CASE REPORT

Acute appendicitis within an obturator hernia

David Edmund Mitchell, Michael Yunaev

Department of General Surgery, Kalgoorlie Regional Hospital, Kalgoorlie, Western Australia, Australia

Correspondence to
Dr David Edmund Mitchell,
mitchell394@hotmail.com

Accepted 12 September 2015

SUMMARY

We present the case of a 17-year-old girl who presented with the signs and symptoms of acute appendicitis; however, during laparoscopic surgery, it was found that the appendix had herniated through the obturator canal. This pathology has previously been associated with an unfavourable outcome and has been reported, in the literature, in older, emaciated women.

BACKGROUND

This case is interesting as all other cases with similar pathology reported in the literature occurred in much older patients. These other cases also had a delayed time to operation, which proved fatal in almost all cases.¹⁻⁴ Our case was operated promptly and our patient recovered with no complications.

CASE PRESENTATION

A 17-year-old girl presented to our emergency department with a 3-day history of peri-umbilical pain. The pain began 3 days prior to her presentation and was initially colicky in nature, but proceeded to become constant and increase in severity over the 3 days. It was located in the peri-umbilical region, with no radiation to the right iliac fossa. The pain was also associated with several episodes of vomiting. There were no exacerbating or relieving symptoms and the patient had no bowel or urinary problems. She had no medical history and was taking contraceptive medication only.

On examination, she had generalised abdominal tenderness, with maximal point of tenderness in the right iliac fossa. She had guarding and rebound tenderness in the right iliac fossa, and decreased bowel sounds throughout.

On presentation, she was haemodynamically stable, with only mild tachycardia (HR 110 bpm, blood pressure 110/60 mm Hg, temperature 36.7°C).

INVESTIGATIONS

Laboratory results on admission showed a raised white cell count of 14.20×10^9 , with neutrophilia 11.4×10^9 . Her C reactive protein (CRP) was 255 mg/L. All other values were within normal limits.

DIFFERENTIAL DIAGNOSIS

The differential diagnosis in this case included acute appendicitis, an appendiceal mass, perforated appendix, an ovarian cyst rupture, ovarian torsion, endometritis, pelvic inflammatory disease, endometriosis, gastroenteritis, strangulated appendages, epiploicae, diverticulitis and urinary tract infection.

The patient's history of a slowly progressing onset of generalised abdominal pain with maximal tenderness at McBurney's point, on clinical examination, in association with her biochemical picture, led us to a clinical diagnosis of acute appendicitis. However, due to the high CRP, there was the uncertainty of whether the appendix had already perforated.

The patient did not report pain in the groin, inguinal or femoral region, which would have been suggestive of an obturator hernia. Owing to the lack of history of obturator hernia, and the relative rarity of an obturator hernia, no clinical tests were performed.

No imaging was carried out, as it was felt that imaging would not contribute to clinical decision-making. CT scan was not considered in this patient, as the patient was a young woman and we would prefer to limit the radiation to the pelvic organs. However, had the patient been reporting pain in the groin, inguinal or femoral region, or had she shown clinical signs of an obturator hernia, a CT scan most likely would have been performed. However, it is highly unlikely that a CT scan would have changed our management, as it would have in any case shown us a picture of acute appendicitis, with a herniation of the appendix. We would have still attempted a laparoscopic appendectomy in this setting.

TREATMENT

The patient was started on intravenous antibiotics (ceftriaxone and metronidazole) and intravenous fluids, and was booked for theatre.

The patient was brought to theatre for laparoscopic appendectomy, and was prepared and draped appropriately.

Intraoperatively, it was noted that there was a large inflammatory mass in the right pelvis. Using blunt dissection, the omentum and small bowel were freed from this mass, making it apparent that the appendix was incarcerated in the obturator foramen (figures 1 and 2). With further dissection, it was eventually possible to remove the appendix from the obturator foramen without perforating the appendix. On initial examination, the tip of the appendix was obviously gangrenous.

OUTCOME AND FOLLOW-UP

The patient did well postoperatively and had an uncomplicated recovery, and was discharged 2 days after the operation.

She was followed up in outpatient clinic 2 weeks postdischarge and was doing well. Her wounds had healed well and she suffered no adverse effects from the operation. We followed up the patient

CrossMark

To cite: Mitchell DE, Yunaev M. *BMJ Case Rep* Published online: [please include Day Month Year] doi:10.1136/bcr-2015-211416

Figure 1 Appendix within obturator foramen.

4 months postoperatively to reassess her and to check for reoccurrence of the obturator hernia. At this follow-up, she was well and had no signs of recurrence of the hernia. Hannington-Kiff reflex was present at this appointment, suggesting no pressure on the obturator nerve.

The histopathology showed an acutely inflamed appendix with neutrophilic exudate and focal necrosis. There was fibroblastic proliferation extending to the outer aspect, indicating inflammation of several days, consistent with an acute appendicitis.

