HEPATIC RESECTION

ESSAY

Submitted for Partial Fulfilment
Of The M. Sc. Degree in
GENERAL SURGERY

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1993

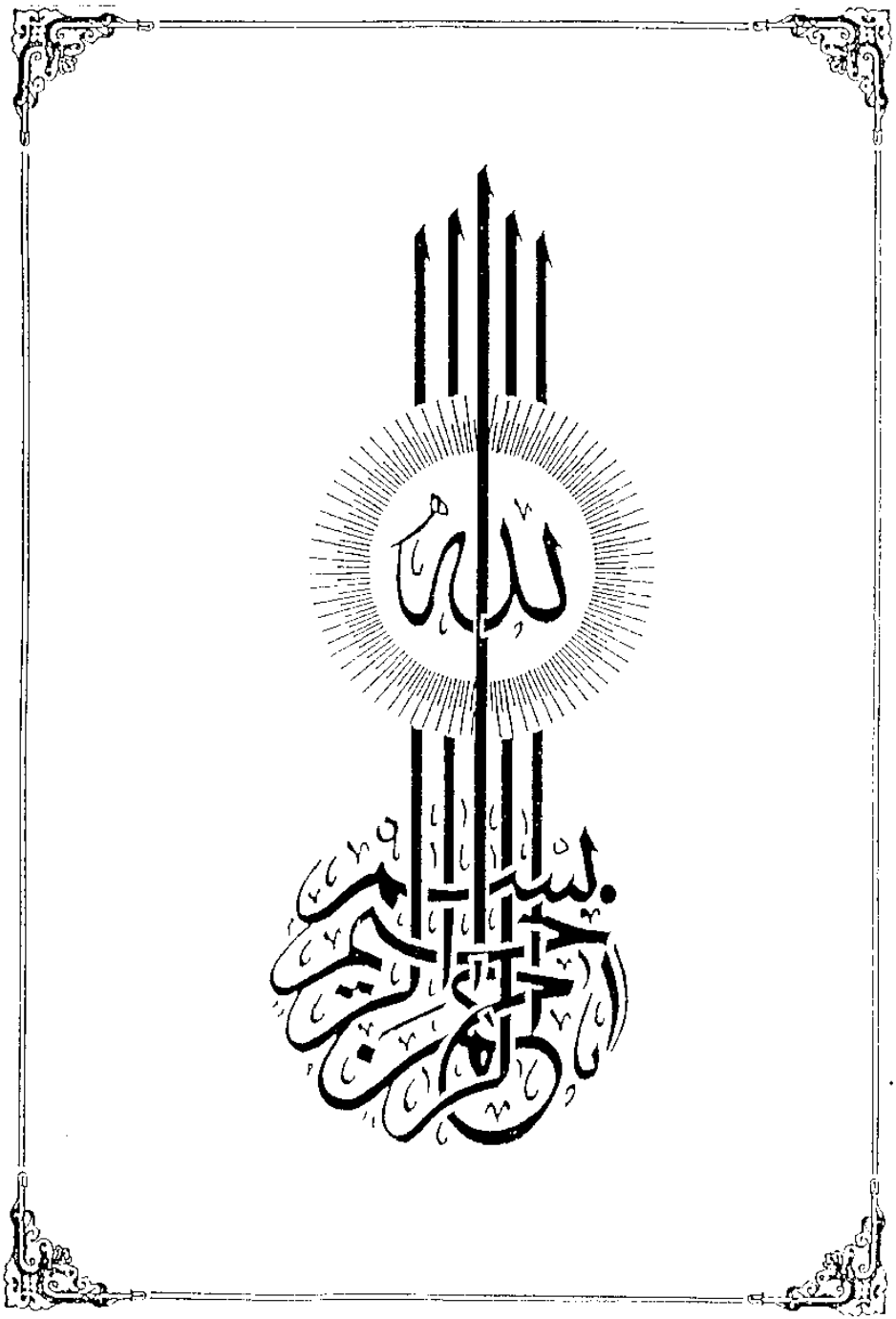
DEDICATION

TO MY FATHER

TO MY MOTHER

TO MY WIFE

TO MY BROTHER



ACKNOWLEDGMENT

I WISH TO EXPRESS MY DEEPEST GRATITUDE AND SINCERE THANKS TO PROFESSOR DOCTOR SHAMEL ABDALLA, PROFESSOR OF GENERAL SURGERY, AIN SHAMS FACULTY OF MEDICINE, AIN SHAMS UNIVERSITY FOR HIS KIND SUPERVISION AND GENEROUS ENCOURAGEMENT THROUGHOUT THIS WORK.

