Asian Journal of Case Reports in Surgery

11(4): 69-74, 2021; Article no.AJCRS.75577

Anti-mesenteric Jejunal Diverticulosis Presenting as Intestinal Obstruction: A Case Report

Mohammad N. Athamnah[1], Nimah A. Rabai[1], Hussein S. O. Al Azzam[1], Odai S. Sawaqed[1], Mu'taz M. A. Massad[2], Mohammad A. K. Alshloul[1], Layth A. K. Alshloul[3], Mohammad A. M. Al Mestrihi[1] and Amer Abu-Shanab[4*]

[1]Department of General Surgery, Princess Basma Teaching Hospital, Irbid, Jordan.
[2]Hashemite University, Zarqa, Jordan.
[3]Department of Radiology, The Royal Medical Services, Amman, Jordan.
[4]Office of Scientific Affairs and Research, King Hussein Cancer Center, Amman, Jordan.

Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

Article Information

Editor(s):
(1) Dr. Pandiaraja. J, Shree Devi Hospital, India.
Reviewers:
(1) Mohammed Ahmed Nagah Mahmoud, MSA University, Egypt.
(2) Ahmed Faidh Ramzee Abdul Aziz, Qatar.
Complete Peer review History: https://www.sdiarticle4.com/review-history/75577

Case Study

Received 09 August 2021
Accepted 19 October 2021
Published 25 October 2021

ABSTRACT

In this report, we present a 38-year-old male patient who was complaining of a six-day history of progressive abdominal pain with recurrent vomiting and constipation. He was afebrile with normal blood pressure and mild tachycardia, his pain was diffused all over the abdomen but more pronounced centrally and in the left upper quadrant. Laboratory workup revealed leukocytosis and abnormal electrolytes. Imaging with abdominal x-ray, ultrasound and computed tomography (CT) scan showed signs of intestinal obstruction. The patient underwent exploratory laparotomy with resection of a 7 cm segment of jejunum containing a 3 cm diverticulum with a traction band attached to it, located on the anti-mesenteric side, and stenotic segment of jejunum just distal to the site of the diverticulum. A primary end-to-end anastomosis was carried out. Postoperatively, the patient fully recovered with no adverse events or complications.

Keywords: Diverticulum; Jejunal diverticulosis; intestinal obstruction; anti-mesenteric diverticulum.

**Corresponding author: E-mail: amer_abushanab23@yahoo.com;*

1. INTRODUCTION

Diverticula are outpouchings from tubular structures [1]. They are subdivided into; true diverticula where it involves all intestinal wall layers as in Meckel's diverticulum, and false diverticula which are protrusion of mucosa, submucosa, and serosa without the muscularis layer [2]. In general, small bowel diverticula lack a true muscular wall, thus, considered as false diverticula. The early reports of jejunal diverticulosis were made by Sommering in 1794, Voigtel in 1804, and Sir Astley Cooper in 1807 [3,4]. The first operation for diverticula was performed by Gordinier and Shil in 1906 [4]. Here we report a case of a 38-year-old male patient who presented to the emergency department complaining of abdominal pain with vomiting and constipation. Examination and radiological imaging were consistent with small bowel obstruction and laparotomy revealed an anti-mesenteric-side jejunal diverticulum with a short segment of jejunal stenosis.

2. CASE PRESENTATION

A 38-year-old man presented to the emergency department complaining of a six-day history of abdominal pain, which was associated with vomiting, abdominal bloating, constipation, and anorexia. The onset of the abdominal pain was sudden and increased gradually. It started colicky in nature, then progressed in intensity and frequency through the course of the illness. Later on, the pain became diffuse and constant, and was not relieved by over-the-counter analgesics (paracetamol) or antispasmodic (Hyocin butalmirate). Before presenting to us, the patient asked for medical advice at two different private clinics without improvements. He had a free medical and surgical history. In addition, he was not on any regular medications, and had no relevant family history. On examination, the patient appeared dehydrated, was normotensive with mild tachycardia, and he was afebrile. The abdomen looked distended, was soft on palpation with diffuse tenderness mostly in the central and left upper quadrant, with the absence of peritonism.

