Lederhosen Hernia: First Description and Literature Review

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Abstract

Etymologically, hernia means “to protrude or to bud”. Abdominal wall hernias are frequent findings in adult and children imaging. Hernias are described by grading the size of their sacs as well as detailing their coverings and contents. Clinically, hernias are classified based on their reducibility, either by the experienced surgeon or by the patient, into reducible or irreducible. Pathologically, they vary in their potential to be obstructed, inflamed, or strangulated. A crucial part of managing any hernia is to interpret the imaging features in order to classify its type and assess for complications. Ultrasound (US), computed tomography (CT), and magnetic resonance imaging (MRI) are the most recommended imaging modalities. New generations of CT scans play an important role in elective and emergency hernia management. CT scans offer high reliability and sensitivity due to their easy accessibility, fast acquisition speed, higher resolution, and three-dimensional multiplanar reconstruction (3D-MPR). One of the most interesting aspects about hernias is their historically associated nomenclatures commonly published and used in medical education and surgical practice to specifically diagnose different hernia types. Those nomenclature terms (adjective or physician names), rather than anatomical regions, are by far the longest list of nomenclatures known to a single medical condition. Purposefully, the terms are essential for the identification of hernias by remembering and depicting their anecdotes. Similarly, the case presented here, supported by CT still/cine figures, introduces a new subtype of bilateral inguinal hernias where communicating hernial content and location are reminiscent of a “Lederhosen”.

Keywords Hernia · Abdominal pain · Bowel obstruction · CT scan

Case Presentation

A 97-year-old man presented with acute small bowel obstruction due to painful bilateral inguinal hernias, which were demonstrable both clinically and radiographically (Fig. 1). His medical history included chronic hernias, stroke, ischaemic heart disease, previous myocardial infarction, and osteomyelitis. On examination, his abdomen was distended and diffusely tender,

most notably within the left inguinal region. Initial laboratory tests showed a normal white cell count of $9300 \times 10^9/L$ (reference range $4000\text{--}11,000 \times 10^9/L$) and a raised C-reactive protein level of 25 mg/L (reference range 0–10 mg/L).

An urgent thin-slice computed tomography confirmed small bowel dilatation and right inguinal and left inguinoscrotal hernias (the level of transition at its average-size neck). Each hernia contained the ipsilateral bowel parts such that the caecum/appendix was visible within the right hernia (red arrows) and the distal ileal loops could be seen within the left hernia (white arrows). The terminal ileum (yellow arrowheads) crossed horizontally to connect both hernias and was enveloped in an outward pouch of the suprapubic inferior abdominal wall in a manner reminiscent of the “Hosentürl” front-flap typically associated with traditional “Lederhosen” (Fig. 2; cine clips of [axial](#) and [coronal](#) supplementary files).

The larger left inguinoscrotal hernia contained free fluid surrounding prominent small bowel loops with a mildly oedematous mesentery. No discernible features of bowel perforation, ischaemia, or pneumatosis intestinalis were seen.

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Fig. 1 A supine plain abdominal radiograph of a 96-year-old man presenting with acute abdominal pain. The film shows non-specific gaseous bowel loop dilatation

The unique simultaneous arrangement of the hernial sac contents was perceived and interrogated with interest from the imaging perspective. However, given the marked frailty of the patient and his multiple cardiovascular comorbidities, he was deemed high risk for surgery and thus underwent a trial of manual hernia reduction, which was successful. The patient's blood investigations and vital signs remained stable throughout admission, and he then returned to his nursing home with follow-up plans and without further complications.

Conclusions

Nowadays, the management of an acute abdomen includes the exclusion of complicated abdominal hernias. Enhanced CT scans offer numerous visualised anatomical details sufficient to delineate structural wall and bowel content within hernial sacs [1, 2]. Practically, clinicians and imaging specialists are required not only to detect the type and location, but also to further assess for potential complication and prognosis of hernias [3]. Therefore, in addition to conveying information on the location and content of hernias, referring to the applicable eponymous term could complement the reporting quality and signpost to an anticipated management plan, accordingly [1].

By reviewing literature, a comprehensive list of different eponymous types of hernia has been composed below (Table 1) [4–9]. In total, there are known 36 eponymous hernia types identified with the majority named after physicians, surgeons, anatomists, or pathologists. It is worthwhile mentioning that may be a handful eponyms are still known and taught in common surgical practice.

