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Isolated Axially Torsion of Meckel's Diverticulum in Adult: A Case Report

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INTRODUCTION/ABSTRACT

The first description of Meckel's Diverticulum (MD) goes back to the sixteenth century when firstly described by Fabricus Hildanus. In the seventeenth century Johann Meckel described it's embryologic and pathologic features. [1,2] It is the most common congenital anomaly of the gastrointestinal tract. It is often found in children and to a lesser extend in adult population. Different incidence of occurrence is reported in different studies, but in common it ranges between 1.4% to2% and only 2% of the affected individuals become symptomatic.[3] Anatomically it is located at anti-mesenteric surface of ileum with an average of 50-60 cm distance from the ileocecal valve.

This congenital entity has often been described by the ''rule of twos''. This rule encounters five descriptions. The first concerns it's incidence (2%), the second concerns it's length which is 2 inches in length, the third concerns its location which is 2 feet far from the ileocecal valve, the fourth concerned with the age at which commonly it is seen, which is under the age 2years, and lastly the incidence of gender affection, it affects male twice as often as females. [4-5] The majority of Meckel diverticula are clinically asymptomatic. When MD becomes symptomatic, the patient can present with abdominal pain, gastrointestinal bleeding and intestinal obstruction. The c common known complications that might need urgent surgery can be summarized as bowel obstruction (small intestine), perforation, bleeding and tumour related complication.[6] The there is an even very rare complication known as axial MD torsion. It is almost all the time followed with intestinal obstruction. We present a case of isolated axially torsion of MD without associated intestinal obstruction, which is extremely rare.

Keywords: Meckel's Diverticulum; Embryology; Pathology; Tumour

PATIENT

A 55 year-old Iraqi male patient presented to our gastroenterology clinic with lower abdominal pain which started 2-3 days before presentation. It firstly began at the upper abdominal and then localized at the right lower abdomen. His medical history was clean, no chronic diseases, but his surgical history revealed an open appendectomy done 25 years ago. Apart from that no relevant surgical, medical or family history. His physical examination revealed normal

vital signs, normal bowel sound, right lower abdominal rigidity, pain and rebound upon palpation. Blood biochemistry revealed CRP (268,7mg/L) and mild elevation of total and direct bilirubin levels. The rest of blood biochemistry results including liver and renal function tests were normal. Complete blood count revealed; normal haemoglobin level, high white blood cell count (17.69 x 10) and dominant neutrophil percentage (86.4%). Abdominal Ultrasonography reported a well confined lesion at the right lower quadrant, with thick fluid and air which led to the suspicion of abscess formation. In addition, they report that the walls of the nearby bowel were thickened. Abdominal Computerized Tomography (CT) showed bilateral nephrolithiasis, a tubular lesion 13-15 cm in length, thin walled with air-liquid levelling laying in the right lower paracolic groove (lower abdominal quadrant) to the right of the cecum and terminal ileum (Figure 1,2,3). There were inflammatory changes at the near-by area which strengthened the diagnosis of abscess formation. Some other irrelevant pathologies like, accessory spleen, small aortic atherosclerotic lesions, umbilical hernia, small right inguinal hernia and right gluteal calcification due to formal injection were reported too. Clinically the patient didn't look to have intra-abdominal abscess formation. So we decided to perform laparoscopy for both diagnosis and treatment.

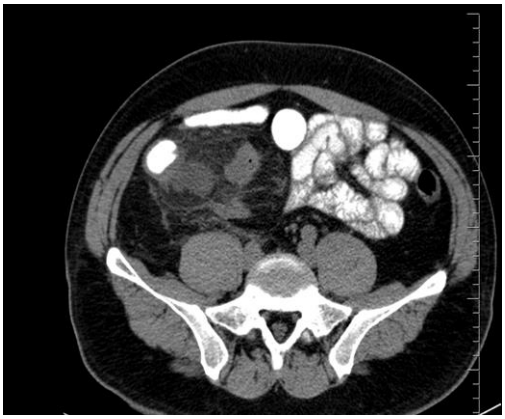

Figure 1: An arroww pointing to the lesion in CT scan section.