Laboratory tests revealed mildly elevated white cells count (16.000/ul), with increased Neutrophils count. Electrolytes test showed hyponatremia (130mmol/l) and hypokalemia (3.2mmol/l). Other kidney and Liver function tests were within normal limits. Abdominal X-ray revealed diffuse distention of small bowel loops with multiple air-fluid levels and no intraperitoneal free gas. Abdominal ultrasonography showed dilated small bowel loops with mildly thickened walls and free fluid in the pelvis. The patient was admitted to the ward and received the appropriate intravenous fluid resuscitation, he was also started on intravenous antibiotics covering enteric organisms. Decompression with a nasogastric (NG) tube revealed more than 500cc bile-stained fluid collected upon insertion, and Foley catheter showed decreased urinary output.

After resuscitation, the patient underwent an abdomen and pelvic computed tomography (CT) scan which demonstrated dilated small bowel loops till mid-jejunum. A transitional zone of collapsed bowel till the rectum was noted and free fluid collection in between bowel loops and in the pelvis, with no evidence of pneumoperitoneum and no obvious cause of the obstruction (Figs. 1 and 2).

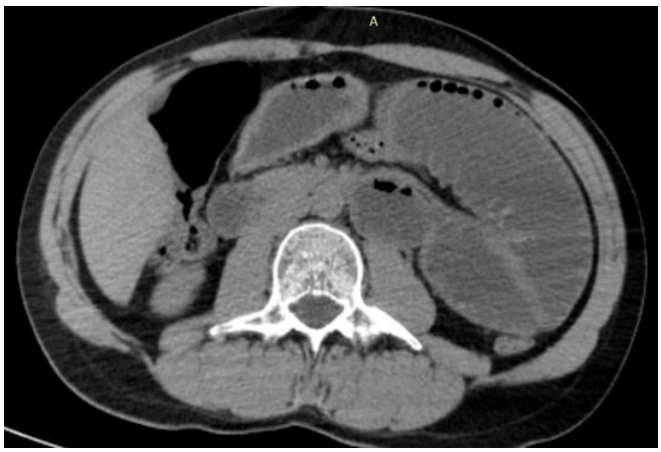

Fig. 1. Non-contrast CT scan, axial view, shows dilated small bowel loops in left upper quadrant and other collapsed bowel loops consistent with small bowel intestinal obstruction

