

Case Report

An acute abdomen packed full of surprises: a case report

Ashwath Narayan Ramji*

Department of Surgery, Kempegowda Institute of Medical Sciences, Bangalore, Karnataka, India

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***Correspondence:**

Dr. Ashwath Narayan Ramji,

E-mail: drashwathramji@gmail.com

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ABSTRACT

“Acute abdomen” is a clinical diagnosis which defines the emergent nature of the condition, rather than the condition itself, and the true diagnosis is often only made after laparotomy or laparoscopy. On occasion, the final diagnosis is drastically different from what was clinically suspected. Diseases such as diverticulosis can have multiple possible pathological outcomes as a consequence of their inflammatory nature, such as stricture formation, adhesions, acute diverticulitis, diverticular abscess, perforation and even malignant transformation. Usually one of these complications will be the presenting factor with rarely another complication discovered during management, which may or may not have been symptomatic. Extremely rarely, will multiple pathological outcomes of a condition be present together. Here we report the case of a male patient who underwent laparotomy for a suspected hollow viscus perforation, with the resulting findings a bewildering surprise.

Keywords: Multiple pathologies, Acute abdomen, Jejunal diverticulosis, Diverticulosis

INTRODUCTION

The abdominal cavity is the largest hollow space in the body and is packed to the brim with components of various organ systems, housing most of the digestive system, as well as large solid organs including the liver and kidneys, and associated connective and vascular tissue.

Pain or other symptoms due to intra-abdominal pathology may thus arise from any of these structures, and may be benign or malignant, and hence thorough evaluation is indicated in every case, and that symptoms may in fact be arising from complications of the primary pathology and not the primary pathology itself should be kept in mind.^{1,2}

Rarely, multiple pathologies may also be encountered, at which point doubt may arise regarding whether they are discrete or related conditions; and occasionally, whether the underlying condition is functional or structural may be the dilemma at hand.³

Diverticulosis is a condition that can have a myriad of pathological outcomes, complications and presentations; and is generally a disease of the Western World and the large bowel; with jejunal diverticulosis being exceptionally rare.⁴ Adenocarcinoma as a result of chronic inflammation-induced neoplastic change is a known complication of diverticulosis, however adenocarcinoma of the jejunum is again a very rare discovery.⁵

This is a report of a case where laparotomy revealed a multitude of unexpected, rare findings within the abdomen, and where the various findings represent different pathological outcomes of a single disease. Literature search revealed no previous reports of any similar cases.

CASE REPORT

A 40-year-old male patient presented to the emergency room with complaints of abdominal pain and vomiting

since the previous 48 hours. He also complained of bloody diarrhoea, initially, followed by no passage of stool or flatus in the last 24 hours. Generalized malaise and fever were also present. The pain was sudden in onset, initially located around the umbilicus and then spread to involve the entire abdomen. There was no significant past history or comorbidities.

On examination, he was dehydrated, listless and both tachycardia and tachypnea were present. The abdomen was distended, with generalized tenderness, rebound tenderness, guarding and rigidity present, all of which appeared to be maximal in both paraumbilical regions. Bowel sounds were diminished.

An erect X-ray of the abdomen was obtained which showed a thin rim of air under the diaphragm, with dilated bowel loops. A diagnosis of hollow viscous perforation was made, and the patient was prepared for emergency laparotomy. Blood investigations revealed an expected picture of sepsis and electrolyte disturbance and appropriate resuscitation was initiated as the patient was being prepared for surgery.



Figure 1: Jejunal diverticula.

A vertical midline incision was made, which revealed multiple diverticula of the small intestine (Figure 1), predominantly in the jejunum. The peritoneal cavity was filled with reactive fluid and debris.

The search for the perforation was interrupted when the bowel could no longer be withdrawn from the peritoneal cavity, which led to yet another unexpected finding – a thick fibrous band around which had coiled around and constricted a loop of bowel (Figure 2). This was then excised, and the involved bowel released.

Oedema around the perforation allowed the identification of the site (Figure 3), however, it was found on seemingly normal bowel, and not in a diverticulum as assumed when the initial diverticula were identified. A resection and anastomosis was performed (Figure 4).



Figure 2: Fibrous band knotting the bowel.



Figure 3: Site of perforation with surrounding oedema.

