

valuation of Different Surgical Managements
of Uncomplicated Chronic Duodenal Ulcer
Essay

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INTRODUCTION

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The rationale of choosing one operation instead of another, concerning the treatment of the uncomplicated chronic duodenal ulcer, is perhaps as hotly a contested discussion among surgeons as the discussion concerning indications for elective surgical therapy among surgeons and internists. The concept of removing the "End-organ" in the treatment of peptic ulcer disease persisted until the 1960s as a means of decreasing the parietal cell mass and thus the stomach ability to respond to various stimuli to acid production.

Gastrectomy remained the most popular of operations for ulcer disease, perhaps because of the familiarity of surgeons with a procedure which was primarily designed to treat gastric cancer. The first successful gastrectomy for benign ulcer disease was performed in 1882 by Rydygrer, but it was Billroth who popularized the operation and was instrumental in training of other gastric surgeons (Kirkham, 1985).

On the other hand, vagotomy apparently was performed experimentally as early as 1814 by

Brodie who observed that the stomach was drier after bilateral vagal section (Jamieson, 1983). Clinically, vagotomy was introduced as a treatment for ulcer disease by Jaboulay 1899 (Saik et al., 1982). Eugen Bucher reported a series of 20 patients on whom vagotomy was performed and they did well after the operation. But it was not until Lester Dragstedt and his associates who popularized vagotomy in 1943, that the era of vagotomy truly began (Johnston, 1980).

Vagotomy might have well been abandoned as a primary means of ulcer treatment except for Dragstedt's ultimate recognition that an accompanying gastrojejunostomy was necessary to relieve the gastric distention that resulted from motility disturbances following vagotomy (Dragstedt, 1960).

Despite his findings, gastrectomy remained the most popular operation for ulcer disease. Moreover, the reliance on simply cutting a nerve to cure such an insidious disease as peptic ulceration is a concept still rejected by many. While the existence of an increased vagal tone

can not be documented in all ulcer patients (Saik, 1983). It was not, however, until ulcer recurrences following gastrectomy became increasingly apparent, that surgeons looked to alternatives.

Hans Von Haberer, a keen student of Billroth, abandoned the Billroth I operation because of ulcer recurrences as well as severe postoperative nutritional problems. The addition of vagotomy was noted to correct this situation. One of the continually hotly debated issues is the pro and con of vagotomy and drainage versus antrectomy and vagotomy. Although a lesser procedure than antrectomy and vagotomy, truncal vagotomy with drainage, still is attended by its recurrences and side effects not much different than that of antrectomy and vagotomy (Johnston, 1980).

In an attempt to avoid the gastrointestinal complications, the parietal cell or proximal gastric vagotomy as suggested by Griffith has gained popularity and was first used in man by Amdrup and Johnston in 1970 (Johnston , 1980).

This operation is designed primarily to allow for maintenance of antral motility, thus allowing the surgeon to forego a drainage procedure or pyloroplasty.

Maintenance of antral innervation allows near-normal gastric emptying, stasis is avoided, and pylorus continues to function as a physiologic sphincter. As highly selective vagotomy without pyloroplasty becomes more popular, it can be said that we have entered a new era, the era of vagotomy.

This essay is an attempt to review the rationale of choosing one operation instead of another, for the treatment of uncomplicated chronic duodenal ulcer.

**ANATOMICAL AND PHYSIOLOGICAL
CONSIDERATIONS**

I. Anatomical Considerations

The stomach is the most dilated portion of the alimentary tract, extending between the two fixed points: the lower end of the oesophagus and the beginning of the duodenum, and very mobile inbetween. Roughly, it is J shaped, but it undergoes considerable variations from one person to another and in the same individual depending on the volume of its contents, the position of the body and the phase of respiration.

Endoscopically, and according to the topographic description of the mucous membrane, it is divided into the fundus, body, pyloric antrum and pylorus (Fig. 1). For descriptive and surgical purposes:

The fundus is dome-shaped and projects upwards and to the left of the cardiac orifice; the body extends from the level of the cardiac orifice, on the lesser curvature, to the level of the "incisura angularis".

The pyloric antrum extends from the "incisura angularis" to the proximal limit of the pylorus, and its lower part, is the most dependant