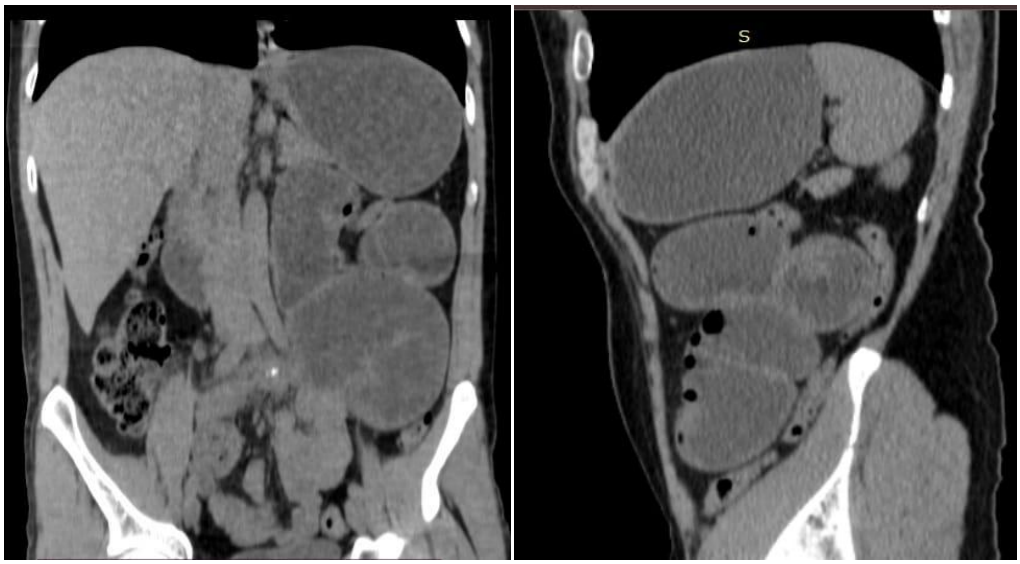

Fig. 2. Coronal and sagittal views, respectively, of the same CT scan, shows the dilated small bowel loops (jejunum) and other collapsed bowel loops as in Fig. 1

Due to the progressive six-day history of the symptoms of the pain and the free surgical history of the patient, the decision was made to proceed with exploratory laparotomy. The cause of the small bowel obstruction appeared to be a jejunal diverticulum located on the anti-mesenteric side and attached to a mesenteric band, about 40 cm from duodeno-jejunal junction. Additionally, distal to the diverticulum, there was a small (2 cm-long) segment of narrowed bowel (Figs. 3 and 4). Resection of the involved segment including the diverticulum and the stenotic bowel was done, and a primary end-to-end anastomosis was carried.

Postoperatively, the patients' general condition significantly improved. NG tube output was nil on day 1 post-op, which was then removed, and the patient was able to tolerate oral intake and had adequate urinary output. On day six, the patient was discharged home. At two-week follow-up visit at the clinic, the patient was fully recovered without any postoperative complications. He kept an uneventful course within the following two months.

Histopathological examination confirmed the diagnosis and showed a small bowel (jejunal) diverticulum measuring 3.0 x 0.5 x 0.5 cm, with a focal area of serositis with no evidence of malignancy.

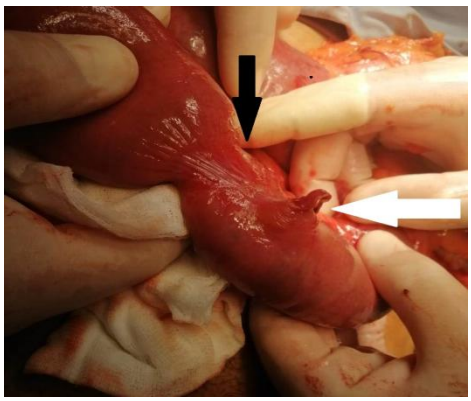

Fig. 3. Intra-operative findings. White arrow: a small bowel diverticulum with attached traction band. Black arrow: distal stenotic bowel segment

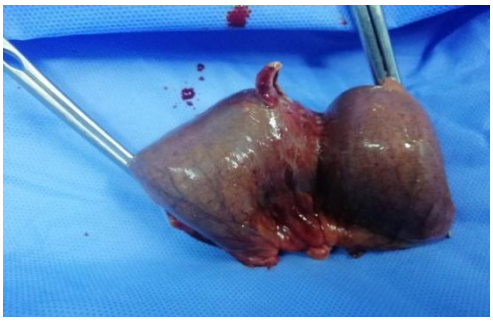

Fig. 4. The resected segment of jejunum containing the diverticulum and the stenotic segment

3. DISCUSSION

Diverticula of the gastrointestinal tract (GIT) are a frequent finding in the population [5]. They commonly present in the colon, while jejunum, ileum, and stomach are much less frequent sites for them, accounting for approximately 0.9–1% of all diverticular diseases [5]. Jejunal diverticulosis has an incidence of 0.6-1.5% [6]. They are usually multiple and most commonly localized in the proximal jejunum 75% [7,8]. Coexistent colon diverticula and jejuno-ileal diverticula is found in 20-70% of the cases [9].

