PORTAL HYPERTENSION

ESSAY

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BY

FATHY AZIZ HAMED

SUPERVISED BY

PROF. DR. MAGED ZAYED

Prof. of General Surgery,

Ain-Shams University.

DR. ALAA ABDALLA

Lecturer of General Surgery,

Ain-Shams University.

FACULTY OF MEDICINE

AIN-SHAMS UNIVERSITY

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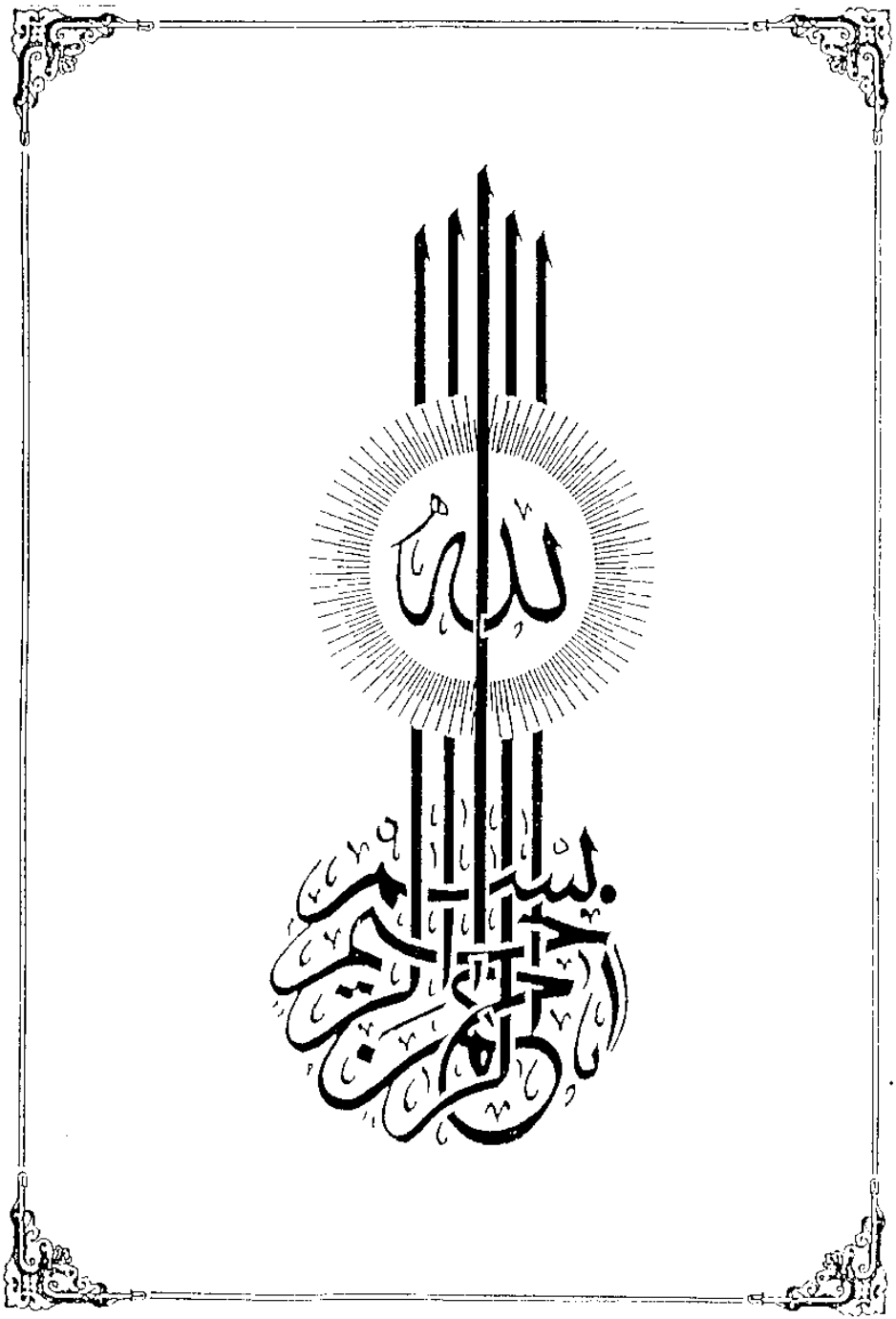
The Candidate



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INTRODUCTION

AND AIM OF THE WORK

Portal hypertension is a sequel of serious diseases affecting Egyptian patients caused mainly by schistosomiasis.

