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RESEARCH ARTICLE

SMALL BOWEL OBSTRUCTION DUE TO MECKEL'S DIVERTICULUM: A CASE REPORT

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Abstract

Meckel's diverticulum is the most common congenital anomaly of the small intestine. It results from incomplete obliteration of the vitelline duct leading to the formation of a true diverticulum of the small intestine which is usually located on the antimesenteric border of the ileum. This case report presents the diagnosis and management of a small bowel obstruction due to Meckel's diverticulum in a 70-year-old patient. To identify the cause of the small bowel obstruction, The patient underwent computed tomography (CT) scan of her abdomen and pelvis which showed mild dilatation of the small bowels, particularly in the distal jejunum and proximal ileum with no transition point was seen on the CT scan. During the laparotomy, it was revealed a gross distension of the small bowel, and the distal portion of the ileum was markedly compressed by an internal hernia twisted around a giant Meckel's diverticulum with a mesodiverticular artery in an area 50 cm from the tip of the ileum.

Introduction:-

Small bowel obstruction accounts for 20% of all acute surgical admissions with the most common cause being postoperative adhesions followed by hernias[1].

Meckel's diverticulum is the most common congenital anomaly of the small intestine. It results from incomplete obliteration of the vitelline duct leading to the formation of a true diverticulum of the small intestine which is usually located on the antimesenteric border of the ileum [1].it is located 60 cm from the ileocecal valve, and can be between 2 – 5 cm in length[2].Its incidence is about 2% according to autopsy reviews [3], and majority of patients remain asymptomatic. Gastrointestinal bleeding is the most frequent clinical presentation in children, and s, intestinal obstruction is the most frequent clinical presentation in adult, mainly due to intussusception or intestinal volvulus and rarely due to diverticulitis, diverticular torsion, or Littré's hernia (abdominal wall hernia that involves the Meckel's diverticulum)[4]. this case report presents the diagnosis and management of a small bowel obstruction due to Meckel's diverticulumin a 70-year-old patient.

Case Report

A 70 year old man, with a medical history of hypertension and diabetes, presented to the emergency room of the University Hospital of Rabat with abdominal pain, bloating, vomiting and no passing gas for 3 days. He had no fever,Blood pressure (145/80mm Hg) and heart rate (85 bpm) were normal. The abdomen had no palpable hernia, was distended with diffuse pain on palpation, and had no evidence of peritonitis. The digital rectal examination was

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normal.Laboratory tests showed leukocytosis with left shift (15,000 white blood cells/mm3). The results of all other tests, such as electrolytes and urinalysis, were within normal limits.

To identify the cause of the small bowel obstruction, The patient underwent computed tomography (CT) scan of her abdomen and pelvis which showed mild dilatation of the small bowels, particularly in the distal jejunum and proximal ileum with no transition point was seen on the CT scan (Fig.1).

