



Endoscopy in Gastromegaly: Presentation of a Case

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Abstract: Introduction: Endoscopy is an enormous resource for the diagnosis, treatment and palliation of many diseases in current medicine. It is in a surprising niche with a high perspective in an interval between several surgical and medical disciplines. Objective and method: case report. Discussion: gastromegaly: is an abnormal increase in the size or volume of the stomach, different from gastroparesis: which is an inhibition of gastric motility associated with delayed emptying; associated with diabetes mellitus, viral infections, hypothyroidism, eosinophilic gastropathy, muscular dystrophy or vagotomy of any kind, etc. There are many causes of gastromegaly: benign, malignant, congenital or acquired, iatrogenic, postsurgical, metabolic, etc. That is why the role of endoscopy for diagnosis, treatment or palliation itself is important. Conclusions: gastromegaly of exponential dimensions is impressive consequently, but on a large scale, representing a great adaptability of the human body in the face of a gradual, progressive and fatal disease. With generalized, constant wear and tear and sequelae that chronically and jointly undermine the patient's state of health.

Keywords: Endoscopy, Gastromegaly, Gastroparesis, Gastric motility, Duodenal cancer, Colonoscopy, Gastric punch-down.

INTRODUCTION

Endoscopy in general is a weapon or an enormous resource for the diagnosis, treatment, and palliation of many diseases in today's medicine. Endoscopy is defined as "a medical procedure that allows the interior of the entire gastrointestinal tract to be visualized by means of an instrument among other systems of the human body." These instruments are the panendoscope, duodenoscope, colonoscope and others. [1] Endoscopy is in a surprisingly niche with a high perspective in an interval between various surgical and medical disciplines;

that is why surgical endoscopy is crucial in the international surgical community, so that it achieves the exchange of information in practice, theory and research, significantly boosting this minimally invasive field thanks to its technological advances. [2]

The first to describe the term endoscopy and try to see the rectum through a tube and a candle is Hippocrates 400 B.C. Later, the reflection of light was used for the first time to examine the cervix, which allows for improved vision, an advance made by the Arab physician Albuskasim (936-1013), seven centuries later the physician Philip Bozzini (1773-1809) introduced the lichtleiter or light conductor visualizing the urethra. Adolph Kussmaul in 1868 in Germany tried to do the first esophagogastroduodenoscopy, however, only Von Mikulicz was successful in Vienna in that year. [3]

The history of endoscopy development is divided into the following segments:

1. The rigid endoscope of the years 1868-1932.
2. The semi-flexible endoscope between the years 1932-1957.
3. The fiberscope dates to 1957 - even to date there are equipment in use (mostly portable).
4. The 1983-present video endoscope was with advanced development. [4]

Wolf and Shinya in 1969 performed the first complete colonoscopy with a flexible fiberoptic colonoscope [5]. The first time a colonoscopy was documented in Mexico was until 1973, with 23 more endoscopic studies. [6]

Well-applied endoscopy has allowed it to be such a varied portfolio or range, that it has been so effective in carrying out procedures, with an exponential technological evolution in medicine, that it optimizes benefits at the end of the day, a situation that is reflected in the health of patients; the proof of this is the applicability in robotic surgery, with the technical advantage over the laparoscopic approach in terms of superior images and ergonomics. [7] Other technological applications of endoscopy that have been evidence of advantageous applicability in complex medical pathology is the use of transforaminal spinal endoscopy, a minimally invasive technique that is used to treat various conditions of the spine, with the benefits of less blood loss translated into a faster recovery and hospital discharge with much less complication. [8] Another area that opportunely takes advantage of the advances of decades in endoscopy is laparoscopic surgery, which in very complex diseases is already called advanced surgical endoscopy. [9]

OBJECTIVE

Presentation of a case and review of the literature.

