CASE REPORT

Parasitised large intestinal diverticulum of the spermatic cord

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SUMMARY

We present a 70-year-old male patient with an unusual incidental finding at an elective repair of an indirect left inguinal hernia (LIH). A black nodule resembling a melanoma metastasis in a lymph node was discovered attached to the spermatic cord. There was no contiguity with the large bowel on the same side. Histological examination showed an isolated, detached colonic diverticulum containing a faecolith. We postulate derivation from an incarcerated colonic diverticulum that became 'parasitised' onto the spermatic cord.

BACKGROUND

The primary clinical relevance of our case lies in recognising this unusual intraoperative finding and in the fact that it may mimic a lymph node involved by melanoma.

Our case also suggests that herniation of an asymptomatic 'true' colonic diverticulum or pseudo diverticulum does not carry a risk of iatrogenic complication following inadvertent inguinal dissection.

CASE PRESENTATION

A 70-year-old man underwent an elective open left inguinal hernia (LIH) repair under local anaesthesia. The patient's LIH history was of 6 months' duration, with no episodes of strangulation or irreducibility. The patient had no significant medical history and there was no history of diverticular disease. Elective repair was indicated. Under local anaesthesia, the left inguinal canal was opened using a standard approach. An ovoid black node-like structure (10×7×4 mm) was found attached to the cord and removed for histological examination (figure 1). The dark pigmentation and resemblance to a lymph node recalled a previous case. On that occasion, the surgical team had encountered melanoma metastases in inguinal lymph nodes during an elective inguinal hernia repair, falsely diagnosed as a hernia.

An indirect hernia sac was separated from the cord structures and invaginated into the deep ring. The posterior wall of the left inguinal canal was augmented with a prosthetic prolene mesh. The patient was discharged in a satisfactory condition on the day of surgery and the postoperative course was uneventful. The wound healed by primary intention.

Histological examination showed a cystic structure lined by non-inflamed large intestinal mucosa. The surrounding muscularis propria consisted of an intact inner circular layer. The outer longitudinal

layer was partially deficient (figures 2 and 3A). There was no evidence of a stalk.

It was presumed to be an incarcerated large intestinal diverticulum inadvertently encountered during the repair, though the clinical relevance was uncertain, so the surgical team were contacted. Intraoperative surgical findings confirmed that the nodule was attached to the cord and bore no relationship to the bowel in the hernia sac. At follow-up, the patient reported nothing untoward and all aspects of the surgery were satisfactory.

OUTCOME AND FOLLOW-UP

At follow-up, the patient reported nothing untoward and all aspects of the surgery were satisfactory.

DISCUSSION

A search of the PubMed database using the terms 'inguinal herniorrhaphy and/or inguinal hernia and/or sequestered diverticulum and/or ectopic tissue' identified rare instances of unusual sac contents such as ectopic adrenal gland, testis and supernumerary or ectopic kidney. There is no previous description of any intraperitoneal structure segregated to the outside of the spermatic cord.

Our case describes the incidental discovery of sequestered large intestinal tissue attached to the spermatic cord during open surgical repair of an indirect LIH. It was clearly separate from an intact indirect hernia sac that protruded through the left, deep inguinal ring. Examination revealed an intact

Figure 1 Photograph of dewaxed specimen showing the bisected nodule with a flat cut face and alternate convex fatty surface uppermost, respectively.

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Figure 2 Photomicrograph to show 'true' congenital type diverticulum containing a faecolith; deficient outer MP (yellow), complete MP (red; H&E $\times 1.25$).

spherical structure without any macroscopic or microscopic opening or infundibulum. The wall was circumscribed by a continuous stretched band of muscle incorporating a full coat of inner circular muscularis propria fibres and wisps of outer longitudinal fibres. There was an uninterrupted lining of colonic

Figure 3 (A) Photomicrograph of the wall composed of inner circular (IC) muscle fibres, wisps of outer longitudinal (OL; H&E $\times 40$). (B) Colonic mucosa supported by adipose tissue containing thick walled vessels (TWVs; H&E $\times 40$).

Figure 4 Photomicrograph showing faecal residue containing cellulose (C) encapsulated by colonic mucosa (H&E $\times 200$).

mucosa and muscularis mucosae with no evidence of inflammation. The light microscopic features favoured a 'true' congenital type large intestinal diverticulum. However, a pseudo diverticulum connected with colonic diverticulosis occurring on the same side as the hernia also appeared possible. A faecolith containing inspissated faecal residue suggested recent continuity with the faecal stream (figure 4).

