

Successful hiatal hernia repair with Nissen fundoplication by laparoscopic approach: a case report



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ABSTRACT

Background: Hiatus hernias represent a herniation of viscera, most commonly the stomach, into the mediastinum through the esophageal hiatus of the diaphragm. There are two main classifications, sliding hernias and paraesophageal hernias. This case study aims to evaluate the successful hiatal hernia repair with Nissen fundoplication by a laparoscopic approach.

Case Presentation: We present a case of a 60-year-old male who presented with recurrent abdominal discomfort 6 months prior to the consultation. This was accompanied by loose stools, bloating, nausea, and vomiting. An initial diagnosis of Gastroesophageal Reflux Disease (GERD) was made. Conservative treatment was initiated with limited success. Endoscopy was then performed,

revealing a hiatal hernia. Surgical intervention was then chosen as a therapeutic option via a laparoscopic approach and additional Nissen fundoplication with favorable outcomes.

Conclusion: Symptomatic paraesophageal hernias are indicated for surgical repair. Paraesophageal hernias can be repaired transthoracically and transabdominal. Repairs via the transabdominal route can be performed with an open approach or laparoscopically, with the laparoscopic approach suggesting lower mortality and morbidity. Nissen fundoplication has been proven as an effective measure in GERD's control and in maintaining an intra-abdominal location of the gastroesophageal junction (GEJ).

Keywords: Hiatal Hernia, Laparoscopic Approach, Nissen Fundoplication.

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INTRODUCTION

Hiatal hernias are classified under 4 main subtypes of Hiatal hernias. Sliding hernias (Type I) and Paraesophageal hernias (Types II, III, IV).^{1,2} Sliding hernias represent 95% of total cases. Most small type I Hiatal hernias are asymptomatic.^{2,3} Symptoms in patients with type II-IV hernia are usually vague and intermittent.³

Hiatal hernias are commonly discovered incidentally on imaging, endoscopy, or manometry. Barium swallow represents the most sensitive test for paraesophageal hernias.³ Several modalities have been proposed for hiatal hernia, one of them is Nissen fundoplication by laparoscopic approach. Nissen fundoplication is a surgical method in which the stomach's fundus is wrapped totally around the intra-abdominal esophagus, thereby increasing the sphincter's intra-abdominal length, narrowing the sphincter, and accentuating the angle of His.^{4,5} The Nissen fundoplication has proven to be a very effective form of therapy with excellent long-term results.^{4,5}

We present a case of a male who presented with recurrent abdominal discomfort 6 months

prior to the consultation. This was accompanied by loose stools, bloating, nausea, and vomiting. The patient had no significant health history before this consultation. An initial diagnosis of GERD was made. Limited success upon initiation of conservative treatment was followed up by endoscopy, revealing a hiatal hernia. Surgical intervention was then performed.

CASE DESCRIPTION

A 60-year-old male presented with recurrent abdominal discomfort 6 months prior to the consultation with the Surgeon. This was accompanied by loose stools, bloating, nausea, and vomiting. The patient had no significant weight loss, had an unremarkable healthy history. An initial diagnosis of Gastroesophageal Reflux Disease (GERD) was made based on clinical symptoms and Barium swallow evaluation (Figure 1). Conservative treatment was initiated with Pantoprazole 40 mg 2x1 per oral (PO), Metoclopramide 10 mg 2x1 PO, (Chlordiazepoxide hydrochloride 5 mg, acridinium bromide 2.5 mg) 2x1 PO. This regiment was continued for 3 months with limited success.

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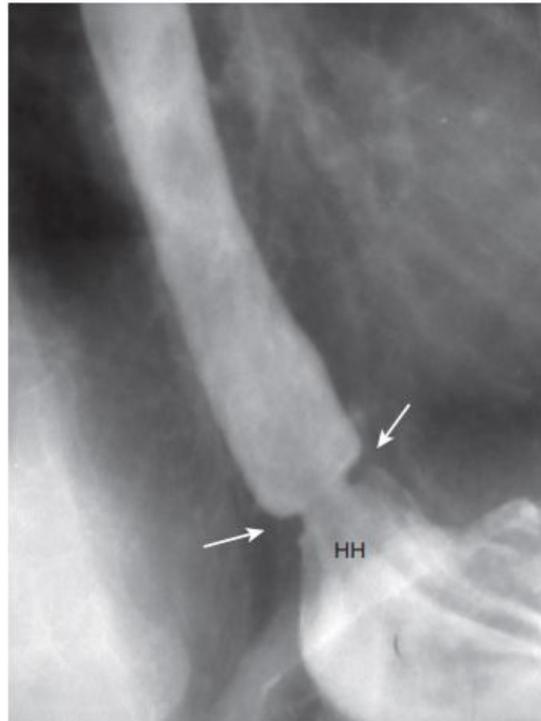


Figure 1. Barium swallow of Hiatal Hernia (HH) with Schatzki ring. A Schatzki ring marks the esophagogastric junction's position so that its appearance above the diaphragm indicates the presence of a sliding hiatal hernia.

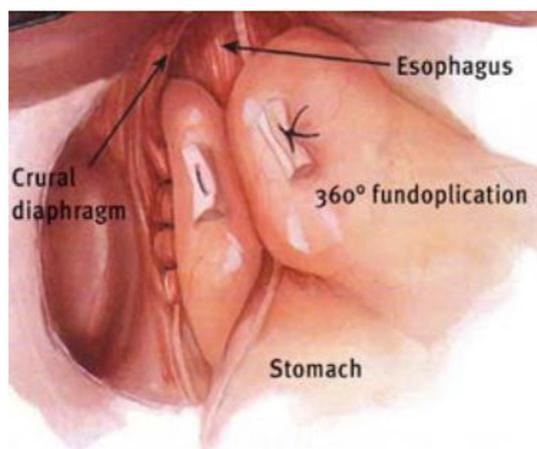


Figure 2. An illustration of 360° Nissen Fundoplication. Key features are to mobilize the lower esophagus, reduce the hiatus hernia, and to wrap the gastric fundus around the esophagus. During the procedure, the proximal portion of the stomach is covered 360° around the GEJ.