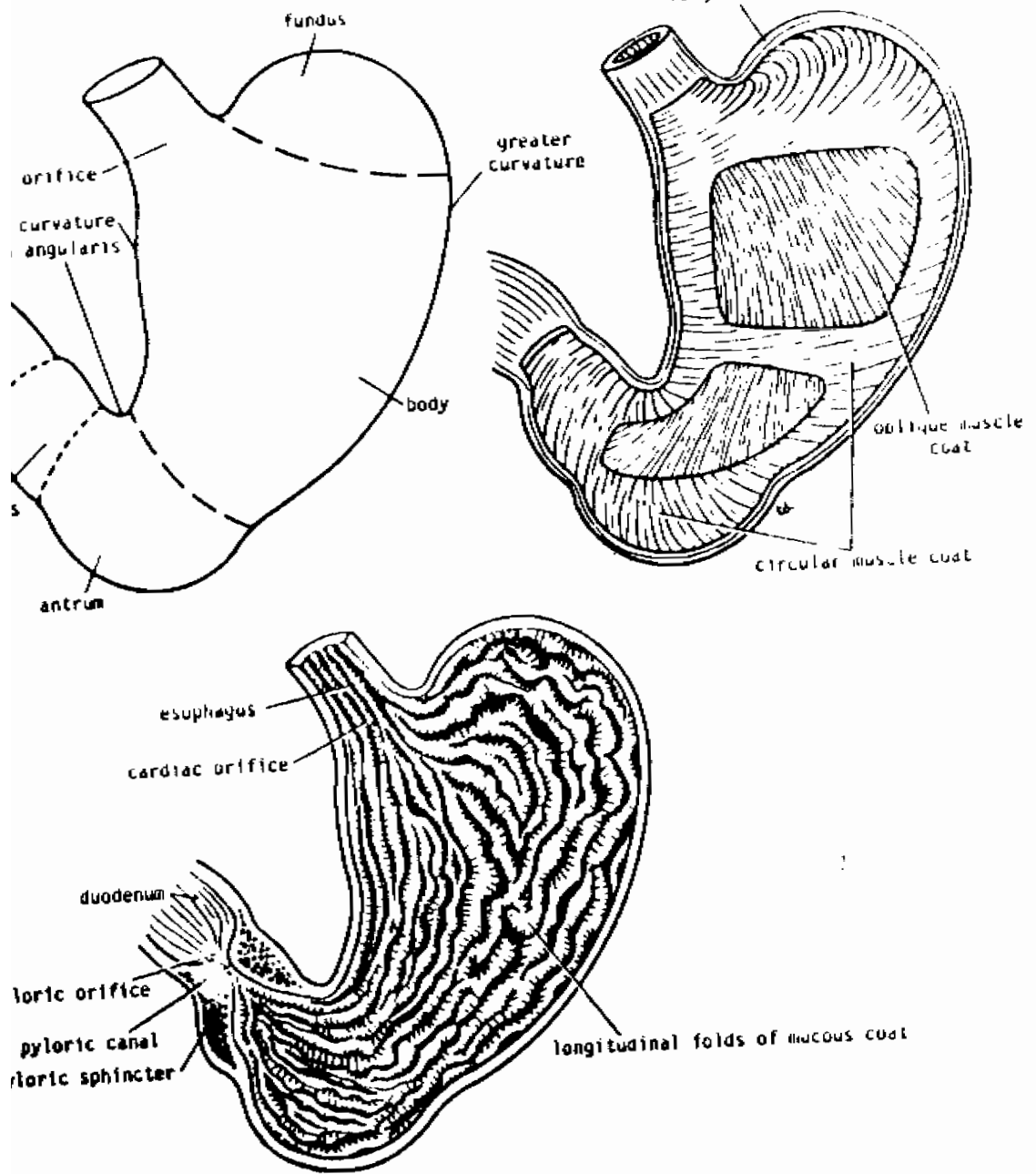


Fig. 1 . Stomach, showing different parts, muscular coats, and mucosal lining. Note increased thickness of circular muscle forming pyloric sphincter.

part of the stomach which is utilized surgically for drainage operations.

The pyloric canal is the terminal one inch tube with thick muscular wall forming the pyloric sphincter that extends to the pyloric opening present at the transpyloric plane. On the contrary, the cardiac orifice does not show an anatomical sphincter but a physiological mechanism do exist, thus preventing the gastro-oesophageal reflux. The pyloric sphincter is also enhanced by the curling back of many longitudinal muscle fibres of the antral musculature.

The first inch of the first part of the duodenum, the site of chronic duodenal ulcer, is called the duodenal bulb, is the only mobile part of the duodenum as it is covered both anteriorly and posteriorly by peritoneal covering and attached superiorly and inferiorly by the lesser and greater omenta respectively; thus, the lesser sac lies behind this short segment separating it from the gastro-duodenal artery. The transpyloric plane on which it lies, is at the level of the first lumbar vertebra. Rarely chronic duodenal ulcer may affect the second inch of the first part and most scarcely

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the second part.

The rest of the duodenum is retroperitoneal with a C-shaped curve to end at the duodenojejunal flexure where a well defined peritoneal fold, the ligament of Treitz, ascends to the right crus of the diaphragm to hold this junction in position (Figs. 2 a & 2 b).

The stomach blood supply is so extensive that three-fourths of it can be ablated without incurring necrosis or even significant dysfunction (Moody et al., 1984). And because of this rich blood supply, gastric mucosal lesions may bleed extensively, even when small or superficial. It is derived in whole from the coeliac trunk branches; the right and left gastric and gastroepiploic arteries and short gastric of the splenic artery (Fig. 3).

