IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)
e-ISSN: 2279-0853, p-ISSN: 2279-0861.Volume 23, Issue 6 Ser. 7 (June. 2024), PP 32-35
www.iosrjournals.org

A Meckel's Diverticulum With Short Stump But Having Large Fibrous Band Up To Umblicus Causing Small Bowel Obstruction

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Abstract
Background*: Meckel's Diverticulum is a true diverticulum of small gut as it has got all layers of the small intestine and also contains ectopic gastric mucosa [1].It is the most commonest congenital abnormality of the gastro intestinal tract and has been reported in up to 1–3% of patients [2]. It is generally asymptomatic and is usually discovered incidentally during surgery [1]. However, hemorrhagic, inflammatory, and small gut obstruction complication are oftern encountered.In our study we present a complete Meckel's Diverticulum extending from anti mesenteric border of distal Ileum to umbilicus having a small stump near gut but with large fibrous band resulting in acute small gut obstruction needing emergency exploration followed by resection anastomosis.*

Keywords*: Meckel's Diverticulum, Small Bowel Obstruction, Short Stump & Large Fibrous Band, Resection Anastomosis*

Date of Submission: 09-06-2024 Date of Acceptance: 19-06-2024

I. Introduction:

Acute intestinal obstruction is a surgical emergency that requires an emergency intervention. Clinical features of acute bowel obstruction include abdominal pain, abdominal distension, vomiting, inability to pass stools and flatus (obstipation).[1] External & internal herniation, bands, adhesions, tumors, tuberculosis, intussception, Postoperative adhesions, torsions are the leading causes of acute intestinal obstruction, Some tim, Meckel's diverticulum can rarely be the cause [2, 3] not necessarily presenting in childhood but in young adult as it is in our study. Meckels Diverticulum is a type of true diverticulum as it involves all layers of the small intestine and contains ectopic gastric mucosa [1]. It is the most common congenital abnormality of the gastro intestinal tract and has been reported in up to 1–3% of patients [2].It is generally asymptomatic and is usually discovered incidentally during surgery [1].However, complications as hemorrhagic manifestation in form of Melaena due to presence of ectopic gastric mucosa causing peptic ulcer bleed, inflammatory as enteritis, and obstructive as acute small gut obstruction can arise [[1], [2], [3] [4]. Small Gut Obstruction may occur because of torsion of the diverticulum with fibrous band as in our study.Intussusception or a volvulus around an attachment to the abdominal wall may also be caused by Meckel's Diverticulum. Embroyologically at about 7

weeks of gestation, the duct separates from the intestine.If there is failure of duct to partially or entirely separate and involute, it can cause an omphalomesenteric cyst or an omphalomesenteric fistula that drains through the umbilicus or a closed fibrous band from the diverticulum to the umbilicus, which can result in obstruction as in our study [Pict:2] [5] If there is no additional attachment it results into formation of Meckel diverticulum.

II. Case Report

A 26 year old male, presented to the Emergency of our hospital, Sharda School of Medicine & Research centre with severe abdominal pain, vomiting, inability to pass stools and flatus since 2 days.On examination his abdomen was distended, tender and bowel sounds were hyperactive. No mass was palpable.There was no significant past medical history, no history of previous abdominal surgery and no comorbidities present.His body temperature was normal.His leukocyte count was 9 x 10 /L, Hemoglobin was 13.4 g /dl and platelet values was 2, 50, 000.All other investigations like, Blood Sugar, Kidney functiontest, Liver function test, electrolytes, arterial blood gas analysis and urine & stool examination were within normal limits. His erect abdominal plain X-ray was done and it showed dilated loops of small bowel with fluid levels, with no free air under either diaphragm.[Pic;1] He was diagnosed with mechanical intestinal obstruction, admitted to the surgical ward with initial management of intravenous fluid resuscitation, antibiotics, nasogastric tube insertion and foleys catheterization. Over the next 12 hours, the patient's vital signs remained stable and his condition did not deteriorate, however there was no improvement in his general condition. His abdominal girth remained the same, he did not pass stools and flatus.A decision to perform emergency exploratory laparotomy under general anaesthesia was taken. On exploring the peritoneal cavity; there was gross distension of the small bowel proximal to this Diverticulum which was present in terminal ileum about 2ft proximal to ileocaecal junction.The distal ileum to diverticulum and large bowel was collpased. The small bowel was subsequently examined and explored. Loops of distended small bowel were identified extending proximally from the duodenojejunal junction till to diverticulum at distal ileum. The distal part of the ileum was found compressed by the meso diverticular band, about 2ft proximal to the end of the ileum. Obstruction was caused by trapping of a bowel loop by a mesodiverticular band which starts from a small stump at antimenteric border of this part of ileum and was connected till umbilicus in form of a fibrous band [Pict;2].The meso diverticular fibrousband from the anti mesenteric boerder of ileum till ublicus was dissected out and the ileal loop was released from the diverticulum.Resection of the Meckel's diverticulum with small part of ileum done and closure of the bowel was performed [Resection Anastomosis] [Pic :3].The Abdomen was closed in layers.The excised tissue was sent for histopathology and the biopsy report confirmed Meckel's diverticulum.The patient recovered without any complications and was discharged after seven days of hospitalization.

