

Recurrent Hiatal Hernia: A Surgical Challenge

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ABSTRACT

Background: Hiatal hernia is the prolapse of any abdominal structure towards the thorax through the esophageal sphincter, either due to the difference in abdominal and thoracic pressures or due to alterations in the structures that form the hiatus. These generally manifest with gastroesophageal reflux, epigastric pain, chest pain, dysphagia, heartburn, among other symptoms.

Methodology: A systematic review was carried out through various databases; The search and selection of articles was carried out in indexed journals in English, from the years 2013 to the present date.

Results: The diagnostic pillar of this pathology is carried out through the esophagram, also called radiography with barium swallow, which allows to identify the size of the defect presented. At present, laparoscopic management is preferred, since it shows similar results to the open approach, reducing hospital stay and post-surgical complications; however, consequently, a relatively high rate of recurrences is evidenced, for which the implications are addressed in this study. associated with it. It has been identified that they are more frequently associated with overweight, the size of the hernial hiatus, patient tissue factors, and a prolonged exposure time to the defect, and that in terms of the surgical approach, despite the fact that in laparoscopic intervention an increase is evident. of recurrence, the percentage requiring a new surgery is low, limiting surgical intervention to those symptomatic or associated with defects that predispose to serious complications.

KEYWORDS: Hiatal hernia; Recurrence; Laparoscopy; Paraesophageal hernia

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INTRODUCTION

Hiatal hernia is defined as a prolapse of any abdominal structure into the thorax through the esophageal sphincter [1,2] and is associated with increased intra-abdominal pressure [3]. The hiatus is formed by muscle fibers attached to the retroperitoneum with bundles that form the right and left crus, which when crossed posteriorly form a "V" to cross anteriorly and insert into the central tendon of the diaphragm. These pillars help maintain sphincter pressure [4]. The phrenoesophageal membrane aids in fixation of the inferior gastroesophageal junction to the hiatus in the abdominal cavity. Some esophageal fibers contribute to the formation of the

hiatus, however they do not occupy the entire opening [5]. It is estimated that the intra-abdominal pressure is 5-14 mmHg and the intrathoracic pressure is -4 to -16 mmHg, with a difference between 9 to 30 mmHg between each cavity. This pressure difference is transmitted between the esophagus and the hiatus, generating tension in it and in the phrenoesophageal ligament, which will oppose it (Figure 1). When this pressure is great enough, or the elasticity of these structures is low, the structures are deformed, generating a widening of the hiatus and a lengthening of the phrenoesophageal membrane, which causes an enlargement of the hiatal orifice and subsequent hernia [5]. Anatomically, hiatal hernia can be classified into 4 types (Figure 2); [6]:

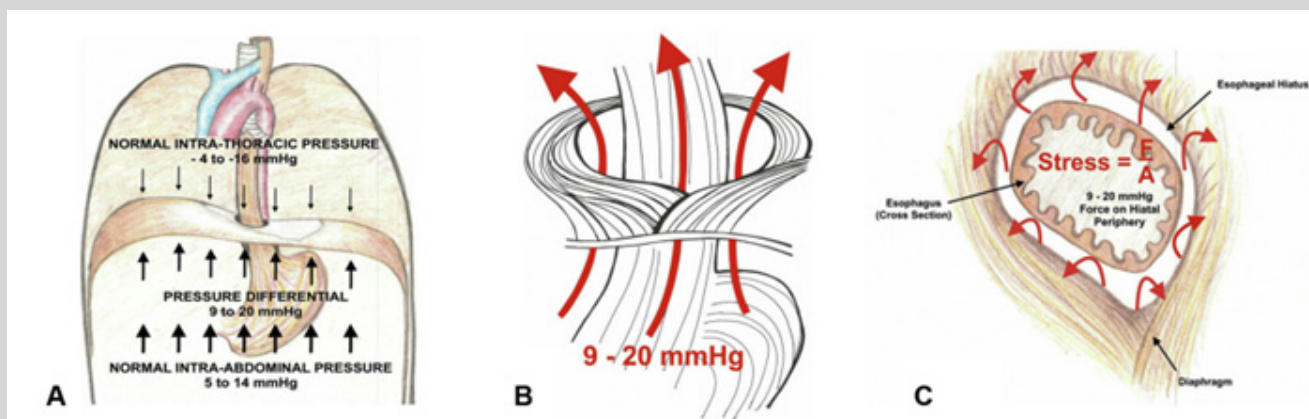


Figure 1: Difference in abdominal and thoracic pressures, direction of the pressures and the stress they exert on the hiatal orifice.