A thorough wash and closure was planned, but another surprise was encountered further distally, an unnervingly tight stricture with surrounding induration was found, with few visibly enlarged lymph nodes in the associated mesentery (Figure 5). The segment along with identifiable nodes was excised, and a stoma created. A thorough wash was given, following which a drain was

placed, and the abdomen closed with reinforced tension-sutures to reduce the risk of *burst abdomen* (Figure 6).

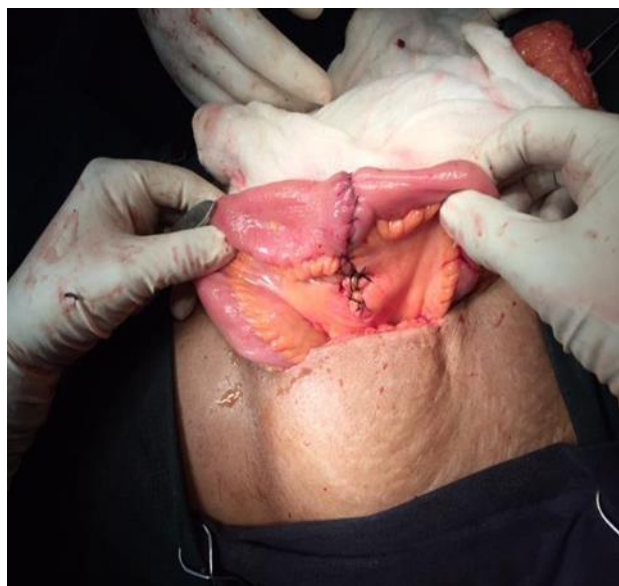


Figure 4: Post-resection-anastomosis.

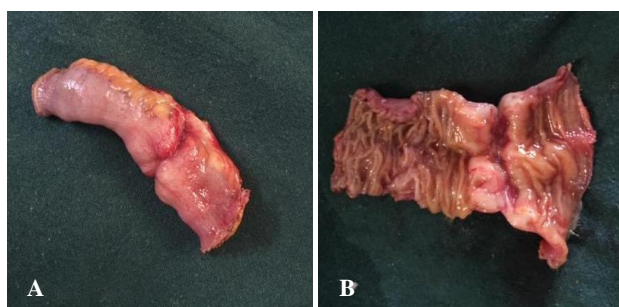


Figure 5: (A) Excised segment with stricture; (B) Cut-section of stricturous segment.



Figure 6: Abdomen closed with reinforced tension sutures.

Histopathology of the resected stricturous segment revealed well-differentiated adenocarcinoma infiltrating

the muscular coat but without serosal breach, and all lymph nodes excised were found to be free of tumour (T3N0Mx). Both the segment with the perforation and the thick band did not have any tumour cells on biopsy. The postoperative period was uneventful.

DISCUSSION

The abdominal cavity is home to a multitude of organs, organ systems and tissues, each of which is vulnerable to pathogenic processes and can present with similar features due to their proximity to one another. Pain is the most common abdominal complaint, and the underlying cause can range from simple and benign to malignant and life-threatening, hence a thorough evaluation of the patient and due consideration to differential diagnosis is essential.¹

Features such as nausea, vomiting and bowel disturbance can occur in almost all intra-abdominal pathologies, either as direct causation or indirectly due to stimulation of surrounding structures. The non-specific nature of these complaints makes localization of the pathology difficult. Further, complications of these pathologies such as pancreatitis, gastrointestinal bleeding and ileus are again non-specific and come with features of their own, thus even further obscuring the clinical picture and complicating the diagnosis.² Of the various possible clinical findings, nausea and vomiting, localized tenderness or guarding, leukocytosis and tachycardia are associated with more significant pathologies and worse prognosis.⁶

At times, despite a battery of investigations, no cause can be identified, and when the condition persists with unyielding symptoms and no diagnosis for up to 7 days, it is referred to as acute non-specific abdominal pain.⁷ This can account for up to 40% of emergency surgery admissions, and when every investigation has been exhausted and no diagnosis reached, a "watch and wait" policy is often resorted to.⁶ In rare instances, a clinical diagnosis may prompt laparotomy only for there to be no identifiable pathology within the abdominal cavity –such as the ominous "negative appendectomy", where the patient presented with "textbook" symptoms, had typical right iliac fossa tenderness and an enlarged appendix was visualized on preoperative ultrasound but could not be found at surgery; a misdiagnosis, or worse, a missed diagnosis may be attributed to this. A diagnostic laparotomy or laparoscopy is the answer to circumvent this so that a thorough search for a seemingly occult pathology can be made.⁸