METHOD

A 47-year-old male was admitted from the emergency department to hospitalization in surgery for protocol or study of the diagnosis of pyloric stenosis. He denies chronic-degenerative diseases. With no surgical history, no allergies, he denies drug addiction. It began 4 months ago with pain in the epigastrium, burning to oppressive intermittently of low intensity with sporadic presentation, with absence of melena, hematochezia, rectal

bleeding and hematemesis. She reported weight loss of 25 kilos in 3 months without dieting and/or exercise or any other medical-surgical management. She presents asthenia and hypodynamia, with postprandial abdominal distension that was consecutively permanent, gastric fullness, belching, dyspepsia, heartburn, regurgitation, with gradual intolerance to the solid, soft and liquid diet consecutively. He evolved with the presence of vomiting of gastric contents and total intolerance to oral intake, a situation that led him to seek medical attention in this hospital.

On physical examination with vital signs with heart rate of 56 X', respiratory rate 21 X', blood pressure of 90/55 mm Hg, temperature 36.4°C, weight 52 kilos, height 1.72 meters. Cachectic/anemic facies, pale integuments and dry mucous membranes, emaciated or extremely thin. Conscious to sleepy. With head and neck without cardiopulmonary data to comment on with a multifocal murmur, there is no association with pleuropulmonary syndrome, abdomen with significant distension with abdominal circumference of 124 centimeters, with intermittent dull pain in the epigastrium at acupressure in the solar point, and generalized pain with peritonism data it is not possible to palpate visceromegaly. In addition, it presents with tympanist throughout the abdomen, auscultation with absence of intestinal sounds or very diminished and gastric punching down on movement. With well-shaped and hypotrophy limbs.

Laboratories: partial thromboplastin time: 34.3 x'. INR 1.69. Prothrombin time 19.5 x', leukocytosis 3.26 / mm³, neutrophils 87.7 %, hemoglobin 7.71 g/dl, hematocrit 22.75 %, mean corpuscular volume 69.96 x 10⁶ / µl, platelets 438.20 u/l, glucose 73.2 mg/dl, BUN 9.66 mg/dl, urea 68.7 mg/dl, uric acid 2.7 mg/dl, creatinine 2.6 mg/dl, sodium 145.8 meq/l, potassium 3.11 meq/l, Cl 90 meq/l. Albumin 2.8 g/l, total proteins 3.8 g/l, alkaline phosphatase: 119.5 IU/l, lactic dehydrogenase 201.58 IU/l, C-reactive protein 31,610 mg/dl, total bilirubin 2.4 mg/dl. Arterial blood gases: pH 7.50, PCO₂ 48 mm Hg, PO₂ 82 mm Hg, HCO₃ of 32 meq/L, lactate 2.6 mmol/L, SO₂ 97 % and with an anion gap of 10 meq/L. In the first instance, a simple emergency CT scan was performed. See figures 1 and 2.



Figure 1: Computed tomography of the abdomen with axial section, showing a stomach with gastromegaly and mass effect on the rest of the intra-abdominal organs.



Figure 2: Computed tomography of the abdomen with coronal section, showing a gastromegaly that occupies more than three-quarters of the entire abdomen and pelvis.

Aggressive bra management was initiated, and endoscopy was performed shortly after admission with findings of retentionist stomach and tumor in the first portion of the duodenum occluding 90% of the intestinal lumen involving pylorus and part of the gastric antrum, biopsies were taken reporting moderately differentiated intestinal adenocarcinoma. The patient is sent to a third level of care with referral to the specialized Surgical Oncology service for protocol and management.