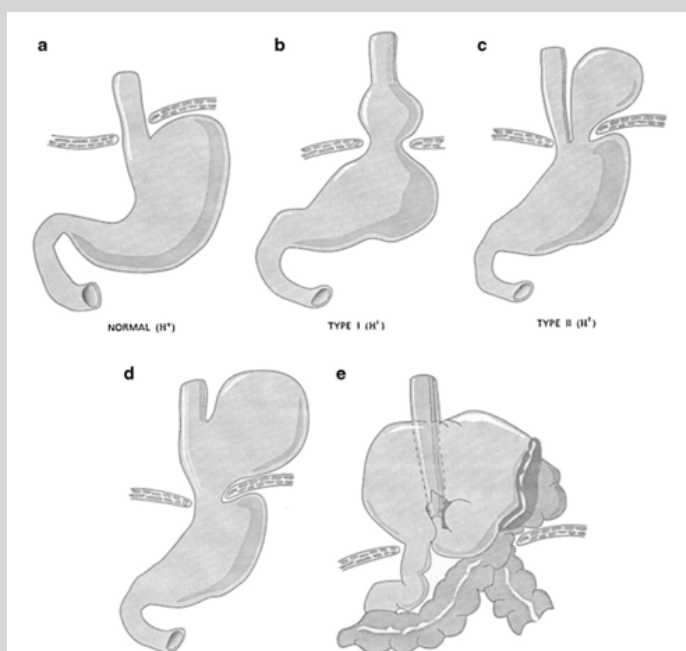


Figure 2: Hiatal hernia classification.

a) Type I: Sliding hiatal hernia, where the gastroesophageal junction migrates above the diaphragm. The stomach remains in its normal alignment and the fundus remains below the gastroesophageal junction.

b) Type II: Pure paraesophageal hernia, in which the gastroesophageal junction remains in its normal position, but a portion of the fundus prolapses through the diaphragmatic hiatus.

c) Type III: It is a combination of type I and II with the gastroesophageal junction and the fundus herniated through the hiatus. The fundus lies above the gastroesophageal junction.

d) Type IV: It is the presence of a structure other than the stomach within the hernial sac, such as omentum, colon, small intestine.

Hiatal hernias are considered to be caused by an increase in intra-abdominal pressure, which leads to protrusion of the stomach and other viscera into the thorax. Some known risk factors are overweight and advanced age; however, others are recognized such as multiple pregnancy, esophageal surgery, and skeletal disorders associated with decalcification and bone degeneration [3,7]. The most common symptoms are gastroesophageal reflux (GER), with manifestations of regurgitation, heartburn, dysphagia, epigastric and thoracic pain, or early satiety.

Barium swallow radiography is essential in the diagnosis of hiatal hernia, as it provides information on the size of the hernia and its location with respect to the gastroesophageal junction. Regarding other studies such as esophagogastroduodenoscopy, it is useful to identify mucosal lesions, however it does not allow visualizing large hernias or certain stomach rotations; in the

manometry, a hiatal hernia is considered when there is a separation between the diaphragm and the lower esophageal sphincter of 2 cm; the pH test allows a correlation between reflux episodes and the symptoms perceived by the patient; finally, tomography is not indicated, however the findings of hiatal hernia in it are usually incidental findings.

Regarding surgical management, the American Society of Gastroenterology and Endoscopic Surgery considers that surgery is reserved for symptomatic patients with paraesophageal hernia, those who present gastric obstruction or volvulus, or GER symptoms that do not improve on management with proton pump inhibitors. This approach can be performed through open laparotomy; however, it has recently been performed through laparoscopy, with similar results between them [8]; (Figure 3).

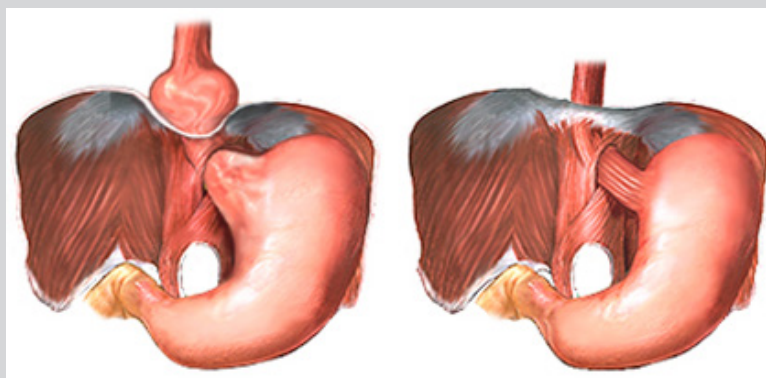


Figure 3: Before and after hiatal hernia repair.

