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An Unusual Form of Intestinal Diverticulum Completely Located in the Lumen of Small Intestine: A Case Report Comments

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Abstract: Diverticular disease is a rare condition in children, the common diverticle in this age is Meckel's diverticulum. Hereby we report a case of a diverticle in a 4 year old girl presenting with abdominal pain and upper gastrointestinal bleeding, which was completely located in the lumen of small intestine. The diverticle was lined by gastric type of epithelium. We believe that this type of diverticulum is a developmental lesion rather than an acquired one. To our knowledge this is the first reported case of internal diverticulum and hence of interest.

Key words: Internal diverticulum, small intestine, pediatric age group, disease, abdominal pain

INTRODUCTION

A diverticulum is a blind pouch leading off the alimentary tract, lined by mucosa that communicates with the lumen of the gut (Chen, 2005). The term true diverticulum implies that the pouch is composed of all layers of the intestinal wall, whereas a false diverticulum lacks a portion of the normal bowel wall and is seen in conditions with high intraluminal pressures and is seen mostly in adulthood (Kodner and Fry, 1999). Diverticulum is a rare finding in the pediatric age group and the only well known type is Meckel's diverticulum, which is an anomalous remnant of the vitelline duct present in the terminal 100 cm of the ileum that results from incomplete obliteration of the omphalomesentric duct (Turck and Michaud, 2004; Wyllie, 2007).

Diverticles appear as outpouching from the main lumen and so are readily visible from outside of the intestine. They are blind ended and lined by epithelium same as the intestine of their origin or are lined by ectopic mucosa (Turck and Michaud, 2004; Wyllie, 2007; Caty and Gibson, 2005). Diverticles are extremely rare in other sites but are rarely reported for example in duodenum (Turck and Michaud, 2004).

Our case was a unique type of diverticulum in jejunum, completely located in the lumen and not visible externally, which is not reported as yet.

CASE REPORT

A 4-year-old girl was referred with epigastric pain, vomiting and upper gastrointestinal bleeding of 2 weeks duration to our center (Children's Medical Center, affiliated with Tehran University of Medical Sciences) in August 2007. Vomitus was after feeding and contained ingested food. She also had a history of dark stools, which were not tarry. No history of hematochezia was given by the parents.

Clinical examination on admission revealed epigastric tenderness with no other abnormal findings. She had no history of specific diseases and growth and development were normal.

Chest X-ray was unremarkable. Plain abdominal radiographs showed distention of intestinal loops and air-fluid levels in the small intestine, colon was normal. Ultrasonography revealed free intra-abdominal fluid, diffuse distention of small intestinal loops and a hypo-echoic mass in the right lower quadrant and compatible with invagination.

Laboratory data revealed leukocytosis (19,000 μL^{-1}), polynucleosis (polymorphonuclear cells: 88%), decreased hemoglobin (11gr dL^{-1}), MCV: 81.4 fl, MCH: 27.9 pg and platelet count: 350,000 μL^{-1}. Stool exam revealed red blood cells: 6-8/hpf and white blood cells: 1-2/hpf. She had a normal blood biochemical profile, normal Prothrombin Time (PT) and Partial Thromboplastin Time (PTT).

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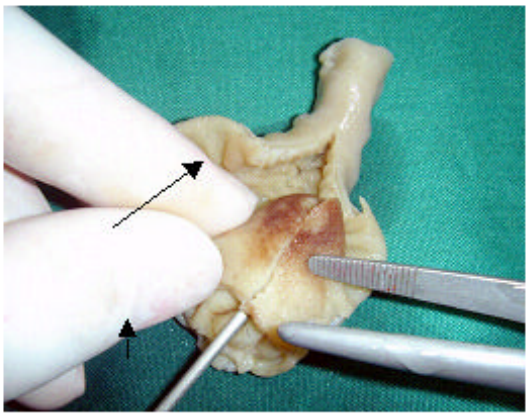

Fig. 1: Internal diverticulum (already opened) covered by mucosa externally with erythematous tip (Large arrow shows the lumen of intestine in which internal diverticulum is located and small arrow is lumen of diverticulum)

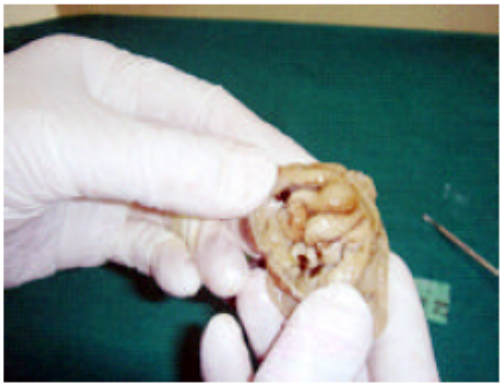

Fig. 2: The internal lining of diverticulum is hyperplastic with rugae resembling gastric mucosa

Surgery was performed with a diagnosis of invagination and laparotomy revealed jejuno-jejunal invagination, which was reduced. A distended jejunal loop appeared, which was excised and end-to-end anastomosis was performed. Specimen was sent to the pathology department.

Gross examination revealed an already partially opened portion of intestine measuring 6 cm in length. The diameter of the unopened end was 0.9 cm. In other parts, it was dilated and approximately 3 cm. in diameter. In the dilated part, a mucosa covered internal diverticulum was found in the proper lumen (Fig. 1), measuring 3 cm in length and 2.5 cm in diameter, which was erythematous on the blind end. It opened inside the lumen and was not seen from the exterior (Fig. 2). On sectioning the mucosa was hyperplastic and appeared as gastric mucosa, but no evidence of ulceration was seen (Fig. 3).

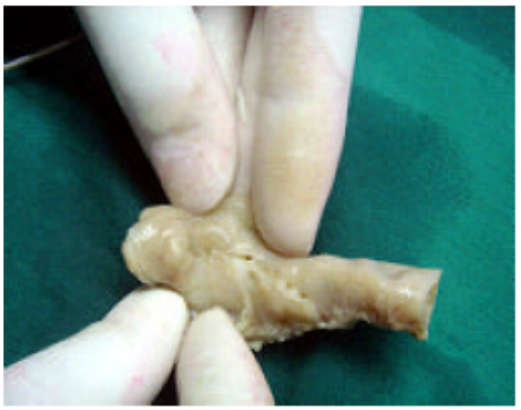

Fig. 3: External view of specimen with no obvious protrusion and opening (already sectioned)

Microscopic examination revealed the diverticulum to be lined by gastric type of epithelium and the wall was complete (2 muscle layers with Auerbach plexus found) and also it was covered by intestinal mucosa on the external surface. No Helicobacter pylori was seen.

To our knowledge this case is the first reported diverticular lesion seen in the interior of intestinal lumen.

DISCUSSION

The word diverticulum is used to describe an abnormal sac or pouch protruding from the wall of a hollow organ such as the colon (Kodner and Fry, 1999). Diverticulum is a rare finding in the pediatric age group and the only well known type is Meckel's diverticulum. Meckel's diverticulum is located externally and in the ileum, but our case was an internal lesion with no external outpouching and also, the location of the internal diverticulum in our patient was clearly stated to be in the jejunum by the surgeon and rules out a variant of Meckel's diverticulum (Turck and Michaud, 2004).

Most individuals with acquired diverticular remain asymptomatic throughout their lives (Chen, 2005). Meckel's diverticula also remain asymptomatic or are discovered incidentally. Although sometimes intestinal bleeding, symptoms resembling acute appendicitis, symptoms related to intussusception, incarceration or perforation maybe seen (Chen, 2005). Our case presented with signs of intestinal obstruction which was proved to be intussusception by surgery. The surgeon did not notice a diverticle while it was completely located in the lumen but resected a portion a portion of jejunum that appeared more dilated than other parts. Pathologic examination of this part revealed an internally located

diverticle lined by gastric type of mucosa. Ectopic gastric lining is also stated in Meckel's diverticulum which may present with peptic ulceration of small intestinal mucosa adjacent to the gastric mucosa and hence bleeding (Chen, 2005).

Our patient also referred with gastrointestinal bleeding, however the mucosa adjacent to diverticle in our case was unremarkable on gross and microscopic examination except erythema in diverticular tip.

Our case is an unreported type of diverticulum which is located completely in the lumen and not visible from outside, it is well formed with all anatomic layers, suggesting a developmental lesion rather than an acquired type seen in adults (Kodner and Fry, 1999).

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