

# Delayed diagnosis of abdominal pain

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## Abstract

We report the case of a 48-year-old woman with abdominal pain who was misdiagnosed with sigmoid volvulus, causing a delay in the correct diagnosis of caecal volvulus. The reasons for this misdiagnosis are explored, to bring attention to this common and potentially fatal error, and to the features and management of caecal volvulus.

## Keywords

Caecal volvulus; delayed diagnosis; colonic obstruction; colorectal surgery; general surgery.

## Case report

A 48-year-old female presented with a sudden onset abdominal pain, cramping in nature and immediately scoring 8/10 in severity. The pain was in the suprapubic region, radiating

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to the umbilicus, not associated with nausea or vomiting, nor with any change in bowel habit. She did not describe any similar pains in the past or any previous gastrointestinal upset.

The patient was 15 months from a wide local excision for invasive ductal carcinoma of the left breast, for which she was taking tamoxifen, 20 mg daily. She was otherwise well and on no other medication; regular follow-up of her breast had shown no evidence of recurrent disease. She had not had radiotherapy. There was no history of abnormal periods; her latest had been 3 weeks previously. She had been pregnant twice and had two adult children. There were no urinary symptoms.

On examination we found her to be systemically well, but in pain; mobilising freely, clutching her lower abdomen, with no other signs of infection or inflammation. Abdominal examination revealed a tender 4 cm diameter mass in the left iliac fossa, which was also felt on rectal examination as a firm irregular mass anterior and to the left of the rectum. Vaginal examination demonstrated the same mass with left adnexal tenderness. Local or regional recurrence of breast cancer was excluded by breast and axillary examination.

Blood investigations showed: white cell count  $11.9 \times 10^9/L$  (neutrophils 10.3) and C-reactive protein (CRP) 12 mg/L. All others, including  $\beta hCG$  were normal. We initially considered that gynaecological causes for the pain were most likely and arranged an urgent pelvic and abdominal ultrasound scan (USS). This demonstrated a mass in the left iliac fossa with air-fluid levels, reported as an abscess. No ovarian cyst or fibroid was seen.

Shortly after her USS our patient became febrile with increasing pain and nausea. We considered a diagnosis of sigmoid diverticular abscess and commenced intravenous fluids and parenteral broad spectrum antibiotics. A CT (computed tomography) scan was arranged with a view to confirming the diagnosis and possible drainage, but the scan was delayed overnight, during which time the patient's condition settled somewhat with normalisation of her temperature and pulse. The pain remained crampy in nature and mostly left-sided.

The CT scan was reported as showing a sigmoid volvulus (Figs 1 and 2).

After diagnosing a sigmoid volvulus we attempted to decompress the colon by passing a flatus tube via a rigid sigmoidoscope. This provided some relief of pain initially, and of the

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Fig. 1. CT 'scout' showing colonic volvulus.

abdominal distension which by then had become significant. The tube was left *in situ* for 24 h during which time the patient was passing a watery stool, but was unable to tolerate a soft diet without vomiting. Her abdomen remained distended, and had enlarged further by the third day of admission, leading us to reconsider the diagnosis once again.

Colonoscopy was performed, at which easy passage of the scope to the mid-ascending colon was possible with no signs of sigmoid dilatation or volvulus. We reviewed the

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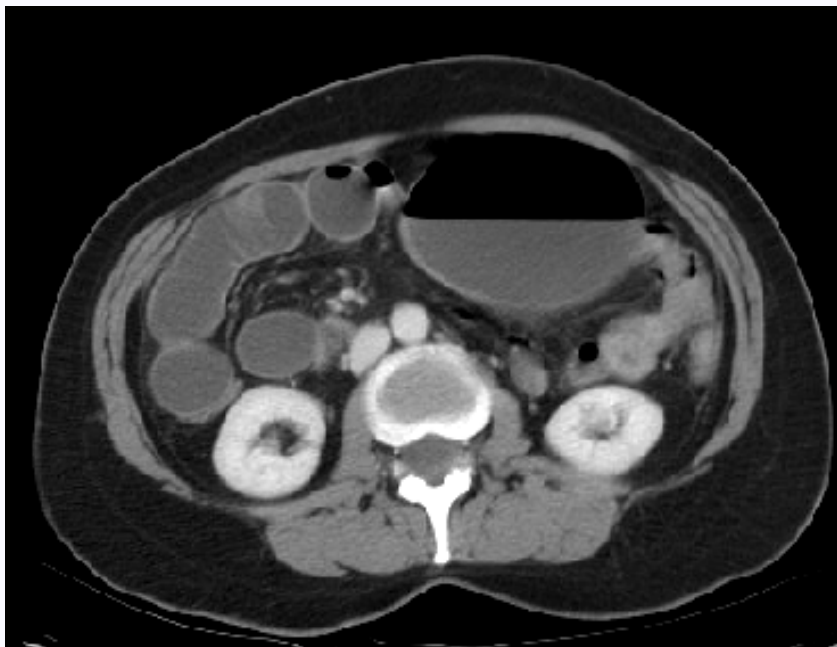


Fig. 2. Volvulus of the colon with dilated small bowel loops.

CT scans with our radiology colleagues who performed a contrast study, which finally confirmed the diagnosis of caecal volvulus by demonstrating a classic 'bird's beak' appearance of the ascending colon at the point of volvulus. The tortorted caecum is clearly seen containing air-fluid levels (Fig. 3).

