

Paraesophageal hernia: Surgery problems in emergency



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Andrea Cavallaro, Vito Catania, Marco Cavallaro**, Antonio Zanghì *, Alessandro Cappellani*

Università degli Studi di Catania, Azienda Ospedaliero Universitaria Policlinico "Gaspere Rodolico" Catania, Italia

Unità operativa di Chirurgia dell'Apparato Digerente

* Unità operativa di Chirurgia Generale e Senologia

** Unità operativa di Radiologia e Radioterapia

Paraesophageal hernia: Surgery problems in emergency

CASE REPORT: *It has been demonstrated that paraesophageal hiatal hernia surgical repair can be performed by endoscopic means, but the procedure is not standardized and results have not been evaluated systematically so far.*

The Authors report a case of strangulated paraesophageal hiatal hernia occurred in a elderly man and treated with open approach.

Eighteen months later, follow up has demonstrated the effectiveness of the repair and the total remission of the symptoms.

Recurrences after paraesophageal hiatal hernias repair may decrease with usage of mesh in the hiatus; however uniform criteria for this procedure are lacking.

After review of the literature inheriting this uncommon pathology, that present about 5% of the hiatal hernias, no conclusions could be drawn regarding the reliability of the laparoscopic procedure and the necessity for an additional antireflux repair. Moreover, uniform specific indications for the need of an esophageal lengthening procedure or preoperative assessment methods for shortened esophagus cases could not be detected.

CONCLUSIONS: *treatment based on standardized protocols for preoperative assessment and postoperative follow-up is required to clarify the current controversies inheriting surgery indications and approach.*

KEY WORDS: Paraesophageal hiatal hernia, Type II, Type III hiatal hernia.

Introduction

The paraesophageal hernia is an uncommon pathology of the gastroesophageal hiatus characterized by a potentially fatal evolution because of lumen occlusion with ischemic vascular damage of the stomach or other organs involved.

The clinical evolution of the paraesophageal hernia contrasts with clinical peculiarities of more widespread sliding hiatal hernia which is often associated with a symptomatic gastroesophageal reflux.

The sliding hiatal hernia (type I) is characterized by congenital or acquired laxity of phrenoesophageal ligament,

laxity of mesoesophagus, or laxity of right diaphragmatic pillar that normally maintains gastroesophageal junction and its specialized functional area (LES) in their normal intrabdominal position: sliding hiatal hernia is characterized by the lack of normal anatomical relationships between esophagus, cardias and fundus well known as acute angle of His.

The rare primary paraesophageal hernia (type II) is characterized by regularity of gastroesophageal junction anatomical links: therefore the junction remains in abdomen while gastric fundus is dislocated in mediastinum cavity. These hernias are generally a consequence of a linear opening of the peritoneum of the esophageal hiatus in front of normotopic gastroesophageal junction. The combination of sliding and paraesophageal hiatal hernia (type III) is instead a more common anatomic situation in which gastroesophageal reflux symptoms are correlated to symptoms caused by mechanical compression of the stomach walls.

Occasionally colon, omentum and spleen may be

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Per la corrispondenza: Dott. Andrea Cavallaro, Via Canova, 2 San Giovanni La Punta, 95037, Catania. (e-mail: andrecavallaro@riscali.it)

involved in the thoracic hernia because of the organoaxial rotation of the stomach (type IV): this specific case generates complex symptomatology and contrastographical radiological images of difficult interpretation.

The incidence relationship between primary paraesophageal hernias (type II) and mixed sliding and paraesophageal hernia (type III) is still not clear: series and literature review are difficult to compare.

There are controversies inheriting incidence, physiopathology, and treatment of paraesophageal hernias: furthermore rare pediatric cases, characterized by difficult differential diagnosis, have been published over years.^{1,2,3}

There is a strong debate inherent the surgical treatment that distinguishes the supporters of thoracic approach and supporters of a surgical abdominal approach.

The necessity of a standard fundoplication repair extended to all patients is also discussed, as well as indications for lengthening gastroplastic procedure (Collis gastropasty) in patients who demonstrate an acquired short esophagus.

