Colonic volvulus. A case report

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Case report

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Background
Incomplete obliteration of the omphalomesenteric duct causes Meckel's diverticulum, the most common congenital anomaly of the gastrointestinal tract. (1,2,6). It is known as "the disease of the 2", affecting 2% of the general population, located two feet proximal to the ileocecal valve, is twice as common in men, measuring 2 inches long and commonly containing gastric and pancreatic heterotopic tissue. (14)
Clinical manifestations occur in 20% of cases (3). During the first few years of life, hemorrhage is the most common clinical presentation in pediatrics. (2). Approximately 80% of cases are discovered incidentally during imaging studies or during surgery. (1, 4).
Diverticulitis, intussusception, hemorrhage, perforation, ulceration, herniation, malignancy, volvulation, and occlusion are the most common complications in adults. (1, 2, 9)
There are many clinical presentations of Meckel's diverticulum, but volvulation is a rare complication, especially if a flange to the mesentery is also present. (14).
Surgical resection is the preferred treatment for symptomatic Meckel's diverticulums, including diverticulectomy, wedge resection, or segmental bowel resection (2).
In this case, a 51-year-old female with acute abdominal symptoms was diagnosed with sigmoid colon volvulus with herniation of the mesodiverticular band of a Meckel's diverticulum. In the existing literature, only a few cases similar to this have been described in adult patients.

Keywords: Meckel's diverticulum, intestinal occlusion, volvulus, internal hernia, mesodiverticular band.

Meckel's diverticulum occurs when the omphalomesenteric duct does not completely obliterate the primordial yolk sac and midgut. (1,2, 6). Meckel's diverticulum incidence is estimated at 1 to 4%. This is a true diverticulum since it involves all three layers of the intestinal wall. (1,2)

In 50 percent of cases, the distance from the Bauhin valve is between 10 cm and 100 cm. (2, 3, 7).

Diverticula from symptomatic patients may exhibit heterotopic mucosa, with 60% or more showing gastric mucosa, but other tissues, such as pancreatic tissue, Brunner's glands, colonic mucosa, endometriosis, and hepatobiliary tissue, may also appear. (6, 8).

Clinical manifestations occur in 20% of cases. Most pediatric patients present with hemorrhage. (2). In adults, 15-25% experience complications, including diverticulitis, intussusception, hemorrhage due to heterotopic mucosa, perforation, ulceration, herniation, tumors, valvulation, and obstruction. (1, 2, 9)

Meckel's diverticulum can be difficult to diagnose preoperatively since the symptoms mimic several other conditions. (2, 5)

For symptomatic Meckel's diverticulum, surgical resection is the choice, which includes diverticulectomy, wedge removal, or segmental bowel removal, depending on whether ectopic tissue is present and whether the diverticulum is intact. (2)

Case report

This is a 51-year-old female patient with a history of Type II Diabetes Mellitus and Systemic Arterial Hypertension without adherence to treatment, who presents to the Emergency Department with generalized abdominal pain, VAS intensity 10/10, colic type, which is accompanied by intolerance to oral routes, vomiting of gastro-biliary contents, and no evacuations during the last 24 hours.

An examination of the patient showed generalized pallor, dehydrated mucous membranes, algic fascia, cardiopulmonary without apparent

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Figure 1. Simple sagittal cut abdominal tomography with large sigmoid colon volvulus.

compromise, globose abdomen because of abdominal distension, peristalsis of struggle, tympanism in all quadrants when percussion is applied, generalized pain, and signs of irritation.

Research conducted in the laboratory reported respiratory acidosis and hyponatremia, but no evidence of leukocytosis was found.

In addition to the diagnostic protocol, a simple tomography of the abdomen can be performed to assess severe dilation of the colon. In addition, possible torsion of the sigmoid colon, air-fluid levels in the abdominal cavity, and free intraabdominal fluid. Figure 1.

There was a decision made to perform an exploratory laparotomy, which revealed abundant free fluid with an inflammatory appearance, sigmoid colon volvulus caused by a mesodiverticular band in Meckel's Diverticulum. Figure 2.

As the patient presented hemodynamic instability during the intraoperative period, vasopressors were administered, the sigmoid colon was detorsed, the internal hernia was released with Ligasure, and a wedge diverticulectomy was performed since there were no signs of intestinal distress. Figure 2.

The patient is discharged to the intensive care unit where she develops pneumonia associated with mechanical ventilation and dies on the seventh day of her hospital stay.

Discussion

As the most common congenital gastrointestinal anomaly, Meckel's diverticulum occurs when the omphalomesenteric duct, which connects the primitive yolk sac to the midgut during fetal development, is not completely obliterated between the fifth and seventh weeks of life. The condition is characterized by incomplete obliteration of the omphalomesenteric duct. (1,2, 6)

It was originally described by Hildanus in 1598 and named after Johann Friedrich Meckel, a German anatomist who described its anatomical and embryological features. (1, 4, 6)

Autopsy and retrospective studies estimate Meckel's diverticulum incidence at 1-4% (2, 3, 4).
As it involves the three layers of the intestinal wall, it is considered a true diverticulum. (1,2)

Usually found on the antimesenteric edge, 50 percent of the time between 10 cm and 100 cm from the Bauhin valve, but with reports ranging up to 180

