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Case Report

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A surgical surprise: Meckel's diverticulum complicating as Littre's hernia

Abstract

Background: Meckel's diverticulum (MD), a true diverticulum with all 3 layers, is the most common congenital anomaly of the gastrointestinal tract is due to the failure of the obliteration of the vitellointestinal duct during the 5th to 9th week of gestation life. MD can present as haemorrhage, obstruction, diverticulitis, intussusceptions or perforation. Here we present a case of strangulated Littre's hernia in the right inguinal region.

Case report: A 19-year-old male presented with a right groin swelling of 1-month duration. His swelling was not reducible for the past 1 day. He had associated vomiting of 1-day duration. On examination he was febrile and with a heart rate of 96 per minute. His groin examination revealed a 6 x 4 cm swelling which was tense and tender with absent cough impulse. His Chest X-ray and abdomen were within normal limit. His blood investigation was within normal limits except for a leucocytosis. A provisional diagnosis of strangulated inguinal hernia was made and patient was taken up for surgery. A right inguino-scrotal incision was made. The hernia sac was opened at the fundus. 5ml of toxic fluid was let out. The content was a gangrenous Meckel's Diverticulum which was 8cm in length and about 60 cm from ileocaecal junction. Resection of the gangrenous MD was done with end-to-end anastomosis of the ileum. Postoperative period was uneventful and he was discharged on the 9th post-operative day.

Conclusion: Meckel's Diverticulum is one of the rare contents of the hernial sac. Diagnosis is usually intraoperative. Management includes resection of the diverticulum.

Keywords: meckel's diverticulum, littre's hernia, strangulated hernia, right inguinal hernia, CT

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Abbreviations: MD, meckel's diverticulum; CT, computed tomography

Background

Meckel's diverticulum (MD) is the most commonly encountered congenital abnormality of the gastrointestinal tract, affecting 2% of the general population.[1] It is a true diverticulum (containing all the three layers of the bowel) because it is derived from the intact embryological vitelline duct that does not undergo normal obliteration during the 5th to 9th week of gestation.[2] The clinical presentation of MD is haemorrhage, obstruction, diverticulitis, intussusceptions or perforation. Presence of Meckel's Diverticulum as a content of the hernia sac is called Littre's Hernia.[3–5] Here we present a case of strangulated Littre's hernia in the right inguinal region.

Case presentation

A 19-year-old male presented with a painful irreducible right inguinal hernia associated with non-projectile bilious vomiting. There was no history of constipation, diarrhoea or malena. On examination he was febrile with temperature of 38^{0}C. He had a blood pressure of 116/82 mm of Hg, respiratory rate of 21 breaths per minute and pulse rate of 96 beats per minute. On examination he had a swelling in the right groin of 6 x 4 cm. It was warm, tender and tense. It was non reducible with absent cough impulse. Testis was separately palpable. His blood investigation revealed leukocytosis (white cells–13,300/mm^3 with 75% of neutrophils) while other investigation including blood sugar, blood urea, creatinine being within normal limits. X-ray of the chest and abdomen were normal. Ultrasound abdomen showed dilated small bowel loops. A provisional diagnosis of strangulated inguinal hernia was made and patient was taken up for surgery. A right inguino-scrotal incision was made and the hernia sac was approached. Sac was opened at the fundus. Toxic fluid of 5mL was let out. The content was a gangrenous Meckel's diverticulum Figure 1A. MD was 8cm in length and was about 60cm from the ileocaecal junction Figure 1B. Resection of the diverticulum was done with end-to-end anastomosis of the ileum Figure 1C. Abdominal drain was placed. Herniorrhaphy was performed. Patient had uneventful post-operative recovery and was discharged on the 5th postoperative day. Histopathology of the specimen revealed a true diverticulum with gangrenous necrosis.