Complications of portal hypertension namely, bleeding, ascites, encephalopathy are serious complications of liver cirrhosis and they are a field of continuous research in an attempt to introduce many lines of treatment to deal with these complications.

The aim of this work is to study the different methods of treatment of bleeding oesophageal varices.

ANATOMY OF THE PORTAL SYSTEM

ANATOMY OF THE PORTAL SYSTEM

The venous drainage of the intestine; pancreas ,spleen is by the portal vein which is formed by the union of the splenic and the superior mesenteric vein at the lower level of the second lumbar vertebra behind the neck of the pancreas . The portal vein runs 8-9 cm to the hilum of the liver where it divides into lobar branches.

The coronary veins usually enter the portal vein in the anatomical aspect cephalad to the margin of the pancreas and the inferior mesenteric vein usually drains into the splenic vein.

The oesophago-gastric varices are the most important porta-systemic anastomosis because of their liability to produce haemorrhage which is the second main cause of death after hepatic coma in case of portal hypertension (Kamel, 1965). The oesophago-gastric varices are classified into three types; intrinsic system, extrinsic system, and the perforator or communicating venous system (Butler, 1951). The intrinsic system is subdivided into a subepithelial venous plexus, the veins of which have a thin walls, no valves and lies within the Laminapropria of the oesophageal wall,

Ferras (1963) postulated that the intrinsic venous plexus of the oesophagogastric transition segment is divided into 2 groups. The musculosa-submucosa venous arrangement of the oesophagogastric transition segment lies 2.5-3 cm above the Z line. The submucous venous trunks leave their plane towards the Lamina propria of the mucosa. They arborize into finer veins, cross the muscularis-mucosa to join the subepithelial plexus which thus becomes rich in this zone and the lower end of the zone III. The veins leave the mucosa back to the submucosa making a second traversing to the muscularis interna. In the submucosa of zone III only a few veins are longitudinally arranged on the left side with little cross communication. They directly join the gastric submucous plexus in zone II to the oesophageal submucosa plexus in zone IV and are called the shunt veins. The submucous veins of the stomach just below the oesophago-gastric junction break up into numerous fine longitudinal capillary. Like veins to continue across the so-called anato-mical cardia of the stomach. On the other hand, distally these cardiac veins confluence into 2-4 main trunks which end in the beginning of the coronary vein within the wall of the stomach.

The muscular venous plexus of the oesophagogastric tran-sition segment is arranged in three venous sets : The tunica muscularis; the intermuscular venous set which is the largest

and lies between the longitudinal and circular muscle layer; and the perimuscular or superficial venous set, close to the external surface of the mucosa. In the gastric part of the oesophago-gastric transition segment, where the outer longitudinal muscle layer becomes very much attenuated, the perimuscular and intermuscular nets joins each other forming one single net. The venous nets are interconnected by perforating veins, both the true and the false and by veins which joint the three nets together with venules which interconnect two adjacent nets and capillary like venules which inter connect the veins between the muscular bundles.

The venous nets are arranged longitudinally cranially and caudally, on each side of the oesophago-gastric transition segment. Many of these veins end into the perforating veins and the rest converge into a limited number of large confluent trunks. The perforated veins are located in the proximal and distal end of zone III and are predominatly of the true type. In the intermediate part of zone III the perforating veins are predominatly of the false type. Accordingly, the direct venous drainage from the mucosa-submucosa system would decrease sharply in the intermediate part of zone III.

The vena comitans of the vagus nerves arise as a branches of the coronary vein close to left and right vagi. Accordingly they are 2 longitudinal venous trunks a left one and right one, they pass upward accompanying the nerve trunks. The right trunk joins the azygous vein, the right posterior bronchial vein or the venous plexus on the surface of the right bronchus while the left trunk drains into the hemiazygous or left bronchial vein.

The Venous Drainage of the Cardia

The oesophago-gastric transition segment (EGTS) is divided into 4 zones, 2 small gastric zones (I and II) below and 2 large oesophageal zones (III and IV) above the squamo-columnar junction which is called the "Z" line (Ferraz, 1963).

Zone I : Started 1-2 cm below Z line and extends distally for 1-2 cm.