DISCUSSION

The stomach is a hollow organ of the human body that acts as a periodic reservoir of food to continue digestion. During feeding, the molding of the gastric walls causes the stomach to move, elongate through both passive and active mechanisms. [10]

Gastromegaly means the abnormal increase in the size or volume of the stomach, which is very different from gastroparesis which is defined as an inhibition of gastric motility associated with delayed gastric emptying, or gastroptosis is defined as the downward movement of the stomach. [11, 12] Delayed gastric emptying is associated with diabetes mellitus, viral infections, hypothyroidism, eosinophilic gastropathy, muscular dystrophy, or vagotomy of any type or variant. [13] There have been some case reports of acute gastric dilatation secondary to major binge eating, as changes in stomach size can influence eating behavior. A recent study showed gastric dilatation in restrictive eating disorders using computed tomography. [14] It is very clear that CT scan of the abdomen shows a surprisingly

massive stomach with a mass effect that compresses the intestines and liver. An active study evaluating physiology such as gastric emptying shows significant worsening of gastroparesis with minimal clearance. Severe gastroparesis bit massive gastromegaly was diagnosis. [15]

Another uncommon cause is the multisystem disorder of neoplastic origin, originating by being a clonal disease of plasma cells or POEMS syndrome, presenting polyneuropathy, organomegaly, endocrinopathy, monoclonal protein and changes in the skin; by an overproduction of the growth factor of the vascular endothelium, causing a gastromegaly characteristic of this pathology. [16, 17] There are many extremely rare causes of gastromegaly with little published literature. However, when analyzing the diagnosis of gastromegaly, it is evident that it is a consequence of another well-established pathology and hence the low importance in its notification. [18, 19, 20] Without neglecting the typical clinical or pathognomonic diagnosis, among the most common etiologies causing a gastric cavity of larger-than-normal proportions, multifactorial pyloric stenosis can be documented with radiological study such as imaging techniques that are essential for diagnosis. While ultrasound is widely used due to its accessibility, MRI offers high sensitivity for evaluating gastrointestinal anatomy. [21, 22] Logically, the age of the patient excludes or affirms the diagnostic etiology due to benign or malignant pathology, or due to the same frequency in terms of its incidence, projectile vomiting, palpable tumor, weight loss, alteration of general condition, wasting syndrome, anemia, asthenia, and adynamia, are actually a very spectacular but nonspecific picture as such. [23, 24]

Due to persistent encephalopathy with metabolic acidosis due to incoercible vomiting, with elevated (compensated) anion gap. Since the loss of gastric fluid produces a specific metabolic alteration: metabolic alkalosis with normal anionic gap, hypokalemia and hyperchloremic gap. It is associated with a reduced concentration of calcium and paradoxical aciduria. [25] Investigations revealed severe hyperammonemia (1446.2 $\mu\text{mol/L}$), organic acidemia, and whole-exome sequencing, with normal blood lactate and ketones, was sent. However, multi-organ dysfunction and refractory shock and death develop; exemplifying an abrupt and fatal evolution. [26] Conversely, postoperative bowel obstruction due to adhesions is common after abdominal surgery, while gastric outlet obstruction is common after post-treatment sequelae or consequences. [27] Atypical cases with pseudo tumors and pseudo tumoral lesions are rare in the stomach, and their incidence is highly variable. These tumors have epithelial or mesenchymal origin and present with non-specific clinical symptoms, already referred to above. That is why the different imaging studies and even the histopathology report of the endoscopic biopsy turn out to be of little use due to their extreme rarity; The low frequency and despite repeated endoscopic biopsies may be inconclusive. [28]

Peptic ulcer disease should not be overlooked in its presentations such as hemorrhage, perforation, and gastric outlet obstruction. Internal or external compression or mechanical blockade is found in the distal part of the stomach (antrum, pylorus, or duodenum) and not in the pylorus itself as commonly said, where gastric outlet obstruction is the more accurate term for "pyloric obstruction" or "pyloric stenosis." [29] With a benign etiology that is due to chronic inflammation and ulcer in the pyloric region. That is why obstruction commonly occurs in the duodenal bulb, due to a high incidence of healing duodenal ulcers, and without ceasing to suspect the diagnosis of cancer. [30] 40% are admitted to the hospital for cancer-related complications. The most common complications of gastric cancer are hemorrhage in 22%%,26%-60%,and perforation with an incidence of

less than 5%. Malignant gastric outlet stenosis requires decompression: with endoscopic stenting or with palliative gastroenterostomy. The main problem for patients with complicated gastric cancer is the lack of standardized algorithms and the variety of possible surgical techniques. [31]

Initial treatment of gastric strictures usually includes endoscopic dilation, especially in patients with benign pyloric strictures and those with inflammatory bowel disease. Several sessions of endoscopic dilation with some luminal permeability are often required, however, strictures may persist despite endoscopic dilation, implying other treatment alternatives. [32, 33] See figures 3, 4, and 5.



