

Meckels diverticulum and intestinal ischaemia

Authors: J. Halliday, RW Jamieson and TE Gillies

Location: Royal Infirmary of Edinburgh, Edinburgh, UK.

Citation: Halliday J, Jamieson RW, Gillies TE. Meckels diverticulum and intestinal ischaemia. JSCR. 2011 1:5

ABSTRACT

We report an exceptional case of intestinal ischaemia requiring resection, secondary to torsion around a long Meckel's diverticulum. Meckel's diverticulum is an uncommon congenital abnormality of the small bowel. Meckel's diverticulum giving rise to intestinal ischaemia that requires resection is very rare but potentially fatal complication.

A 62 year old woman presented as an emergency with sudden onset upper abdominal pain and vomiting. Clinical suspicion of cholecystitis prompted an ultrasound scan which revealed a distended gallbladder with multiple gallstones and an otherwise normal abdomen. Laparoscopy revealed a large volume of free blood in all four quadrants and a loop of gangrenous small bowel. The case was converted to laparotomy and a 640 mm loop of infarcted small bowel, torted around a Meckel's diverticulum, was resected.

Detection of a complication arising from a Meckel's diverticulum presents a diagnostic challenge and can be mistaken for more common surgical presentations.

INTRODUCTION

Meckel's diverticulum is a true diverticulum of the small bowel resulting from incomplete closure of the omphalomesenteric duct. In the foetus the omphalomesenteric duct connects the yolk sac with a loop of the primitive midgut. It usually obliterates in the 5th to 7th week of life: if this fails a number of congenital abnormalities can develop. Approximately 90% of these are Meckel's diverticula (1). Ectopic mucosa can be found in 43% of symptomatic diverticulum with gastric, pancreatic and carcinoid tissue being reported (2).

Despite being the most common congenital anomaly of the small intestine, the incidence of Meckel's diverticulum is 0.5 - 2% (1). J.F. Meckel reported the complication rate from Meckel's diverticulum as 25% in his seminal paper of 1809: more recent reports suggest that they are rarer, 16% in the definitive series from the Mayo Clinic (2). The average length of a Meckel's diverticulum is 3cm; length and base diameter are reported as important predisposing factors for complications (2). The male to female ratio of complications is 3:1 (1). Mean age of presentation is 31 (2), with the incidence of complications decreasing with age such that the rate of complications in the over 40's is reported as little over 0% (1).

The commonest complication in the paediatric population is intussusception, followed by bleeding, and diverticulitis (2). The most common complication in adults is bleeding from

ectopic gastric mucosa, a consequence of ulceration of adjacent mucosa from acid secretion by the ectopic tissue (1). Small bowel obstruction is a slightly rarer complication, most frequently caused by volvulus around an associated fibrous or omphalomesenteric band, intussusception, adhesions or incarceration within a hernial sac (2). Torsion around a Meckel's diverticulum giving rise to intestinal ischaemia requiring resection is very rare complication: a Medline search revealed 3 case reports over the past 50 years.

CASE PRESENTATION

A 62 year old lady presented as an emergency with sudden onset upper abdominal pain and vomiting. She had no history of previous abdominal surgery. Her observations were unremarkable. Examination revealed a tender right upper quadrant and epigastrium, with no evidence of peritonitis and normal bowel sounds. Blood investigations revealed a mild normocytic anaemia, an elevated neutrophil count and mildly deranged liver function tests. Clinical suspicion of cholecystitis prompted an ultrasound scan which revealed a distended gallbladder with multiple gallstones and an otherwise normal abdomen, with no free fluid. Laparoscopy on the following day revealed a large volume of free blood in all four quadrants and a loop of gangrenous small bowel. The case was converted to laparotomy and a 640 mm loop of infarcted small bowel, torqued around a Meckel's diverticulum, was resected. Pathology confirmed infarction of a 65mm long Meckel's diverticulum with probable ectopic pancreatic tissue and a 30mm long remnant vessel at the tip. The presence of the remnant blood vessel at the tip of the diverticulum suggests that there was an omphalomesenteric fibrous band around which the Meckel's probably torqued. The patient recovered without complication.

DISCUSSION

Diagnosis of complications related to a Meckel's diverticulum is difficult. Presentation can be clinically indistinguishable from a variety of intra-abdominal diseases such as inflammatory bowel disease, acute appendicitis, and other causes of small bowel obstruction. In this case classical clinical signs of small bowel ischemia such as fever, tachycardia, and peritonitis were absent; investigations were most compatible with a diagnosis of cholecystitis. Plain abdominal radiographs are typically non-specific for Meckel's diverticulum (3), and frequently fail to reveal relatively common complications. Technetium-99m pertechnetate scintigraphy which detects radionuclide uptake in the ectopic gastric mucosa can detect 85% of Meckel diverticula in children but in adults is less reliable (1). Barium studies are reported as detecting a smaller percentage of cases (4). Contrast-enhanced Computed Tomography (CT) scanning is considered helpful in the diagnosis of small bowel obstruction and strangulation in patients with clinical symptoms suggestive of those complications (4). The definitive diagnosis of Meckel's diverticulum can sometimes only be made at surgery, as highlighted by our case, a case report by Yu J.S. et al (3) and a fatal report by Vork and Kristensen (5). In patients with intestinal obstruction, delaying surgery for more than 36 hours increases the mortality rate from 8% to 25% (3). Detection of a complication arising from a Meckel's diverticulum presents a diagnostic challenge and can be mistaken for more common surgical presentations. It is important that pathology from a Meckel's diverticulum be considered as one of the differential diagnoses of an acute abdomen.

REFERENCES

1. [Sagar J, Kumar V, Shah DK. Meckel's diverticulum: a systematic review. J R Soc Med 2006, 99:501-505](#)
2. [Park JJ, Wolff BG, Tollefson MK, Walsh EE, Larson DR. Meckel diverticulum: The Mayo Clinic experience with 1476 patients \(1950-2002\). Ann Surg 2005, 241:529-533](#)
3. [You JS, Chung SP, Park YS, Yu JS, Park YA. A case of strangulated small bowel obstruction caused by Meckel's diverticulum in an adult. J Emerg Med 2007, 33:133-135](#)
4. [Murakami R, Sugizaki K, Kobayashi Y, Ogura J, Yamamoto K, Kurokawa A, Kumazaki T. Strangulation of small bowel due to Meckel diverticulum: CT findings. Clin Imaging 1999, 23:181-183](#)
5. [Vork JC, Kristensen IB. Meckel's diverticulum and intestinal obstruction--report of a fatal case. Forensic Sci Int 2003, 138:114-115](#)