Inversion of Meckel's diverticulum causing gastrointestinal bleeding and small bowel obstruction

Introduction

Meckel's diverticulum is a persistent embryonic remnant resulting from a failure of in-utero obliteration of the vitelline duct. Surgical dogma states that it occurs in 2% of the general population (Barbary et al, 2004), has an average length of 2 inches (Margolies and Compton, 1989), is usually found within 2 feet of the ileocaecal junction (Kovarik, 1981) and accounts for approximately 2% of intussusceptions (Steinwald et al, 1996) involving the small bowel.

Symptoms vary depending on the age of the patient at diagnosis. In the paediatric population Meckel's diverticulum usually presents with gastrointestinal blood loss secondary to ulceration arising adjacent to ectopic gastric mucosa within the diverticulum. However, in the adult population, intestinal obstruction is the most common presenting symptom, with acute diverticulitis and perforation also well described. Malignant transformation from a Meckel's diverticulum is uncommon (Lin et al, 2000).

This article reports a case of a patient with a Meckel's diverticulum which caused concurrent gastrointestinal bleeding and distal small bowel obstruction as a result of diverticular inversion and ulceration.

Discussion

This patient presented with concomitant symptoms of small bowel obstruction and haemorrhage. The small bowel is an uncommon source of obscure lower gastrointestinal bleeding. Vascular anomalies, ulcers, inflammatory conditions and neoplasia of the small intestine account for the majority of cases (Keroack et al, 2004). Vascular anomalies are the commonest cause of bleeding and are responsible for 70–80% of cases (Lewis, 2000). In addition, ulceration in inflammatory lesions resulting from Crohn's disease, ischaemia, vasculitis and the use of non-steroidal anti-inflammatory drugs have been implicated.

Meckel's diverticulum is the most common cause of small bowel bleeding in patients under the age of 25 years (St-Vil et al, 1991), and it acts as the lead point for approximately 2% of intussusceptions involving the small bowel (Steinwald et al, 1996). Additionally, between 4 and 14% of the complications of Meckel's diverticulum can be attributed to intussusception (Moore and Johnston, 1976; Yamaguchi et al, 1978). Heterotopic pancreatic tissue in an inverted, intussuscepting Meckel's diverticulum is rare (Boldero, 1978; Williamson et al, 1984).

The cause of diverticular inversion may be abnormal peristalsis caused by ulceration, inadequate drainage of secretions, heterotopic pancreatic tissue, polyps or lipomas (Blakeborough et al, 1997). Consequently gastrointestinal haemorrhage caused by a Meckel's diverticulum may result from ileal ulceration secondary to heterotopic mucosa or from intra-luminal mechanical trauma from repeated inversion (Lu et al, 2001), as in the case presented.

Technetium-99m scanning is approximately 75% accurate for the diagnosis of Meckel's diverticulum (Lewis, 2000). Wireless-video-capsule endoscopy pro-

Figure 1. A coronal view of the incompletely obstructed ileal segment (arrow).

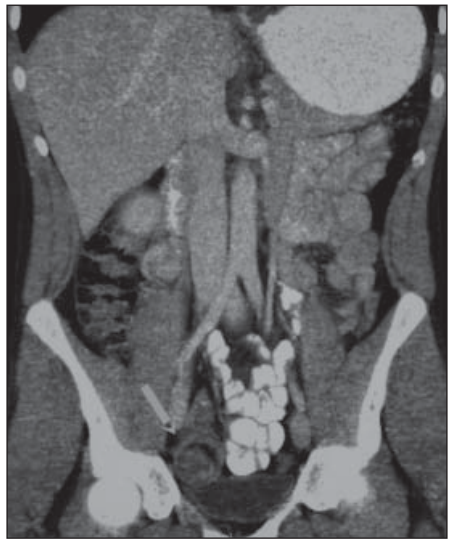
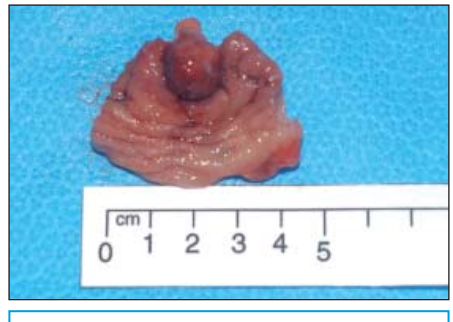


Figure 2. Specimen (luminal aspect) of Meckel's diverticulum displaying a 15 mm submucosal nodule.



