Rare cause of small bowel obstruction secondary to epiploic appendagitis: Diagnostic dilemma and role of minimal invasive surgery

Muhammad Butt*, Alice Lee, Parmvir Nijjar, Ioannis Panagopoulos
West Middlesex University Hospital, General Surgery, United Kingdom

ARTICLE INFO
Article history:
Received 19 November 2020
Accepted 29 November 2020
Available online 2 December 2020

Keywords:
Small bowel obstruction
Epiploic appendagitis
Sigmoid appendagitis
Laparoscopic band adhesiolysis

ABSTRACT
Acute abdomen is the most common emergency surgical presentation, often caused by small bowel obstruction (SBO). There are many underlying causes of SBO, of which post-operative adhesions are the commonest. Acute epiploic appendagitis is a rare cause of SBO with only a few reported cases in the literature. We report a rare case of SBO secondary to sigmoid appendagitis presenting with colicky epigastric pain and delayed onset obstructive symptoms (intractable vomiting and constipation).

We chose to highlight this case given the unusual presentation and diagnostic dilemma, particularly the unusual localisation of pain. In addition, we wanted to highlight the laparoscopic management of this case, as opposed to laparotomy (described in the literature), which minimised surgical morbidity for the patient.

Crown Copyright © 2020 Published by Elsevier Ltd on behalf of IJS Publishing Group Ltd. This is an open access article under the CC BY-NC-ND license (http://creativecommons.org/licenses/by-nc-nd/4.0/).

1. Introduction
Small bowel obstruction (SBO) is one of the commonest causes of abdominal pain presenting to the surgical assessment unit. Epiploic appendagitis is a rare and usually self-limiting ischaemic and/or inflammatory process involving the colonic epiploica [1]. The condition is most common in obese, female patients in their second to fifth decades and typically presents with localised abdominal pain [2]. The location of the pain depends upon the distribution of inflamed epiploica. They are most commonly identified in the rectosigmoid junction (57%), followed by the ileocaecal region (26%), ascending colon (9%), transverse colon (6%) and descending colon (2%) [2–4]. As a result, epiploic appendagitis often mimics other more commonly diagnosed surgical conditions such as diverticulitis and appendicitis. SBO secondary to epiploic appendagitis is rare, with few reported cases in the literature [5,6].

We chose to highlight this case to fellow surgeons given the unusual presentation and diagnostic dilemma, particularly the delayed onset of abdominal signs and unusual epigastric localisation of pain. In addition, we wanted to highlight that this case was managed successfully with laparoscopic band adhesiolysis, as opposed to laparotomy (as described in the literature), which minimised surgical morbidity for the patient. The work has been reported in line with the SCARE criteria.

2. Case presentation
A 48 years old, self-employed man was admitted to the surgical assessment unit with colicky abdominal pain of one day duration, localized to the epigastrium. This was associated with a few episodes of low volume vomiting of normal stomach contents. He had no smoking history, minimal alcohol use and no previous surgical history. On examination, his vital signs were all within normal limits and abdominal examination revealed epigastric tenderness with no peritonism or rebound. He was not noticeably distended.

3. Investigations
Initial investigations included blood tests which revealed a mildly raised white blood cell count (12 × 10⁹/L) with a normal c-reactive protein, liver function and lactate. Chest and abdominal x-rays were unremarkable (Fig. 1). Due to on-going pain, the patient underwent a CT scan of the abdomen and pelvis with intravenous contrast and an ultrasound scan of the abdomen to rule out gallstone pathology. Both were reported as normal.

The patient was initially managed conservatively with proton pump inhibitors, given the negative investigations discussed above. Over the next 2 days, serial blood tests were taken showing no change in inflammatory markers or liver function.

However, on day 4 of admission he reported worsening severity of pain with intractable vomiting the previous night. Since admission, he had been unable to pass flatus or stool. A chest x-ray
Fig. 1. Initial plain abdominal film on day 1 of admission.