Diverticula of the gastrointestinal tract are usually found on the mesenteric side as they tend to form at sites of weakness in the bowel wall where blood vessels penetrate it because these sites are the least resistant to minor changes in intraluminal pressure which could be caused by abnormal neuromotor innervation resulting in intestinal dyskinesia [4,5,10,11,12]. It occurs most frequently in the elderly, with a peak in the sixth and seventh decades, and slightly more common in men than women with a ratio of 1.5:1 [13,14]. Here we present a rare case of a young man with an anti-mesenteric-side diverticulum that could be explained by the presence of a traction band.

Symptoms and presentation of jejunal diverticulosis vary widely, and can mimic other conditions which cause a delay in the diagnosis [11,15]. Most patients have no symptoms and get diagnosed incidentally based on imaging or surgeries for other reasons or as a finding on autopsy. On the other hand, 20-30% of patients present with either acute complications, such as acute diverticulitis (the most common acute complication, 2.3-6.4%), gastrointestinal bleeding, perforation (2-6% of cases), intestinal obstruction, or chronic complications as chronic abdominal pain, gastrointestinal motility disorder, steatorrhea with vitamins/protein deficiencies due to malabsorption, blind loop syndrome, enterolith formation, jejunal dyskinesia, or chronic diverticulitis [7,13,16-18]. Furthermore, some patients present with chronic recurrent pneumoperitoneum without peritonitis, or a “flatulent dyspepsia”, which is a triad of epigastric pain, abdominal discomfort, and flatulence one or two hours after meals or even with atypical presentation as delirium especially in elderlies [4,19,20]. The case reported here presented with symptoms and signs of intestinal obstruction.

The differential diagnosis for such presentations commonly includes adhesions after previous surgeries, complicated hernias (e.g. strangulation, tumors, small bowel volvulus), and inflammatory bowel disease e.g. Crohn's disease [21]. But in our patient, it was due to a complicated jejunal diverticulum which accounts for only 2.3–4.6% of cases of jejunal diverticulosis [5]. Intestinal obstruction in these cases can be caused by several different mechanisms such as segmental diverticular inflammation, adhesions due to previous inflammation/surgery, volvulus, intussusception, invagination or external compression [1,3 22].

Different diagnostic modalities can be used for diagnosing diverticular disease, including the use of Barium studies, intestinal ultrasonography, or computed tomography [23]. However, it can be difficult to visualize, as diverticula with large ostium can rapidly empty, and small diverticula may not retain the contrast medium or not be filled with it at all [13,24]. Recently, new diagnostic modalities are available like tomography enteroclysis and endoscopy (capsule and double-balloon), where they facilitate better and more accurate diagnosis. Unfortunately, they are not available in all centers, they need an experienced physician, and they are expensive, especially the double-balloon endoscopy. Still, the definitive diagnosis is usually made with exploratory laparotomy with cessation of symptoms after surgical resection confirms the diagnosis [7,24].

Management of jejunal diverticular diseases depends on the clinical presentation. Surgery is the mainstay of treatment if patients present with acute abdomen and diffuse peritonitis as incomplete intestinal obstruction or acute perforation, or in case of severe anemia due to hemorrhage [11]. For acute intestinal obstruction, the management could be either conservative medical management or surgical intervention depending on the individual case. Conservative medical management includes intravenous fluid resuscitation, nasogastric tube decompression, and bowel rest. In cases of hemodynamically unstable patients, suspected perforations, vascular compromise or failure of conservative measurements, surgical exploration is mandatory [25]. The patient presented here had no previous abdominal surgeries, so adhesions as a cause of obstruction was excluded, which could be treated initially conservatively. The hernial orifices were intact, and imaging didn’t reveal any obvious cause of obstruction. The patient had leukocytosis and his symptoms of abdominal pain and vomiting were progressive and didn’t resolve with conservative measures; thus, surgical

intervention was performed after resuscitation with a suspicion of a small bowel tumor causing obstruction as the main differential diagnosis.

