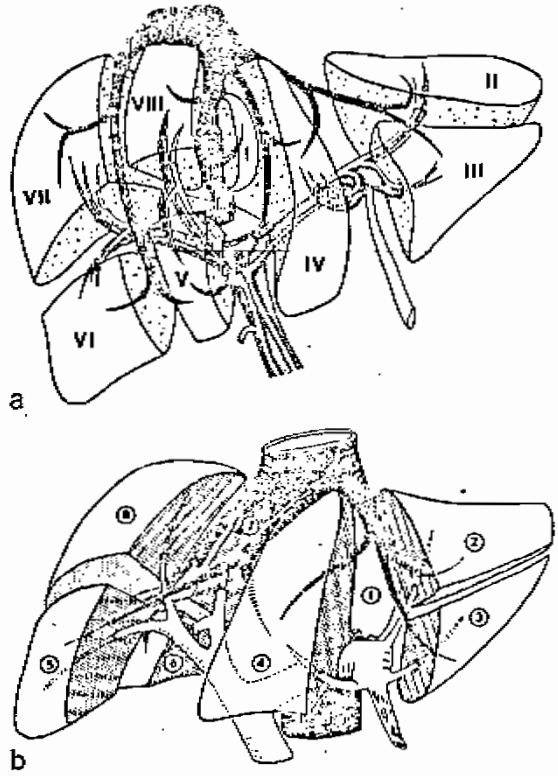
The obliquity of the middle and of the right portal scissurae.

goes from the middle of the gall bladder bed anteriorly to the left side of the vena cava posteriorly. The right and left livers, individualized by the main portal scissura, are independent as regards the portal and arterial vascularization and the biliary drainage. The middle hepatic vein follows this main portal scissura (Bismuth, 1986).

These right and left livers are themselves divided into two parts by two other portal scissurae. These four subdivisions are called sectors.

1 - The right liver is divided into two sectors by the right portal scissura where runs the right hepatic vein. Each of these two sectors is divided into two segments. The anterior sector-segment V inferiorly, and segment VIII, superiorly, and the posterior sector-segment VI- inferiorly, and segment VII superiorly.

2 - The left liver is also divided into two sectors by the left portal scissura where the left hepatic vein runs. The anterior sector is divided by the umbilical fissure into two segments : medially the segment IV, the anterior



The functional division of the liver and the segments A-ex-vivo position, B-in situ position.