Interestingly, pantaloon hernia is described as an ipsilateral concurrent direct and indirect hernia, each bulging on either side of the inferior epigastric vessels [10]. Likewise, this reported case is another mimic to a clothing or costume item perceived to resemble the front-flap of a “Lederhosen”. Bilateral inguinal and inguinoscrotal hernias are not uncommon, but the unique combined arrangement of both hernial sac contents demonstrates a different peculiar appearance that equally warrants precise imaging interrogation and could benefit from a descriptive term for educational illustration.

Fig. 2 Selected axial and coronal images of an enhanced CT scan abdomen/pelvis of a 96-year-old man showing small bowel dilatation and right inguinal hernia containing caecum/ileocaecal junction (red arrows) and terminal ileum horizontally crossing (yellow arrowheads) to enter the left large inguinoscrotal hernia (white arrows). Terminal ileum is

enveloped within an outward pouch of the suprapubic inferior abdominal wall. Overall appearance mimics the front-flap (Hosenlatz or “Hosentürl”) found in the traditional costume “Lederhosen” as worn in southern Germany and Austria

Table 1 List of different eponymous types of hernia from literature review

#	Term (alphabetical order)	Description
1	Amyand's	Appendix within the hernial sac
2	Barth's	Loops of the intestine between serosa of the abdominal wall and persistent vitelline duct
3	Béclard's	Femoral hernia through saphenous opening
4	Berger's	Hernia in pouch of Douglas (Cul-de-sac)
5	Bochdalek	Congenital posterolateral diaphragmatic hernia
6	Busoga	Direct inguinal hernia caused by narrow defect in conjoint tendon or transversalis fascia, common in Busoga area of Uganda, South Sudan, and Ghana
7	Cloquet's	Femoral hernia perforating the aponeurosis of the pectineus, lying therefore behind the femoral vessels
8	Cooper's	Femoral hernia with two hernial sacs (bi-ocular femoral hernia)
9	De Garengeot's	Appendix-containing incarcerated femoral hernia
10	Gibbon's	Hernia with hydrocele
11	Gruber's	Internal mesogastric hernia
12	Grynfeltt's	Hernia through Grynfeltt-Lesshaft triangle (superior lumbar triangle).
13	Hesselbach's	Hernia of a loop of the intestine through the cribriform fascia presenting lateral to femoral artery
14	Hey's	Encysted scrotal or oblique inguinal hernia covered by three coverings of the peritoneum
15	Holthouse's	Inguinal hernia that has turned outward into the groin
16	Krönlein's	Partially inguinal and partially pre-peritoneal hernia
17	Larrey's	Morgagni's hernia
18	Laugier's	Femoral hernia through gap in lacunar ligament, more medial in position and almost always strangulated
19	Lederhosen	Bilateral inguinal hernias connected across the abdomen by the terminal ileum whilst enveloped in suprapubic inferior abdominal wall bulge, like the front-flap found in the traditional costume "Lederhosen"
20	Littre's	Hernia with Meckel's diverticulum
21	Lumbar	Lumbar region hernias: (1) Petit's and (2) Grynfeltt's
22	Malgaigne's	Abdominal wall muscle protrusion during leg raise test
23	Maydl's	Hernia contains two loops of bowel arranged like a "W"
24	Morgagni	Retrosternal diaphragmatic hernia
25	Mery's	Perineal hernia protruding through pelvic floor muscles and fascia
26	Narath's	In congenital dislocation of the hip, hernia behind the femoral vessels
27	Pantaloon	Ipsilateral concurrent direct and indirect hernia, each sac protrudes on either side (Pantaloon legs) of the inferior epigastric vessels
28	Petersen's	Herniation of the small bowel through mesenteric defect from the Roux limb (bariatric gastric bypass)
29	Petit's	Hernia through inferior lumbar triangle (Petit's triangle)
30	Phantom	Localised muscle bulge after muscular paralysis
31	Richter's	Strangulated hernia involving one sidewall of the bowel
32	Rieux's	Protrusion of intestine into a pouch behind the caecum (retrocaecal)
33	Rokitansky's	Separation of muscular fibres of the bowel allow protrusion of a sac of the mucous membrane
34	Serofini's	Hernia behind the femoral vessels
35	Spigelian	Congenital or acquired defect in the spigelian fascia (transversus abdominis aponeurosis)
36	Treitz's	Hernia into spaces/folds of posterior parietal peritoneum adjacent to ligament of Treitz (para-duodenal hernia)
37	Velpeau's	Femoral hernia in front of the femoral vessels

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Compliance with Ethical Standards

Conflict of Interest The authors declare that they have no conflict of interest.

Ethical Approval All images/cines prepared were anonymised prior to submission (courtesy of Nottingham University Hospitals NHS Trust). No personal or confidential patient data used in composing this report.

Informed Consent A publication consent was obtained from the patient's next of kin.

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