Laparoscopic vagotomy in treatment of intractable doudenal ulcer

Essay
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قطع العصب الحائرعن طريق منظار البطن لعلاج قرحة الإثنى عشر المستعصية

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توطئة للحصول على درجة الماجستير فى الجراحة العامة

مقدمــة مــن

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Introduction

Since the publication by **Dragstedt** and **Owens**, in (1943) showing the effectiveness of vagotomy in the treatment of duodenal ulcer disease, vagotomy has become the corner stone of the surgical treatment of duodenal ulcer, there has been a constant evolution in the surgical treatment, beginning with truncal vagotomy combined with a gastric drainage procedure and evolving in to highly selective vagotomy **(Dubois., 1995).**

The ability of the general surgeon to perform acid reducing operations through the laparoscope has become a reality. Prior to this development, the open operations that were available to treat peptic ulcer disease had significant discomfort that discouraged patients from seeking this treatment course. In addition,the recovery period was relatively prolonged. As the field of laproscopic surgery develops, it appears that further changes will occur (**Pietrafitta et al., 1998).**

If a procedure can be done with less pain, less incision,less scar, less hospitalization,less time off work and above all less cost, and still deliver a similar outcome, it will be viewed as better **(Costalat., 2000).**

This evolution was halted in the late 1970s with the appearance of the first H2 receptor antagonist. The introduction of the H2 receptor antagonist into clinics , resulted in the majority of patients healing their ulcers with aggressive medical management (**Rubin,1999).**

Introduction of proton pump inhibitor (Omeprazale) and the discovery of hlelicobacter pylori have virtually eliminated the need for elective ulcer surgery, except in some patients not responding to medical treatment **(George et al., 2000).**

The efficacy of laparoscopic surgery in the treatment. of chronic duodenal ulcer has been demonstrated in the short and medium term by a number of authors employing different methods. Conventional techniques have been applied using minimally invasive approaches, including transthoracic truncal vagotomy, transabdominal truncal vagotomy, alone or in association with pneumatic dilatation of the pylorus, pyloromyotomy or pyloroplasty, truncal vagotomy and antrectomy, anterior and posterior supraselective vagotomy, posterior truncal vagotomy (PTV) and supraselective anterior vagotomy, PTV and anterior seromyotomy, and PTV with anterior linear gastrectomy **(Dubois., 1994).**

Laparoscopic vagotomy is not only beneficial to patients refractory to medical treatment, but can be used as an alternative to life-long pharmacological therapy. This has revitalized the operative treatment of peptic ulcer disease **(Kathhouda&Mouiel., 2005).**

Anatomy

Anatomy of the abdominal part of the vagus nerve

The vagi enter the abdomen through the esophageal hiatus, the left vagus anterior and the right vagus posterior to the esophagus due to embryological rotation of the stomach. the anterior trunk gives the hepatic and anterior gastric divisions. while the posterior trunk gives the celiac and posterior gastric divisions **(fig. 1).**

At the hiatus we may find:

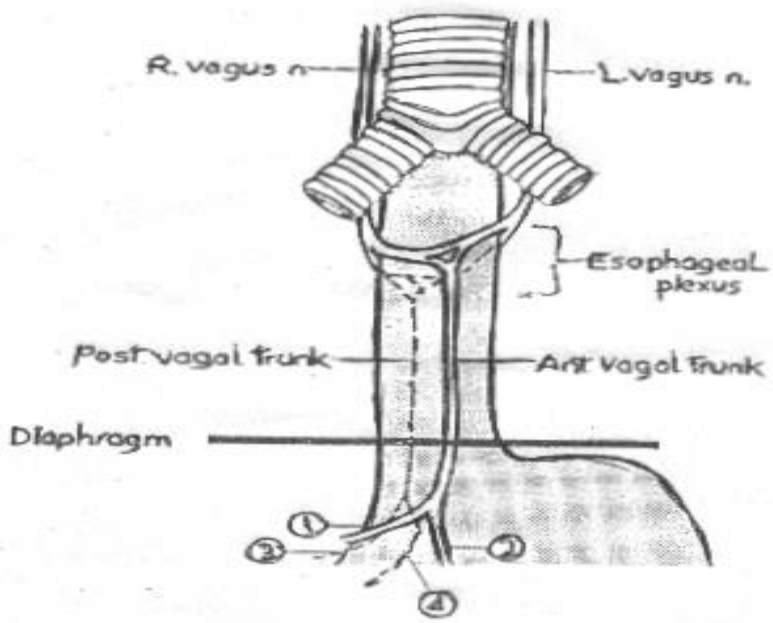
- Two vagal structures only (88%). These will be the anterior and posterior vagal trunks, which have not yet split to form the four typical divisions. Both trunks are usually to the right of the midline of the esophagus. The posterior trunk lies closer to the aorta than to the esophagus .