Zone II : Is the 0.5-1 cm area between Z line and zone I below

Zone III : Extends for 1.5-3.5 cm above Z line

Zone IV : Is the most cranial and is 1.5-3 cm high.

and a submucous group which drains the subepithelial plexus and lies above the cardia within the submucosa, they are 10-15 longitudinal veins with numerus cross anastomoses. At the upper end of the oesophagus, this network terminates in the pharyngeo-laryngeal venous plexus while at the lower end of the oesophagus, they assume aspecial arrangement which will be discussed in the anatomy of the oesophago-gastric transition segment. The extrinsic system on the otherhand is subdivided into : the extrinsic system and the vena comitans of the vagus nerves (Butler, 1951). The former constitutes drainage of the abdominal oesophagus is carried through 3-4 veins which join the left coronary vein where it deviates to the right to leave the lesser omentum. The short gastric veins also contribute in the drainage of abdominal oesophagus. This set of veins is arranged longitudinally on the right and the left margin of the oesophagus. It comprise 8-10 veins on each side. On the left side they drain the hemiazygous (below) and the accessory hemiazygous (above) while on the right site they drain into the vena azygous major. Few imperfect valves are found in the azygous vein, but its tributaries are provided with complete valves.

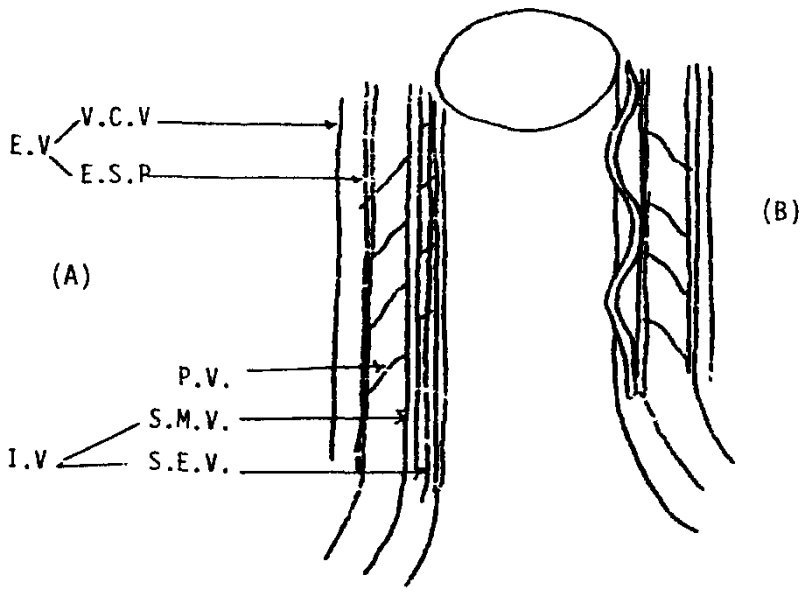

Fig. (1) : Schematic presentation of the veins draining the oesophagus (after Butler, 1951)

(A) Normal (B) Abnormal

E.V. : Extrinsic veins
I.V. : Intrinsic veins
V.C.V. : Vena comitanes of the vagus nerve
E.S.P. : Extrinsic set proper
S.M.V. : Submucous veins
S.E.V. : Subepithelial veins
P.V. : Perforating veins