III. Discussion

Meckels Diverticulum is the most common congenital malformation in the lower portion of the small intestine [5, 6]. Abdominal pain, abdominal distention, constipation, and vomiting- bilous/ non bilous are the salient features of intestinal obstruction. Multiple air-fluid levels in diagnostic imaging indicate pathological accumulation of fluid gas and are characteristic findings in X-ray and CT scan of small bowel obstruction which was also true for our case.On CTscan, Meckel's Diverticulum is hardly distinguished from the normal small intestine in uncomplicated cases. However, a blind-ending fluid or gas-filled structure may be seen in continuity with the small intestine. The cause of this diverticulum is the vitelline duct, which normally connects undeveloped gut to the yolk sac that atrophies during 5th–7th week of pregnancy [7]. When the vitelline duct does not atrophy completely then it develops into a true diverticulum, which makes up 2% of population [6]. Most people with diverticulum are asymptomatic [6]. Symptoms appear usually during the 1st year of life, with the possibility of their appearance during childhood [6]. These symptoms include rectal bleeding or intestinal obstruction [8]. Our case presented with small intestinal obstruction and we confirmed it through abdominal X-ray. The intervention was surgical that involved midline incision. During the surgery, it was revealed that there was the Meckel's Diverticulum, located 60 cm (approx. 2 feet) from ileocecal valve and blood supply by yolk arteries [6, 8]. Intussusception or inversion of the Meckel's Diverticulum into the ileum or cecum, or the existence of the fibrous band that entraps the vascular supply of the small bowel underneath it and may cause strangulation, or wrap the small intestines around the fibrous band from Meckel's Diverticulum to the umbilicus [8].That happens commonly for people who have diverticulum with obstruction symptoms [8]. The fibrous band is a remnant of right and left yolk arteries [8]. The anatomical structure for the diverticulum of length and base is important factor for rotation around the band thus occurrence of obstruction [6]. In other cases, reported pre-operate diagnosis is rare by 4% of their cases. Meckel's Diverticulum can be diagnosed by ultrasound when there are complications and it is not specific [7]. Arteriography and technetium pertechnetate scans are ideal for diagnosis in case with bleeding or ectopic gastric mucosa [8]. There are various mechanisms for bowel obstruction arising in a patient of Meckel's diverticulum. Obstruction can be caused by trapping of a bowel loop by a meso diverticular fibrous band, a volvulus of the diverticulum around a meso diverticular fibrous band, and

intussusception, as well as by an ex- tension into a hernia sac (Littre's hernia). In our case; obstruction was caused by trapping of a bowel loop by a meso diverticular fibrous band. The important aspect of our case is clear demonstration of the meso diverticular fibrous band of a Meckel's diverticulum. The lack of ectopic tissue thus suggests diverticulitis as a cause of inflammation, and subsequent obstruction was not a likely differential. Instead, the tip of the Meckel's diverticulum with a band attached to the ileal mesentery was discovered per-operatively during the diverticulectomy. Thus, meso diverticular fibrous band of Meckel's diverticulum was determined to be the cause of small bowel obstruction in this patient.

IV. Conclusions

Most of the Meckel's Diverticulum are asymptomatic and present as small stump as a diverticulum at distal ileum with small or no fibrous band but some time a small stump with large fibrous band upto umbilicus is present as in our case [pic:2] [Pic;3]. It is mostly a symptomatic but when symptomatic as clinical manifestations may arise from complications like obstruction, bleeding or diverticulitis, Meckel's Diverticulum must be included in the differential diagnosis of young patients presenting with small bowel obstruction.These are rarely diagnosed prior to surgery because of its indistinguishable features from other intra-abdominal pathologies. The standard treatment of Meckel's Diverticulum is surgery in form of dissecting it out completely which may need a small part of bowel only at anti mesenteric border or a portion of bowel if stump is broad based and large as in our case resulting in resection anastomosis after dissecting out complete Meckel's diverticulum and portion of involved gut.Early surgery is required in order to prevent complications as strangulation or gangrene of Gut. Significant morbidity and mortality can be prevented if surgeons act to diagnose Meckel's Diverticulum and manage it on time.