- Four vagal structures (7%). These will be the four divisions of the vagal trunks. Division has occurred above the diaphragm **(fig. 2A).**

❖ More than four vagal structures (5%). These may be:

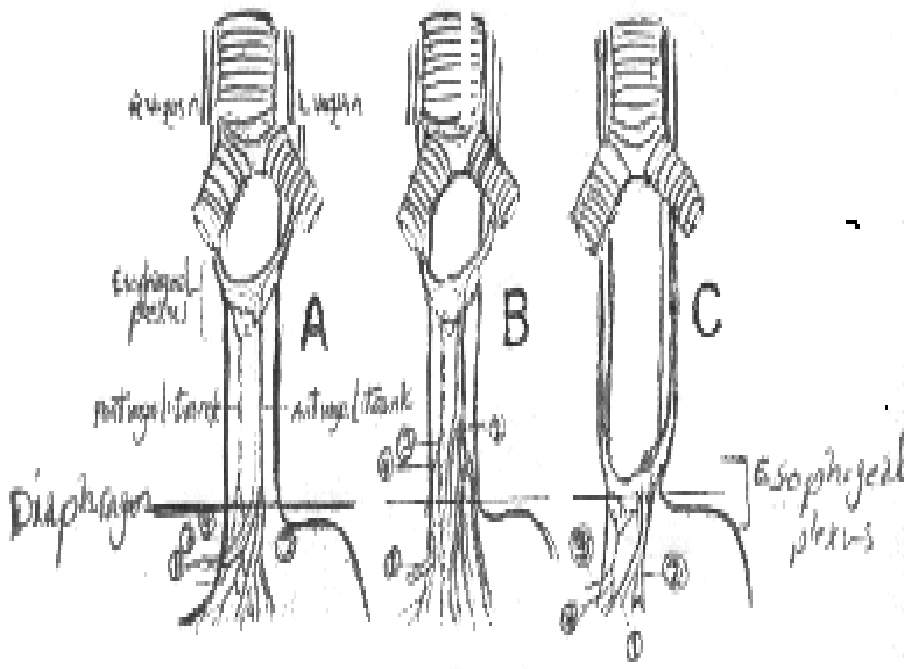
1-Divisions and branches of divisions **(fig. 2b).**

2-Elements of the esophageal vagal plexus **(fig,2c).**



1-Hepatic division 2-Anterior gastric division
3-Coeliac division 4-Posterior gastric division

Fig. (1): the vagal structures in the thorax and abdomen **(Perdiskis et al., 1997).**



1-Hepatic division 2-Anterior gastric division
3-Coeliac division 4-Posterior gastric division

Fig.(2): variations of the vagus at the the hiatus.
(**Horgan et al., 1999).**

Anterior Gastric Division :

It proceeds in the Lesser omentum 5-10mm from the lesser curvature as the anterior nerve of Latarget. This nerve can be traced distally to about the level of the incisura. From 2-12 branches pass from the principal nerve to the stomach wall, The average being 6 **(Skandalakis et al., 1988).**

At a point 5-7 cm proximal to the pylorus, it usually divides into branches and the appearance of this division has been described as "the crow's foot", most of the branches supplying the pyloic antrum **(Kwon et al., 2001).**

The term "crow's foot" was originally applied to the termination, of the left gastric artery at the same location by Payne **(Awad et al., 1997).**

The nerve of Latarget may be duplicated and each nerve supplies its own branches to the stomach wall. In some subjects, there is no true nerve of Latarget, a fan of gastric branches arises from the anterior vagal trunk above the origin of the hepatic division, and one or more long branches below this origin descend to supply the antrum. Even where a definite nerve of Latarget is present. there are usually some, and often many branches to the gastric cardia and fundus that arise from the anterior trunk proximal to the origin of the hepatic division **(fig. 3) (Skandalakis et al., 1988).**

At the level of the hiatus, it lies behind the peritoneum and phreno-esophageal ligament and is closely to the anterior surface of the esophagus, It is attached to the esophagus by a vascular mesovagus which only become apparent as the anterior trunk is mobilized **(Awad et al., 1997).**