With the patient experiencing varying degrees of heartburn, abdominal discomfort, and bloating. Endoscopy was then performed, revealing GERD and a hiatal hernia. Surgical intervention was then chosen as a therapeutic option.

Surgery was performed 6 months after the initial commencement of symptoms. The approach chosen was an abdominal laparoscopic approach with a (3 + 2 trocar setup). The patient was placed in a supine position under general anesthesia, after which asepsis and antisepsis were performed on the surgical site. An initial substernal incision was performed. After trocar placement and orientation, a closed esophageal hiatus was located. The esophagus and gaster were freed, followed by the omentum. A 360° Nissen fundoplication was performed using 3 stitches and the surgical site closed (Figure 2). The operation was performed on the patient in over 2 hours. The patient was observed and returned to the general ward. The patient was started on a liquid diet that was titrated upwards based on clinical and symptom improvement. He was then discharged after 3 days with no significant event during the hospital stay, with medications consisting of Mefenamic acid 500 mg 3x1 PO, Moxifloxacin 400 mg 1x1 PO, and Esomeprazole 40 mg 2x1.

DISCUSSION

Hiatal hernias represent a herniation of viscera, most commonly the stomach, into the mediastinum through the esophageal hiatus of the diaphragm.⁶ There are 4 main subtypes of Hiatal hernias. Sliding hernias (Type I) and Paraesophageal hernias (Types II, III, IV).⁷ Sliding hernias represent 95% of total cases.¹ Most small type I Hiatal hernias are asymptomatic; however, patients with large type I hernias can present with GERD symptoms.⁸ The most common symptoms were heartburn, regurgitation, and dysphagia.⁸ If present, complications are usually related to reflux. Symptoms in patients with type II-IV hernia are generally vague and intermittent. Common symptoms include substernal, epigastric and postprandial fullness.⁸

Diagnosis of Hiatal hernias is suspected in patients with GERD symptoms or patients with a history of surgery to the hiatus.⁹ Commonly they are discovered incidentally on imaging, endoscopy, or manometry.⁹ Upright chest X - rays are usually sufficient in diagnosing Hiatal hernias if they show an air-fluid level behind the cardiac shadow.^{9,10} Paraesophageal hernias may be diagnosed on upper endoscopy, but barium swallow is the most sensitive diagnostic test.^{9,10}

The treatment approach to type I hernias are generally symptomatic and consists of the

management of GERD.⁹ The treatment approach to paraesophageal Hiatal hernias is primarily surgical.¹¹ Optimal approach for asymptomatic is controversial.¹¹ Indications for surgical repair are based on recommendations relating to paraesophageal hiatal hernia complications upon herniation and high mortality in emergent situations.^{11,12} Paraesophageal hernias can be repaired transthoracically and transabdominal. Repairs via the transabdominal route can be performed with an open approach or laparoscopically.^{11,12} Each technique has its advantage and disadvantage. The transthoracic approach facilitates complete esophageal mobilization but is rarely used to access trauma and postoperative pain, which is higher than the laparoscopic approach. The transabdominal approach enables the reduction of volvulus, with some degree of esophageal mobilization.^{11,12}

However, complete mobilization to the aortic arch is difficult or impossible without risk of injury to the vagal nerves. Laparoscopic repair of paraesophageal hernias appear to be the standard approach.¹³ Laparoscopic repair was associated with the shortest hospital stay (4.5 days) and the lowest risk of requiring mechanical ventilation postoperatively (2.3 % of patients).¹⁴ Recurrence of paraesophageal hernia post repair are relative (10 - 40%), use of mesh (biologic or synthetic) is believed to reduce the requirement of mechanical ventilation postoperatively.¹⁵ Although the role of fundoplication remains controversial. Various types of fundoplication have been used in the treatment of hiatal hernia and/or GERD. Of these, the Nissen fundoplication (360° wrap) has been the most widely performed and studied. It has been proven as an effective measure in the control of GERD and in maintaining an intra-abdominal location of the gastroesophageal junction (GEJ) after hiatal hernia repair. Providing enhanced postoperative recovery and excellent long-term outcomes. Rather than a hospital stays of 5 – 7 days and a 6-week postoperative convalescence—which is necessary with open fundoplication—patients who have had laparoscopic Nissen fundoplication remain hospitalized only 24 hours and return to their usual activities within 1 – 2 weeks.⁶

CONCLUSION

Paraesophageal symptomatic hernias are indicated for surgical repair, whereas asymptomatic disease requires careful consideration for risk and benefit. Paraesophageal hernias can be repaired transthoracically and transabdominally with the transabdominal laparoscopic approach being the preferred option due to reduced access trauma and postoperative pain as well as reduce mortality and

morbidity. Addition of mesh and fundoplication increases success and reduces the chances of recurrence. Nissen fundoplication been proven as an effective measure in the control of GERD and in maintaining an intra-abdominal location of the gastroesophageal junction (GEJ).¹⁶ Providing enhanced postoperative recovery and excellent long-term outcomes.

CONFLICT OF INTEREST

There is no competing interest regarding manuscript.

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None.

AUTHOR CONTRIBUTION

All authors equally contribute to the study from the conceptual framework, data gathering, data analysis, until reporting the case study through publication.

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