

Case Report

Petersen's Hernia as a Complication of Bariatric Surgery: A Case Report

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Received: 16 June, 2021; Accepted: 27 August, 2021

Abstract

Background: Bowel obstruction due to Petersen hernia is a known but rare late complication of a R-Y surgery that can be a life threatening condition. Delayed intervention may result in a high morbidity and even mortality. The clinical findings are not specific, In this context, imaging exams have an important part in the early detection and surgery of this condition.

Cases Report: We describe the case of a 46-year old man presenting with acute abdominal pain and a history of gastric bypass five years previously. Abdominal Ultrasound did not reveal any significant findings. Indeed, through the use of multi slice computed tomography with IV and oral contrast, diagnosis of internal hernia was made and confirmed by laparotomy.

Conclusion: Internal hernias are rare and difficult to diagnose, but they should be included in the differential diagnosis in intestinal obstruction cases and a history of abdominal surgery to reduce the high morbidity and mortality rates; surgical intervention shouldn't be delayed.

Keywords: Computed Tomography, Internal Hernia, Roux-en-Y, Gastric Bypass

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Please cite this article as: Petersen's Hernia as a Complication of Bariatric Surgery: A Case Report. *Novel Biomed.* 2021;9(4):215-17.

Introduction

Internal hernias are protrusions of the viscera along the peritoneum or mesentery but remain within the abdominal cavity. The responsible hernial orifices are usually pre-existing anatomic structures such as foramina, recesses and fossae. The mesentery and visceral peritoneum's pathologic defects are mostly due to – congenital, surgical, traumatic, inflammatory, circulatory pathology. Internal hernia is a rare cause of small bowel obstruction. The incidence is only 0.2-0.9%. This may be congenital or acquired and may be persistent or intermittent. There is a high risk of strangulation of bowel loops.

Therefore, an internal hernia is a hazardous and lethal condition².

Types of Internal hernia and their relative incidence: Paraduodenal(Lt.>Rt.): 53%, Foramen of Winslow: 8%, Transmesenteric: 8%, Transomental: 1-4%, Pericaecal: 13%, Intersigmoid: 6%, Supravesical and pelvic: 6%.

In 1900, Dr Walther Petersen, a German surgeon, first reported Petersen space hernia, an internal hernia due to the Petersen defect, a space between the Roux limb and the transverse mesocolon after Roux-en Y (R-Y) reconstruction (Petersen 1900). This is a rare internal hernia that occurs after any gastrojejunostomy. It may occur in both types of anastomosis (ante colic or retro

colic). Although Petersen's hernia occurs in a potential space behind the Roux limb, its clinical presentation and imaging findings are similar to those of other internal hernias¹. Clinically, it presents from intermittent and mild digestive complaints to acute intestinal obstruction.

To diagnose, we need to focus on the configuration of bowel loops; Mesenteric vessels change the bowel wall's enhancement pattern³.

Case Report

A 46-year-old man was admitted to the emergency department with complaints of acute epigastric pain, vomiting, and darkening of stool colour. The pain had radiation to his periumbilical area; vomiting was a mixture of residual processed food and bile repeated many times. He admitted that his gas pass and defecation have not deteriorated and were as usual as they were.

The patient had a history of previous gastric bypass surgery five years before the morbid obesity. He was on no medication and was not a smoker or drinker.

The patient was dehydrated on physical examination; the abdomen was distent; however, it had no tenderness or rebound; hematological and biochemical investigations were regular. Plain abdominal X-ray showed distent bowel loops. Abdominal Ultrasound was done, which did not reveal any significant findings. A surgical consult was requested for the patient, and a CT scan with IV and oral contrast was made, which found the twisting of mesenteric vascular pedicle at its root along with jejunal loops, the classic Whirl sign suggesting an internal hernia (figure1) and distention of descending

colon, haziness of mesentery, multiple mesenteric lymphadenopathies without any distinct obstructive lesion or transitional point. The patient underwent an explorative laparotomy, during which the diagnosis of internal hernia was confirmed.

Discussion

Petersen's hernia is a specific kind of internal hernia. The intestine moves into a potential space between the transverse mesocolon's caudal surface and the mesentery of the Roux limb (Petersen's space)⁴.

As mentioned before, Petersen's hernia may occur in both types of anastomosis (ante colic or retro colic). Although it occurs in a potential space behind the Roux limb, its clinical presentation and imaging findings are similar to those of other internal hernias. CT findings: There are specific imaging findings in patients who have undergone Roux-en-Y gastric bypass bariatric surgery that suggests an internal hernia, some of which are more specific for the diagnosis of a hernia in Petersen's space. The main points to observe are the presence and site of abdominal distention, the herniated intestinal loop segment, mesenteric vessel rotation and mesenteric fat haziness, the position of the Treitz angle and the course of the ileum. Mesenteric vessel rotation is the whirl sign or mesenteric swirl, and mesenteric fat haziness is usually seen. Various articles have shown this finding to be the most sensitive sign for diagnosing internal hernias but is not specific^{5,6}. An important parameter to be evaluated is the pattern of intestinal loop distension, usually mild distension of small intestine loops in the upper abdomen, in most cases located preferentially in the left hypochondrium.



Figure 1. Whirl sign A. MRI T1 fs axial. B.CT coronal C.CT axial

A key finding for tomographically diagnosing the herniated segment is a jejunal loop located above the stomach. A distended jejunal loop above the gastric level is usually accompanied by mesenteric vessel stretching and engorgement and mesenteric vessel elongation^{5, 7}; in a coronal reconstruction, with herniated loops in the upper pole, these findings have a mushroom-like appearance. Sometimes adjacent peritoneal lymph nodes are enlarged. Lockhart et al.⁶ also described this finding, which increases the diagnostic specificity. A further finding is the Treitz angle position, which is usually displaced anteriorly and to the right.

Middle ileal segments have a descending trajectory from the left upper quadrant towards the right lower quadrant, and the distal ileum has a horizontal path up to the cecum. Some signs, such as distended intestinal loops, the whirl sign, and the mushroom-like appearance, are common to other types of internal hernias. A precise diagnosis of Petersen's hernia requires specifically finding and localizing the herniated intestinal segment.

Investigative computed tomography scans and upper gastrointestinal and small bowel contrast studies may not reveal an internal hernia in 20% of cases⁴.

Conclusion

We report the description of a man presenting

clinically with acute abdominal pain with Petersen hernia diagnosis. Internal hernias are rare and difficult to diagnose, but they should be included in the differential diagnosis in intestinal obstruction cases and a history of abdominal surgery to reduce the high morbidity and mortality rates; surgical intervention shouldn't be delayed.

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