I AM VERY GRATEFUL TO PROFESSOR DOCTOR MOHAMMED HALMY EL GOHR, ASSISSTANT PROFESSOR OF GENERAL SURGERY, AIN SHAMS FACULTY OF MEDICINE, AIN SHAMS UNIVERSITY FOR HIS UNFORGETABLE HELP IN THIS WORK.

I WOULD ALSO LIKE TO THANK DOCTOR WALEED ALIAN LECTURER OF GENERAL SURGERY, AIN SHAMS FACULTY OF MEDICINE, AIN SHAMS UNIVERSITY FOR HIS GREAT HELP DURING THIS WPORK.

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INTRODUCTION

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HEPATIC RESECTION IS AN INCREASINGLY COMMON PROCEDURE IN MANY MEDICAL CENTERS NOWADAYS WITH SIGNIFICANT REDUCTION IN THE OPERATIVE MORBIDITY AND MORTALITY (SCHWARTZ, 1989). RECENTLY, THE STUDY OF THE FUNCTIONAL ANATOMY OF THE LIVER PERMITTED DESCRIPTION OF HEPATIC SEGMENTS WHICH ALLOWED SAFE RESECTION OF DIFFERENT LIVER SEGMENTS (Bismuth et al, 1988).

THIS STUDY IS PLANNED TO PRESENT CONSIDERABLE REVIEW OF HEPATIC RESECTION WITH ALMOST UPDATED KNOWLEDGE IN AN ATTEMPT TO CLARIFY THIS SUBJECT, THAT IS FREQUENTLY MET WITH IN CURRENT PRACTICE.

SURGICAL ANATOMY

OF

THE LIVER

SURGICAL ANATOMY OF THE LIVER

Anatomy of the liver can be described according to different aspects, each one has its significance. Morphological and functional anatomy, vascular and segmental anatomy has been described (Bismuth, 1982).

MORPHOLOGICAL ANATOMY OF THE LIVER

The liver is the largest gland in the body. In males it generally weighs 1.4-1.8 Kg, and in females 1.2-1.4 Kg. Its color is reddish brown in the fresh state.

POSITION OF THE LIVER:

The liver is occupying most of the right hypochondrium and epigastrium and extends into the left hypochondrium as far as the left lateral line (Last, 1984).

SURFACE ANATOMY OF THE LIVER:

The upper border extends from a point below the right nipple at the 4th intercostal space crossing the xiphesternal junction to a point infromedial to the left nipple at the 5th rib and up to the 7th rib of right midaxillary line.
The right border is convex to the right and extend from the end of the previous line to a point 1 cm below the costal margin along the midaxillary line.
The lower border completes this triangle crossing the midline at about the transpyloric plane slightly concave near the right (Clemente, 1989).

STABILITY OF THE LIVER:

The liver is suspended to the inferior vena cava by the hepatic veins, which are entirely intrahepatic in their course, thus the posterior part of the liver could not descend without elongation of the vena cava.

Also the ligamentum teres, intraabdominal pressure and all the peritoneal folds attaching the liver to the diaphragm and anterior abdominal wall share in hepatic fixation (Last, 1984).

SURFACES AND MARGINS OF THE LIVER

The liver is wedge shaped with the base of the wedge to the right and the apex to the left.

Superior Surface

It includes parts of the right and left lobes. It fits closely under the diaphragm, separated from it by peritoneum except for a small triangular area, where the two layers of the falciform ligament diverge (Clemente, 1989).

It reaches the fifth rib on the right and the fifth space on the left. It presents a shallow cardiac impression corresponding with the position of the heart above the diaphragm. It is related to the right diaphragmatic pleura and right pulmonary base. No definite border separates superior, anterior, right lateral and right posterior aspects of the liver and all are grouped to be called the

diaphragmatic surface which is separated from the visceral one by a narrow edge (Clemente, 1989).

Anterior Surface

Is triangular and convex and is covered by peritoneum except at the attachment of the falciform ligament. A large part of it is in contact with the diaphragm which separate it from pleura and sixth to tenth ribs on the right and from the seventh and eighth costal cartilages on the left. The middle part of this surface lies behind the xiphoid process and the anterior abdominal wall in the infracostal angle (Clemente, 1989).

Right Surface

Is separated from the right lung and pleura and the seventh to eleventh ribs by the diaphragm. It is covered by peritoneum and its upper third is separated from the thoracic wall by diaphragm, right lung and pleura while its middle third is separated only by the diaphragm and pleura and the lower third by the diaphragm (Clemente, 1989).