Furthermore the location, size, nodularity and transmitted brown hue from the entrapped faecolith (observed as a black nodule attached to the cord) was a good mimic of a melanoma involving a lymph node. Our surgical team had previously experienced a case of lymphadenopathy due to melanoma as a false hernia diagnosis. Histological examination was considered mandatory to exclude malignancy.

The pathogenesis of this lesion is likely to have involved diverticulosis, herniation and incarceration through the deep inguinal ring followed by parasitisation of the diverticulum to the cord.

The prolapse of tissues and organs through abnormal openings into unusual positions is a pathological process that occurs in a wide range of topographical locations throughout the body and has a number of predisposing associations and pathophysiological factors. Certain tissues also have the ability to gain a new

Figure 5 Photomicrograph showing the muscular wall labelled with smooth muscle actin, highlighting inner circular (IC) and outer longitudinal (OL) layers of muscularis propria (Immunoperoxidase $\times 200$).

position by detachment and dislocation across freely communicating anatomical spaces. This was first recognised by Vesalius¹ in the 16th century. The process is believed to operate when infarcted epiploic appendages give rise to loose intraperitoneal bodies. Furthermore, the epiploic fat can reattach remotely to the caudal aspect of the spleen where it is described as a 'parasitised appendix epiploica'.^{2,3}

A similar pathological mechanism may have occurred in our case with the inguinal canal acting as a conduit for prolapse, detachment and then reattachment of colonic tissue to the cord (figure 3B).

The apparent formation of a congenital-type or 'true' diverticulosis containing all layers of muscularis propria is another key facet in this case (figure 5). This may have arisen from incarcerated left-sided or right-sided colon, including the tip of the appendix.

Presumably, sequestration of the colonic tissue to the cord occurred when continuity with the gut lumen was lost after a faecolith formed. True diverticulae are thought to arise during fetal development due to splitting of the longitudinal muscle fibres, leaving only circular muscle fibres in continuity with the mucosa.⁴ The typical congenital-type colonic diverticulum is right sided, whereas false (acquired) 'pseudodiverticulae' are usually left sided. These pulsion-type diverticulae arise due to protrusions or herniations of mucosa through the muscular layers of the intestine. Our case displayed the features typical of a 'true' or congenital diverticulum, which are more commonly seen in the right side of the colon.

The content of the hernia sacs usually remain hidden in uncomplicated cases unless opportunistically imaged. Conversely, surgical exploration of strangulated inguinal hernias is mandatory and the contents are well documented. Small bowel loop or greater omentum are the most frequent findings. Less commonly, colon, urinary bladder, vermiform appendix, Meckel's diverticulum, uterine tube and ovary and epiploic appendages have been found. A coexistent or secondary pathology such as acute appendicitis (Amyand's Hernia) or caecal carcinoma may complicate the problem of a strangulated inguinal hernia,⁵⁻¹⁰ notwithstanding the fact that these studies only described the hernia sac components of strangulated hernias. It can be seen that incarceration of either right or left side colon is rare in LIH especially as a source of a detached extra-peritoneal cord diverticulum. The finding of a faecolith could suggest an origin from either an incarcerated left-sided diverticulum or appendix. Conversely, a 'true' congenital type diverticulum is usually found in the right side of the colon and typically occurs in the caecum.

Patient's perspective

At a postoperative review clinic the patient did not recall ever having suffered from symptomatic diverticulosis.

Learning points

- ▶ Inguinal hernia repair is a frequently performed surgical procedure and although unusual findings are rare they are likely to be encountered episodically by a surgeon. Such unexpected findings may pose a surgical dilemma. Awareness that an incarcerated 'true' or acquired left-sided diverticulum may be encountered during open inguinal hernia repair is useful information for the surgical practitioner. It may also mimic other pathologies such as lymphadenopathy.
- ▶ Furthermore, the precise origin of the ectopic colonic wall tissue and faecolith is uncertain. It is not possible to know the content of the unopened left-sided hernia (LIH) sac. We postulate that the presence of a faecolith invested by a complete coat of muscularis propria may represent a parasitisation phenomenon. In such a process an incarcerated colonic pseudo diverticulum, congenital or 'true' colonic diverticulum, or appendiceal tip, becomes separated and then reattached to the cord. The microscopic findings least favour the latter two possibilities in that the outer longitudinal layer is deficient and there is no mucosa associated lymphoid tissue.
- ▶ We exclude the possibility that a diverticulum was inadvertently transected from the prolapsed indirect inguinal hernia sac. Furthermore, our case demonstrates that no adverse consequences are associated with this finding at LIH repair.
- ▶ We recommend the term 'parasitised' large intestinal diverticulum of the cord as the best term to describe this unusual translocation phenomenon.

Competing interests None.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

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