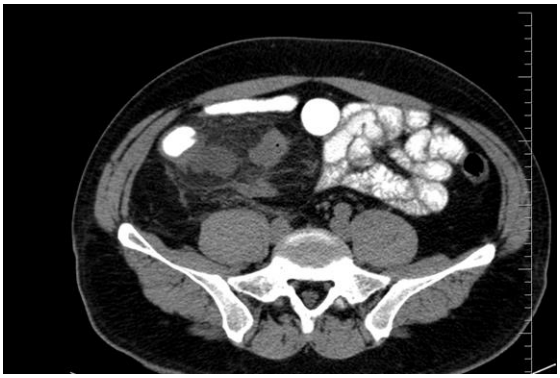

Figure 2: The arrow pointing to the lesion in cuadal CT scan section.

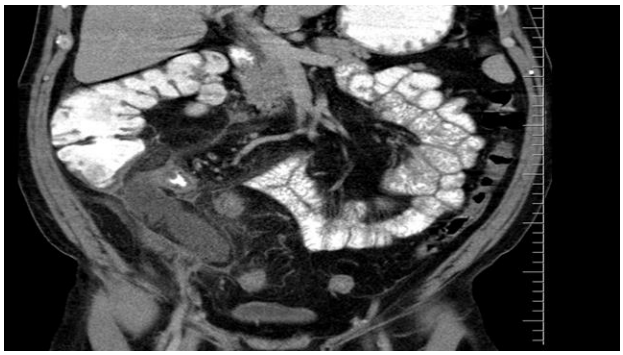

Figure 3: The arrow pointing to the lesion in a couronal section in a CT scan.

On exploration, we that the omentum and part of the small intestine covered a protrusion alt the right lower paracololıcspace. The covering tissue was dissected very gently. Below the covering tissue, there was no abscess formation but there was a tubular lesion laying in the right paracolicspace, it was whitish in colour, soft in consistency and about 15cm in length (Figure4). When we completed the dissection it appeared to be an axially strangulated MD without causing segment ileum volvulus. It was strangulated at its origin and at its distal end where was attached by a fibrous band to the sigmoid colon appendix epiploicae and to the lower right distal parabolic space (probably following appendectomy. Figure2) .The distal attachment point was clipped and cut. Endo ca was used to dissect and transect its continuity to the ileum. After then a drain was placed at the right paracolic space.

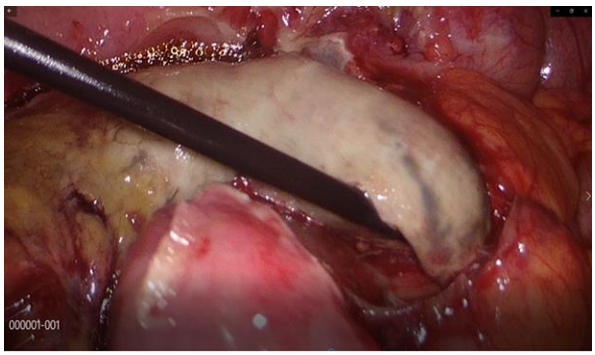

Figure 4: The dissection of the proximal torsion point.

The pathology report revealed a small bowel segment 15 cm in length and 4,5 cm in width (Figure 5). On transection; it showed wide transmural ischemic necrosis, serozal and submucosal superlative inflammation with rich neutrophilic infiltration. And the all epithelium was necrotic and bloody in appearance. The patient had

uneventful Post-operative period and discharged on the seventh post-operative day. He came for control 45 days later. His control revealed normal physical examination and laboratory results.