Posterior Surface

It is wide on the right and narrow on the left with a median concavity for the vertebral column. Much of this surface is not covered with peritoneum. There is a groove for the inferior vena cava the floor of which is pierced by the hepatic veins. Caudate process separate this surface from portahepatis. The posterior aspect of the left lobe comprises a shallow impression for the oesophagus and the fundus of the stomach (Clemente, 1989).

Inferior Surface

It is directed downward, backward and to the left. It is covered by peritoneum except at portahepatis fissure for ligamentum teres and the fossa for the gall bladder. The portahepatis is a deep transverse fissure between the upper ends of the fissure for ligamentum teres and the fossa for the gall bladder and between the caudate process posteriorly and quadrate lobe anteriorly. At the portahepatis the portal vein, hepatic artery and hepatic nerve plexus enter while right and left hepatic ducts and lymph vessels emerge. They are arranged from front backward as hepatic ducts, hepatic artery and portal vein. The caudate process lies behind the portahepatis, in front of I.V.C. and it connects caudate lobe to the right lobe. The fossa for the gall bladder forms the right boundary of the quadrate lobe and it is devoid of peritoneum. Gall bladder fits this fossa and its fundus reachs the lower border of the liver. Quadrate lobe comprises three impressions for part of the colon, right kidney and the pylorus and the first part of the duodenum (Clemente, 1989).[FIG 1]

Lobar anatomy of the liver

The liver is divided into two main lobes right and left and two accessory lobes caudate and quadrate. The latter two lobes are separated by the hilar fissure where the caudate lobe lies posteriorly and the quadrate lobe anteriorly (Clemente, 1989).

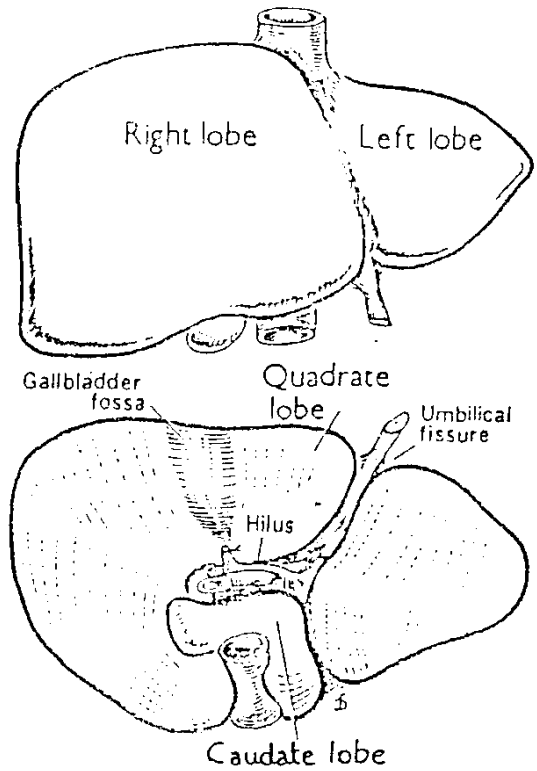

Fig. 1

Morphological aspect of the liver

(Bismuth H., 1988)

The Quadrate lobe

Rectangular in shape, bounded by the inferior border anteriorly, portahepatis posteriorly, fissure for ligamentum teres on the left and the fossa for the gall bladder on the right. It is related to the lesser omentum, pylorus and first part of duodenum and transverse colon from behind forward.

The caudate lobe

Bounded by the fissure for ligamentum venosum on the left, portahepatis below, the groove for I.V.C on the right and above, it continues with the superior surface. It is connected to the right lobe below and behind by the caudate process (Clemente, 1989).

PERITONEAL RELATIONS OF THE LIVER:

The right lobe is covered by peritoneum on its inferior, upper and anterior surfaces, posterior surface showed an area devoid of peritoneum and comes in direct contact with the diaphragm called the bare area.

The peritoneum is reflected on to the diaphragm forming the upper and lower layers of the coronary ligaments and bordering the bare area. At the right end of the bare area the two layers of the coronary ligament meet each other to form the right triangular ligament.

The left lobe is covered completely by peritoneum except posteriorly where the peritoneum is reflected on the diaphragm as the left triangular ligament (Clemente, 1989).

Bare areas of the liver includes: Bare area on the posterior surface of the right lobe between the two layers of the coronary ligament. It is triangular in shape and its base lies close to the groove for the I.V.C., fossa for the gall bladder and groove for I.V.C. (Clemente, 1989).