Intestinal Obstruction due to Meckel’s Diverticulum: A rare presentation

G. N. S. Srinivas*, P. Cullen**
Torbay Hospital*, Torquay, Devon; The Queen Elizabeth Hospital**, King’s Lynn, Norfolk, UK.

Key words. Meckel’s Diverticulum; enteroliths; small bowel obstruction.

Abstract. Meckel’s diverticulum occurs in about 1-3% of general population. The majority of them are asymptomatic and incidentally found at laparotomy. The most common complication due to Meckel’s diverticulum in adults is intestinal obstruction. The frequency of symptoms decreases with age. Enteroliths are rarely formed in a Meckel’s diverticulum and are known to cause intestinal obstruction. These should be considered in the differential diagnosis of radio-opaque shadows in the plain abdominal films. We describe a rare presentation of Meckel’s diverticulum in an elderly woman.

Background

Meckel’s diverticulum is the most common congenital anomaly of the gastrointestinal tract, occurring in 1-3% of the general population (1). Majority of them are asymptomatic with only 16% giving rise to symptoms (2). The most common presentation in adults is intestinal obstruction. Enteroliths are a rare feature in Meckel’s diverticulum. We present an unusual case of intestinal obstruction in an 84 year old female patient due to Meckel’s diverticulum with enteroliths.

Case report

An 84 year old woman presented with a 2-day history of colicky central abdominal pain, distension, vomiting, and constipation. She denied any recent change in bowel habit or weight loss. Her past medical history included hypertension, angina and an abdominal hysterectomy 32 years ago for fibroid uterus. On examination, she was mildly dehydrated with no clinical signs of sepsis. The abdomen was distended and resonant with no signs of peritonitis. The bowel sounds were exaggerated. There was no evidence of incisional or groin hernias. Rectal examination was unremarkable. Laboratory testing revealed a mild leukocytosis (12, 100 white blood cells/mm³, 86% neutrophils), normal haemoglobin, electrolytes, creatinine and liver function tests. An erect chest film was unremarkable. The abdominal plain film (Fig. 1A & B) showed grossly dilated small bowel loops with paucity of gas in the colon. There were multiple radio-opaque shadows in the right lower abdomen with peripheral calcification and central radiolucency, the significance of which was unclear preoperatively. A diagnosis of small bowel obstruction was made, a nasogastric tube was inserted and intravenous fluids were administered.

At laparotomy there was small bowel obstruction due to a Meckel’s diverticulum with a band adhesion from the fundus of the diverticulum to the mesentery of the ileum (‘mesodiverticular band’). The mechanism of obstruction appeared to be due to acute angulation of small bowel caused by short, fibrous mesodiverticular band, with proximal dilatation leading to an axial twist.

Fig. 1

An 84 year old lady presented with small bowel obstruction: Preoperative Imaging.
A. Plain abdominal film showing dilated small bowel loops and paucity of colonic gas. The arrow points to calcific shadows in the right lower abdomen.
B. Close-up view of the above film showing the peripheral calcification of the stones with radiolucent centres (Arrow). The arrow heads point to the surgical clips from previous hysterectomy.
over 52 yrs, Park et al. have noted that 84% were asymptomatic and 16% were symptomatic (2). The mean age of patients with a symptomatic Meckel’s diverticulum was 31. The frequency of symptomatic Meckel’s diverticulum decreased with age. The male-female ratio was approximately 3:1. 29% of all Meckel’s diverticula contained ectopic or abnormal tissue.

The lifetime risk of complications in patients with a Meckel’s diverticulum is estimated to be 4% (4). In adult patients intestinal obstruction is the most common complication (40%) and in children, gastrointestinal haemorrhage. A Meckel’s diverticulum may result in small bowel obstruction by a variety of mechanisms: by entangling a loop of small bowel around a fibrous cord or within a mesodiverticular band, intussusception, volvulus, incarceration within a hernia sac (Littre’s hernia), chronic Meckel’s diverticulitis, foreign body, or neoplasm (4).

Enteroliths are a rare complication of Meckel’s diverticulum; the incidence of enteroliths was quoted as 6% (2) and 10% (5). The exact incidence of enteroliths in Meckel’s diverticulum causing intestinal obstruction is unknown; about 5 case reports were found in literature (6). However, to our knowledge the combination of enteroliths in Meckel’s diverticulum and intestinal obstruction due to mesodiverticular band has not been reported.

In general, calculi formation in the small bowel rarely occurs except when there is stasis e.g. in blind pouches in side to side anastomosis, or above the level of a stricture, e.g. Crohn’s disease. It is known that most of Meckel’s diverticula have wide necks, and since these are true diverticula with smooth muscle in the wall capable of peristalsis, the chances of stasis are generally low. In addition, Meckel’s diverticula may have ectopic gastric mucosa, which creates an acid environment and prevents the precipitation of calcium salts.

Meckel’s enteroliths were reported to be radio-opaque in 88% of the cases (5, 7). The differential diagnosis of the calcifications at abdominal radiography includes biliary and urinary calculi, calcified lymph nodes, calcified fibroids, mesenteric fat necrosis, teratoma and enteroliths. In the small bowel, a Meckel’s diverticulum is the most common site of enterolith formation, which is a rare complication of this diverticulum. Enteroliths in a Meckel’s diverticulum are usually triangular and flat and have a radiolucent centre (8). The calcified structures can be misinterpreted as teeth-like calcifications, which suggest the diagnosis of teratoma (9). A correct preoperative diagnosis of intestinal obstruction from Meckel’s diverticulum, however, is possible with the help of computerised tomography (1, 7). Our case illustrates the rare combination of enteroliths and intestinal obstruction due to Meckel’s diverticulum in an elderly woman.

Discussion

Meckel’s diverticulum, the most common congenital anomaly of gastrointestinal tract with a reported incidence of 2-3% at autopsy, represents a persistence of vitellointestinal (omphalomesenteric) duct, and consists of a blind diverticular pouch arising from the ileum usually 30-100 cm proximal to the ileocaecal valve (3). It measures approximately 5 cm and is situated on the ante-mesenteric border of the ileum. It is a true diverticulum and hence has all the layers of the gastrointestinal tract, unlike sigmoid diverticula which lack smooth muscle layer.

In a large series of 1476 cases of Meckel’s diverticulum found during the operation, from a single institute
Conclusions

Meckel’s diverticulum that contained enteroliths, causing mechanical small bowel obstruction from a mesodiverticular band has not been reported. A preoperative diagnosis was not possible in view of non-specific nature of the clinical and radiological findings. Peripheral calcified stones or, less commonly, laminated stones when detected in the lower abdomen on a plain film should raise the possibility of Meckel’s enteroliths in the differential diagnosis.

References


G. N. S. Srinivas, M.S., F.R.C.S.
Staff-grade Surgeon
Torbay Hospital
Torquay
Devon, UK
TQ2 7AA
E-mail: gandrapu.srinivas@nhs.net