Nonstructural or functional disorders are also associated with abdominal pain, the most common being functional dyspepsia, irritable bowel syndrome and functional abdominal pain syndrome, which on occasion may present with alarm features, and thorough evaluation to differentiate them from structural or surgical conditions is required.³ Structural and functional disorders may also

coexist, such as functional abdominal pain coexisting in a patient with quiescent inflammatory bowel disease.³

The other end of the spectrum, and even more rare, is when multiple intra-abdominal pathologies coexist, with varying levels of symptomatology. Occasionally, an additional pathology may be encountered that was asymptomatic or dormant, which may or may not require intervention. In certain instances, different conditions may have very similar presentations, hence even when the suspected pathology is identified, a search to rule out the differential diagnosis is resorted to – as in the search for a Meckel diverticulum during appendectomy.⁹

In our case, the patient was diagnosed to have hollow viscus perforation based on clinical features and abdominal roentgenogram. Laparotomy revealed jejunal perforation, multiple jejunal diverticula, jejunal stricture harbouring adenocarcinoma, and a fibrous band producing intestinal obstruction. As per our knowledge and literature search, no similar case has been reported with such a plethora of intra-abdominal findings. In all likelihood, the diverticulosis was the inciting factor for the other pathologies, as a serendipitous coexistence of multiple findings is unfathomable.

Diverticulosis is predominantly a disease of the Western world, affecting the elderly and localized predominantly to the large intestines. Our patient had diverticular disease of the small bowel, an exceptionally rare finding, having a prevalence rate of just 0.6-1.5% in autopsies, and an incidence of 0.002-0.7% from imaging studies. Further, even amongst small bowel diverticulosis, diverticulosis of the jejunum is distinctly rare.⁴

Acquired diverticula are "false diverticula" that occur due to herniation of mucosa and submucosa through the muscularis where the blood vessels enter the intestinal wall. They are generally multiple in number, extraluminal, and may be associated with diverticula in other gastrointestinal locations. This is in contrast to congenital diverticula like Meckel's diverticulum that are "true" – bearing all layers of intestinal wall, intraluminal, single and usually unassociated with diverticulosis at other sites.¹⁰

While having the potential for multiple diverse manifestations, jejunal diverticulosis is providentially asymptomatic and quiescent. However, when active, symptoms can range from dyspepsia and chronic malabsorption to life-threatening conditions including perforation, intestinal obstruction, catastrophic haemorrhage and even malignancy. Obstruction occurs from intussusception or volvulus; and pseudo-obstruction may also be encountered, where no anatomical cause of obstruction is found.⁴ Adhesions and epiploic bands resulting from inflammation can also cause obstruction, by virtue of strangulation and internal herniation.¹⁰ The acidic environment of the diverticular recess, dyskinesia and bacterial overgrowth favour the development of

enteroliths, which can be a cause of extrinsic compression resulting in intestinal obstruction.¹¹ Enteroliths may cause mucosal injury, resulting in intestinal gangrene, or may induce stricture formation distally due to chemical effects.¹² Peritonitis due to visceral perforation or bowel incarceration is the worst end of the clinical spectrum.⁴

Accounting for only 1-2% of all gastrointestinal malignancies, adenocarcinoma of the small bowel is another rare diagnosis, especially so in the jejunum, as the majority occur in the duodenum. The small bowel is inherently immune to malignancy due to rapid transit of food, low bacterial load, rapid cell turnover, local protective secretory Ig A and the enzyme benzopyrene hydroxylase. When it occurs, small bowel malignancy is usually associated with Crohn's disease, celiac sprue or familial syndromes.⁵ A stricture in the setting of diverticular disease is an ominous sign, and is an indication for resection. In our patient as well the stricture was a site of malignant transformation.¹³

Diverticular disease and malignancy of the bowel are both more common in the West, linked to low fibre diets and there is an increase in prevalence with age. Chronic inflammation is the suggested inciting factor for neoplastic progression, and the lack of muscular layer allows a carcinoma within a diverticulum to easily breach the serosa.¹⁴

Perforation in the setting of diverticular disease may occur at the diverticular sac itself, which is thinned out and lacks the muscular layer, or may occur in the adjacent bowel due to inflammatory processes, gangrene or obstruction. Perforation into the adjacent viscera or skin can result in fistulisation.