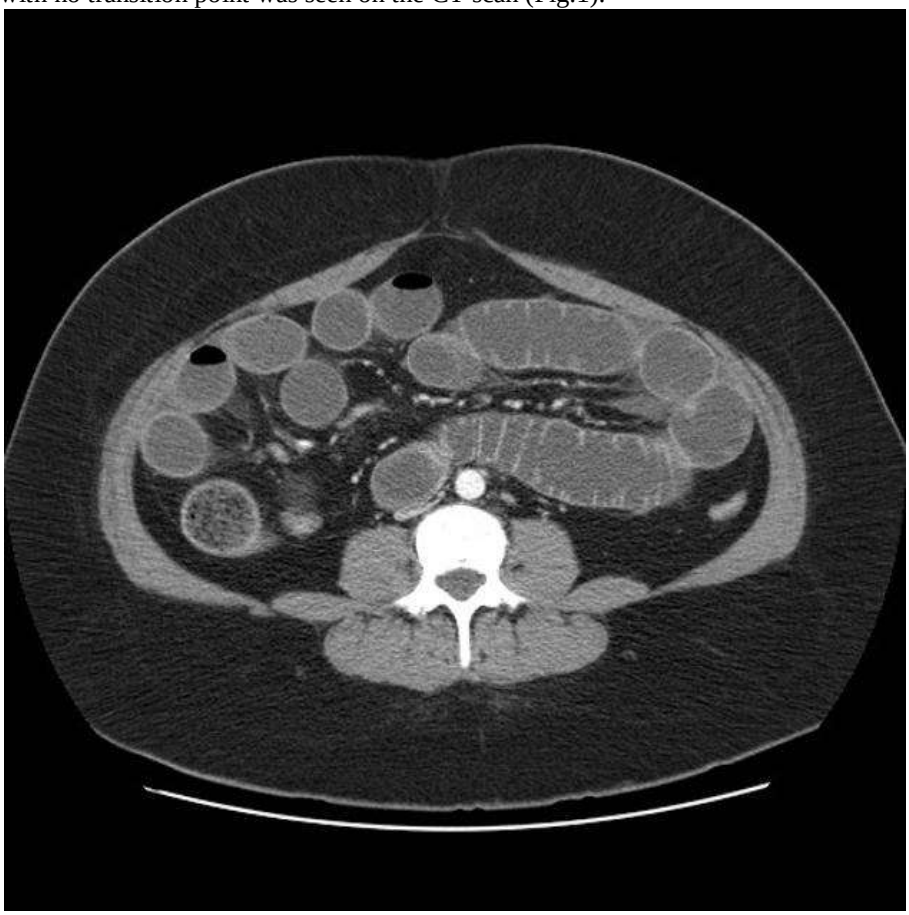

Figure 1:- CT imagine of the abdomen.

As the etiology of the stenosis was not identified, it was decided to perform an exploratory laparotomy under general anesthesia and a nasogastric tube was inserted with immediate drainage of the stasis fluid.

During the laparotomy, it was revealed a gross distension of the small bowel and collapse of the large bowel. Loops of distended small bowel were identified extending proximally from the duodenojejunal junction to the distal ileum. The distal portion of the ileum was markedly compressed by an internal hernia twisted around a giant Meckel's diverticulum with a mesodiverticular artery in an area 50 cm from the tip of the ileum (Fig.2, 3) .