Some series have been published over years on which has been demonstrated that laparoscopic repair of the defect is sure and effective even on long time follow up: however the laparoscopic repair of wider and greater paraesophageal hernias has had a slow development because of the complex dissection of the hernia sac and possible related complications.^{4,5}

Case report

On autumn 2005 a 70 years old patient comes to our observation. The patient has been complaining postprandial thoracic pain, heart palpitation and nausea during last 3 months: because of the ingravescence of symptoms he comes to our surgical team in urgency. Laboratory hematochemical analysis are normal apart of

a slight neutrophilia. RX study demonstrates in left retrocardiac area an area of radiologic clearing suggesting an hiatal hernia. The patient undergoes contrastografic barium examination that demonstrates gastroesophageal junction in its normotopic abdominal position: a consistent part of gastric fundus, whose lumen is in communication with the intraabdominal portion of stomach, protrudes in thorax through the diaphragmatic hiatus and acquire contrastographical medium in Trendeleburg position. Therefore the patient undergoes TC exam.

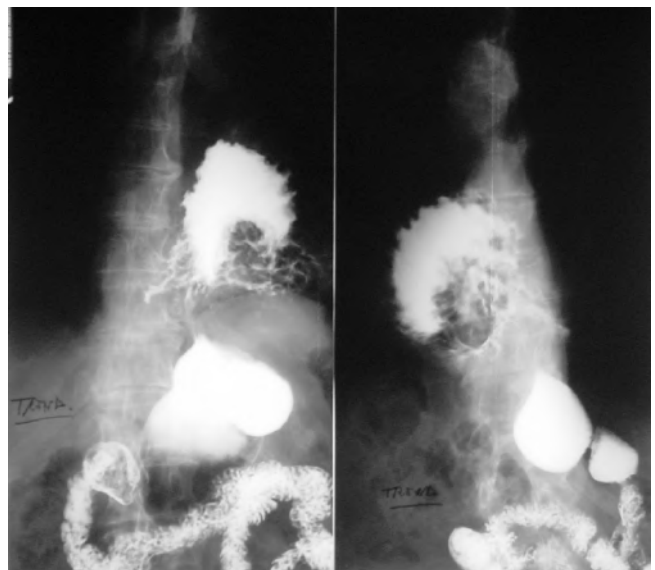
TC Study demonstrates the presence of a wide hiatal hernia: great part of the stomach is placed over the emidiaphragm. Moreover the stomach, that constitutes two large saddlebags, dislocates towards the posterior space and the splenic hilum. On MIP reformatting the radiologist find a left gastric artery in tension just because of the dislocation of the stomach over of the diaphragm. Multiple stones of the gall bladder with diameter < 1 cm are present.

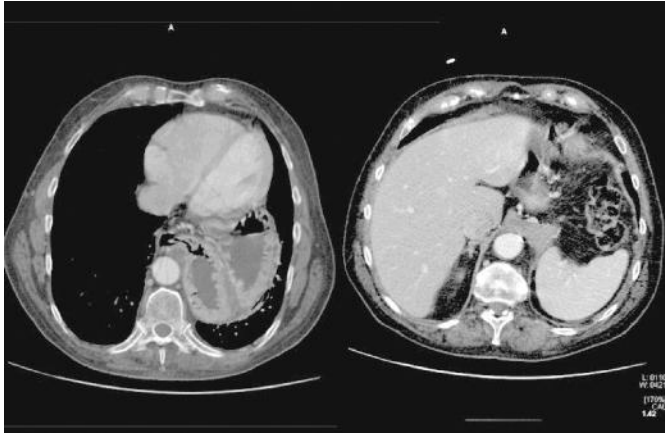
The patient undergoes surgery: we have found uncautious to prosecute by mininvasive surgery because of unsure accessibility of the thoracic contours and limits of the extended hernia sac.

We performed an accurate preparation of structures involved and we carefully reduced the ectopic stomach in abdomen. Hernia sac was removed and we performed a crural pillars reapprossimation using prolene stitches without any prosthesis.

When we were sure about vitality of ectopic stomach that has been angled we performed a calibrated 240 degree fundoplicatio according Toupet. Moreover we performed colecistectomy.

The follow up, two years later, has demunstrated any complication apart of a slight postoperative dysphagia post (4 week duration) and the patient experienced total remission of the cardiac and digestive symptomatology.





Discussion

Clinical Diagnosis

The patient affected by paraesophageal hiatal could be asymptomatic or tolerate a great variety of aspecific symptoms for years.

Symptoms commonly reported are: dysphagia, regurgitations (70%) and heart palpitations (60%). Abdominal pain (60%) interests patients affected by large hernias and is typically postprandial with retrosternal localization or localized on epigastric area, or right or left hypocondrium and sometimes it irradiates posteriorly. It can be associated to nausea and vomito (50%).