We took the patient to theatre where we confirmed the diagnosis at laparotomy. The caecum was dilated to 25 cm in diameter with serosal splitting, but there was no leakage of

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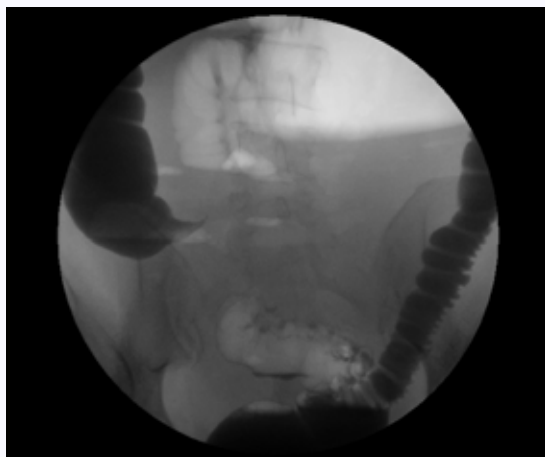
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**Fig. 3.** Gastrograffin enema showing caecal volvulus and normal sigmoid colon.

colonic contents. The small bowel was dilated to mid-jejunum. A right hemicolectomy and primary anastomosis were performed, with the patient making an uncomplicated recovery to be discharged on day 7 postoperatively.

## Diagnosis

Caecal volvulus with small bowel obstruction.

## Clinical evidence and unusual features

We are presenting this case to highlight the delay in diagnosis of caecal volvulus, an uncommon but often fatal condition of the bowel. Colonic volvulus accounts for a small

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proportion (around 1%) of large bowel obstructions in the UK but a much higher proportion in some parts of Africa, even as high as 50% in some countries<sup>[1]</sup>. In a large series of colonic volvulus from the Mayo clinic between 1960 and 1980, 52% of colonic volvuli were caecal, 43% sigmoid and 5% were of the transverse colon or splenic flexure<sup>[2]</sup>. In another series, caecal volvulus comprised 28% of colonic volvulus<sup>[3]</sup>.

The presence of a long, redundant, looping sigmoid colon twisting on its mesentery is the cause of sigmoid volvulus; a condition associated with chronic mental illness, prolonged constipation and old age. Caecal volvulus is more often a disease of younger, healthier people; the peak incidence being in the fifth decade. It is commoner in women than men. One lesson from this case is to include caecal volvulus in the differential diagnosis of a middle-aged woman presenting with symptoms of bowel obstruction, especially if the features point more towards small bowel obstruction.

The caecum in the female is more often mobile than in the male with less fusion (zygosis) of the caecum to the posterior peritoneal structures, allowing mobility of the caecum seen during pregnancy. When appendicectomy is necessary in late pregnancy, the appendix and caecum may be found in the right upper quadrant of the abdomen. This greater mobility may explain why caecal volvulus is commoner in women than men, and the peak incidence in the fifth decade may be a consequence of pregnancy accentuating the mobility of the caecum in this way. However, we are not aware of any evidence for this condition being more common in parous than nulliparous women.

Caecal volvulus is most commonly an ileo-caecal volvulus. An intraperitoneal ascending colon can twist around the ileocolic artery. It is unclear what begins the process of volvulus but many associations have been described, from recent abdominal surgery, distal obstruction and pregnancy to colonoscopy and air travel.

The mortality of caecal volvulus is of the order of 15%–20%. Most mortality will be in elderly patients, but delays in diagnosis will increase this mortality and if left for long enough a volvulus will inevitably be fatal. There was a 17% overall mortality for patients with caecal volvulus in the Mayo clinic series; 13% mortality if the caecum was viable at laparotomy, rising to 33% if there was dead bowel<sup>[2]</sup>.

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This diagnosis is a difficult one to make and is most often confused with sigmoid volvulus, as in this case. A correct diagnosis will be made from the plain abdominal X-ray only 25% of the time according to the work of Hiltunen in 1992<sup>[3]</sup>, and yet the chance to make the diagnosis early does appear to be by correct interpretation of the first X-ray. Anderson and Mills looked at 55 abdominal X-rays from patients later confirmed to have a caecal volvulus, and found that caecal volvulus had been suspected in only 53% of the cases, but when the films were reviewed retrospectively, the signs (i.e. a 'comma' of colon often in the left upper quadrant with its concave edge pointing to the right) were present in 90% of cases<sup>[4]</sup>. Certainly, these X-ray signs were there in our patient (Fig. 1).

The correct diagnosis was delayed in this case because of initial misinterpretation of the radiological investigations and a temporary improvement in symptoms after sigmoid colon decompression. Unlike sigmoid volvulus, colonoscopic decompression is seldom successful at relieving caecal volvulus. This treatment worked in just 3% of patients with caecal volvulus in the Mayo clinic series<sup>[2]</sup> and in 5% of patients in a series of 55 patients with caecal volvulus from St Louis<sup>[5]</sup>. The best treatment remains laparotomy and right hemicolectomy, or tube caecosotomy in a patient considered unfit for colectomy<sup>[5]</sup>.

## Teaching point

It was only after careful review of the CT scan, colonoscopy and contrast enema that the correct diagnosis was made in this case. Fortunately our patient suffered no ill effects of this delay and made a full recovery. We are aware that in an older person this may not have been the outcome and we wish to remind readers to consider caecal volvulus in the differential diagnosis of bowel obstruction, especially in a previously fit, young patient labelled with sigmoid volvulus who does not respond to colonoscopic decompression as treatment of their condition.

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