A rare case of intestinal obstruction due to internal hernia

Dr. Jayanth
3rd year PG
Dept. Of General Surgery
• One of the common cause of acute abdomen
• May lead to high morbidity and mortality if not treated correctly
➤ It can be classified into two types:
  Dynamic (mechanical)
  Adynamic
• **Dynamic**: where peristalsis is working against a mechanical obstruction.

• **Adynamic**: mechanical element is absent
  - Peristalsis may be absent (paralytic ileus)
  - May be present in non propulsive form.
    (mesenteric vascular occlusion or pseudo-obstruction)
Cause of obstruction

DYNAMIC

1. Intraluminal: impacted faeces, foreign bodies, gallstones, Bezoars.

2. Intramural: tumors, inflammatory strictures,

3. Extramural: adhesion, hernias, volvulus, intussusception, tumors
Cause of intestinal obstruction

• Adhesions- 40%
• Tumors -15%
• Inflammatory- 15%
• Hernia-12%
• Intraluminal-10%
• Miscellaneous -8%
INTERNAL HERNIA
Definition

Internal hernias are defined by the protrusion of a viscus through a normal or abnormal peritoneal or mesenteric aperture with in the confines of the peritoneal cavity. The hernia orifice is usually a preexisting foramen, recess, and fossa but can be foramen, recess, and fossa where the cause is due to surgery, ischemia, and trauma caused by surgery, ischemia, and trauma.
Scientists in Ireland have classified a brand-new organ inside human body, one that has been hiding in plain sight in our digestive system, proving the anatomic description laid down over 100 years of anatomy as incorrect.

Researchers hope that the reclassification will aid better understanding and treatment of abdominal and digestive diseases.
Classification

Internal hernias are classified as

1. Congenital
2. Acquired
In the broad category of internal hernias are several main types, as traditionally described by Meyers, based on location.

Using historical data, these consist of

- Paraduodenal (53%),
- Pericecal (13%),
- Foramen of Winslow (8%),
- Transmesenteric and Transmesocolic (8%),
- Intersigmoid (6%),
- Retroanastomotic (5%),

7% described by Meyers included paravesical hernias, which are not true internal hernias.
Hernias.

• Internal hernias:

A: Foramen of Winslow
B: Right paraduodenal hernia
C: Left paraduodenal hernia
D: hernia transmesentérica
E: hernia pericecal
F: hernia transomental
G: intersigmoidea hernia.
PARADUODENAL HERNIA

Transverse Colon Elevated

- Transverse colon (elevated)
- Transverse mesocolon
- Superior duodenal fold
- Paraduodenal recess (fossa)
- Inferior duodenal fold
- Superior mesenteric artery in root of mesentery
- Abdominal aorta
Paraduodenal fossae originate as congenital peritoneal anomalies due to failure of mesenteric fusion of parietal peritoneum and an associated abnormal peritoneum along with associated abnormal rotation as the small bowel is imprisoned beneath the developing colon
In the classic older literature, paraduodenal hernias were the most common type of internal hernia, accounting for approximately 53% of all cases.

Unlike most types of internal hernias, this subtype does have a sex predilection, being found more commonly in men by a ratio of 3:1.

There are two main types, left and right, with the former consisting of most (75%) cases.
PARADUODENAL HERNIA

Pathogenesis:

1) Increased intra abdominal pressure pushes bowel into potential sac
2) Congenital anomaly in development of the peritoneum that arises during midgut rotation
Left Paraduodenal hernia

Left paraduodenal hernias have an overall incidence of approximately 40% of all internal hernias. They occur when bowel prolapses through Landzert's fossa, an aperture present in approximately 2% of the population. These hernias therefore can be classified as a congenital type, normal aperture subtype.
Landzert's fossa is located behind the fourth part of the duodenum and is formed by the lifting up of a peritoneal fold by the inferior mesenteric vein and ascending left colic artery as they run along the lateral side of the fossa. Small-bowel loops prolapse postero inferiorly through the fossa to the left of the fourth part of the duodenum into the left portion of the transverse mesocolon and descending mesocolon.
Left Paraduodenal hernia

Lt. paraduodenal hernia borders
- Ant Part of orifice--IMV,
- post part--post abd wall,
contains most of small bowel
- Afferent limb-4th part of duodenum
- Efferent limb-terminal part of ileum.
Right Paraduodenal hernia

Right paraduodenal hernias have an overall incidence of approximately 13% and occur when bowel herniates through Waldeyer’s fossa.

This normal yet uncommon recess is found in less than 1% of the population.

Like left paraduodenal hernias, the right paraduodenal hernia can be classified as congenital type, normal aperture subtype.
In these situations, the herniated contents are located in the right half of the transverse mesocolon and behind the ascending mesocolon.

This type of hernia occurs more frequently in the setting of nonrotated small bowel. When compared with the left paraduodenal hernias. Those on the right are usually larger and are more often fixed.
Pericaecal hernia
Historically, pericecal hernias account for 13% of all internal hernias. The pericecal fossa is located behind the cecum and ascending colon and is limited by the parietocecal fold outward and the mesentericocecal fold inward.