Despite current techniques, hiatal hernia has a high recurrence rate, up to 66% in laparoscopic interventions [9], being up to 42% regardless of the type of procedure performed. It is considered that treatment failure may be caused by various factors such as the difference in pressure in the thorax and abdomen (overweight patients), age, the size of the esophageal hiatus, fibrosis, and inadequate surgical technique. Additionally, the clinical manifestations of recurrence are usually varied, from epigastric pain to volume and strangulation. The diagnosis of recurrent hiatal hernia does not vary from the initial diagnosis, radiography with barium swallow is preferred as the first option. Finally, regarding treatment, the authors agree that it should be performed only in symptomatic patients with paraesophageal hernia or in whom obstruction is evident. The surgical approach is mainly by laparoscopy, since it reduces hospital stay, however, there is no significant evidence with the open technique. Some authors claim a benefit of reinforcing mesh placement for hiatal closure, but this remains controversial [8-10].

METHODOLOGY

A systematic review of the available scientific literature on recurrent hiatal hernia was carried out in the different scientific databases such as ScienceDirect, Pubmed, Elsevier, Scielo, among others, which included articles in English and Spanish, including between 2012 and the present year, those outside this range were excluded. The terms "hiatal hernia", "recurrent hiatal hernia", "paraesophageal hernia" were used as keywords, resulting in 31 articles that allow evaluating the impact of hernia recurrence after performing different types of surgical interventions and what is the need for retreatment of this, all those who did not provide sufficient information at the time of their review were excluded.

RESULTS

Recurrent hiatal hernia is defined as any hernia that appears after primary repair, regardless of the initial type I. Radiologically, it was possible to identify a recurrence of approximately 50% of patients, who are generally asymptomatic, to which Camps showed that recurrence rates are close to 40%, of which approximately 21% were symptomatic and up to 50%. % of patients with recurrence evidenced by radiological studies were asymptomatic; According to Itali et al. [9] the recurrence of laparoscopically repaired hiatal hernia reached 66%, which occurred predominantly in giant hiatal hernias, however it was identified that between 30% and 95% of them were asymptomatic. Contrary to this Ortenzi and Fontana et al, report a recurrence rate of less than 20%; Consequently, in the study "Laparoscopic Surgery for Recurrent Hiatal Hernia" they found an overall recurrence rate that varied between 15% and 60%, data with which Pokala et al. [3] agree in their research.

Attempts have been made to establish the causes of recurrences, and although there is no single attributable cause, some authors consider that overweight patients, with long exposure, those with a large hiatus, fibrosis, or in some cases where the surgical technique has not been the adequate one presents a higher risk of recurrence. Campos describes in his research that "the most important factor for recurrence is the size of the diaphragmatic defect" since in some cases the solidity of the pillars does not allow suturing without generating tension, data that is supported by Lanzarini et al. [9] who consider that the size and type of primary hernia is one of the decisive factors in recurrence; he additionally agrees with Arealos [1], establishing that the surgical technique is a factor that influences recurrence. They consider that the recurrence rate is higher in laparoscopic surgery secondary to an underestimation of

the tension when performing the approximation of the pillars for its closure. In their study, they indicate that hernias greater than 10 cm in diameter have a recurrence of 10.8%, specifically they explain that in hernias greater than 5 cm the rate of a new fundoplication was 40%; They also comment that type III and IV hernias are also more likely to recur. In their study, they indicate that hernias greater than 10 cm in diameter have a recurrence of 10.8%, specifically they explain that in hernias greater than 5 cm the rate of a new fundoplication was 40%; They also comment that type III and IV hernias are also more likely to recur. In their study, they indicate that hernias greater than 10 cm in diameter have a recurrence of 10.8%, specifically they explain that in hernias greater than 5 cm the rate of a new fundoplication was 40%; They also comment that type III and IV hernias are also more likely to recur.

In their research Ortenzi et al. [10] found that the body mass index, the time between the first diagnosis and the type of surgical procedure were the factors associated with recurrence. Regarding giant hernias, the study "Laparoscopic repair of giant paraesophageal hernia: are there factors associated with anatomic recurrence?" showed that despite the fact that anatomical recurrence was 34%, only 9% presented symptoms and only 4% required intervention. surgical [11-13]; this finding is comparable with that of Lakis et al. [14] who in their study show that radiological recurrence was 17.3% without presenting a difference between young patients and those over 80 years of age.