Figure 3: Endoscopic image of a severe stricture in the distal antrum with associated pyloric stenosis. Image taken from the reference: Rozenberg J, Kumar R, Abel WF, Joseph J, Kesar V, Okolo PI, Kesar V. Endoscopic stricturoplasty for pyloric stenosis refractory to endoscopic balloon dilation and lumen apposing metal stenting. *Endoscopy*. 2026 Mar;58(S 01):E1-E2. doi: 10.1055/a-2749-3337. [33]



Figure 4: Endoscopic image showing stenoplasty with an isolated pointed nanoelectrosurgical scalpel (ITNKS) in a circumferential direction, at 3, 6, 9 and 12 hours (black arrows). Image taken from the reference: Rozenberg J, Kumar R, Abel WF, Joseph J, Kesar V, Okolo PI, Kesar V. Endoscopic stricturoplasty for pyloric stenosis refractory to endoscopic balloon dilation and lumen apposing metal stenting. *Endoscopy*. 2026 Mar;58(S 01): E1-E2. doi: 10.1055/a-2749-3337. [33]



Figure 5: Endoscopic image showing endoscopic balloon dilation (EBD) of the pylorus guided by a wire of 13.5 to 15.5 mm. Image taken from the reference: Rozenberg J, Kumar R, Abel WF, Joseph J, Kesar V, Okolo PI, Kesar V. Endoscopic stricturoplasty for pyloric stenosis refractory to endoscopic balloon dilation and lumen apposing metal stenting. *Endoscopy*. 2026 Mar;58(S 01):E1-E2. doi: 10.1055/a-2749-3337. [33]

In cases where pyloric stenoses are benign, the placement of a luminal apposition metal stent may be beneficial, as it provides sustained dilation. Or another option that may be performed in certain cases is extensive endoscopic submucosal dissection involving more than three-quarters of the circumference for gastric epithelial neoplasia. [34] Finally, surgical treatment is also possible (gastrectomy, proximal or distal resection of the stomach. Other options are laparoscopic truncal vagotomy and gastrojejunal vagotomy, which promote the continuity of the intestinal tract to redirect and bypass gastric outlet obstruction secondary to peptic ulcer disease, which are a safe and effective modality, or in the palliation of malignant disease with low morbidity and a satisfactory clinical condition. [35, 36] In addition, cases with another diagnostic etiology in which gastromegaly with elongated and redundant gastrophrenic and gastrolial ligaments were confirmed. Gastrophrenopexy with pexy from the gastric fundus to the left hemidiaphragm pillar is performed laparoscopically or conventionally. [37] In cases of pyloric stenosis following conventional endoscopic dilation and pyloroplasty, where they fail, especially in cases of recurrent stenosis or moderate to severe gastric ptosis, surgical treatment is considered the last effective and efficient option. [38]

CONCLUSIONS

Endoscopy is invaluable in modern medicine, consolidating itself as a pillar in gastrointestinal pathology in its diagnosis and treatment, with great significance in effectiveness and efficiency, by saving time, resources and supplies.

The gastromegaly of exponential dimensions is impressive, which is a consequence on a large scale, but represents a great adaptability of the human body in the face of a gradual, progressive and fatal disease. With generalized, constant wear and tear and with sequelae that chronically and jointly undermine the patient's state of health. It is therefore the reason for study and an extensive review of this work

Conflict of Interest

The authors stated that they had no potential conflicts of interest regarding the research, authorship, and/or publication of this article.

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