Case study

Remnant causing obstruction! - A case of patent omphalomesenteric duct in adult

ABSTRACT

Omphalomesenteric duct remnant is a congenital anomaly associated with the primitive yolk stalk commonest remnant being Meckel's diverticulum. Persistence of omphalomesenteric duct in infants is a rare congenital anomaly present in 2% of population with complete patency being observed in 0.1 % population. In adults incidence is not reported though there are few case reports (approximately 23) out of which 13 cases presented as small bowel obstruction, 6 as mesenteric cyst, 4 as discharge from umbilicus. An exceptional case of persistent omphalomesenteric duct in adolescent leading to small bowel obstruction is hereby presented. After relevant investigations on exploratory laparotomy, patent band identified as omphalomesenteric duct causing small bowel obstruction was seen and resection and anastomosis was done and patient was discharged on post operative day 10 and is currently asymptomatic. In conclusion, persistent omphalomesenteric duct is an extremely rare cause of small bowel obstruction in adults, while it can be taken into consideration in patients without history of previous abdominal surgery.

KEYWORDS- Omphalomesenteric duct; Meckel's diverticulum; intestinal obstruction

INTRODUCTION

Obstruction of small bowel is a common surgical emergency and a frequently encountered problem in abdominal surgery [1]. It is a major cause of morbidity around the world and a significant cause of admissions for emergency surgical treatment [1,2]. It is a severe condition, requiring quick and correct diagnosis as well as immediate, rational and effective management [3]. Although small bowel obstruction is common, persistent omphalomesenteric duct as a cause of obstruction, particularly in adults, is a rare finding. The omphalomesenteric duct remnant is a congenital anomaly associated with the primitive yolk stalk [4,5]. Commonest remnant of omphalomesenteric duct is Meckel’s diverticulum while the occurrence of a persistent omphalomesenteric duct is rarely encountered5,6]. An omphalomesenteric duct remnant in childhood may cause intestinal obstruction, black stools or melena, pain in abdomen and umbilical hernia or drainage [4,5]. Persistent omphalomesenteric duct causing small bowel obstruction in an adult male, which is a rare case is being presented here.

CASE REPORT

A 14-year-old male patient without any medical or abdominal surgical history presented at our emergency department with colicky abdominal pain, vomiting, absence of passage of gas and faeces with abdominal distension of 72-hour duration. On physical examination abdomen was distended and the blood tests were normal. Abdominal X-ray revealed multiple air fluid levels in the periphery suggestive small bowel obstruction (Figure 1).

FIGURE 1 X-ray abdomen erect showing multiple air fluid level

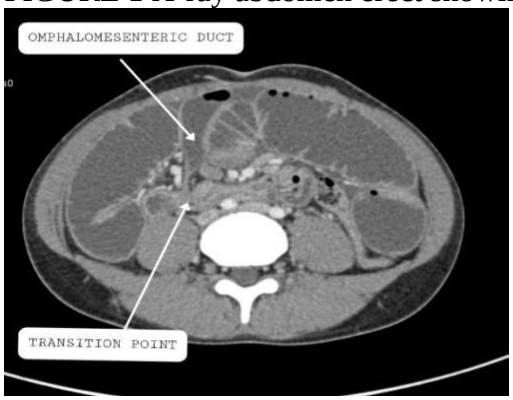

FIGURE 2 CT abdomen showing persistent omphalomesenteric duct

Computed tomography (CT) of abdomen and pelvis demonstrated dilated small bowel and a band like structure originating from the umbilicus and extending till the transition point in the small bowel loops; a remnant of the omphalomesenteric duct was suspected (Figure 2).

The patient was kept nil per oral, a nasogastric tube was inserted and Foley's catheterisation was done. Patient was started on intravenous fluid therapy and a exploratory laparotomy was done, which revealed a duct with patent lumen extending from the anti-mesenteric border of the terminal part of ileum extending to the posterior wall of the umbilicus was seen, causing closed loop ileal obstruction. The omphalomesenteric duct was resected along with the segment of ileum and resection anastomosis was done. The patient was gradually started on feeds and was shifted to full diet and was discharged after two weeks and is currently asymptomatic. The histopathological report did not show presence of ectopic gastric or pancreatic tissue.