Table 1: Classification of recurrences.

Classification	Score	Size
No recurrence	0	<2cm
Asymptomatic recurrence	1	3 - 5cm
Symptomatic recurrence	23	>5cm

DISCUSSION

One of the most controversial issues is the surgical approach to recurrent hiatal hernias, this is because most authors agree that they should only be operated on when associated with symptoms or anatomical defects that can lead to life-threatening conditions [18]. This is because revision of hiatal hernia recurrences on multiple occasions is associated with high rates of intraoperative morbidity, reaching up to 20% [19].

Mittal [20] specify that the success of the intervention is based on the reduction of the hiatal hernia and its cross closure without generating tension, additionally it is possible to associate some modifying interventions such as Collis gastroplasty and the use of mesh for the hiatal repair; In addition to this, they consider that adequate esophageal length must be ensured through adequate mediastinal mobilization; DeMeester [21] agrees with this, who in his study comments that the success in the approach to hiatal hernia is found in complementary procedures such as Collis gastroplasty and incisions that relax femoral tension and the placement of meshes for femoral closure. Regarding the use of mesh, it has been shown that despite the fact that the recurrence rate is high, Jones et al. [22] showed that it is a safe procedure and that it reduces symptoms in the long term, reducing the percentage of recurrence that requires additional surgical intervention. In contrast to this, Soper et al in their research report favorable results without requiring the use of mesh in the repair of the hiatus. In the study "Long-term quality of life and risk factors for recurrence after laparoscopic repair of paraesophageal hernia" it is evident that the use of mesh is widely accepted and there is no significant difference between the different

According to what was reported by Saad in some patients with hiatal hernia it was possible to identify the absence of collagen fibers or a decrease in type I and III collagen fibers in the phrenoesophageal membrane, as well as alterations in the Collagen metabolism associated with the expression of COL3S1, which initially could cause the primary hernia, and this factor is influential in the presence of recurrence despite an adequate surgical technique [15]. Various studies have established that laparoscopic hiatal hernia repair has a higher rate of radiological recurrence; Additionally, it is considered that these may be indicative of failures in femoral closure or lack of previous suture. In addition to this, in the study carried out by Linnaus et al. [16].

It has not been possible to reach a consensus in the classification of recurrences, since some authors consider any postoperative hernia as a recurrence, however others limit it to those of more than 2 cm in length; which agrees with what was found by Lidor et al. [17]. Those who classify hernias as smaller than 2 cm, 3 to 5 cm, and larger than 5 cm classify recurrences as asymptomatic, symptomatic, or true (Table 1), the latter being the ones that require intervention. The clinical manifestations of recurrence are generally similar to those seen in primary hiatal hernia, ranging from epigastric pain, chest pain, regurgitation and early satiety, to volvulus. Likewise, various authors agree that its diagnosis should be made through an esophagram or X-ray with a barium swallow.

types of mesh and a reduction in symptomatic recurrence in the group that used mesh, with an excellent improvement in quality of life [23-25]. Despite the above, the only finding was evidenced in the study "Long-term results and complications related to Crurasoft® mesh repair for paraesophageal hiatal hernias" in which there were serious complications associated with the use of this particular material, for which no was recommended [26]. Additionally, Suppiah [27] considers that in cases where an anterior crural defect is present, compound cardiopexy and fundoplication may be required to fix the cardioesophageal junction to the median arcuate ligament [28]. Some authors such as Zaman [29] consider that performing bariatric surgery and gastric sleeve play an important role in the treatment and reduction of recurrences.

In accordance with what has been mentioned, it can be deduced that currently a benefit of the approach through laparoscopy has been evidenced [30], in addition to the placement of mesh and alternative procedures, for the reduction of symptomatic recurrences, which are those that require in the long term additional surgical interventions. In addition to this, due to the complexity of the interventions to be carried out, it is considered that they must be carried out by an expert team, to guarantee the durability of the repair.

CONCLUSION

Recurrent hiatal hernia can be considered a frequent complication of primary repair procedures; one of the main risk factors is being overweight and the size of the hernia hiatus. Despite this, the proportion of recurrences that must be operated

on is low, since they do not present symptoms or affect the patient's quality of life. Based on this review, it was possible to identify that the key to reducing these recurrences is found in the performance of complementary surgical procedures such as mesh placement and Collis gastroplasty, as well as a decrease in the patient's BMI either with a concomitant performance gastric sleeve or bariatric surgery, since despite the persistence of radiological recurrences, the patient's symptoms are reduced and quality of life is improved.

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