Discussion

Meckel's Diverticulum was first reported initially in 1598 by Wilhelm Fabricius Hildanus and then by Johann Friedrich Meckel in 1809.[2] It arises because of the failure of the obliteration of the vitellointestinal duct during the 5th to 9th week of intra uterine life. Omphalomesenteric duct-related anomalies are a spectrum of disease which includes omphalomesenteric fistula, enterocysts, and a fibrous band connecting the intestine to the umbilicus, and MD being the most common. In 90 % of the patient, MD is found in the antimesenteric border.[6] MD follows the famous "rule of twos" Figure 2, while But FX Felberbauer et al.,[7] has questioned this rule in his own review.[7] Meckel"s Diverticulum can complicate as small bowel obstruction, (31%), hemorrhage(23%), diverticulitis (14%), intussusceptions (14%), perforation (10%) and miscellaneous umbilical abnormalities &tumours (8%).[8] Bani-Hani & Shatnawi[9] in their study compared the incidentally found and symptomatic Meckel's Diverticulum and have stated that symptomatic group were significantly younger than those in the incidental group. The estimated total lifetime complication rate

has been reported to be 4.2% to 6.4%. A risk of complication is 3.7% at age 16, decreasing to zero by 76 years of age. More than 50% of symptomatic patient are less than 10 years of age. Obstruction being the most common complication can be due to any of the following,[4]

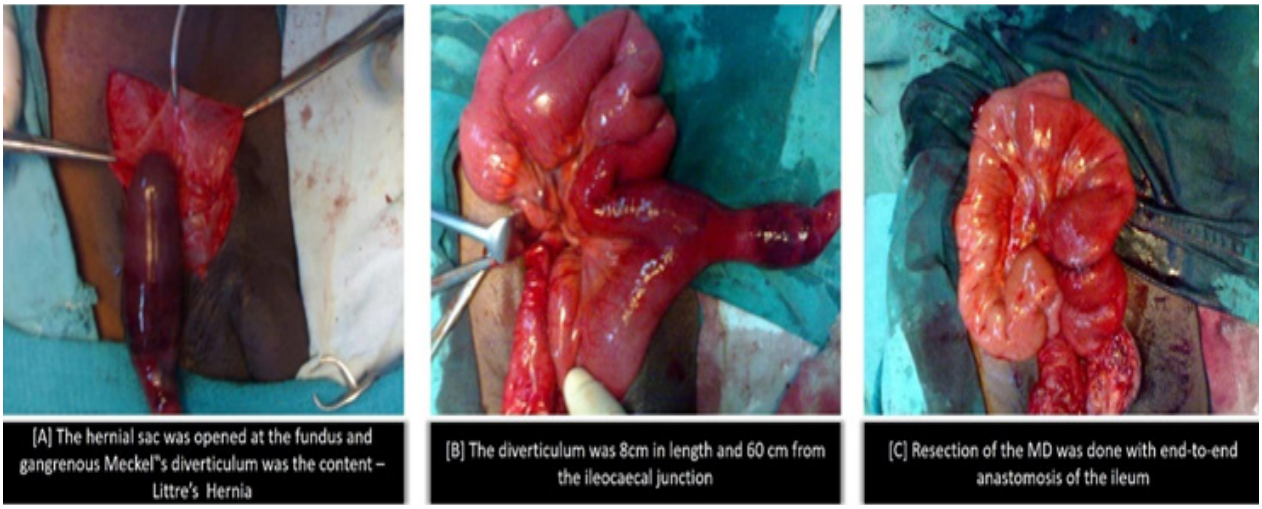

Figure 1 The surgical approach to the litter's hernia.

A: The hernial sac was opened at the fundus and the gangerous meckel's diverticulum was the content-littre' hernia,

B: The diverticulum was 8cm in length and 60cn from the ileocaecal junction,

C: Resection of the MD was done with end-to-end anastomosis of the ileum.

- Volvulus of the intestine around the fibrous band attaching the diverticulum to the umbilicus
- Axial volvulus of the diverticulum
- Mesodiverticular band causing direct ileal obstruction
- Adhesive obstruction secondary to previous diverticulitis
- Diverticulum may invert into the gut lumen causing an obturating obstruction
- Obstruction may occur in neonates due to prolapsed or extrusion of ileum through the umbilicus via patent vitelline duct
- Intussusception with the diverticulum acting as a lead point (common in children)
- Internal herniation around a band attaching the diverticulum to umbilicus or another viscus
- Littre's hernia

