# MEDICAL VERSUS SURGICAL TREATMENT OF DUODENAL ULCER

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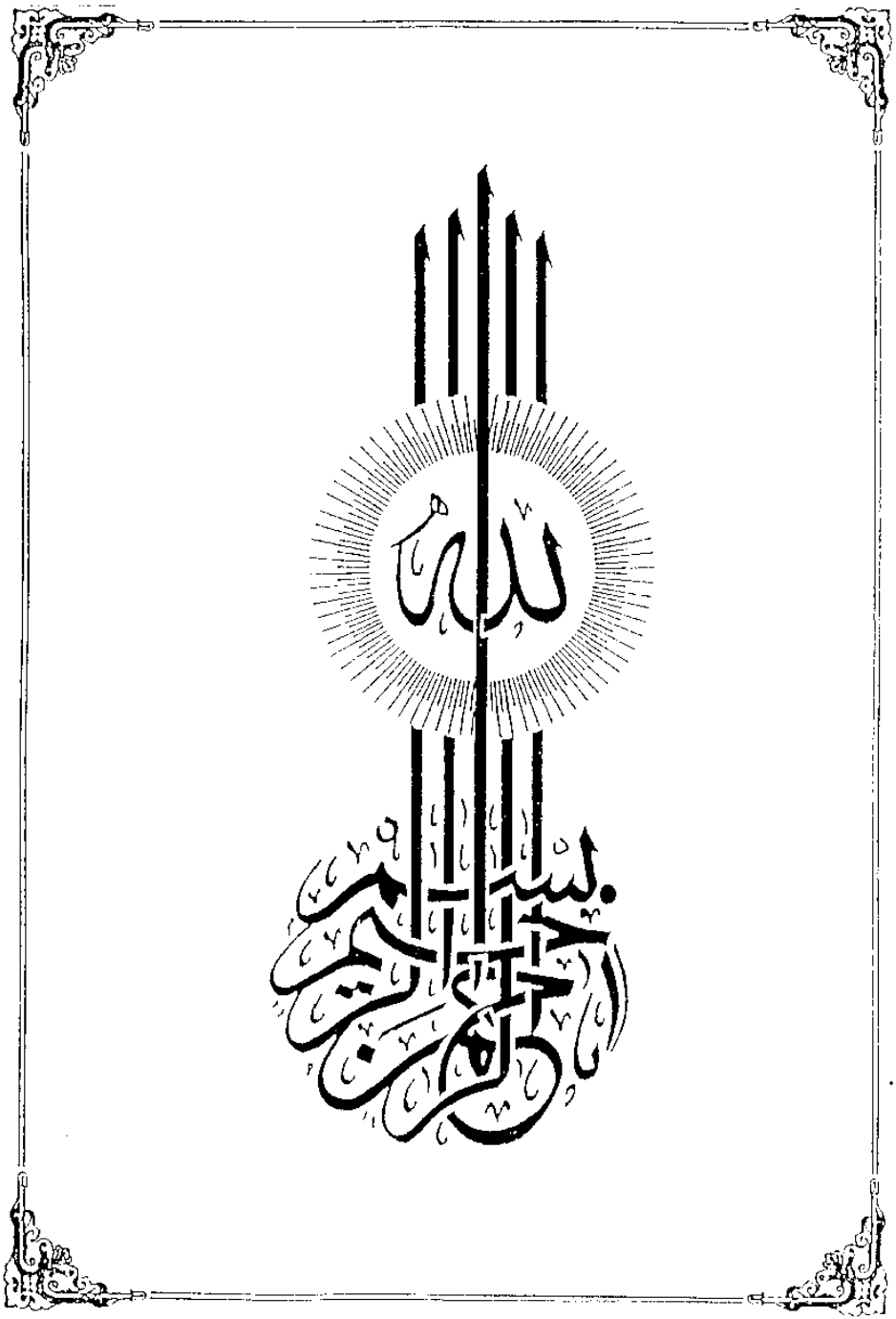

# C O N T E N T S

# INTRODUCTION

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Duodenal ulceration (DU) is a very common disease; about 10 percent of the population have clinical evidence of duodenal ulcer at sometime in their lifetimes. It develops only in the mucosa that is exposed to the corrosive action of gastric juice which has hydrochloric acid and pepsin as its most important components.

