CASE REPORT

Internal herniation through a defect in the transverse mesocolon

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Accepted 6 February 2014

SUMMARY

Internal hernias are rare, constituting 5.8% of all intestinal obstruction cases. Congenital transverse mesocolon hernias in adults are specifically rare. We hereby present a case of an adult female presenting with acute intestinal obstruction. Her CT scan showed classic signs of internal herniations: 'Whirlpool sign', crowding of bowel loops in the upper compartment and the absence of caecum from the Right Iliac Fossa. At operation, she was found to have a congenital defect in the transverse mesocolon, through which have herniated the terminal ileum, caecum and the proximal half of the ascending colon. They have furthermore rotated 360° about the axis of the pedicle forming a volvulus. The bowel was viable. The herniated bowel was derotated, and reduced through the defect, the defect was closed with polydioxanone sutures, and the caecum and ascending colon was fixed to the lateral abdominal wall.

BACKGROUND

Literature about internal hernias (IH) causing intestinal obstruction is limited to case reports. This case of internal herniation in an adult with a transverse mesocolon defect is an extremely rare presentation, with only five known cases reported in literature.

CASE PRESENTATION

We hereby present a case of a 55-year-old woman, admitted with symptoms of intestinal obstruction, with worsening lower abdominal pain for 5 days and vomiting with abdominal distension for 2 days. She also had absolute constipation for 2 days. There was no other significant surgical history. The patient also denies any abdominal pain or similar problems in the past.

On examination, her vital signs were normal. She was found to have a distended abdomen, and a tender Right Iliac Fossa, she was however non-peritonitic.

INVESTIGATIONS

An abdominal X-ray showed dilated loops of large bowel in the left hypochondrium, prompting a CT scan, which showed distended loops of large and small bowel, with a maximum diameter of large bowel of 8.3 cm in the left hypochondrium. The caecum was not identified in the Right Iliac Fossa. The 'whirlpool sign' was apparent. There was also a large amount of ascites (figure 1). It was reported by the radiologist as a query caecal volvulus.

Figure 1 Coronal CT scan. Whirl sign shown by asterisk (*). Note the compressed stomach (white arrow).

DIFFERENTIAL DIAGNOSIS

Causes of acute intestinal obstruction.

TREATMENT

An urgent laparotomy was performed and 1700 mL of ascites were drained. The patient was found to have a congenital defect in the transverse mesocolon, measuring 5×7 cm. The distal terminal ileum, caecum, ascending colon and proximal transverse colon were found to be mobile. They have all herniated through the defect, into the upper compartment in the left hypochondrium. The bowel was twisted 360° through the defect. The bowel was viable.

The bowel was derotated and reduced through the defect; the defect was closed with PDS sutures. The caecum and ascending colon were fixed to the right lateral parietal peritoneum.

OUTCOME AND FOLLOW-UP

The patient had an uneventful recovery; she was discharged home on day 8 postoperation. She was followed up in the out patient department 1 and 3 months postoperation, she was asymptomatic, and had recovered completely.

DISCUSSION

IHs are uncommon. They are found as an incidental finding at autopsy in 0.2–0.9% of cases,¹ and they account for only 5.8% of causes of intestinal obstruction.² IHs are either primary (congenital) or secondary postoperative (acquired). Acquired causes are more common, representing 54% of

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To cite: Alaker M, Mathias J. *BMJ Case Rep* Published online: [please include Day Month Year] doi:10.1136/bcr-2013-202753

IHs.³ Acquired IHs occur most commonly after gastrojejunostomies and Roux-en-Y procedures; and can occasionally occur between limbs of colostomies and mucus fistulae.⁴

Congenital defects, albeit rare, are more common to diagnose in the paediatric population. Adults presenting with herniation through congenital defects are rare. Congenital defects are classified according to the anatomical location of the defect: paraduodenal (53%), pericaecal (13%), transmesenteric (8%), foramen of Winslow (8%), intersigmoid (6%), transomental (1–4%), supramesocolic and pelvic (6%).⁵ Transverse mesocolon defects and subsequent herniation are extremely rare, with only a handful of cases reported in literature.^{6–13}

Many theories have been proposed as to the cause of these congenital defects.¹⁴ Andrews has postulated that herniation through anatomical defects (paraduodenal and foramen of Winslow hernias) are due to abnormalities during embryonic intestinal rotation.¹⁵

Mesenteric pathological defects are caused by developmental ischemic injury to the mesentery. The concurrence of intestinal atresia along with mesenteric congenital defects supports this theory.¹⁶ These defects are therefore most commonly found in the paediatric population.¹⁷ Treves has demonstrated that the most common area to find a mesenteric defect is in the mesentery of the terminal ileum, at the junction between the last branch of ileal artery and the ilioocolic artery, named 'Treves' Field. This area contains no blood vessels, fat or lymph nodes, and is therefore highly susceptible to developmental injuries.¹⁸ It has also been postulated that transmesenteric and transmesocolic hernias lack a hernial sac, and therefore, considerable lengths of bowel can protrude through; and which makes them also likely to rotate forming a volvulus.¹⁶

IHs are difficult to diagnose preoperatively due to their rarity and due to the absence of specific clinical features and signs.