Case Report

A 35-year-old man presented with vomiting, mid-gut colic, intermittent passage of fresh blood per rectum and a haemoglobin level of 8.0 g/dl. Clinical examination was unremarkable and initial investigation with abdominal sonography revealed no abnormality. Computed tomography of the abdomen demonstrated a thick-walled loop of small bowel in the region of the terminal ileum (*Figure 1*). A differential diagnosis of ileo-ileal intussusception, Crohn's disease and Meckel's diverticulitis was considered.

The patient proceeded to exploratory laparotomy, which revealed inversion of a Meckel's diverticulum causing incomplete small bowel obstruction. Segmental ileal resection and primary anastomosis was performed without incident. Recovery was uneventful. Histopathological examination showed a 15 mm submucosal nodule with associated ulceration of the overlying mucosa in the base of the diverticulum (*Figure 2*). Microscopy confirmed that the nodule contained heterotopic pancreas with lobules of ductal and acinar epithelium.

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vides a diagnosis in 50–60% of the cases (Appleyard et al, 2001). Barium studies and computed tomography scan may show a 'target lesion' in distal ileum or ascending colon along with invaginated vasculature (Steinwald et al, 1996). Laparoscopy and laparotomy remain the most effective diagnostic and therapeutic procedures. **BJHM**

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MMR: the endgame?

Many newspapers showed Andrew Wakefield arriving at the General Medical Council in July looking younger than his years and confident, his wife by his side, well-wishers waving supportive placards. Wakefield, who now works in the USA, and two of his co-experimenters face an expected 14 weeks' hearings. The charges do not include Wakefield's suggestion of the MMR (measles, mumps and rubella) vaccine as a cause of autism, but relate to the way the research was carried out.

My reading around this case does not draw me to Wakefield. I have no sympathy with him, and directly or indirectly he has harmed public health in this country. But I wonder at the wisdom of this hearing. Wakefield has powerful supporters, in the sense that the media have fed on the story and he can hire clever lawyers. If he is found guilty, his supporters will see him as a martyr. It will further their view that the establishment is out to get him as a brilliant scientist not afraid to speak the truth. If the charges are dismissed, it will be taken as evidence that MMR causes autism. Whichever, the publicity seems likely to knock immunization rates.

The *Daily Mail*'s website gave a chronology of the MMR affair. It was honest in what it listed: report after report unable to confirm any link between MMR and autism. It was less honest in failing to remind readers that its columnists, especially Melanie Phillips, took Wakefield's side. Her story from 2004, 'Dr Wakefield was shamefully discredited', turns up top if you search the *Mail* online for Andrew Wakefield. Phillips writes well and persuasively but scientific truth is not always intuitive, and like many who have commented on the affair, she cannot separate the anecdotal from the consequential.

The *Guardian* (17 July) – 'Doctor at centre of MMR controversy accused of paying children at party for blood samples' – laid the charges on the line, but wrote of parents seeking out single vaccines 'which the Department of Health claims are not as safe'. There is a difference between single vaccines not being as safe, and the Department claiming they are not as safe. It would be wrong to write that the vaccine is 'safe', but there is no evidence that single vaccines are safer, and less work has been done on single vaccines than on the triple vaccine. Why the subtle impugning of the Department?

The *Independent on Sunday* (15 July), currently running a ridiculous campaign against WiFi in schools that still quotes the widely discredited *Panorama* programme discussed in *In the public's view...* in June (Goodman, 2007), picked the Wakefield hearing as its lead News Agenda item: 'the people making the headlines in the coming week'.

The main thread was a mother convinced that her two children are autistic because of MMR. Her daughter had developed autism so she was reluctant about having her son immunized, but was eventually persuaded. Now that he also is autistic, she blames herself. In the centre of the page was a picture of Wakefield and a highlighted quotation, 'My motivation is the suffering of children I've seen and the determination of parents to find out why part of them has been destroyed'. Within the text was a quote from John Fletcher, a leading member of a parental support group: 'If Wakefield is struck off, it will discourage any doctor from asking questions about the safety of vaccines'.

Wakefield's motivation is unimpeachable, but it does not allow him to act unethically and run with flights of fancy. John Fletcher's remark is understandable as the father of an autistic child, but ridiculous. The *Independent on Sunday*'s article was hopelessly biased and should not have been published. **BJHM**

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