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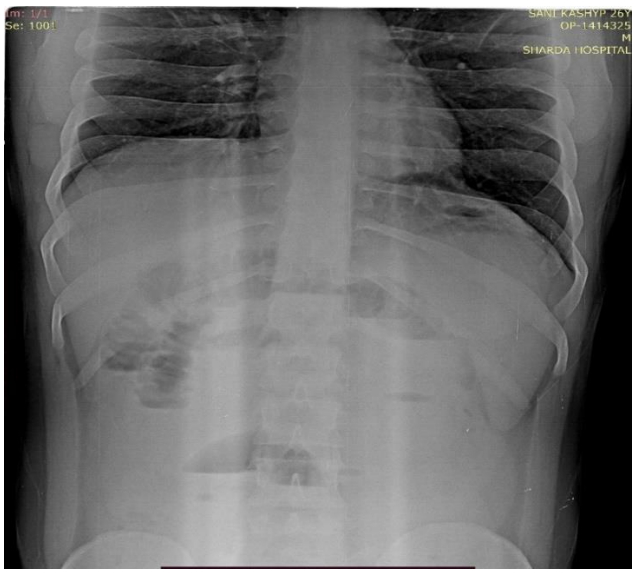
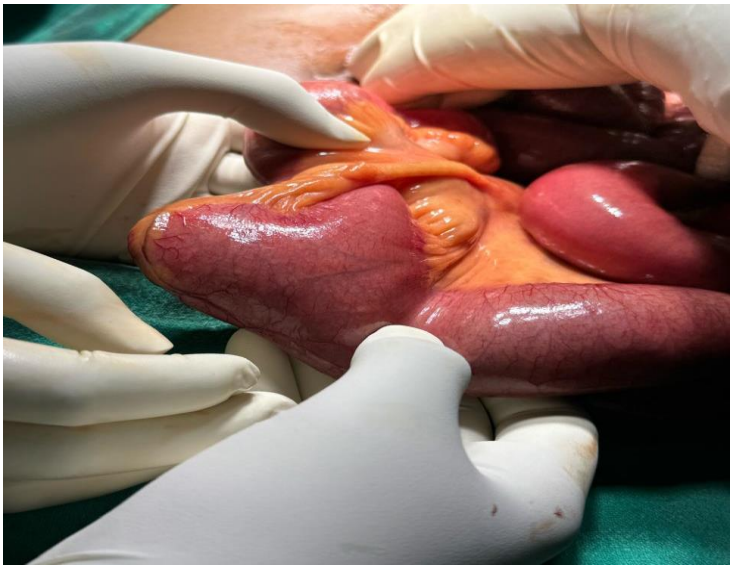
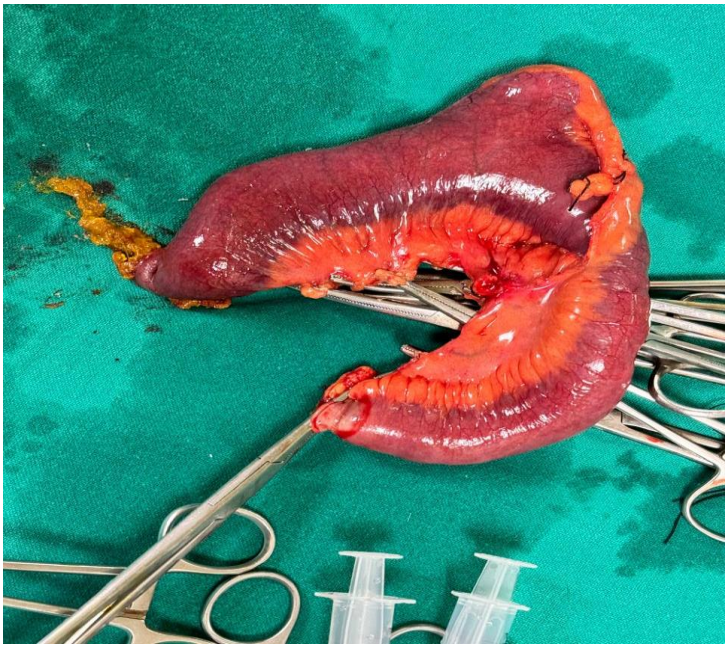


Pic 1 : X-Ray Abdomen Straight Erect View Showing Fluid Levels.



Pic 2 : Diverticulum Causing Obstruction With Long Fibrous Band



Pic : 3 Resected Gut With Meckel's Diverticulum With Long Fibrous Band