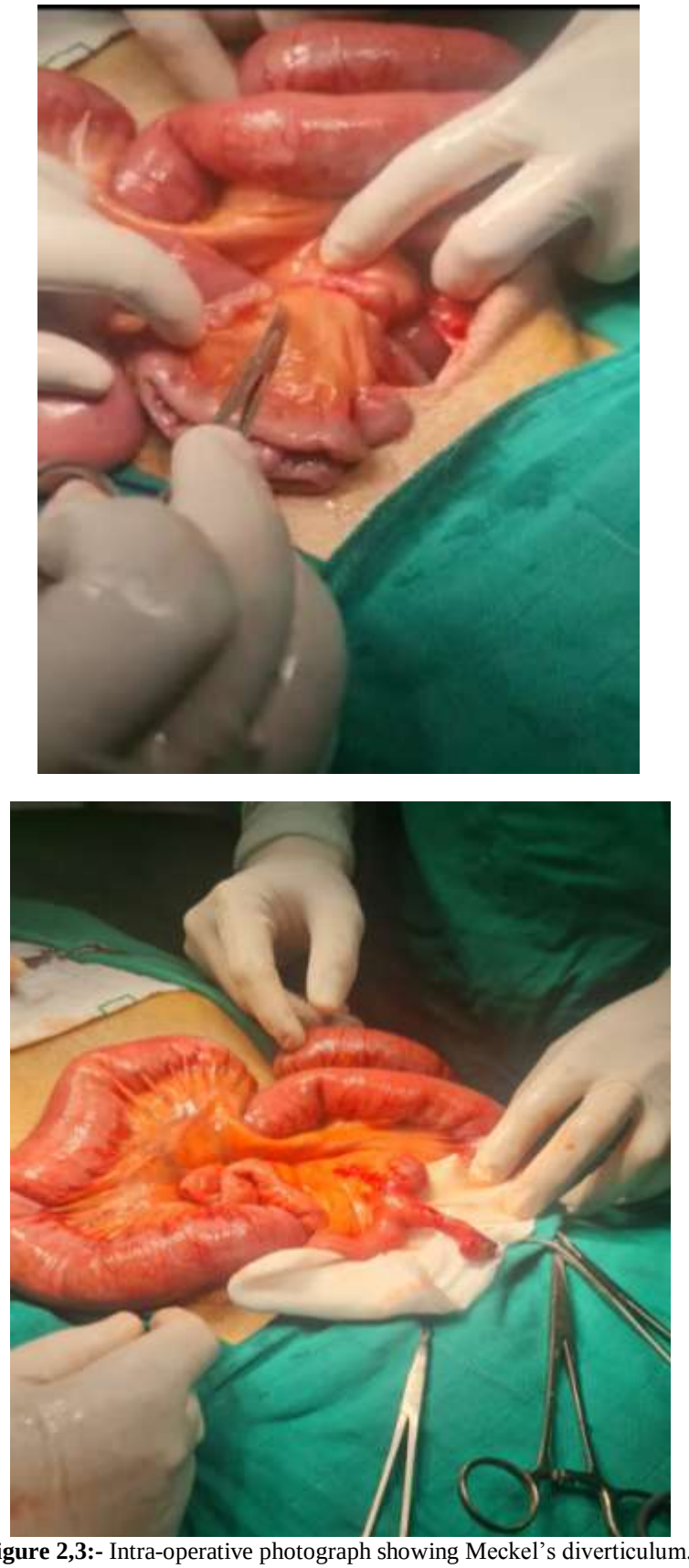

Figure 2,3:- Intra-operative photograph showing Meckel's diverticulum.

A short segment of the terminal ileum containing Meckel's diverticulum was resected and a termino-terminal manual anastomosis through two hemi-surjects was performed (Fig.4) . Histology showed an infracted Meckel diverticulum with No gastric-type mucosa or pancreatic tissue was identified.

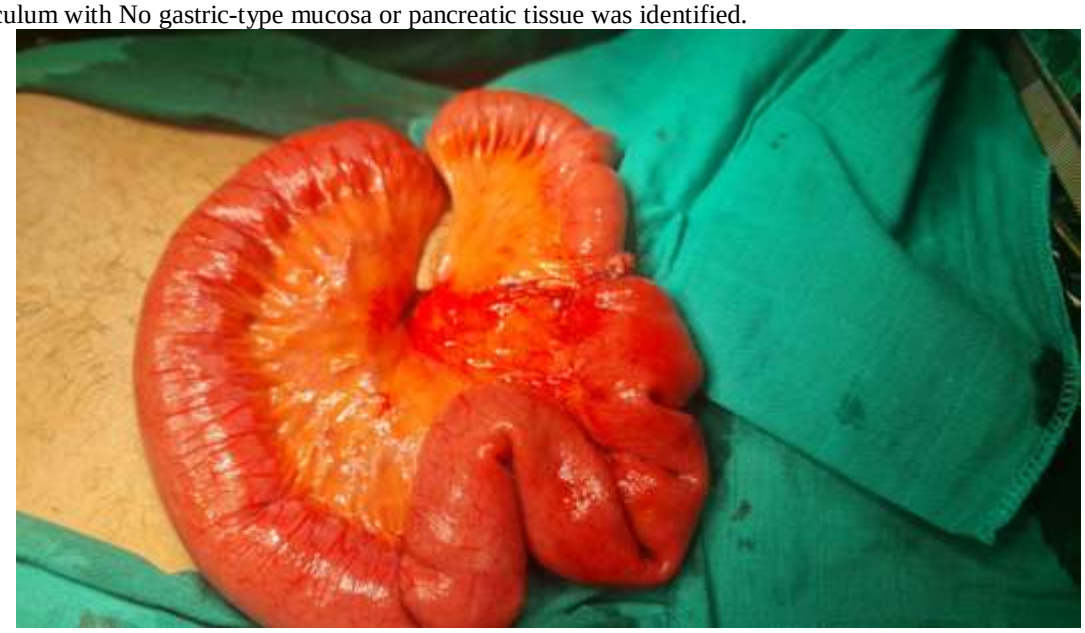

Figure 4:- Meckel's diverticulum was resected and a termino-terminal manual anastomosis.