According Pauwelyn KA et al. (2005) and Hayden et al. (to 2005), some reviews describe an anemia co-existence up to 30% of patients: it could be related to linear lesions of the neck of the hernia (Cameron's lesions) whose bleeding finding is a not infrequent endoscopical report.^{6,7}

The aspecificity of symptoms could lead to conservative treatment that should be avoided because of the potentially fatal complications.

Radiological diagnosis

Diagnosis is enforced by contrastographical study and TC helps to define localization of the gastroesophageal junction, anatomical relationships with diaphragm, stomach localization or rotation and other organs that could have been involved in hernia sac.⁸

The EGDS is useful to exclude reflux-related esophagitis and erosive or peptic lesion but must be executed with caution: if propedeutic to surgery, EGDS could be useful to aspiration of the gaseous content with the purpose to avoid lesions caused by incoming trocars.

Ph-manometry during 24 hours reveals the esophageal primary peristalsis, LES pressure, and PH during 24 hours allowing calculation of prolonged refluxes, total number of refluxes, the time percentage of acid exposure, and finally it allows to acquire the De Meester score: an abnormal acid exposure has been found according literature up to 90% of the cases with hernia of type III.

The esophageal motility disorders are typically characterized by frequent tertiary contractions and a limited amplitude of the esophageal contractions (<30 millimeter Hg) that interest up to 40% of the patients. Some difficulties to place manometry catheters because of altered anatomic conditions are not infrequent.⁹

Treatment

Despite there is a general consensus inheriting the opportunity of a surgical indication, the optimal procedure of repair is widely discussed and doesn't meet a consensus. The modalities inheriting sac isolation, diaphragmatic defect repair, the opportunity of a gastropexy, the opportunity and the modalities of an antireflux plastic procedure are discussed.

Most surgeons think that the repair would have to include resection of hernia sac, isolation of which is often a difficult procedure, in order to avoid the risks of recurrences and the formation of dangerous mediastinum cysts: this limits the opportunity of a miniminvasive procedure and justify in some cases the thoracic or combined access because of their greater caution.^{10,11,12}

Various modalities of non protesic crural strengthening or protesic repair of hiatal defect and a variety of gastropexy procedures have been adopted over time from authors: according some surgeon a mesh in ptfe or dual mesh placed with correct indications and intraoperative calibration could reduce the risk of recurrences and post-operative dysphagia.

Very interesting are morphofunctional studies of Casaccia et al (2005), Darling et al (2005) and Basso et al (2000): they describe the use of an "A" shaped mesh in polypropylene and PTFE to fix, according a "tension free" modality, along the right diaphragm pillar without a true crural strengthening, linking left part of the mesh to the left diaphragm pillar. The disposition of physical

force vectors on the LES would be better respecting physiology with the aim of reduce risks of crural diastasis typical of traditional aprotic strengthening.^{13,14,15}

Other controversies regard the antireflux procedure.

In paraesophageal primary hernias (type II) the functionality of the LES would have theoretically to be undamaged: however some authors document acid refluxes up to 60% of the cases.

Unfortunately the sac excision, the preparation of the gastroesophageal junction and underpassing esophagus lead to a reflux disease of iatrogenic origin. From this point of view a fundoplication procedure seems to represent a good element of subdiaphragmatic intrabdominal fixity: the procedure more widespread is fundoplication according to Nissen on a Bougie of 50-58 Fr. with the adoption of two or three stitches and a medium length of the gastric cuff of 1.5-2 cm.

Other common adopted procedures are subtotal fundoplication according Toupet, anterior fundoplication according Dor and Belsey Mark procedure that requires a thoracic access.

Some authors advance the opportunity of Collis lengthening procedure associated to fundoplication because of acquired short esophagus.

In literature incidence of complications and post-operative mortality are greater in the repair procedures of type II and III hernias in relation to laparoscopic treatment of a non complicated reflux: these differences reflect not only risks inherent the greater complexity of pathology but also risk inherent the greater complexity of the surgical repair.

There are some aspects on which general consensus of surgeon exists: they should be observed in order to avoid or to limitate complications especially during laparoscopic approach.

The insufflation pressure must be lower than normal (< 10 mmHg) in order to prevent ventilation difficulties and high blood CO₂ concentration.

Moreover in order to avoid the laceration or the microporation of stomach and esophagus rough maneuvers should be avoided during the isolation and reduction of ectopic stomach.

