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Case Report

Perforated Mesenteric Meckel's Diverticulitis Presenting as Generalized Peritonitis: A Case Report

Arpana Shrestha,[*,1] Pawan Tiwari,[1] Sabir Miya,[1] Ashish Uprety,[1] Raj Kumar Chhetri[1]

ABSTRACT:

Meckel's diverticulum is a congenital anomaly of the gastrointestinal tract that occurs in approximately 2%-4% of the population. It results from incomplete obliteration of the vitelline duct. It is a true diverticulum as it contains all layers of the intestinal wall. Most diverticula are asymptomatic; however, they can cause serious complications such as inflammation, perforation, obstruction, and bleeding. We report a case of a 39-year-old female who presented to the emergency department with several hours of epigastric pain and features suggestive of hollow viscus perforation with peritonitis. However, perioperative and histopathological findings confirmed a different pathology: perforated mesenteric Meckel's diverticulitis with ectopic gastric mucosa presenting as generalized peritonitis.

Keywords: Diverticulitis; Ectopic gastric mucosa; Meckel's diverticulum; Perforation.

INTRODUCTION:

Meckel's diverticulum is a true small-bowel diverticulum resulting from persistence of the omphalomesenteric duct.[1] It is a common congenital anomaly of the gastrointestinal tract, affecting approximately 2%-4% of the population. While often asymptomatic, it can lead to severe complications like hemorrhage, intestinal obstruction, intussusception, and perforation.[2] Bleeding from a Meckel's diverticulum containing ectopic gastric mucosa is the most common clinical presentation in younger patients, but it is rare in adult patients.[3] Furthermore, symptomatic patients are predominantly children, and it is rare to encounter those complications in adults.[4] Due to this rare presentation, it raises potential diagnostic dilemmas and management issues in them.

CASE REPORT:

A 39-year-old female presented to the emergency department with a complaint of epigastric pain for two days, which was sudden in onset, continuous, pricking type, and increasing in intensity. It was initially localized to the epigastrium but later became generalized. The pain was associated with two episodes of vomiting, which were non-projectile, non-bilious and non-foul-smelling. The pain was aggravated by movement and was relieved by rest. She denied lower urinary tract symptoms. She denied previous episodes of similar abdominal pain. Relevant past medical history included a lower cesarean section six years back. She denied any medical conditions or bowel disease. She did not take regular medications and denied any previous gastroscopies or colonoscopies.

On examination, she was afebrile, had sinus tachycardia at 115 beats per minute, and had a respiratory rate and blood pressure within the normal range. She had generalized tenderness with a rigid, non-distended abdomen and sluggish bowel sounds suggestive of generalized peritonitis. No clinical hernias were detected.

Blood tests demonstrated elevated inflammatory markers, including a white blood cell

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1 - Department of General Surgery, Lumbini Medical College and Teaching Hospital, Palpa, Nepal

Corresponding Author:
Arpana Shrestha
e-mail: arpanashrestha260@gmail.com
ORCID: https://orcid.org/0009-0004-5128-2906

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count of 11,100 cells per microliter, neutrophils of 81%, and C-reactive protein of 58 mg/L. Other parameters, including liver function tests, serum amylase, urea and electrolyte analyses, were all within the normal range. The urine analysis was unremarkable. Chest X-ray revealed gas under the right dome of the diaphragm (**Fig. 1**). Based on clinical, laboratory, and radiological findings, our initial diagnosis was generalized peritonitis secondary to hollow viscus perforation.

Initial pre-operative management included intravenous (IV) antibiotics, crystalloid fluid, proton pump inhibitors, and antiemetics. The patient underwent a midline laparotomy under general anesthesia on the same day, which revealed a diverticulum arising from the mesenteric site of the ileum approximately 60 cm from the ileocecal valve, with a perforation of about 0.5 cm × 0.5 cm at the neck of the diverticulum (**Fig. 2**) along with approximately 200 ml of turbid peritoneal fluid.

The segmental resection of the involved ileal segment including the diverticulum was performed, followed by primary ileoileal anastomosis and thorough peritoneal lavage. (**Fig. 3**). After adequate peritoneal lavage and placement of a drain in the pelvis, the abdomen was closed. The post-operative period was uneventful; tubes and drains were removed subsequently and the patient was put on H. pylori eradication triple therapy.