Discussion:-

Meckel's diverticulum was originally described by FabriciusHildanus in 1598. However, it is named after Johann Friedrich Meckel, who established its embryonic origin in 1809[1] [5-6].

Meckel's diverticulum isresults from incomplete obliteration of the omphalomesenteric duct between the 5th and 7th week of gestation. It is the most frequent anomaly, (90%) resulting from this incomplete obliteration[7].

It isthe most common congenital anomaly of the small bowel, with a prevalence of approximately 1-3%, and a true diverticulum containing all layers of the intestinal wall. The medium length of a Meckel's diverticulum is 3 cm, with 90% ranging from 1 cm to 10 cm[6]. The diverticulum containing all layers of the intestinal wall and usually located between 60 and 100 cm from the ileocecal valve on the antimesenteric border of the terminal ileum.The average distance to the ileocecal valve appears to vary with age. For children under 2 years of age the average distance is 34 cm. In adults, the average distance between Meckel's diverticulum and the ileocecal valve is 67 cm. Most cases of Meckel's diverticulum are asymptomatic, with an estimated lifetime risk of developing complications of about 4%[8].

There are many mechanisms of intestinal obstruction from a Meckel diverticulum. Obstruction can be caused by blockage of an intestinal loop by a mesodiverticular band, volvulus of the diverticulum around a mesodiverticular band and intussusception, as well as by extension into a hernial sac (Littre's hernia) [9]. In our case, the obstruction is caused by trapping of a bowel loop by a mesodiverticular band.

The diagnosis is not only clinical but also confirmed by imaging exams [12] . Abdominal X-ray with air fluid levels in the small bowel and paucity of gas in the colon is very typical. According to the literature, abdominopelvic computed tomography has a 90–95% sensibility and a 96% specificity for small bowel obstruction, and in 95% of the cases, it provides not only information about the exact location and etiology of the obstruction, but also indirect signs of small bowel suffering

The primary treatment for symptomatic Meckel's diverticulum is surgery, by laparotomy, the extent of resection of which depends on the peroperative results and the type of complication found. In cases in which the diverticulum has a large base or when there are inflammatory or ischemic changes in the adjacent ileum, it is preferable to resect the involved bowel with an intestinal anastomosis[10], [11]. This resection is also necessary for the treatment of

patients who suffer from gastrointestinal hemorrhage because the site of the bleeding is usually in the adjacent ileum. Involvement of the diverticulum by benign tumors can be treated by simple diverticulectomy, depending on the site and size of the lesion. For malignant tumors, extensive intestinal and mesenteric resection is required[12], [13].

Conclusion:-

Meckel's diverticulum is an incomplete obstruction of the omphalomesenteric duct. It is rare and affects 2-4% of the population. It is most often asymptomatic and is only diagnosed incidentally or when complications arise. Small bowel obstruction due to a hernia of the internal ileum twisted around a Meckel's diverticulum with a mesodiverticular artery is very rare, difficult to diagnose, and requires a high level of suspicion and is only performed by exploratory surgery.

Conflict of interest:

The authors declare no conflict of interest

Authors contribution:

ZAKARIA ELBARKAOUI, AMINE BENHADI, and SOUHAIL ZEOUAY participated in the care of the patient. They wrote the first version of the manuscript. ECHERRAB EL MAHJOUB, MOHAMED ELABSI, EL ALAMI EL HASSAN, EL OUNANI MOHAMED, and AMRAOUI MOHAMED made essential contributions to the document. ZAKARIA ELBARKAOUIAMINE BENHADI, and SOUHAIL ZEOUAY coordinated the drafting of the manuscript.

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