DISCUSSION

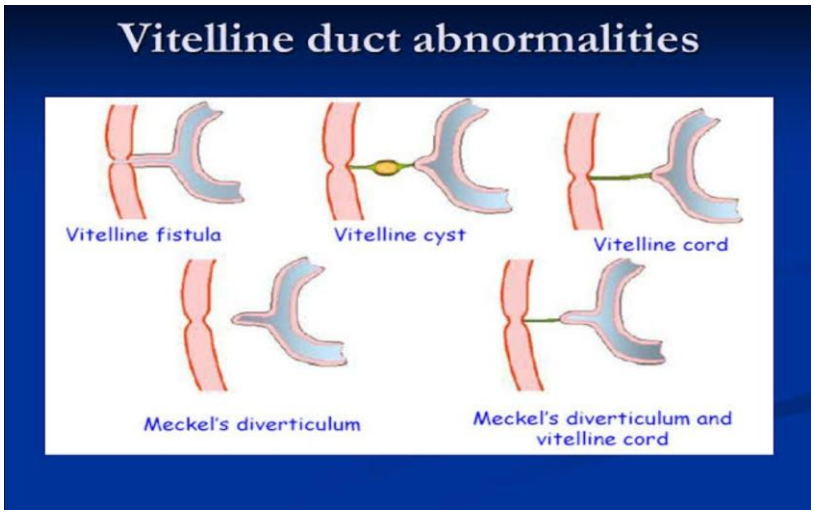

FIGURE 3 Diagrammatic representation of Vitello-intestinal duct abnormalities

Acute small bowel obstruction is a common surgical emergency [1,2]. Immediate and correct diagnosis of this condition and its etiology are essential and appropriate treatment is needed [3]. The clinical presentation of these patients [3,6] along with the cause of obstruction [1] is variable while appropriate management remains controversial [1,2,7,8]. The most common symptoms and signs of small bowel obstruction, although variable are abdominal pain, vomiting, constipation, abdominal distension and tenderness [3,7]. Adhesions, incarcerated hernias, and large bowel cancer constitute the most frequent causes of obstruction while adhesions are the leading cause accounting for 45%-80%[1,7,9]. Miscellaneous causes of bowel obstruction account for 2-3% of all cases but should be considered in differential diagnosis are intussusception of the bowel usually secondary to pathologic lead point such as polyp or tumors ,gallstones ,enteroliths ,phytobezoars [10]. Small bowel obstruction is extremely rare due to persistent omphalomesenteric duct, particularly in adults with very few cases reported in literature approximately 13 case reports/series in total [11-19]. The vitelline duct is primitive connection of the yolk sac to the embryonic midgut and the anomalies are related to the failure of obliteration of the vitelline duct[4,5]. It normally becomes a thin fibrous band, which eventually disintegrates and is absorbed spontaneously between the 5th-10th week of gestation [4,5]. The omphalomesenteric duct will continue to grow if it fails to obliterate; the failure of such closure may result in various lesions which is determined by the stage of arrest of normal involution. The following are the remnants of omphalomesenteric duct Meckel's diverticulum, ileal umbilical fistula, vitelline duct cyst or a fibrous cord connecting the ileum to the umbilicus diagrammatically represented in figure 3 [4,5,17]. Commonest small intestinal congenital anomaly is Meckel's diverticulum. The remnants of omphalomesenteric duct may persist in approximately 2% of infants [17]. Although these malformations are found with equal frequency between the sexes, the symptoms are encountered in males significantly [5].

Even though asymptomatic in most cases, common presentation of omphalomesenteric duct malformations include abdominal pain, rectal bleeding, intestinal obstruction, umbilical drainage, and umbilical hernia[4,5] depending on the age of presentation. In most cases the symptoms usually appear before the age of 4 years[4]. As the age increases usually symptoms don't appear . It has also been reported that 40% of the children with this anomaly have symptomatic lesions, while this anomaly is usually asymptomatic in adults [4].
There are various mechanisms for small bowel obstruction in a case of persistent omphalomesenteric duct. Following are the mechanisms described mainly intussusception, in case of a patent omphalomesenteric duct, volvulus or internal hernia (closed loop obstruction) from a patent

omphalomesenteric duct or a fibrous connection between
the umbilicus and the ileum [11-16]. A patent duct connecting the umbilicus to the ileum, such as in this case,
results from an persistent omphalomesenteric duct that is not completely obliterated and absorbed. In general, appropriate treatment of obstruction of small bowel as well as its timing of surgery still remains unequivocal [1,2,7,8]. Management of this condition requires careful assessment and awareness while the appropriate treatment needs to be tailored according to the individual situation [9]. Many of these patients can be treated non operatively if there's improvement in the symptoms due to spontaneous resolution of the obstruction. However, since the incidence of strangulation of the bowel is quite high, it should be done with greater caution [6,7,9].

FIGURE 4
Intraoperative image showing fibrocystic structure from anti-mesenteric border of pre terminal ileum to umbilicus

FIGURE 5
Gross histopathological examination showing the incomplete obliteration of omphalomesenteric duct

In the reported case, since there was no history of previous abdominal surgery and computed tomography suggestive of closed loop small bowel obstruction was present, an operative intervention was decided. Intraoperatively patent band extending from the terminal ileum to the anterior abdominal wall at the level of umbilicus was seen and the lumen was palpable and hence resection of that ileal segment along with the patent duct was done and umbilical end was tied off which was left insitu (FIGURE 4,5). The intra-operative findings justified the treatment done for the patient.

Recent advances in diagnostic modalities have resulted in an increased incidental discovery of asymptomatic congenital anomalies. In such cases, the use of laparoscopic surgery is considered to be an effective, safe and less invasive treatment. (18)

In conclusion, persistent omphalomesenteric duct causing obstruction of small bowel in adults is extremely rare, with very few cases reported all over the world in the literature. It should be taken into consideration in adults with acute small bowel obstruction without any prior history of abdominal surgery.

Consent and Ethical approval: Not Applicable

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