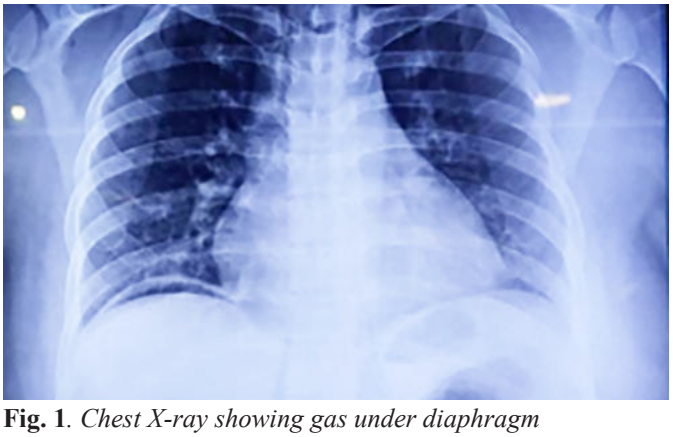


Fig. 1. *Chest X-ray showing gas under diaphragm*



Fig. 2. *Mesenteric Ileal Diverticulum with Perforation*

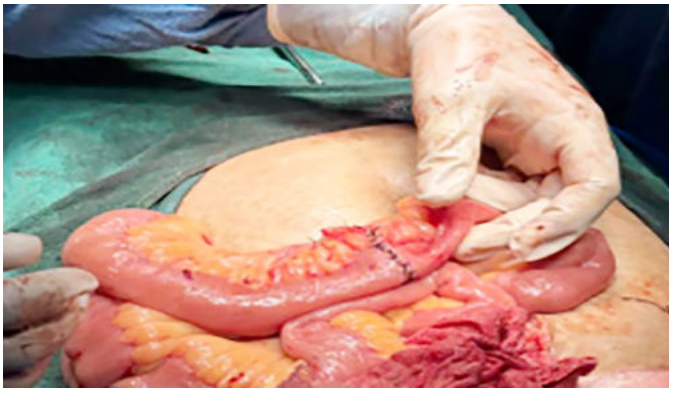


Fig. 3. *Ileoileal anastomosis*

The patient was discharged on the ninth post-operative day to follow up in the surgical outpatient department with a histopathological report. On the twenty-first day of follow-up, the histopathology report showed perforated Meckel's diverticulitis with ectopic gastric mucosa. Dense inflammatory infiltrates and microabscesses were noted with no dysplasia or malignancy.

DISCUSSION

Meckel's diverticulum is the most common congenital anomaly of the gastrointestinal tract, occurring in around 2–4% of the population and is located at the anti-mesenteric border of the ileum. Although most remain asymptomatic, nearly 4–6% develop complications requiring surgical intervention.[1-2]

Our case is unusual as the diverticulum originated from the mesenteric border of the ileum. Mesenteric-sided Meckel's diverticulum is an exceptionally rare anatomical variant. Hence, it can be mistaken for intestinal duplication cysts or any other mesenteric lesions. In our case, the atypical location of Meckel's diverticulum can obscure the diagnosis and increase the risk of complications due to its close relationship with mesenteric vessels as well as adjacent bowel loops.[3-5]

Perforated Meckel's diverticulitis presenting as generalized peritonitis is particularly rare in adults. In our case, the presence of pneumoperitoneum and diffuse peritoneal signs initially suggested hollow viscus perforation, and finally the diagnosis of perforated Meckel's diverticulitis was established only after exploratory laparotomy.

The histopathological report of our case revealed ectopic gastric mucosa within the diverticulum. Heterotopic mucosa is found in around 50% of symptomatic Meckel's diverticula, where the gastric mucosa is the most common type. Acid secretion from ectopic gastric tissue may cause mucosal ulceration, inflammation, bleeding,

and finally perforation. The atypical location of a mesenteric-sided diverticulum, perforation, and ectopic gastric mucosa renders this case exceptionally uncommon.[6-7]

Preoperative diagnosis of complicated Meckel's diverticulum is one of the challenging tasks because its clinical manifestations are nonspecific, and radiological findings are often inconclusive. Technetium-99m pertechnetate scintigraphy is used for detecting ectopic gastric mucosa, especially in pediatric patients, but its sensitivity in adults is low. Hence, lots of adult cases are being diagnosed intraoperatively after exploration for acute abdomen.[4,7]

Surgical resection is the definitive treatment for complicated Meckel's diverticulum. The choice between diverticulectomy and segmental bowel resection mainly depends on the diverticular base, presence of perforation, ischemia, inflammation, or suspicion of ectopic tissue. In our case, perforation at the neck of the diverticulum and surrounding inflammation guided the decision for segmental ileal resection with primary ileoileal anastomosis. Histopathological report confirmed perforated Meckel's diverticulitis with ectopic gastric mucosa. Uneventful post-operative recovery of the patient also supports the effectiveness of prompt surgical intervention in optimizing morbidity as well as mortality in this case.[3,8]

CONCLUSION

Our case of perforated mesenteric Meckel's diverticulitis is exceptionally rare, causing generalized peritonitis. Pre-operative diagnosis is difficult because of its nonspecific clinical presentation. Surgical intervention with bowel resection and histopathological confirmation is crucial for successful management. Thus, proper awareness of this rare anatomical variant may facilitate timely diagnosis by the surgeon, which plays an important role in the improvement of patient outcomes.

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