From these major four arteries, after forming a free anastomosis, small branches run for short distances over the anterior and posterior surfaces of the stomach in a regular way accompanied by branches of the vagi forming neurovascular bundles for a short distance before they

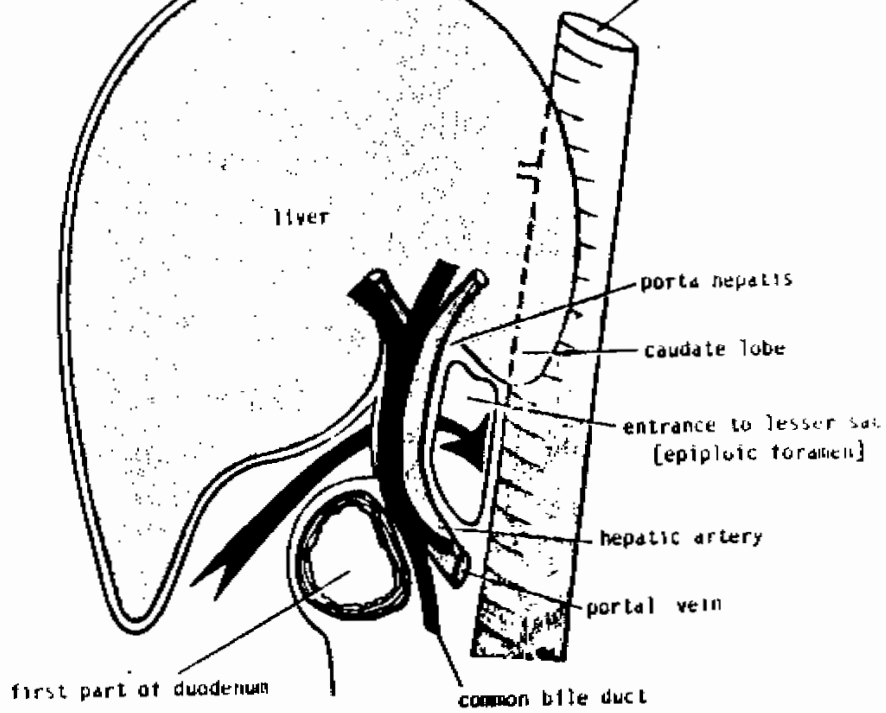


Fig. 2a Sagittal section through entrance into lesser sac, showing important structures that form boundaries to opening

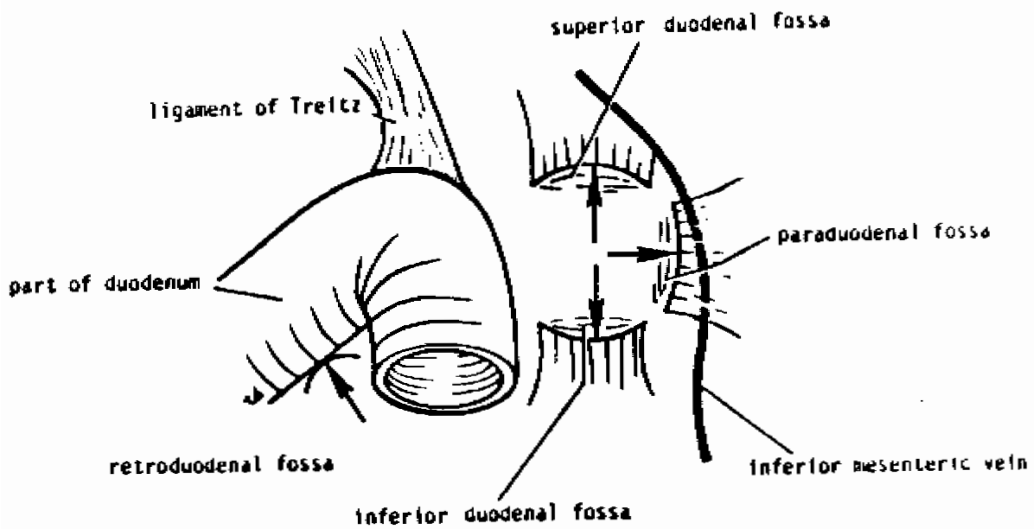


Fig. 2b Peritoneal fossae that may be present in region of duodenojejunal junction. Note presence of inferior mesenteric vein in peritoneal fold, forming paraduodenal fossa.

pierce the muscular coat to form the extensive submucosal arterial plexus (Fig. 4), which gives rise on its venous side to the same veins accompanying the arteries named above, except that there is no gastro duodenal vein, and there is the important prepyloric vein of Mayo, which is a surgical useful guide to the gastro-duodenal junction since it lies on the anterior surface of the junction.

The blood supply of the supra-ampullary part of the duodenum is furnished by the superior pancreatico-duodenal artery, a branch of the gastro duodenal artery, and the infra-ampullary part by inferior pancreatico-duodenal artery, a branch of the superior mesenteric artery. Although the anastomosis in between them occur in the submucosa, yet the plexus is not well developed as it is the case also in the lesser curve area of the stomach and this sometimes gives rise to post-operative leak from the duodenal stump due to failure of blood supply when endangered more by unaware surgical technique and sutures (Harrington and Sawyers, 1985).

The stomach is supplied by both divisions of

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