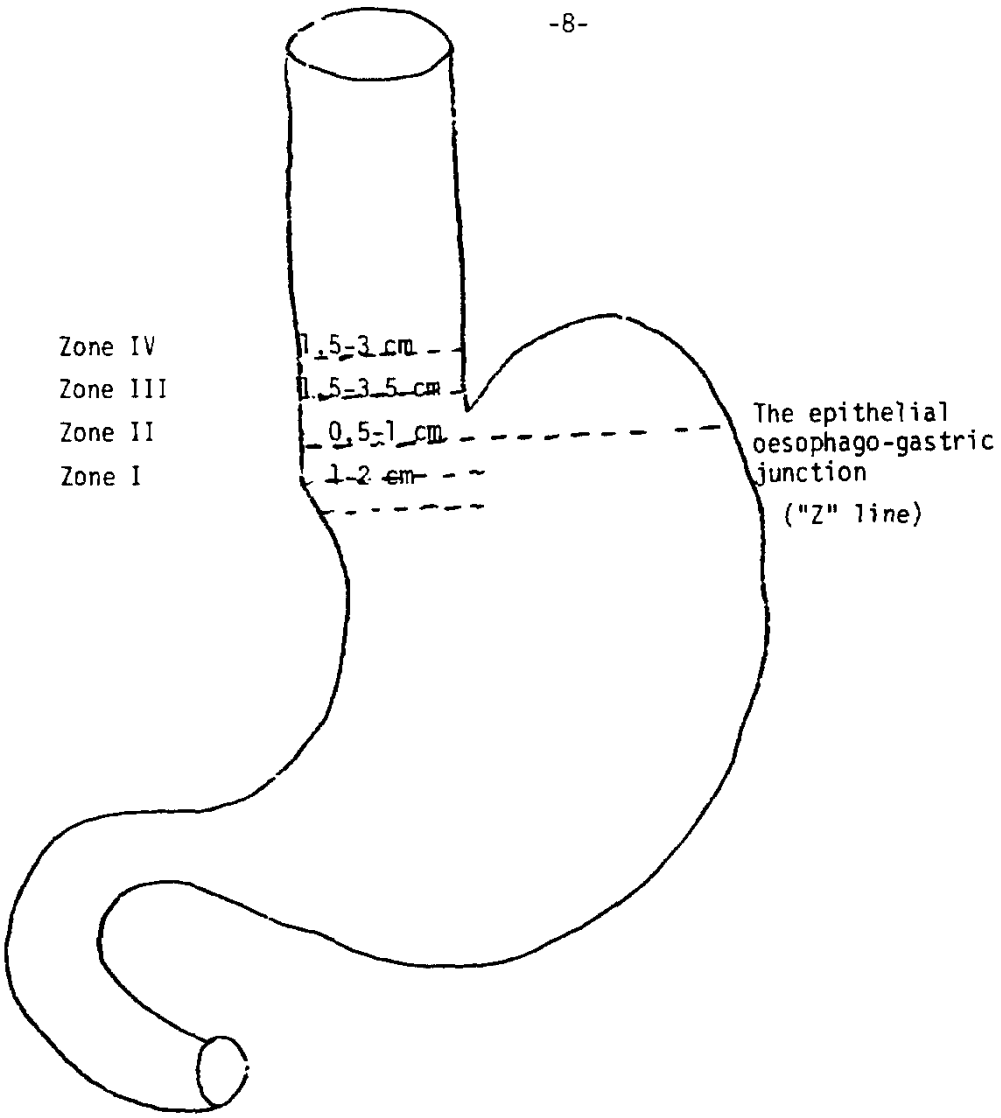

Fig. (2) : Diagram to show the division of the oesophago-gastric transition segment (E G T S)

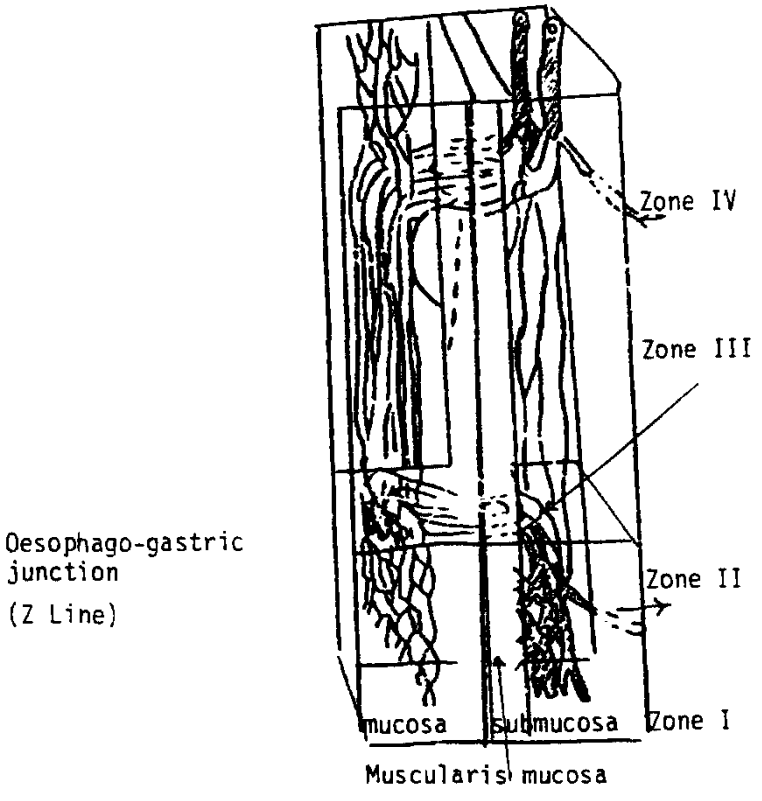

Fig. (3) : Diagram of the mucosal and submucosal venous arrangement at the "EGTS" (adapted from Ferraz de Carvalho, 1966)