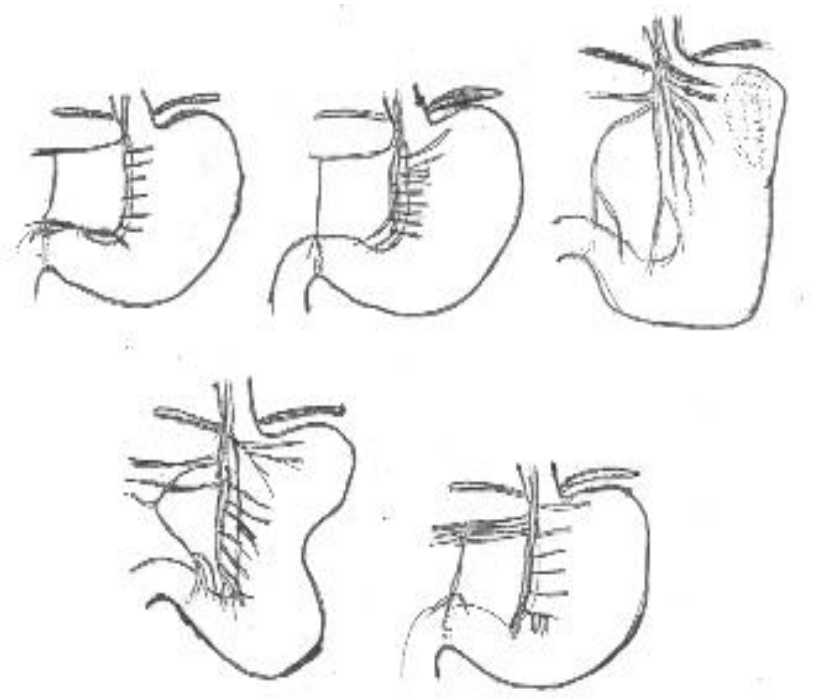


Fig.(3):patterns of the distrbution of anterior gastric and hepatic division of vagus **(Kauer et al .,1995).**

Hepatic Division :

The hepatic division of the anterior Vagal trunk usually separates from the anterior gastric division at the level of the abdominal esophagus. It lies between the leaflets of the a vascular portion of the gastrohepatic ligament. It supplies the liver and ultimately also a branch to the pyloric antrum. It is frequently found in multiple and usually closely parallel branches **(Jordan ., 1991).**

Posterior gastric division :

The posterior gastric division forms the principal posterior nerve of the lesser curvature (posterior nerve of Latarget). As a rule, the posterior nerve appears to terminate slightly higher on the lesser curvature and possess fewer gastric branches than does the anterior nerve. In no case did a posterior nerve reach the duodenum. Sometimes the posterior nerve of Latarget fell into a superior vagal trunk just below or even above the diaphragm.

The inferior branches arise from the descending posterior nerve of Latarget and supply only the lower body and the antrum. Between these two groups of branches the lesser curvature had no grossly visible nerve supply **(fig. 4) (Skandalakis et al., 1988).**

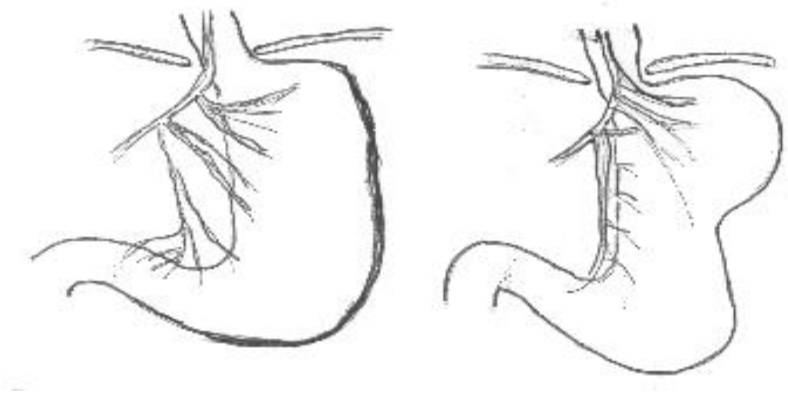


Fig.(4): patterns of the distribution of the posterior gastric and celiac divisions of the vagus **(Kauer et al .,1995).**

The nerve of Grassi is the name given to one or more branches of the posterior vagus nerve that originate at the level of the gastro-esophageal junction, and supply the gastric fundus. Grassi describes this nerve as being present in 90% of cases. It originates at or above the hiatus in 16% or below the hiatus in 84% of cases **(Grassi., 1991).**

Celiac division :

The celiac division is the largest of the four vagal divisions. it lies in the gastro-pancreatic peritoneal fold. In all cases it is single and lead directly to the celiac plexus. This division may follow the left gastric artery or the right crus of the diaphragm or take an intermediate position in the triangle bounded by the artery, the crus, and the right margin of the stomach **(Skandalakis et al., 1988).**