The aetiology of duodenal ulcer is not fully understood. The presence of acid and pepsin is essential for the appearance of a duodenal ulcer. It has been established that patients with D.U., as a group, secrete more acid than does a group of normal subjects. However, this observation does not explain the cause of D.U. particularly since many patients secrete amounts of acid well within the range of normal. It appears to be one of several aetiological factors operating in these patients. There are increasing evidences that a disturbance of the mucosal defence mechanisms may be an important precipitating factor.

The recent drugs as cimetidine, ranitidine, sucralfate and omeprazole constitute the base of the medical treatment of duodenal ulcer.

Although D.U. is primarily a medical problem, surgery still has its role especially in resistant and complicated

cases. The postoperative complications following the traditional surgical manoeuvres were the major drawback of this line of treatment. But after the introduction of the new procedures of surgical intervension as highly selective vagotomy and seromyotomy with their minimal postoperative complications, there is an increasing popularity of this line as a definitive treatment of duodenal ulcer.

The medical management of duodenal ulcer is controversial; widely differing views are strongly held. On the other hand, different surgical procedures are described.

# EMBRYOLOGY AND ANATOMY OF THE STOMACH AND DUODENUM

## EMBRYOLOGY OF STOMACH AND DUODENUM:

Before the end of the fourth week of gestation, the head and tail folds have progressed sufficiently to define the embryonic foregut, midgut and hindgut (Gerald, 1978). The stomach, the first part of duodenum and the upper half of the second part till the biliary orifice are derivatives of the foregut while the lower half of the second part, the third and fourth parts are derivatives of the midgut (Mahran et al, 1973).

By the end of the fourth and beginning of the fifth week the stomach can be recognised as a fusiform dilatation caudal to the oesophagus and dorsal to the heart. At this stage, it is median in position and separated from the pericardium by the septum transversum which extends ventrally onto the cranial side of the yolk duct. Dorsally the stomach is related to the aorta; and owing to the presence of the pleuroperitoneal canals on each side, it is connected to the body wall by a short dorsal mesentry, the dorsal mesogastrium. This mesentry is directly continuous with the dorsal mesentry of the intestine. The liver develops as a hollow outgrowth from the ventral aspect of the foregut and grows cranially into the substance of the septum transversum, this part of the septum now being termed the ventral mesogastrium (Williams and Warwick, 1980).

In the human embroyo at the 10 mm stage, the characteristic curvatures of the stomach are already distinguishible. Growth proceeds more actively along the dorsal border of the viscus; its convexity is notably increased. The fundus arises as a local bulge from its upper part. As a result of the more rapid growth of the dorsal border, the pyloric end of the stomach runs ventrally and the concavity of the lesser curvature becomes apparent (Fig. 1) (Williams and Warwick, 1980).

Originally, the stomach occupies a higher level and later it descends to its permanent position in the abdomen (Mahran et al, 1973).

During the fifth and sixth weeks of gestation, the stomach appears to undergo displacement to the left of the median plane and rotation from left to right through an angle of 90 degree along its longitudinal axis so that its originally right surface becomes dorsal and its left ventral (Gerald, 1978). As a result, the right vagus nerve is distributed mainly to the dorsal and the left mainly to the ventral surface of the organ (Hamilton and Mossman, 1972).

The dorsal mesogastrium increases in depth and becomes folded on itself; the lesser omentum becomes more transverse than anteroposterior. The pancreatico-enteric recess which is a simple depression on the right side of the dorsal meso-