In cases of obstruction due to jejunal diverticular diseases, the preferred surgical approach is a segmental resection limited to the affected segment of the bowel followed by a primary anastomosis, which decreases the possible complications post-operatively, and avoids short bowel syndrome [2, 4]. Keeping in mind that there is a risk of recurrence after resection, as the pathogenesis of the disease still persists (including neuropathy, myopathy, etc.) [4]. In this reported case, a short 7-cm segment was resected that included the diverticulum with the attached traction band and the distal stenotic segment, followed by end-to-end jejuno-jejunal anastomosis.

4. CONCLUSION

Jejunal diverticulosis is a rare disease and a rare cause of intestinal obstruction. It should be considered in the differential diagnosis of acute or chronic abdomen symptoms, to allow for proper management and to avoid serious complications associated with a delay in the diagnosis. Surgical intervention with resection and primary anastomosis is the treatment of choice of unstable patients with acute complications or in refractory cases when conservative management fails.

CONSENT

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

ETHICAL APPROVAL

As per international standard or university standard ethical approval has been collected and preserved by the authors.

ACKNOWLEDGEMENTS

This work was independent and was not supported by any funding.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Feuerstein JD, Falchuk KR. Diverticulosis and diverticulitis. In Mayo Clinic Proceedings. 2016;91(8):1094-1104. Elsevier.
2. Georgios Delimpaltadakis, Kalliopi Strataki, Konstantinos Spiridakis, Theodoros Papadakis, Eleni Tsagkataki. Jejunal diverticulosis is a rather difficult diagnosis: Report of a case and review of literature. Journal of Surgery. 2019;7(1):8-13.
DOI: 10.11648/j.js.2019701.12
DOI: 10.11648/j.js.20190701.12
3. Woods K, Williams E, Melvin W, Sharp K. Acquired jejunoileal diverticulosis and its complications: A review of the literature. Am Surg. 2008;74:849-850.
4. Evangelos Falidas, Konstantinos Vlachos, Stavros Mathioulakis, Foots Archontovasilis, Constantinos Villias. Multiple giant diverticula of the jejunum causing intestinal obstruction: Report of a case and review of the literature. World Journal of Emergency Surgery. 2011;6:8.
Available:http://www.wjes.org/content/6/1/8
5. Romera-Barba E, Pastor SG, Navarro García MI, Torregrosa Pérez NM, Sánchez Pérez A, Vazquez-Rojas JL. Jejunal diverticulosis: A rare cause of intestinal obstruction. Gastroenterol Hepatol. 2017; 40(6):399-401.
DOI: 10.1016/j.gastrohep.2016.04.016
Epub 2016 Jun 4. PMID: 27270086.
6. Laiz-Diez B, Gonzalez J, Ruiz-Tovar J, Lopez-Monclus J, Duran-Poveda M. Jejunal pseudo diverticulosis. Three Cases Report. Rev Esp Enferm Dig. 2017;109(4): 305-306.
DOI: 10.7235/reed.2016.4403/2016
7. Reddy SV, Jagadeesh AB, Sushma P, Prakash KV, Chowdary MM. Jejunal diverticular perforation with intra-abdominal abscess: a case report. Int J Sci Stud. 2015;3(5):205-207.
DOI: 10.17354/ijss/2015/378
8. Dhineshreddy Gurala, Pretty Sara Indiculla, Prateek Patibandla, Jobin Philipose, michael Krzyzak, Indraneil Mukherjee. Perforated jejunal diverticulitis. Case Rep Gastrointerol. 2019;13:521-525.
DOI: 10.1159/000503896
9. Ahmet Gokhan Saritas, Ugur Topal, Ismail Cem Eray, Kubilay Dalci, Atilgan Tolga Akcami, Kivilcim Erdogan, Jejunal diverticulosis complicated with perforation: A rare acute abdomen etiology.