Alexis Littre in 1700 described in his paper two cases of intestinal diverticulum as a sole content of hernia sac, and later in 1841 Riecke coined the term "Littre's hernia".[10] The two conditions which often are mistaken for a true Littre's hernia are the Richter's Hernia (partial enterocele of the anti-mesenteric bowel wall which can be incarcerated or strangulated in a hernia sac) and a mixed Meckel's hernia (hernia containing a Meckel's diverticulum plus intestine or other abdominal viscera). Davis[11] emphasized further that hernial sac with Meckel's Diverticulum alone as the sole content should be termed as Littre's hernia.[11] Usual sites of Littre's hernia are-inguinal (50%), umbilical (20%), and femoral (20%), other sites (10%).[3,12] A large systematic review recently reported only 53 case in the literature.[13] Although Meckel's diverticulum is more frequently encountered in men, Littre hernias occur more often in women, mainly due to the high incidence of femoral and obturator Littre hernias.[13] Despite the advances in radiologic techniques, preoperative diagnosis of Littre's hernia and its differentiation from other hernia are still impossible.[3,9,13] Bani-Hani & Shatnawi[9] reported that only 5.9% patients were diagnosed preoperatively. Ultrasonography, which may reveal pelvic abscess, a tubular fluid-distended diverticulum at a site far from the cecum, diverticular wall swelling, segmental thickening of the intestinal walls, and invagination, is not sufficiently specific. Abdominal computed tomography (CT) scans may aid in the diagnosis if MD is suspected; they may show multiple fluid-filled, dilated loops of ileum with distal collapse.[9] R Sinha[14] reported the first case of incarcerated Littre's hernia diagnosed on CT Abdomen. CR López-Lizárraga et al.,[2] reported a strangulated Littre's hernia with Meckel's diverticulum duplication.[2] Velásquez-Bueso et al.,[15] reported an interesting case with a combination of Amyand's Hernia and Littre's Hernia in a school going child.[15] Diaz Pedrero et al.,[16] reported an the oldest patient with Littre's Hernia–90 years.[16] Other diagnostic modalities are barium studies (accuracy rate of 47%), radioisotope studies, and angiography.[9] The treatment of choice for patients with symptomatic MD is surgical resection. We did a surgical resection of the MD and made an end to end anastomosis of the ileum. Cullen et al.,[17] in his landmark paper in 1994 has written *"Meckel's diverticula discovered incidentally at operation should be removed for most patients, regardless of age"*. Bani & Shatnawi[9] have also concluded the same. In his series of 1116 cases FX Felberbauer et al.,[7] has reported mortality of 0.18% and a morbidity of 3.67% in asymptomatic diverticula as compared to a mortality of 1.99% with 9.56% morbidity for symptomatic. The differences are highly significant, therefore a complication from a MD results in a more than tenfold mortality and about threefold morbidity when compared with the removal of an asymptomatic diverticulum.

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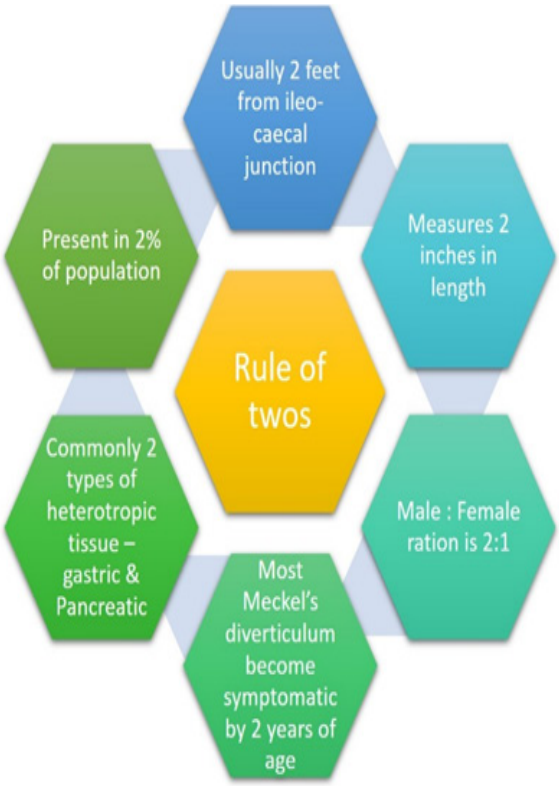

Figure 2 Rule of twos.

Conclusion

Littre's Hernia is a rare type of hernia. Preoperative diagnosis of Littre's hernia is difficult. Symptomatic Meckel's diverticulum needed to be resected. Owing to the long-term complication even an asymptomatic MD need to be removed.

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Conflicts of interest

The authors declare that there are no conflicts of interest.

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