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Meckel's diverticulum with heterotophic pancreatic epithelium presenting with intestinal obstruction in a 22 year old male

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Abstract
Meckel's diverticulum is a congenital diverticulum of the small intestine due to persistence of Vitelline duct.Although often asymptomatic, in about 2%patients it may present with symptoms of intestinal obstruction, diverticulitis or gastrointestinal bleeding. Diagnosis is difficult as symptoms can be vague and most investigations are non specific.We present the case of a 22 year old male who presented with obstruction secondary to Meckel's diverticulitis with heterotropic pancreatic epithelium. Patient underwent exploratory laprotomy with resection of the segment of ileum containing Meckel's diverticulum.

Keywords: Meckel's diverticulum, Vitello- intestinal duct, intestinal obstruction

Introduction
Meckel's diverticulum is the most common congenital anomaly of the gastrointestinal tract [1]. It occurs due to persistence of Vitello-intestinal duct [2]. It has a prevalance of 2%, is located along the antimesentric border of the terminal ileum, usually within 60cms of the ileocaecal valve [3]. Only 4% of patients with Meckel's diverticulum have a complication, making surgical intervention in an asymptomatic one unnecessary [4]. Patients may present with obstruction, per rectal bleed, diverticulitis, incarcerated hernia, carcinoid or even gastrointestinal stromal tumour [5]. All symptomatic Meckel's diverticulum must be treated with surgery, depending on the presentation, with a diverticulectomy, wedge resection or resection of ileal segment with ileo-ileal anastomosis [6].

Case Report
A 22 year old male presented with pain in abdomen, abdominal distension and vomiting since 3 days. He also gave history of constipation since 2 days. He had fever 2 days ago. There was no other significant history and the patient didn't have any co morbidities. On examination, patient was tachycardic and had tenderness in lower abdomen with guarding. Patient was given broad spectrum antibiotics and intravenous fluids. A nasogastric tube and a foley's catheter were inserted. X-ray abdomen was suggestive of small bowel obstruction while all blood investigations were within normal limits. After initial resuscitation and stabilising the patient, a CECT of the abdomen was performed. CT suggested dilated small bowel loops with a probable zone of transition at terminal jejunum-proximal ileum. There was partial swirling of mesentric vessels near zone of transition. Patient underwent exploratory laprotomy. There was minimal free fluid in the abdomen, with dilated jejunum and proximal ileum. An inflammed Meckel's diverticulum was noted, approximately 50cm proximal to the ileocaecal junction, 2.5-3 cms in length with adhesions extending from the diverticulum to the small bowel. A resection of the diverticulum with corresponding segment of ileum and a end to end anastomoses of the ileum was performed. Patient recovered well from surgery. Incidentally patient's histopathology report had pancreatic heterotopic epithelium in addition to diverticulitis.