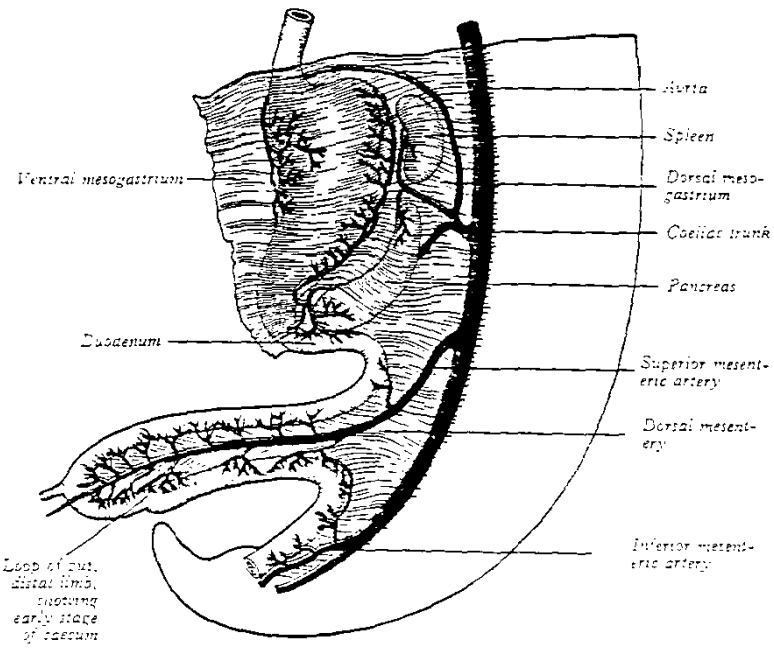


Fig. 1 The abdominal part of the digestive tube in a human embryo at the 10 mm stage.

gastrium, becomes dorsal to the stomach and excavates downwords and to the left. It may now be termed the inferior recess of the bursa omentalis (Gerald, 1978).

The displacement and rotation of the stomach has been attributed to its own growth chances, extention of the pancreatico-enteric recess and pressure of the rapidly growing liver (Gerald, 1978).

While these changes are occurring in the stomach, the midgut increases in the length more rapidly than the vertebral column and forms a loop which acquires a dorsal mesentry as it lengthens, and projects into the coelomic cavity (Williams and Warwick, 1980).

The duodenum develops from a loop formed by the distal portionof the foregut and the proximal protion of the midgut (Mahran et al, 1973).

The rotation of the stomach reacts on the position of the duodenum, which prior to this stage is a ventrally directed loop but now carried dorsally and to the right. At this stage the duodenum possesses a thick mesentry which is continuous with the dorsal mesogastrium and the mesentry of the intestinal midgut loop on the other hand (Williams & Warwick, 1980).

Later on the colon presses the duodenum against the posterior abdominal wall. This leads first to the adhesion of the right side of its mesentry to the parietal peritoneum, and later to the absorption of both layers. In this way the duodenum comes to sessile or "retroperitoneal" (Gerald, 1978).

The lining epithelium of the duodenum proliferates and almost occludes the lumen by the sixth week of gestation. These outgrowths terminate for a time in blind endodermal pockets within the duodenum (Gerald, 1978).

Duodenal development is further complicated by a wave of growth and differentiation that sweeps along its entire length. The duodenal channel, however, is reestablished by the third month when the epithelium reverts to a simple columnar form and the spaces coalesce together (Gerald, 1978).

The blood supply of the duodenum is an evidence of its development. Its first part and the upper half of the second develop from the foregut and are supplied by the superior pancreatico-duodenal artery, a branch of the coeliac trunk, the artery of the foregut; the lower half of the second, the third and fourth parts develop from the midgut and are supplied by the inferior pancreatico-duo-

denal artery, a branch of the superior mesenteric artery, the artery of the midgut (Mahran et al, 1973).

The junction between the foregut and the midgut is indicated in the adult by the bilirary orifice (Mahran et al, 1973).

## ANATOMY OF THE STOMACH AND DUODENUM

### THE STOMACH:

It is the most dilated part of the digestive tract; it is situated between the end of the oesopagus and the beginning of the small intestine.

### General Characteristics: (Williams and Warwick, 1980).

It lies in the epigastric, umbilical and left hypochondriac regions of the abdomen; it occupies a recess bounded by the upper abdominal viscera, and completed in front and on the left side by the anterior abdominal wall and the diaphragm.

Its shape and position are modified by changes within itself and the surrounding viscera; and no one form or position is typical.

Its mean capacity varies with age, being about 30 ml at birth, increasing gradually to about 1000 ml at puberty, and commonly reaching to about 1500 ml in the adult.

The stomach has two openings, and is described as if it had two borders or curvatures, and two surfaces.

### The Gastric Orifices: