Original Research Paper

Volume - 7 | Issue - 7 | July - 2017 | ISSN - 2249-555X | IF : 4.894 | IC Value : 79.96

General Surgery

CASE REPORT ON MECKEL'S DIVERTICULUM PERFORATION WITH ASEPTIC PERITONITIS IN A 3 YEARS OLD CHILD

Dr. Rahul Aggrawal	Junior Resident, Dept. of General Surgery, A.C.P.M. Medical College
Dr. Agraj Mishra	Junior Resident, Dept. of General Surgery, A.C.P.M. Medical College
Dr. A.M. Chitale	Professor, Dept. of General Surgery, A.C.P.M. Medical College

ABSTRACT Meckel's diverticulum is the most common congenital abnormality of the gastrointestinal tract; it is caused by an incomplete obliteration of the vitelline duct (i.e., omphalomesenteric duct). Despite the availability of modern imaging techniques, diagnosis is challenging. Although Meckel diverticulum is usually asymptomatic, 2 types of complications requires clinical attention. One type involves ectopic mucosal tissue and most often leads to GI bleeding in younger children. In the second type, an obstruction, inflammation or rarely, perforation of the bowel is present. The incidence of Meckel's diverticulum in the general population has been estimated to be about two percent. Reports from autopsy and retrospective studies range from 0.14 to 4.5 percent. We report a case of perforated Meckel's diverticulum perforation with aseptic peritonitis in a 3 year old female child.

KEYWORDS : meckel diverticulum, intestinal perforation, peritonitis

Introduction:
Meckel's diverticulum, the most common congenital anomaly of the gastrointestinal tract, has been described as the remnant of the omphalomesenteric duct. According to the rule of 2s, it occurs in 2% of the population, with a male to female ratio of 2:1, is located 2 feet proximal to the ileocecal valve, the symptoms present ≤ 2.0 years, and it is approximately 2 inches long. Complication rate is about 4%. Intestinal perforation is a less common complication in children that occurs in 10% of patients. Meckel diverticulum is typically lined by ileal mucosa, but other tissue types are also found with varying frequency. The heterotopic mucosa is most commonly gastric. This is important because peptic ulceration of this or adjacent mucosa can lead to painless bleeding, perforation, or both. The anatomic limitations in "walling off" the perforated Meckel's diverticulum by the surrounding loops of small intestine prevented the bowel contents from spreading within the peritoneal cavity.

Case presentation:
A 3 year old female child came to our hospital emergency department with complaints of abdominal pain since last 2 days which was associated with oral intolerance and recurrent vomiting. There was history of on and off fever. There was no history of abdominal trauma, diarrhoea or rectal bleeding. General appearance was relatively good and mental state was alert. Her vital signs were as follows: blood pressure 80/50 mmHg; heart rate 112 beats/min; respiratory rate 26 cycles/min; and temperature 37.8 C without any signs of dehydration. Her head, neck and chest exams were within normal limits.

On abdominal examination; distension was present with guarding and diffuse tenderness all over abdomen. Nasogastric tube aspiration was done for relieving distension. Laboratory data: WBC 17.6K, hemoglobin 8.4 gm/dl, hematocrit 24%, platelet count was 560K; serum electrolytes, liver panel, prothrombin, and partial thromboplastin times were all normal.

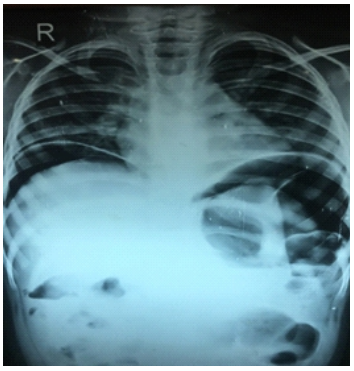

Figure 1: X-ray abdomen erect showing pneumoperitoneum.

X ray abdomen erect shows free air under both dome of diaphragm s/o pneumoperitoneum and few prominent small bowel loops with air fluid levels are seen in abdomen. These findings are s/o hollow viscus perforation. USG abdomen s/o perforation with peritonitis.

An abdominal computed tomography (CT) scan could not be performed because of the emergency nature of the situation.

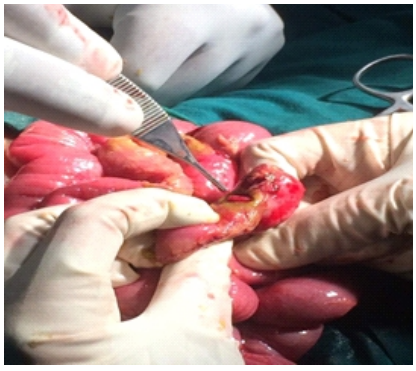

Figure 2: Showing perforated meckel diverticulum intra-operatively.

Surgical evaluation under general anesthesia was performed, and a transverse laparotomy incision was made, a 3 cm sized Meckel diverticulum was seen at proximal 30 cm from the ileocecal valve. The tip of Meckel diverticulum was perforated. The diameter of perforation site was measured about 1 cm and identified the small bowel adhesions with pus patches around the perforated area. The perforated Meckel diverticulum was successfully removed by diverticulectomy along with appendicectomy. Irrigation of peritoneum with normal saline was done. The specimen was sent to pathology for biopsy. After surgery, the child had a very uneventful hospital course and was discharged on postoperative day 7th day.

Discussion:
Meckel Diverticulum is a 3-6 cm outpouching from the antimesenteric border of the ileum at 50-75 cm from the ileocecal valve. Failure of involution of the omphalomesenteric duct during the 5th and 7th week of gestation, results in Meckels diverticulum. It contains four layers of intestine and may have different ectopic tissues such as gastric, pancreatic, colonic, duodenal, or endometrial in about 30% to 50% of patients. Meckel's diverticulum occurs in about two percent of the population, making it the most prevalent congenital anomaly of the gastrointestinal tract.

Most cases with Meckel diverticulum are asymptomatic (56%-77.5%) and present as diagnostic challenge. Only about 17% to 40% of cases are symptomatic, and the most common presentation is rectal bleeding

(43%-80%), intussusception, intestinal obstruction (23%-42%), diverticulitis, and peritonitis (14%-24%). During the total life time, the complication rate of Meckel diverticulum is 4%. The current case demonstrated a very rare complication of Meckel diverticulum with peritonitis. It is well known as fact that if a Meckel diverticulum have no complication, any operation is useless. But when complications occur and symptoms arise, the patient have to be process operation. Among the complications, the intestinal obstruction is most common. And second is diverticulitis and third is bleeding. But perforation is very rare accounting for less than 1% of all cases. Several cases of perforation of Meckel diverticulum have been reported in the past but very few cases had been reported in age group of 2 years to 5 years; so perforation of Meckel diverticulum in this age group is very rare cases. And it is very hard to diagnosis before life threatening condition. It is difficult to predict and diagnose the site of perforation prior to exploration, although duodenal and ileal perforation can be distinguished by observing the nature of the abdominal aspirates. If aspirated materials looks more bilious, it indicates duodenal perforation. In contrast, if aspirated materials look more feculent, it suggests ileal perforation. There are various etiologies that lead to perforation of Meckel diverticulum. Firstly, progression of diverticulitis can cause perforation. Ulceration of adjacent ileal mucosa secondary to acid produced by ectopic gastric mucosa can also cause perforation.

The features of either localized or generalized peritonitis on perofration of Meckel diverticulum are similar to perforation of other hollow viscera. It is managed by initial resuscitation and antibiotics followed by prompt diverticulectomy or segmental resection along with peritoneal irrigation.

Conclusion:

Meckel's diverticulum should be considered in the differential diagnosis of acute abdominal pain and the signs and symptoms of bowel obstruction. Perforated MD can mimic several diseases such as perforated appendicitis, and solitary ileal perforation. Treatment is different, but confirming a preoperative diagnosis of MD in cases with signs of perforation is not necessary because prompt surgical intervention is mandatory if an intra-abdominal pathology is suspected. If diagnosis and management is done at proper time, good prognosis with about 100% survival will be expected with isolated perforated MD.

References:

1. Tenreiro N, Moreira H, Silva S, et al. Unusual presentation of a Meckel's diverticulum: a case report. J Surg Case Rep 2015;16:48-51.
2. Chen JJ, Lee HC, Yeung CY, et al. Meckel's diverticulum: factors associated with clinical manifestations. ISRN Gastroenterol 2014;2014.
3. Kim TH, Choi KH. Incidence of Meckel's diverticulum. J Korean Surg Soc 2001;60:636-9
4. Yamaguchi M, Takeuchi S, Awazu S. Meckel's diverticulum. Investigation of 600 patients in Japanese literature. Am J Surg 1978; 136:247-9.
5. Lee SI, Huh YS, Kwun KB. A case of perforated Meckel's diverticulum in a 5-day-old neonate. J Korean Surg Soc 1989;36:817-21
6. Moore T, Johnston AO. Complications of Meckel's diverticulum. Br J Surg 1976;63:453-4.
7. St-Vil D, Brandt ML, Panic S, Bensoussan AL, Blanchard H. Meckel's diverticulum in children : a 20-year review. J Pediatr Surg 1991;26:1289-92
8. Chang YT, Lin JY, Huang YS. Spontaneous perforation of Meckel's diverticulum without peritonitis in a newborn: report of a case. Surg Today. 2006;36:1114–7. doi: 10.1007/s00595-006-3317-3.
9. Gandy J, Byrne P, Lees G. Neonatal Meckel's diverticular inflammation with perforation. J Pediatr Surg. 1997;32:750–1. doi: 10.1016/S0022-3468(97)90024-5.
10. Hunter WC. Perforated Gangrenous Meckel's Diverticulum in a New-Born Infant: Report of a Case. Am J Dis Child. 1928;35:438–42. doi: 10.1001/archpedi.1928.01920210083009.
11. Kumar P, Ojha P, Singh UK. Spontaneous perforation of Meckel's diverticulum in a neonate. Indian Pediatr. 1998;35:906–8.
12. Kusumoto H, Yoshida M, Takahashi I, Anai H, Maehara Y, Sugimachi K. Complications and diagnosis of Meckel's diverticulum in 776 patients. Am J Surg. 1992;164:382–383.
13. Baldiserotto M, Maffazzoni DR, Dora MD. Sonographic findings of Meckel's diverticulitis in children. AJR Am J Roentgenol. 2003;180:425–428.