Diagnosis of jejunal diverticulosis preoperatively is difficult, and is largely an operative finding. Treatment of choice for complicated diverticulosis is surgical resection.

CONCLUSION

The abdominal cavity is a large space that extends from the thorax to the pelvis and contains innumerable structures, complicating clinical diagnosis. A high index of suspicion and good clinical acumen along with appropriate use of diagnostic tools usually delineates the diagnosis. However, considering the number of structures packed into the cavity, multiple or unexpected pathologies may be encountered and should be prepared for. Even when an expected pathology is encountered and managed, a thorough search of the abdominal cavity should be done so that any coexisting pathology - either obvious or occult may be identified and appropriately managed. In our case, the patient had presented with acute abdominal pain and was taken up for emergency laparotomy with a clinical diagnosis of hollow viscus perforation, an accurate diagnosis, however, in addition

to the perforation, he was found to have small bowel diverticulosis, a fibrous band causing bowel obstruction, and a stricture harbouring adenocarcinoma of the small bowel - an unprecedented number of pathological lesions coexisting probably as consequences of chronic diverticular disease.

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REFERENCES

1. Cartwright SL, Knudson MP. Evaluation of Acute Abdominal Pain in adults. Am Fam Physician. 2008;77(7):971-8.
2. Park WM, Gloviczki P, Cherry KJ Jr, Hallett JW Jr, Bower TC, Panneton JM, et al. Contemporary management of acute mesenteric ischemia: Factors associated with survival. J Vasc Surg. 2002;35(3):445-52.
3. Bharucha AE, Chakraborty S, Sletten CD. Common Functional Gastroenterological Disorders Associated With Abdominal Pain. Mayo Clin Proc. 2016;91(8):1118-32.
4. Hanna C, Mullinax J, Friedman MS, Sanchez J. Jejunal diverticulosis found in a patient with long-standing pneumoperitoneum and pseudo-obstruction on imaging: a case report. Gastroenterol Rep (Oxf). 2015;4(4):337-40.
5. Kushwaha JK, Sonkar AA, Saraf A, Singh D, Gupta R. Jejunal adenocarcinoma: an elusive diagnosis. Indian J Surg Oncol. 2011;2(3):197-201.
6. Mayyas E, Ahmad S, Sbairhat AS, Khorri F. Threatening signals in acute abdomen. Rawal Med J. 2010;35(2):160-4.
7. Sheridan WG, White AT, Havard T, Crosby DL. Non-specific abdominal pain: the resource implications. Ann R Coll Surg Engl. 1992;74:181-5.
8. Agresta F, De Simone P, Bedin N. The laparoscopic approach in abdominal emergencies: a single-center 10-year experience. JSLS. 2004;8:25-30.
9. Siddiqui MA, Luke FE, Sartaj S. Meckel Diverticulum in the Setting of Acute Appendicitis: A Mimic of Periappendiceal Abscess. OMICS J Radiol. 2018;7:300.
10. Nejmeddine A, Bassem A, Mohamed H, Hazem BA, Ramez B, Issam BM. Complicated jejunal diverticulosis: A case report with literature review. N Am J Med Sci. 2009;1(4):196-9.
11. Kumar, D., & Meenakshi. Complicated jejunal diverticulitis with unusual presentation. Radiology Case Reports. 2018;13(1):58-64.
12. Pathak P, Rehmani B, Kumar N. Jejunal Epiphany: Diverticulae, Enteroliths and Strictures. J Clin Diagn Res. 2016;10(12):1-2.
13. Venara A, Toqué L, Barbieux J, Cesbron E, Ridereau-Zins C, Lermite E, et al. Sigmoid stricture associated with diverticular disease should be an indication for elective surgery with lymph node clearance. J Visceral Surg. 2015;152(4):211-5.
14. Soran A, Harlak A, Wilson JW, Nesbitt L, Lembersky BC, Wieand HS, et al. Diverticular Disease in Patients with Colon Cancer: Subgroup Analysis of National Surgical Adjuvant Breast and Bowel Project Protocol C-06. Clin Colorectal Cancer. 2006;6(2):140-5.

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