However, a few radiological features seem to be specific to this rare cause of intestinal obstruction: the crowding together of loops of bowel in an abnormal location, and/or the absence of bowel from their normal location and a normal appearance around the duodenum and the foramen of Winslow.^{19, 20} Since IHs are usually accompanied with volvulation of the contents of the hernia about their axis, the 'Whirlpool Sign' is classically present, which is mostly demonstrable by scrolling down the axial or coronal CT scans; However, it would still be difficult to differentiate this diagnosis from other causes of closed loop obstructions, and from a volvulus. However, a diagnosis of a mechanical intestinal obstruction should prompt an exploratory laparotomy. Surgical treatment of IHs includes straightforward reduction of the contents of the hernia and primary closure of the defect. If blood supply has been compromised, segmentary intestinal resection, anastomosis and primary repair of the defect should be carried out.⁹

Competing interests None.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

REFERENCES

- Ghahremani GG. Internal abdominal hernias. *Surg Clin North Am* 1984;64:393–406.
- Martin LC, Merckle EM. Review of internal hernias: radiographic and clinical findings. *Am J Roentgenol* 2006;186:703–17.
- Mayo CH, Stalker LK, Miller JM. Intra-abdominal hernia: review of 39 cases in which treatment was surgical. *Ann Surg* 1941;114:875–85.
- Newsom BD, Kukora JS. Congenital and acquired internal hernias: unusual causes of small bowel obstruction. *Am J Surg* 1986;152:279–85.
- Gomes R, Rodrigues J. Spontaneous adult transmesenteric hernia with bowel gangrene. *Hernia* 2011;15:343–5.
- Ishizaki Y, Nakatsuka H, Matsugu Y, et al. A case of mesenteric hiatal hernia of the ascending mesocolon (in Japanese). *J Jpn Surg Assoc* 2000;61:1900–3.
- Tsukuda K, Furutani S, Takagi S, et al. A case of transmesocolic hernia of ascending colon (in Japanese). *J Jpn Surg Assoc* 2006;67:1926–8.
- Ueda J, Yoshida H, Makino H, et al. Transmesocolic hernia of the ascending colon with intestinal obstruction. *Case Rep Gastroenterol* 2012;6:344–9.
- Tekin A, Küçükartallar T, Aksoy F, et al. Internal herniation as a major cause of intestinal obstruction. *Med Princ Pract* 2008;17:400–3.
- Giorgione R, Arceci F, Castano P, et al. Transverse mesocolon herniation. Description of a clinical case (in Italian). *Minerva Chir* 1991;46:975–7.
- Tauro LF, Vijaya G, D'Souza CR, et al. Mesocolic hernia: an unusual internal hernia. *Saudi J Gastroenterol* 2007;13:141–3.
- Zimmerman LM, Laufman H. Intraabdominal hernias due to developmental and rotational anomalies. *Ann Surg* 1953;138:82–91.
- Halpenny J. Internal hernia: with a report of a case of mesocolic hernia. *Can Med Assoc J* 1912;2:1094–8.
- Ming YC, Chao HC, Luo CC. Congenital mesenteric hernia causing intestinal obstruction in children. *Eur J Pediatr* 2007;166:1045–7.
- Andrews E. Duodenal hernia: a misnomer. *Surg Gynecol Obstet* 1923;37:740–50.
- Malit M, Sathyaprasad B. Congenital mesenteric defect: description of a rare cause of distal intestinal obstruction in a neonate. *Int J Surg Case Rep* 2012;3:121–3.
- Murphy DA. Internal hernias in infancy and childhood. *Surgery* 1964;55:311–16.
- Treves F. Lectures on the anatomy of the intestinal canal and peritoneum in man. *Br Med J* 1885;1:470–4.
- Liu ZY, Wang Y, Liang CH. Lesser sac herniation through a defect in the transverse mesocolon: CT findings. *Br J Radiol* 2008;81:e50–2.
- Blachar A, Federle MP, Brancatelli G, et al. Radiologist performance in the diagnosis of internal hernia by using specific CT findings with emphasis on transmesenteric hernia. *Radiology* 2001;221:422–8.

Learning points

- Internal herniation is an uncommon cause of intestinal obstruction.
- Acquired defects after an abdominal procedure, such as Roux-en-Y or formation of a stoma, are more common than congenital defects.
- Congenital herniation can occur in anatomical defects, such as Foramen of Winslow or paraduodenal; or can be through pathological defects in the mesentery, omentum or mesocolon.
- Out of these defects, transverse mesocolon defect is one of the rarest causes of internal herniation. Furthermore, intestinal obstruction due to congenital defects is most commonly presented in the paediatric population.
- This case of an adult presenting with intestinal obstruction due to herniation through a transverse mesocolon defect is an extremely rare presentation.

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