International Journal of Surgery Case Reports. 2019;63:101-103.
Available:https://doi.org/10.1016/j.ijscr.2019.09.013

10. Syllaios A, Koutras A, Zotos PA, Triantafillou E, Bourganos N, Koura S, Leaks A. Jejunal diverticulitis mimicking small bowel perforation: Case report and review of the literature. Chirurgia (Bucur). 2018;113(4):576-81.
11. Sem F. Hardon, Frank C. den Boer, Tarik Aallali, Gerwin A. Fransen, Sandra Muller. Perforated jejunal diverticula in a young woman: A case report. International Journal of Surgery Case Reports. 2021;81: 105838.
Available:https://doi.org/10.1016/j.ijscr.2021.105838
12. Natasha Leigh, Brianne J. Sullivan, Roi Anteby ans Susan Talbert. Perforated jejunal diverticulitis: A rare but important differential in the acute abdomen. Surgical Case Reports. 2020;6:162.
Available:https://doi.org/10.1186/s40792-020-00929-3
13. Jae young Kwak, Eun Hwa Park, Cheon Soo Park, ji Hoon Kim, Myeong Sik Han, Jin Ho Kwak. Uncomplicated jejunal diverticulosis with pneumoperitoneum. Ann Surg Treat Res. 2016;90(6):346-349.
Available:http://dx.doi.org/10.4174/astr.2016.90.6346
14. Jeong-moh John Yahng. Case report: challenges in diagnosis and treatment of small bowel diverticulitis presenting with acute abdomen. Medical Case Studies. 2018;8(2):4-8.
DOI: 10.5897/MCS2018.0121
15. Abbasi C, Jimenez MC, Lisi M. Massive gastrointestinal bleeding due to jejunal diverticula in a community hospital: A case report and review of diagnostic and therapeutic options. Gastroenterol. Insights 2021;12:196-201.
Available:https://doi.org/10.3390/gastroent12020017
16. Montuschi E. Jejunal insufficiency with hypoproteinemia edema. Proc R Soc Med. 1949;42(11):868.
PMID: 15394795
PMCID: PMC2081445.
17. Shimayama Toshio, Jiroichi Ono, Taketo Katsuki. Iron deficiency anemia caused by a giant jejunal diverticulum. The Japanese journal of surgery. 1984;14(2):146-149.
18. Joseph S. Butler, Christopher G. Collins, Gerard McEntee. Perforated jejunal diverticula: A case report. Journal of Medical Case Reports. 2010;4:172.
DOI: 10.1186/1752-1947-4-172
19. Geena Benjamin, Agnes Thomas, Mathew Koshy, Small bowel diverticulosis causing pneumoperitoneum without peritonitis: A case report. Gastrointestinal Abdominal RAdiol ISGAR. 2018;1:69-71.
Available:https://doi.org/10.1055/s-0038-1675433
20. Carlos Mario Balcazar, Beatriz Carolina Ayola R, jose Mauricio Ocampo Ch, Monica Bejarano. Perforation of jejunum due to diverticular disease: A condition to consider in elderly. Rev Colomb Gastroenterol. 2019;34(2).
DOI:http://dx.doi.org/10.22516/25007440.224
21. Kalogeropoulou C, Kraniotis P, Zabakis P. Small bowel obstruction due to phytobezoar: CT findings. European Association of Radiology; 2003.
22. Balducci G, Dente M, Cosenza G, Mercantini P, Salvi P. Multiple giant diverticula of the foregut causing upper gastrointestinal obstruction. World J Gastroenterol. 2008;14:3259-3261.
23. Vuorinen P. Jejunal Diverticula. British medical Journal. 1963;2,5360:762-3.
DOI:10.1136/bmj.2.5360.762.
24. Olutayo A. Sogunro, Matthew Buck, Philippe Ronel Labrias. Jejunal diverticulitis: Three case reports of a rare but clinically significant disease. Dis Med Res; 2021.
Available:http://dx.doi.org/10.21037/dmr-20-161.
25. Jackson P, Cruz MV. Intestinal obstruction: Evaluation and management. American Family Physician. 2018;98(6):362-7.

Peer-review history:
The peer review history for this paper can be accessed here:
https://www.sdiarticle4.com/review-history/75577