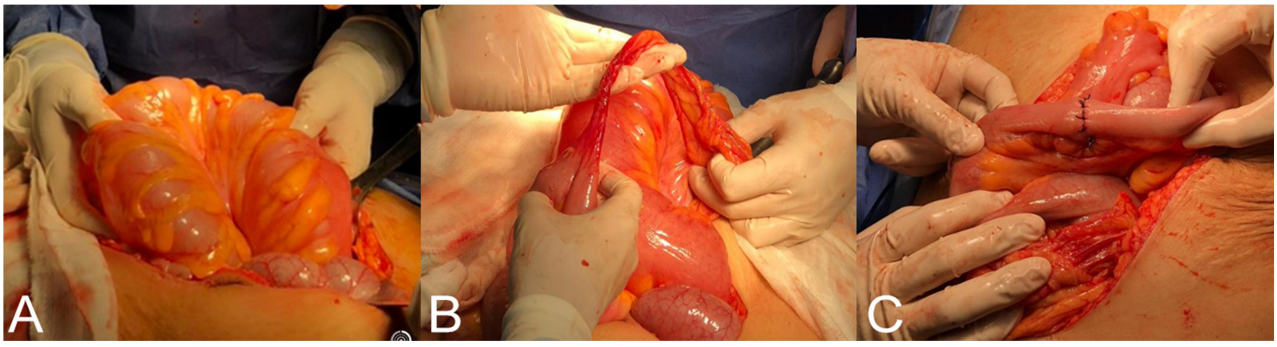

Figure 2. A. Sigmoid colon volvulus. B. Presence of Meckel's diverticulum with a mesodiverticular band with the effect of internal herniation of the sigmoid colon and secondary volvulus. C. Meckel wedge diverticulectomy.

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Figure 3. Product of Meckel wedge diverticulectomy.

cm, its average dimensions are 2 cm in diameter and 5 cm long. (2, 3, 7).

It is known as "the disease of the 2", as it affects 2% of the general population, and is located two feet proximal to the ileocecal valve (0.60 m), is twice as frequent in males (males to females 2:1), is 2 inches long, and contains gastric and pancreatic heterotopic tissue. (14)

Ileocolic branches of the superior mesenteric artery supply the arterial supply. Rarely, a persistent vitelline artery supplies Meckel's diverticulum through the mesodiverticular band. This extends from the adjacent mesentery to the tip of the diverticulum. (5)

There is evidence of heterotopic mucosa in the diverticula of symptomatic patients, with 60% or more exhibiting gastric mucosa, but other tissues, such as pancreatic tissue, Brunner's glands, colonic mucosa, endometriosis, and hepatobiliary tissue, may also be present. (6, 8).

It has been reported that heterotopic tissue occurs in the following order: gastric mucosa (62.4%), pancreatic tissue (16.1%), gastric and pancreatic tissue (5.4%), jejunal mucosa (2.1%), Brunner's glands (2.1%), accessory pancreatic tissue (2.1%) and gastric and duodenal mucosa (2.1%) (6).

Clinical manifestations are observed in 20% of cases (3). In pediatric patients, hemorrhage is the most common clinical presentation. (2). Approximately 80% of the cases are detected incidentally during imaging studies or during a surgical procedure. (1, 4). There are about 15-25% of patients who experience complications, including diverticulitis, intussusception, hemorrhage caused by heterotopic mucosa, perforation, ulceration, herniation, tumors, valvulation, and obstruction, the latter of which is the most common in adult patients. (1, 2, 9)

It is possible for a Meckel's diverticulum to cause obstruction through a variety of mechanisms, including formation of a small bowel volvulus around a fibrous band, intussusception into the intestinal lumen, and incarceration in Littre's hernia, stenosis secondary to chronic diverticulitis, diverticular lithiasis, diverticular tumor or the presence of an annular diverticulum caused by an inflammatory adherence between the tip and the base of the diverticulum forming a ring in which a part of the ileum may be strangled. (2).

Although Meckel's diverticulum presents with a variety of clinical presentations, volvulation is a rare complication, especially if it is accompanied by a mesentery flange. The narrow base and significant length of Meckel's diverticulum facilitate its torsion. (14)

Meckel's diverticulum has an average size of three centimeters, 90% measure between one and ten centimeters. Giant Meckel's diverticula are those larger than five centimeters in diameter and represent about 0.5% of all Meckel's diverticula. (19)

It can be challenging to diagnose complicated Meckel's diverticulum preoperatively because the symptoms can mimic several more common conditions. According to clinical history, clinical signs, and radiological findings, delays in surgical treatment greater than 36 hours increase the risk of mortality by 8-25% in patients at risk of intestinal ischemia. (2, 5)

According to Vork et al, Meckel's diverticulum combined with a mesodiverticular band has a high mortality rate and requires immediate surgery. In these cases, intestinal obstruction is caused by an internal intestinal hernia below the mesodiverticular band. (5)

The treatment of choice for a symptomatic Meckel's diverticulum is surgical resection, which includes diverticulectomy, wedge resection, and segmental bowel resection depending on the integrity of the base of the diverticulum, the adjacent ileum, and whether the diverticulum contains ectopic tissue. (2)

Conclusion

The presence of volvulus due to Meckel's diverticulum is a rare cause of acute abdomen. Because of the imminent risk of intestinal ischemia in these cases, it is imperative that diagnosis and timely surgical intervention are carried out as soon as possible.

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Conflicts of interests

The authors have no conflicts of interest to declare

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