Fig. 2. Subsequent chest film on day 4 of admission showing small bowel loops with air-fluid levels.
ordered by the night on-call team (to rule out perforation) had in fact showed dilated small bowel loops with air-fluid levels sitting in the upper abdomen (Fig. 2). His physical examination had also changed with upper abdominal distension and localised tenderness in the left hypochondrium. A large bore nasogastric tube was inserted which drained feculent material. Blood tests continued to be unremarkable.

Given the change in clinical picture, a second CT scan of the abdomen and pelvis was ordered. This showed dilated jejunal loops with a transition point in the left side of the abdomen; the findings were in keeping with mechanical small bowel obstruction and a suspected band in the mid abdomen (Fig. 3). There was no radiological evidence of bowel ischaemia or perforation.

4. Treatment

Upon diagnosing SBO, the patient was managed with large bore nasogastric tube insertion, intravenous fluid resuscitation, analgesia and anti-emetics. The patient was then taken for diagnostic laparoscopy. The patient was consented for all possible surgical outcomes including laparotomy with small bowel resection, an anastomosis and possible stoma formation. In theatre, an initial laparoscopy revealed dilated jejunal loops with transition point 70 cm from ileocecal junction. The adhesional band was identified as a large, inflamed sigmoid epiploic appendage making a bridge with attached small bowel mesentry and incarcerating a small bowel loop in a W shape pattern beneath it. The affected small bowel loops were dusky in colour initially but improved with good peristalsis upon laparoscopic release of the band. In view of the patient’s good preoperative fitness and the operative findings, no small bowel resection was performed. A drain was left in situ and plans made for either a repeat CT scan or laparoscopy if the patient deteriorated on the ward.

5. Outcome and follow-up

Post-operatively the patient recovered well and was discharged on the 6th post-operative day with outpatient follow up. Thus far, approximately 2 months post-operation, he has not suffered any complications.

6. Discussion

Acute epiploic appendagitis is a diagnostic challenge for surgeons as the condition may present with wide variety of differentials depending on location of the pathology including acute appendicitis, diverticulitis, colitis, gastritis or cholecystitis [2–4].

Epiploic appendagitis resulting in SBO is rare, with only a handful of reported cases [5,6]. Previous cases have reported SBO secondary to an inflamed epiploic appendix in the ileocecal region [5,6]. Interestingly, as in our case, Gasparella et al. also reported a delay in overt obstructive signs and initially normal inflammatory markers in a 2-year-old child [6]. To the contrary, Hadjizacharias et al. reported a case of a 69-year-old with acute onset obstructive symptoms within 12 h and a rise in inflammatory markers with low grade pyrexia [5]. Both cases were managed with laparotomy and resection of the epiploic appendix.

Epiploic appendagitis can be investigated with ultrasound scan, CT scan and (uncommonly) MRI. Ultrasound examination at the area of maximal tenderness may reveal a round hyperechoic mass usually 2–4 cm in diameter. Gasparella et al. ordered an ultrasound scan which showed a thickened ileal loop-shaped loop, which, although non-diagnostic, did indicate a surgical pathology and prompt a laparotomy [5]. In our case, ultrasound scan was normal; this may be because the scan was ordered to rule out gallstones, when in fact the epiploic appendagitis was later diagnosed in the left side of the abdomen, on the sigmoid colon.

CT scan remains the imaging modality of choice for diagnosis of acutely inflamed appendagitis. Radiological features include a fat density oval structure with high density rim and surrounding inflammatory fat stranding. As in our case and other reported cases [5], CT scan will often show a transition point, but the underlying etiology may not be identified. Intra-operative findings are definitive [5].