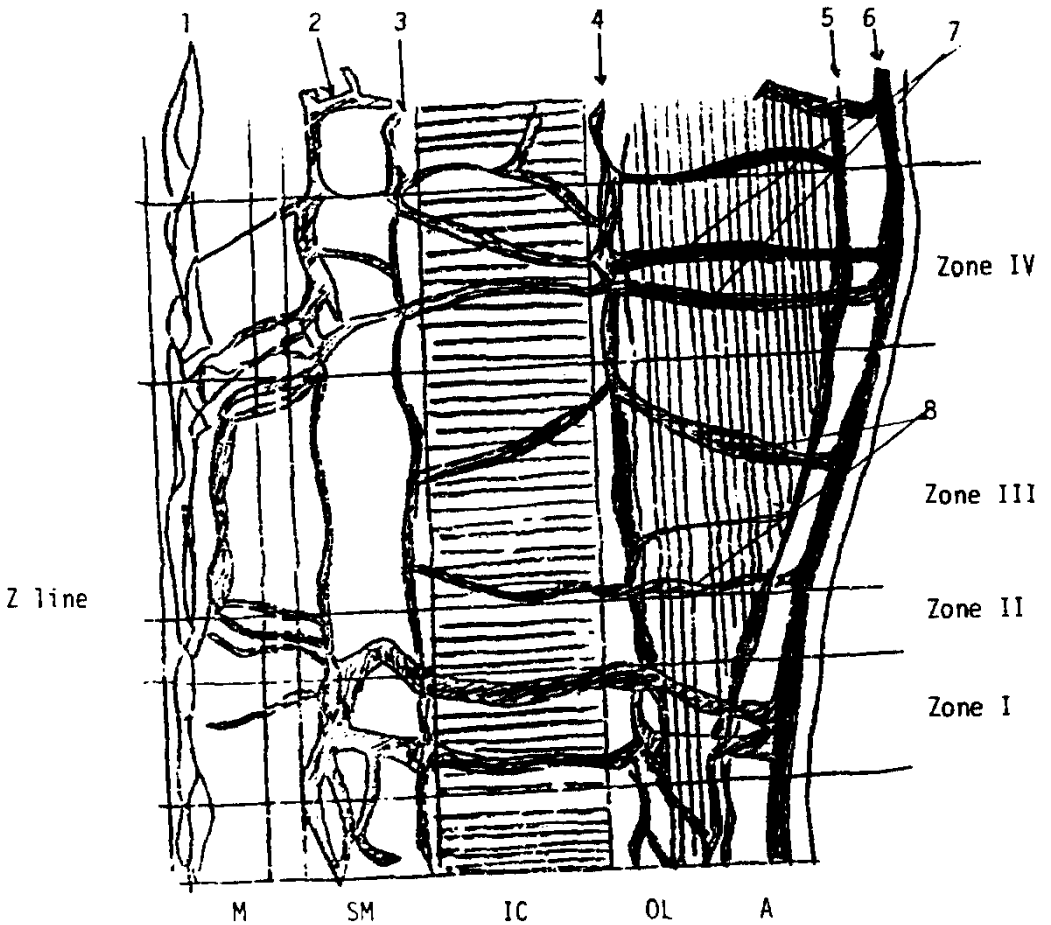

Fig. (4) : Outline of a longitudinal section of the "EGTS" (Adapted from Fujimura and Ferraz de Carvalho, 1977).

M : Mucosa
MM : Muscularis Mucosa
SM : Submucosa
IC : Inner Circular muscle layer
OL : Outer longitudinal muscle layer
A : Adventitia

(1) Subepithelial venous plexus
(2) Submucous venous plexus
(3) Submuscular veins
(4) Intermuscular veins
(5) Perimuscular veins
(6) Subserous veins
(7) True perforators
(8) False perforators