DISCUSSION

Obturator hernias are rare diagnoses; however, they carry significant morbidity and mortality, especially in the elderly population. The incidence rates vary, but are thought to be between 0.073% and 1% of all hernias, and 0.2–1.6% of all cases of mechanical bowel obstruction.⁵ The mortality rate of obturator hernias is among the highest of all abdominal wall hernias, ranging from 13–40%.⁶

The obturator canal is approximately 0.2–0.5 cm wide and 2–3 cm long. It is formed by the rami of the ischium and pubic bone. It is closed by a strong quadrilamellar barrier, consisting of an internal and external obturator membrane. The membranes are joined below and separated above, and are encased by muscle on both sides. The obturator nerve and artery pass through the cranial part of the foramen, and it is usually pressure on the obturator nerve that leads to the classic symptoms of obturator hernia, which include the Howship-Romberg sign and pain in the medial thigh, usually relieved by flexion of the thigh. It is seen in 25–50% of patients. The second sign is the

Figure 2 Obturator foramen after removal of appendix.

Hannington-Kiff sign, which is an absent adductor reflex in the thigh resulting from obturator nerve compression. The Hannington-Kiff sign is believed to be more sensitive, and as specific as the Howship-Romberg sign.⁷

CT scan is thought to be the primary imaging modality for diagnosis of an obturator hernia. It can improve the diagnostic accuracy by up to 90% in those patients suspected of having this condition.⁷

Only four other cases of herniated appendix through the obturator canal were found during our literary search.^{1–4} In three of these cases,^{1 2 4} isolated herniation of the appendix was present. In the fourth case,³ a knuckle of terminal ileum was also found in the hernia sac. In our case, the clinical diagnosis of appendicitis allowed us to operate early, prior to the perforation of the appendix, to prevent systemic sepsis.

Ours is the first case where the management of the patient was entirely laparoscopic in nature. In three of the cases,^{1 3 4} the patients were managed surgically with a laparotomy, while in the other case, by Kjossev *et al*,² the patient had an initial laparoscopic approach, which was then converted to a laparotomy. In that case, Kjossev *et al* also used multiple incisions to open the thigh as turbid, foul smelling, dishwasher-like fluid had tracked into that region. The thigh was also opened in the case presented by Hartley *et al*, for a similar reason.

Owing to our early intervention, we were able to free the appendix from the obturator foramen without perforating the appendix, which led to a standard laparoscopic appendicectomy with no need to open the abdomen or the thigh.

Learning points

- It is important to be aware that what seems straightforward may sometimes turn out to be complex, and the surgeon should be prepared for any eventuality.
- In this case, we were able to extract the appendix without perforation, but the other cases of similar pathology highlight the need for flexibility in approach, including opening the compartments of the thigh.
- When the decision to operate is made, the operation should be carried out as soon as possible and, as seen in the other reported incidences of similar pathology, waiting provides no benefit.
- In the setting of an atypical presentation, a CT scan should be utilised to help with diagnosis and surgical management.

Competing interests None declared.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

REFERENCES

- 1 Camerlinck M, Vanhoenacker F, De Vuyst D, *et al*. Appendicitis in an obturator hernia. *Abdom Imaging* 2011;36:170–3.
- 2 Kjossev KT, Losanoff JE. Gangrenous appendicitis in a strangulated obturator hernia. *South Med J* 2003;96:1042–3.
- 3 Archampong EQ. Strangulated obturator hernia with acute gangrenous appendicitis. *BMJ* 1969;1:230.
- 4 Hartley BE, Davies MS, Bowyer RC. Strangulated appendix in an obturator hernia presenting as gas gangrene of the thigh. *Br J Surg* 1994;81:1135.
- 5 Green BT. Strangulated obturator hernia: still deadly. *South Med J* 2001;94:81–3.
- 6 Mantoo SK, Mak K, Tan TJ. Obturator hernia: diagnosis and treatment in the modern era. *Singap Med J* 2009;50:866–70.
- 7 Losanoff JE, Richman BW, Jones JW. Obturator hernia. *J Am Col Surg* 2002;194:657–63.

Copyright 2015 BMJ Publishing Group. All rights reserved. For permission to reuse any of this content visit <http://group.bmj.com/group/rights-licensing/permissions>.
BMJ Case Report Fellows may re-use this article for personal use and teaching without any further permission.

Become a Fellow of BMJ Case Reports today and you can:

- ▶ Submit as many cases as you like
- ▶ Enjoy fast sympathetic peer review and rapid publication of accepted articles
- ▶ Access all the published articles
- ▶ Re-use any of the published material for personal use and teaching without further permission

For information on Institutional Fellowships contact consortiasales@bmjgroup.com

Visit casereports.bmj.com for more articles like this and to become a Fellow