Although there are actually four subtypes (ileocolic, retrocecal, ileocecal, and paracecal) of pericecal hernias, most commonly the herniated loop consists of an ileal segment protruding through a defect in the cecal mesentery and extending into the right paracolic gutter.
These hernias can therefore be subcategorized as either acquired or congenital defects in the cecal mesentery.

Clinically, patients with pericecal hernias present in a similar manner to those with all other types of internal hernias except for the location of pain, which tends to be in the right lower quadrant, so that pericecal hernias are sometimes mistaken for appendiceal abnormalities.

A higher incidence of occlusive symptoms with rapid progression to strangulation is also commonly found, with a mortality rate reported to be as high as 75%.
Retrocaecal hernia (hernia of Rieuex)

- Caused by a partial defect of fixation of the right ascending mesocolon (Toldt fascia).

- In this type of hernia, where the viscera are trapped between the abdominal posterior peritoneum on the dorsal side, the cecum ventrally, and the right ascending mesocolon as the upper limit.
Transmesenteric hernia

Protrusion of a loop of bowel through the mesentery of the small bowel, the transverse mesocolon, the sigmoid mesocolon, or the falciform ligament.

Congenital-associated with intestinal atresia, or mesenteric ischemia,

Acquired-Most TMHs in adults are related to predisposing factors, including previous surgery, abdominal trauma, and peritonitis.
TRANSOMENTAL HERNIA

- Accounts for 1% - 4% of all internal hernias
- Type I - through the free edge of the Gastric omentum.
- Type II - through the GCL into the lesser sac

Herniation of viscera, typically small bowel, through an opening in the gastrocolic omentum. The ring is formed entirely by the omentum
Hernia through epiploic foramen (Blandin hernia)

8% of all internal hernias
- Small bowel most frequently involved (60%)
- TI, cecum, ascending colon (25-30%)
- GB, transverse colon, and omental hernias are rare
- Risk factors: enlarged foramen, excessively mobile gut due to a long mesentery, persistence of the ascending mesocolon, ascending mesocolon that is not fused to the parietal peritoneum
Acquired internal hernia

Hernia in iatrogenically created defect:
   1) open and laparoscopic Roux-en-Y gastric bypass,
   2) Billroth II gastrojejunostomy,
   3) bilioenteric anastomosis,

After the gastric bypass the hernia occur in 3 iatrogenically created space
   1) the transverse mesocolon,
   2) the divided small bowel mesentery,
   3) the Petersen space that is located between the small bowel mesentery of the Roux limb and the transverse mesocolon.
1. **The mesocolic defect (arrow A),** Mesocolic / transmesenteric hernias occur through iatrogenically created defects in the mesentery. These defects include herniation of an abdominal viscus, usually through the small bowel mesentery or transverse mesocolon. These hernias are common following abdominal surgery, especially Roux-en-Y loop reconstruction.
2. The Petersen defect (*arrow B*),

Petersen hernias are internal hernias which occur in the potential space posterior to a gastrojejunostomy. This hernia is caused by the herniation of intestinal loops through the defect between the small bowel limbs, the transverse mesocolon and the retroperitoneum, after any type of gastrojejunostomy.

3. The enteroenterostomy defect (*arrow C*).
Symptoms of internal hernia

- Acute or intermittent small bowel obstruction.
- Pain, vomiting, distention, obstipation.
- Rapidly progress into shock if associated with mesenteric ischemia and bowel necrosis.
Investigations

• X ray abdomen
• CT abdomen
  • CT shows Mesenteric vessels may be stretched, crowded, engorged, and have a “whirl sign.”
  • Encapsulation or clustering of small bowel loops in peritoneum
Right Paraduodenal Hernia

A. Cadaver simulation of herniated loop through inferior paraduodenal fossa (arrow). 3th duodenum (*). Treitz (open arrow).

B, C. Axial and Coronal views:
Waldeyer's Fossa (ovoid zone). Loops Herniated Position (circles)

A. Axial MIP view. B. Coronal view.
B. Right paraduodenal dilated loops (red arrow) with stretching of gastrocolic venous trunk (white arrow) situated behind to herniated sac.
Medial displacement of ascending colon (*)
Left Paraduodenal Hernia.

A. Hernia sac (open arrow) located between stomach (with arrow) and pancreatic tail (black arrow).

B. MIP coronal view. Twisting mesenteric vessels in the core of the herniated loops (red arrow).
Winslow Foramen Hernia (blue zone)
A. Sagital. B. Coronal. C. Axial.
Herniated small bowell position (circles)
Landmarks:
Inferior: Duodenal Bulb (red arrow)
Anterior: Hepatoduodenal Ligament (blue arrow)
Posterior: Inferior Cava Vein (yellow arrow)
CT Shows: Mesenteric swirl sign
Treatment

• Diagnostic laparoscopy
• Basic principles of hernia surgery, including reduction of the hernia contents, resection of the hernia sac, restoration of normal bowel anatomy, and repair of the hernia defect.

- If the orifice is large reduce the hernia
- If the orifice is narrow and associated with edematous bowel loops the best option is controlled decompression of the distended bowel to avoid the vital structures that pass through.
High index of clinical suspicion along with prompt surgical management is required in internal hernia in order to avoid a potential abdominal catastrophe.

Thank you....

Reference: Shackelford.