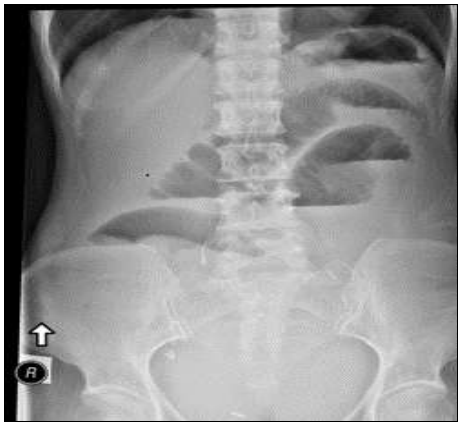

Fig 1: X-ray abdomen erect suggestive of Intestinal Obstruction

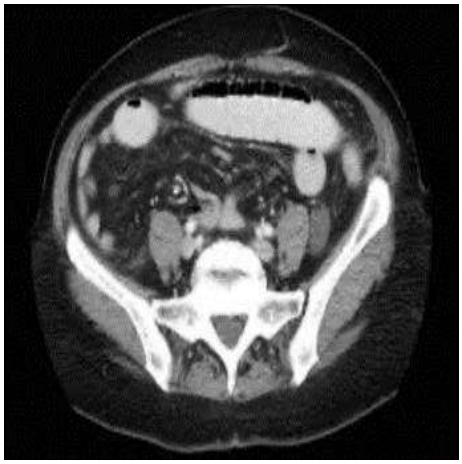

Fig 2: CECT abdomen suggestive of intestinal obstruction

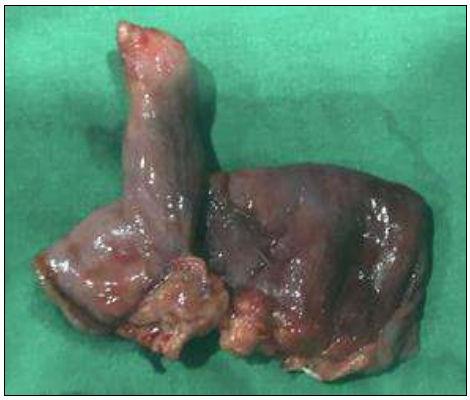

Fig 3: Resected Meckel's diverticulum

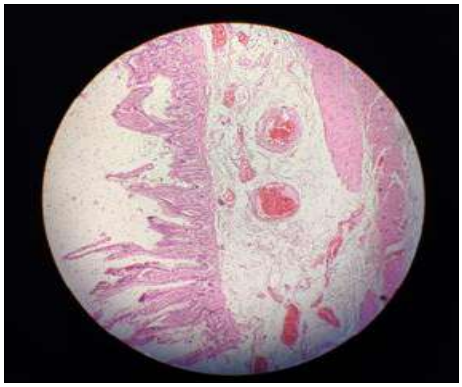

Fig 4: Histopathology image of Meckel's diverticulum with heterotopic pancreatic epithelium

Discussion

A German Surgeon, Wilhelm Fabricus Hildanus, was the first person, ever, to describe Meckel's diverticulum in 1598 [7]. However, it was Johann Friedrich Meckel, an eminent German Professor of Anatomy, Pathology & Zoology who first described its anatomy and embryology [8]. Although he is credited with a number of eponyms, the diverticulum remains his most celebrated work [9]. Prevalance of Meckel's diverticulum is between 0.3-2.9%, while it's average location is 52.4 cms proximal to ileocaecal valve, with a mean length of 3.05cm and symptoms in 4 to 9% of patients [10]. It occurs due to failure of closure of vitelline duct in the 5th week of gestation [11]. Normally the Vitelline duct, also known as the omphalomesentric duct, connects the gut to yolk sac. Failure of its timely obliteration can lead to a variety of anomalies, including omphalomesentric fistula, enterocyst, a fibrous band connecting the intestine to the umbilicus and Meckel's diverticulum.Incidence is higher in males, when compared to females [12]. It is also far more common in children compared to adults, hence there is often a delay in diagnosis in adults [13]. Children often present with intestinal obstruction, followed by rectal bleeding, and less commonly with diverticulitis and other symptoms [14]. Other studies argue that haemorrhage is the most common symptom in children [15]. Adults present with obstruction, bleeding, diverticulitis, incarcerated hernia and rarely carcinoid tumour [16]. Although mostly lined by ileal epithelium, other epithelia such as gastric, jejunal, colonic and pancreatic epithelium have been reported, lining it's wall [17]. Rare ectopic tissues like Brunner's gland, hepatobiliary tissue and even endometrial tissue have been reported [18]. Heterotropic gastric tissue causing ulceration of surrounding ileal mucosa is the most common cause of bleeding in Meckel's diverticulitis [19]. Adults may present with symptoms of abdominal pain, vomiting, constipation or per rectal bleed. Some patients may have atypical presentation such as left sided abdominal pain, and other differential diagnoses will have to be ruled out [20]. There is even a case report of a GIST in Meckel's diverticulum with a coexisting adenocarcinoma of colon [21]. Due to the relative non specificity of symptoms, X-ray abdomen and CT abdomen can point to a differential diagnosis but not conclusively diagnose Meckel's diverticulitis. Multidetector CT and CT enterography have better diagnostic efficacy [22]. Treatment of Meckel's diverticulum when symptomatic is surgical. Diverticulectomy, wedge resection with closure, resection of Meckel's diverticulum with its corresponding ileum with end to end ileal anastomosis have all been successfully performed and the choice of procedure depends on patient presentation, intra abdominal findings and surgeon's expertise [23]. Robijn *et al*. proposed resection based on a risk score [24]. Surgical procedure also depends on presence of ectopic tissue, which can be accurately determined by height to diameter ratio of >2. These diverticuli have ectopic tissue in body and tip whereas shorter ones have a wide distribution of ectopic tissue throughout the diverticulum. [25]. Ultimately, choice of surgery depends on a number of factors.

Conclusion

Meckel's diverticulum should be considered a differential diagnosis in adult patients presenting with small bowel obstruction, particularly as presentation can be atypical and investigations inconclusive.

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Conflict of Interest
Not available

Financial Support
Not available

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