Abstract:
The most prevalent congenital anomaly of the gastrointestinal tract is Meckel's Diverticulum. It is often difficult to diagnose or misdiagnosed. It may remain completely asymptomatic or it may mimic disorders such as appendicitis, crohn's disease and peptic ulcer disease. The correct diagnosis of symptomatic Meckel's Diverticulum before surgery is often difficult. We report a case series of five patients to study the various manifestations of Meckel's diverticulum, who underwent emergency surgery on suspicion of a different disorder but then intraoperatively where found to have Meckel's diverticulum as the primary pathology.

INTRODUCTION:
Meckel's Diverticulum is due to the failure of obliteration of the vitello-intestinal (omphalomesenteric) duct. It is the most common congenital anomaly of the gastrointestinal tract. It occurs on the anti-mesenteric border of the ileum approximately 2 feet from the ileocaecal valve. It is a true diverticulum unlike a sigmoid diverticula. It can contain heterotopic tissue of gastric mucosa or pancreatic tissue. The manifestations and complications of a Meckel's diverticulum vary depending upon the age of presentation. A diagnosis of symptomatic Meckel's Diverticulum is often missed as it is indistinguishable from other common intra-abdominal emergencies such as acute appendicitis, inflammatory bowel disease or other causes of small bowel obstruction.

CASE SERIES:

Case 1
A 25 year old male patient presented with complaints of Right lower quadrant abdominal pain of 2 days duration. Pain was colicky in nature. Patient had multiple episodes of vomiting, and fever of 1 day duration. There was no other relevant positive history. On examination, the patient had tenderness in the RIF. There was mild leukocytosis in the differential count. Abdominal X-ray showed small bowel ileus in RIF. Ultrasonogram had features suggestive of appendicitis. Surgery was proceeded via a Mcburney's incision.

On exploration the appendix was found to be normal. Hence the possibility of Meckel's was suspected at this stage. On further exploration, an inflamed Meckel's diverticulum was found at about 50cm from the ileocaecal valve. Since the inflammation extended to the base resection and anastomosis of the ileal segment was done.

Case 2 & 3
Two other patients a 12 year old and a 15 year old boy had a similar presentation and intra operatively, both were found to have an inflamed Meckel's diverticulum. They were proceeded with diverticulectomy.

Case 4
A 56 year old female patient was referred with complaints of colicky central abdominal pain with multiple episodes of vomiting. Patient gave a history of recent onset of constipation. On examination the patient was dehydrated and her abdomen was distended. She had tenderness in all quadrants of the abdomen, and the bowel sounds were exaggerated. Abdominal X-ray showed dilated small bowel loops. CT abdomen showed dilated small bowel loops. Patient was proceeded with laparotomy via a midline incision. A meckel's diverticulum 55cm from the ileocaecal valve was found. It was twisted on its own axis (volvulus), leading on to gangrene of the diverticulum. Patient was proceeded with resection and anastomosis.
Axial Torsion Of Meckel's Diverticulum With Gangrene of the diverticulum Resected Specimen Case 5

A 15 year old male patient was referred with complaints of sudden onset colicky abdominal pain, that recurred every 20-30 minutes. He had multiple episodes of vomiting. Patient had normal passage of stools. On examination, patient had a tender mass that appeared intermittently above the umbilicus whenever the patient was symptomatic with pain. RIF was found to be relatively empty. Per rectal examination was found to be unremarkable. Abdominal X-ray showed absence of caecal gas shadow. Ultrasonogram was suggestive of a target like mass around 3cm in diameter. Patient was diagnosed to have an intussusception and hence was proceeded with laparotomy. The intussusceptent and intussusceptum were found 40cm from the Ileocaecal junction.(An Ileo-Ileal type of intussusception). On manual reduction, a Meckel's diverticulum was found to be the leading point. Resection of the involved small intestine was done followed by ileo-ileal anastomosis.

Intussusception with Meckel's Diverticulum as the Lead Point

**DISCUSSION:**
Most cases of Meckel's diverticulum are diagnosed when complications manifest, or incidentally, in unrelated conditions during laparotomy, laparoscopy or radiological investigations of the small bowel. Epidemiology wise, the "Rule of Two" personifies the facts that there is a 2% incidence of it in the general population; a 2:1 male:female ratio; patients usually present before 2 years of age; its location is about 2 feet away from the ileocecal valve; and the base is 2 inches wide and often contains 2 types of mucosa. It arises from a failure of the proximal part of the vitelline or omphalomesenteric duct to obliterate by the 6th week of fetal development. The left and right vitelline arteries originate from the primitive dorsal aorta, and travel with the omphalomesenteric duct. The right becomes the superior mesenteric artery that supplies a terminal branch to the diverticulum, while the left involutes. Having its own blood supply, Meckel's diverticulum is susceptible to obstruction, infection or inflammation. The vast majority of Meckel's diverticula are asymptomatic. Among symptomatic patients, the presentation differs depending on the age. GI bleed is the most common presenting symptom and complication in children. The source is typically from a peptic ulceration of the adjacent normal ileum caused by the acid secretion from the heterotopic gastric mucosa in the diverticulum. Intestinal obstruction is the most common complication in adults. Obstruction can occur from an intussusception with the diverticulum as the lead point; volvulus around a fibrous band that connects the diverticulum to the anterior abdominal wall; incarceration within a hernial sac (Litre's hernia); and enteroliths blocking the neck of the diverticulum. Meckel's diverticulitis occurs in about 20% of symptomatic patients and is often mistaken for acute appendicitis. In our institution, in the period between 2011 to 2012, five cases were diagnosed with having meckel's diverticulum intra-operatively; in all of them the diagnosis was missed pre-operatively. Of the five, three patients were found to have Meckel's diverticulitis. The other two presented with intestinal obstruction; one from intussusception with the diverticulum as the lead point; and the other due to a fibrous band from the apex of the diverticulum to the anterior abdominal wall. This caused an axial torsion (volvulus) of the diverticulum resulting in the gangrene of the meckel's diverticulum. This gangrene in particular, is a rare phenomenon. It has been reported only five times in adults and thrice in children in the past 35 years. The clinical diagnosis of a Meckel's diverticulum is extremely difficult except in the presence of bleeding. When bleeding is the presenting symptom, a 99m Tc-pertechnetate radionuclide scan is the most accurate for diagnosing a Meckel’s diverticulum. Tagged red blood cell scan is also useful when bleeding is the presenting symptom. Contrast studies in the form of small bowel follow through (SBFT) and enteroclysis are diagnostic in up to 75% of patients, but can be unreliable and variable between institutions. The paucity in the availability of the above mentioned investigations in our institution precludes their consideration. Sonography and CT are typically of little value because distinguishing a diverticulum and intestinal loop can be very difficult. In the face of limited resources, as in our case, laparoscopy and laparotomy are to be considered as a diagnostic tool. Treatment of symptomatic Meckel’s diverticulum is basically surgical. Both open and laparoscopic methods are feasible. Surgical treatment options include simple diverticulectomy or limited ileal resection. Associated bands if any should be removed. Results of surgical excision are generally excellent.

**CONCLUSION:**
We report a case series eliciting the various complications of Meckel's diverticulum which formed a working diagnosis initially. The preoperative diagnosis is often difficult and often presumed to be appendicitis or small bowel obstruction of unclear etiology. The correct diagnosis of Meckel’s diverticulum could only be made during surgery. Meckel’s diverticulum should be kept in mind in patients with atypical presentations.
REFERENCES:


