



ORIGINAL ARTICLE

Internal hernias and their mimics: How would radiologists help?



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KEYWORDS

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Abstract *Purpose:* Trying to define the most valuable radiological sign(s) for the diagnosis of internal hernias and their mimics; mainly cocoon syndrome and adhesions.

Review: Nowadays with the increasing number of bariatric surgeries, the number of diagnosed internal hernias has increased significantly. Adhesions and cocoon syndrome are among the differential diagnosis. Although many signs were suggested for the diagnosis of such conditions, yet no single sign is enough to diagnose each of the above.

Method and subjects: This is a retrospective study. In a period of 32 consecutive months, from June 2010 to February 2013 a total of 240 patients were admitted with abdominal pain with signs of remittent or persistent intestinal obstruction. All cases are subjected to multislice CT examination. Several criteria are used to diagnose internal hernia. Informed consents were taken from all patients and organizational ethics committee were informed.

Results: The age of the patients varies between 22 and 63 years with average age of 36 ± 2.3 years. Most of the patients were females with ratio of 2:1. Commonest presentation was abdominal pain present in all cases. The study diagnosed 13 cases/internal hernias, 14/adhesions, two cases/cocoon syndrome, two cases/intussusceptions and one case/malrotation. The most important signs used are Swirl's sign, localized bowel gathering and segmental bowel dilatation.

Conclusion: A single sign is not enough for the diagnosis of internal hernia, rather the use of more than one sign is essential to narrow the differential diagnosis.

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Clinical relevance/application: The prevalence of internal hernia is increasing due to increased rate of operative abdominal intervention. Prompt radiological diagnosis is crucial to avoid unwanted surgery in a non-virgin abdomen.

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1. Purpose

- Trying to define the most valuable radiological sign(s) for the diagnosis of internal hernias and their mimics; mainly cocoon syndrome and adhesions.

2. Literature review

Meyers, MA wrote in 1970 defining internal hernia as the herniation of a viscus through a normal or abnormal aperture within the confines of the peritoneal cavity. He stated that by that time only 400 cases of internal hernia were diagnosed and most of them were paraduodenal hernias. Meyers used arteriography in 1969 and barium follow through in 1970 to diagnose internal hernias. Before that speaking of internal hernia may reached 1930s and 40s (1–3).

Early reports utilizing CT in diagnosing internal hernia started almost at 1982. Harbin WP stated that CT demonstrated a sac like mass of dilated loops of the small bowel which displaced the right ureter laterally, indicating its retroperitoneal location. Failure of oral gastrografen to enter the loops implied small bowel obstruction. Dilatation of loops within and outside the sac was strongly suggestive of vascular compromise of the entire small bowel secondary to volvulus. The constellation of findings is diagnostic of an internal hernia of the retroperitoneal type which mostly are paraduodenal hernias (4) (see Figs. 1–7).

Nowadays with the increasing number of abdominal surgeries and advent of bariatric surgeries entailing surgical bypasses; the number of diagnosed internal hernias has increased significantly. In 2001; reports stated that transmesenteric hernias are becoming more common than paraduodenal hernias. Numerous signs have been suggested for the diagnosis of internal hernias using CT throughout the years. Blachar et al. suggested signs like:

1. Cluster of SB anterior and lateral to pancreas.
2. Sac like mass or encapsulated small bowel.
3. Mass effect on posterior wall of stomach and caudal displacement of duodeno-jejunal junction.
4. Crowding, stretching and engorgement of mesenteric vessels.
5. Displacement of mesenteric trunk.
6. Caudal or dorsal displacement of transverse colon.
7. Medial displacement of ascending or descending colon.
8. Distended small bowel.
9. Point of transition.
10. SB obstruction (5–10).

In 2009; Carucci et al. suggested signs like atypical bowel configuration, clustered bowel, and staple line change to diagnose internal hernia following Roux-en-Y gastric bypass surgery (11).

Cocoon syndrome or primary encapsulating peritonitis is characterized by a thick fibrotic peritoneum that wraps the bowel in a concertina-like fashion with some adhesions. This

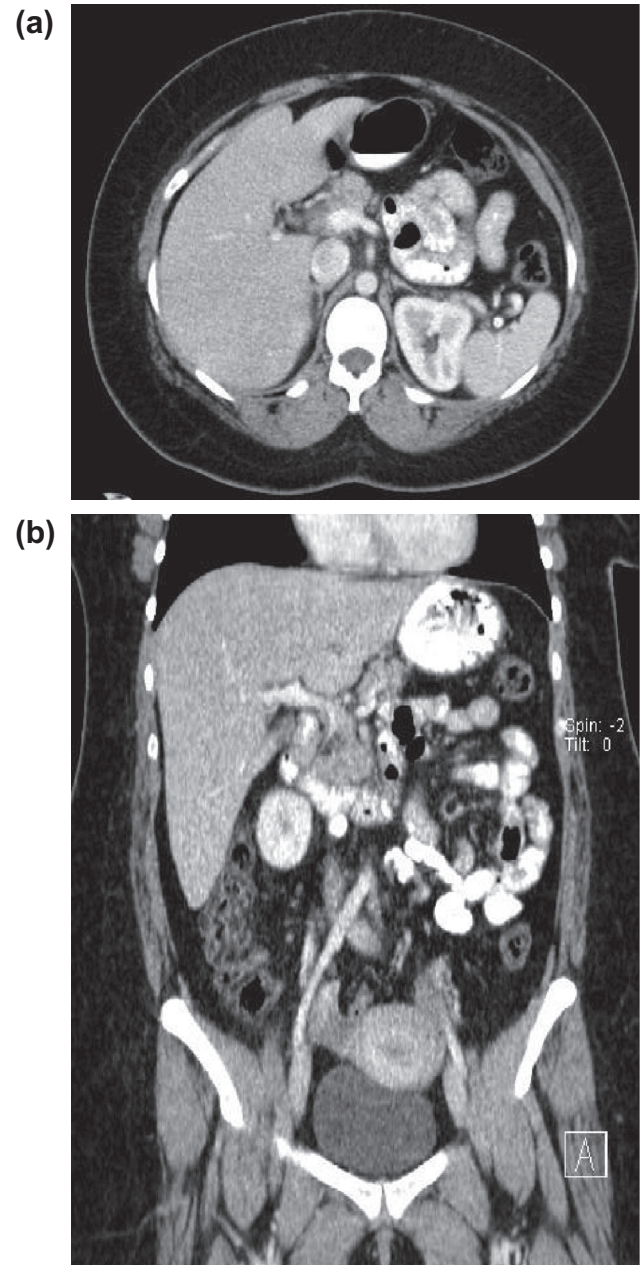


Fig. 1 (a) Axial & (b) coronal reformatted image of the abdomen showing localized bowel gathering at the left side with no bowel dilatation ... paraduodenal hernia.

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