Beginning the procedure with left diaphragmatic pillar dissection seems to limit risk of caval vein and small curvature vessels injuries. The vague nerves, in particular front one, is often far away from the esophageal wall and therefore more prone to lesions. The crural defect should be closed posteriorly to the esophagus when possible.

Finally in patients with high operative risks, surgery times could be limited with simple reduction of hernia, sac isolation without resection, closure of diaphragmatic defect, gastropexy without performing a fundoplication.^{16,17}

The adoption of robotics surgery in the repair has been described. It has advantages of best precision of the movements and introduce the opportunity to perform intervention at distance.

According to Braumann et al (2005) at the moment the lack of the instruments and the enormous costs of robotic systems are the greatest impediments against robotic surgery diffusion.¹⁸

Results

There is a lack of data in the follow up of patients surgically treated in order to estimate long term reliability of the repair and clinical follow up. Literature data inherent laparoscopic approach are lacking and often discordant. The percentage of laparotomy conversions reported from authors varies from the 3 to 30%: commonly reported causes are tight adhesions of hernia sac, adhesions of previous surgical incisions, emorrhages, and suspected iatrogenic lesions of organs.

After surgery, complications commonly described are pneumothorax, splenic bleeding lesions, vague nerve lesion, and crural pillars lesions.

Frightening and potentially fatal complications are esophageal perforation, strangled hernia recurrences, necrosis of gastroesophageal junction because of vascular damage.

Other common complications are bloating difficulty, dysphagia, and gastric delayed emptying.¹⁹

Symptomatic paraesophageal hernia recurrences interest, in literature, a percentage variable from 7 to 20% of cases within 5 years: these patients generally undergo surgery again to correct the defect.

The improvement of symptoms interest approximately 80% of patients within 27 months since surgery: 70-85% of them declares to be satisfied.

The adoption of postoperative contrastographical barium demonstrates a greater number of recurrences caused by asymptomatic recurrences that could be quantified in 20 – 25% of patients surgically treated.

Conclusions

There are many reviews in literature inheriting the laparoscopic treatment of paraesophageal primary hiatal hernia and mixed hiatal hernia: that indicates good perspectives for the miniminvasive surgery control of disease. It's however important to understand the causes of recurrences and surgical failure that in some series of patients seem greater in comparison with failures described with traditional laparotomic or thoracic approach. A percentage of failures is probably to attribute to the inadequate closing of diaphragmatic defect, inadequate isolation and excision of the hernia sac, to the technical difficulties in the crural strengthening and to the understating of a brachiesophagus that would have required a Collis lengthening gastropasty procedure.

The miniminvasive correction, like every young procedure,

require a meaningful learning curve and moreover sincere and not omissive publications of complications when occur in order to understand if the miniminvasive technique really offer advantages to patients or it is only useless choice to comply with technological evolution.

Riassunto:

È stato dimostrato che la riparazione dell'ernia iatale paraesofagea può essere effettuata per via chirurgica miniminvasiva ma la procedura non è standardizzata e non esistono ancora oggi risultati attendibili.

CASO CLINICO: Gli autori riportano un caso di ernia paraesofagea strangolata con sofferenza vascolare in un anziano trattato in urgenza con approccio a cielo aperto. Il follow up a 18 mesi ha dimostrato la efficacia della riparazione e la totale remissione dei sintomi.

Il numero di recidive post-chirurgiche può essere contenuto con l'uso di mesh nello iato, tuttavia non esiste uniformità di consenso su questo tipo di approccio.

Gli autori, dopo una revisione della letteratura inerente questa patologia non usuale (5% delle ernie iatali), pur considerando la possibilità di una procedura correttiva miniminvasiva ritengono che l'affidabilità della procedura laparoscopica sia ancora da dimostrare e manifestano perplessità sull'opportunità di una procedura antireflusso "di principio".

Inoltre non esistono metodiche diagnostiche affidabili per la diagnosi preoperatoria di un esofago corto nonché indicazioni uniformi per l'opportunità di una procedura chirurgica gastroplastica per l'allungamento esofageo.

CONCLUSIONI: È pertanto auspicabile l'adozione di protocolli per la stadiazione preoperatoria, il trattamento, e il follow up postoperatorio per chiarire le attuali controversie inerenti le indicazioni e l'approccio chirurgico.

PAROLE CHIAVE: Ernia iatale paraesofagea, ernia iatale da scivolamento, ernia iatale di tipo II, III.

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