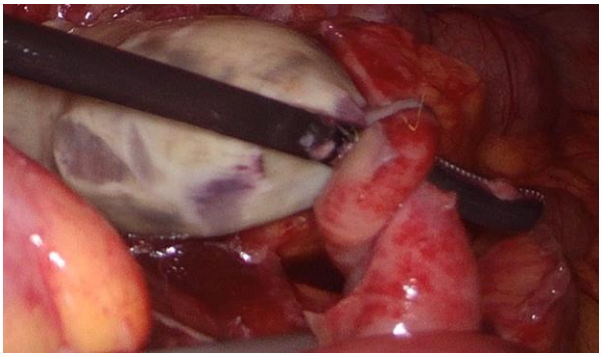

Figure 5: The proximal attacment point

DISCUSSION

MD is a true diverticulum occurs in about 2% of the population .The majority of MD cases are clinically silent and may remain so throughout the entire lifetime. The total lifetime complication rate of MD is accepted to be 2% with a little bit of male to female dominance.[3-5] Symptomatic MDs are subject to treatment, but treatment of silent MDs which diagnosed during procedure to irrelevant disorder is controversial. Thirunavukarasu strongly believe in the removal of asymptomatic MD because of a high risk region for malignancy development in the ileum.[7] On the other hand Blouhos et al. don't recommend routine diverticulectomy for asymptomatic MDs.[8] There are some risk factors that may lead to increase the risk of symptomatic MD development and thus increase the risk of complications. These risk factors can be summarized as: male sex, age younger than fifty years, diverticulum length of 2 cm or more or diverticulum containing heterotopic mucosa. When two, three, or four of these risk factors are met, symptoms development rate increases to 25,42 and 70% respectively.

Some studies have showed that MD complications differ according to different patients ages. The most common complication during early child hood gastrointestinal bleeding, invagination and diverticulitis, but intestinal obstruction due to volvulus or bird was the most common complications in adult.[9-10]

MD complication in adult is extremely rare. Bowel obstruction seems to be the most common complication in adult, that can develop due to a fibrous band, loop formation or in association with MD volvulus.[11-13] Axial MD volvulus is even more extremely rare condition that very few cases were reported.[13-15] Our case is a kind of axially isolated MD torsion that differ from many of this kind of twisted MD in many aspects as in its clinic picture, location, associated development of intestinal obstruction and treatment. Our patient clinical picture was obscure, he had abdominal discomfort which was mild, but not as acute abdomen clinical picture that is seen in complicated MD. There was only pain at the tower quadrant during palpation. His appetite was good and no compliant of bowel obstruction, he was able to eat, drink and defecate. In contrary to many reported cases with axially MD torsion. Almost all the patients presented to the emergency services with signs and symptoms of acute abdomen or/and intestinal obstruction (abdominal pain, nausea and/or vomiting.[13-15] This can be explained as an isolated MD torsion

without affecting the intestine part next to its origin or any other part of the intestine. The giant MD in our patient was twisted at its origin and became as if an isolated organ that didn't belong to the rest of gastrointestinal tract and didn't cause any part of the bowel to be obstructed as the result of its torsion as in many other cases[11,13 and 15] MD complications can be treated by laparoscopy or laparotomy. Most of the reported cases were treated by conventional surgery, because almost all of them had intestinal obstruction diagnosis which makes laparoscopic intervention risky. While we cloud treated our patient laparoscopically because there was no bowel obstruction. Almost all of axially twisted MD cases were treated by open surgery with resection of the adjacent ileum segment.[11-15] But our case was treated by laparoscopic diverticulectomy which commonly the treatment of uncomplicated or asymptomatic MD.[4,6]

During our search in the literature, we have noticed that in adult patients with MD torsion whether associated with bowel obstruction or not , they have common similarity in the MD length. All the twisted MDs were giant with length of=> 10 cm and a width of =>4 cm. From the point of view, we advise resection of asymptomatic MD diagnosed during investigation for unrelated disorder or during laparotomy or laparoscopy. Because all the patient underwent urgent surgery because of MD torsion had the characteristics that we have mention above. This means asymptomatic giant MD patients have high risk of developing MD torsion. As we know emergent surgery carries a higher risk than planed one. In addition, hospital stay prolongs and antibiotic treatment becomes mandatory and consciously expenses rises uses of antibiotics which could be preventable.

CONCLUSION

Axial MD torsion is extremely a rare complication, which is complicated with bowel obstruction. Isolated axial MD torsion is very rare .But male patients with giant MD (=>10 cm length) have a very high probability of developing MD torsion with or without bowel obstruction. So we advise resection of asymptomatic giant MD particularly in male patients.

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