As opposed to the previous case reports discussed above, our case was managed with laparoscopy and minimal surgical intervention. We suggest that similar cases with virgin abdomens, good pre-operative fitness and suspected band adhesions with viable bowel can benefit from laparoscopic management which facilitates earlier hospital discharge, earlier return to work and less morbidity [7]. We also suggest that surgeons consider epiploic appendagitis as a differential cause for SBO, particularly in patients with unusual localization of pain and other features of small bowel obstruction. This case was reported in line with the SCARE guideline [8].
Declaration of Competing Interest

None of authors have any conflicts of interest to declare.

Funding

None of authors have any funding to declare

Ethical approval

This case study does not require ethical approval. Fully informed written consent to publish was gained from the patient.

Consent

Informed consent was obtained from the patient.

Author contribution

1. Muhammad adeel javed butt, study concept, wrote full case report.
2. Alice lee, rephrased, designed and added references and important academic information.
3. Parmvir nijjar, collected and incorporated media related to the case along with informed consent and data collection.
4. Ioannis Panagopoulos, consultant and supervisor who reviewed and edited the details in the text.

Registration of research studies

Not applicable.

Guarantor

1. Mr Ioannis Panagopoulos.
2. Mr Muhammad Adeel Javed Butt.

Provenance and peer review

Not commissioned, externally peer-reviewed.

References

[1] B. Coulter, Contribution of US and CT for diagnosis of intraperitoneal focal fat infarction (IFFI): a pictorial review, JBR-BTR 93 (4) (2010) 171–185.
[2] A.T. Almeida, L. Melão, B. Viamonte, et al., Epiploic appendagitis: an entity frequently unknown to clinicians—diagnostic imaging, pitfalls, and look-alikes, AJR Am. J. Roentgenol. 193 (5) (2009) 1243–1251.
[3] J. Boardman, K.J. Kaplan, C. Hollcraft, et al., Radiologic-pathologic conference of Keller army community hospital at West Point. the United States military academy: torsion of the epiploic appendage, AJR Am. J. Roentgenol. 180 (3) (2003) 748, AJR Am J Roentgenol (full text) - Pubmed citation.
[4] J.H. Thomas, F.E. Rosato, L.T. Patterson, Epiploic appendagitis, Surg. Cynecol. Obstet. 138 (1) (1974) 23–25.
[5] T. Hadjizacharias, D. Dellaportas, D. Myoteri, C. Nastos, S. Chaniotis, Polymeneas G. Epiploic appendagitis causing small bowel obstruction: a pleasant surprise, Case Rep. Surg. (July (4)) (2020) 3126495, http://dx.doi.org/10.1155/2020/3126495, 2020 PMID: 32704399; PMCID: PMC7358774.
[6] M. Gasparella, M. Ferro, M. Marzaro, C. Benetton, C. Zanatta, F. Zoppellaro, M. Gasparella, Addome acuto in età pediatrica: una sfida continua. Due casi clinici: volvolo intestinale su residuo del doto onfalo mesenterico e strangolamento ileale su appendice epiploica cecale [Acute abdomen in children: a continuous challenge. Two cases report: meckel’s diverticulum with small bowel volvulus and internal herniation related to epiploic appendagitis mimicking acute appendicitis], Pediatr. Med. Chir. 36 (March–April (2)) (2014) 83–86, Italian.
[7] R. Agha, G. Muir, Does laparoscopic surgery spell the end of the open surgeon? J. R. Soc. Med. 96 (11) (2003) 544–546, http://dx.doi.org/10.1258/jrsm.96.11.544.
[8] R.A. Agha, M.R. Borrelli, R. Farwani, K. Koshy, A. Fowler, D.P. Orgill, For the SCARE Group, The SCARE 2018 statement: updating consensus surgical Case REPort (SCARE) guidelines, Int. J. Surg. 60 (2018) 132–136.

Open Access
This article is published Open Access at sciencedirect.com. It is distributed under the |JSCR Supplemental terms and conditions, which permits unrestricted non commercial use, distribution, and reproduction in any medium, provided the original authors and source are credited.