SAJS
Case Report

Abdominal manipulation during water-soluble contrast enema – an alternative method of non-operative decompression of sigmoid volvulus?

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Summary
Sigmoid volvulus is common in some developing countries. We describe a new method of decompression using a Urograffin and saline enema with additional extra-abdominal manual massage.

Sigmoid volvulus is common in some developing countries, where it represents 20 - 54% of intestinal obstruction. In Africa it occurs more commonly in the black than in the white population.

Sigmoid volvulus is diagnosed on clinical and radiological grounds.[1] Management involves relief of obstruction, either with surgery or non-operatively using colonoscopy or contrast enema, and prevention of recurrent attacks.

We describe a new method of decompression of sigmoid volvulus using a Urograffin and saline enema with additional extra-abdominal manual massage.

Case report

A 30-year-old black woman presented with symptoms suggestive of sigmoid volvulus. Plain abdominal supine radiographs showed a typical distended loop of large bowel and 'coffee bean' appearance (Fig. 1). A contrast enema was requested to confirm the diagnosis.

A 20F Foley's catheter was inserted *per rectum*. Urograffin was instilled through the catheter until the obstruction was noted with the typical 'bird's beak' sign (Fig. 2a). Administration of 750 ml Urograffin and normal saline resulted in opacification of the descending colon proximal to the point of torsion. The patient was placed in the left posterior oblique position. Soft abdominal pressure was applied by hand over the distal part of the volvulus. Circular anticlockwise movements were then made from lateral to medial over the volvulus under fluoroscopic guidance (Fig. 2b - f).

After 5 minutes contrast flowed freely into the more proximal bowel and the patient urgently requested to void her bowels. The catheter was removed and she passed stool and flatus. An abdominal radiograph taken after the procedure shows resolution of the proven sigmoid volvulus (Fig. 3). The patient returned to the ward and had an uneventful elective laparoscopic sigmoidectomy for a redundant sigmoid colon 3 days later.

Discussion

Madiba *et al.* showed that there was a higher prevalence of redundant sigmoid colon in blacks than in Indians and whites. This might explain the higher number of sigmoid volvuli seen in the black population.[2] Risk factors for sigmoid volvulus include chronic constipation in developed countries and a high-fibre diet in African countries. High altitude and enemas containing pepper, ginger and herbal extracts have also been implicated.[2,3]

Fig. 1. Abdominal radiograph demonstrating the typical coffee bean sign of sigmoid volvulus.

Non-operative management includes flexible or rigid sigmoidoscopy and colonoscopy with decompression rates between 70% and 90%, and barium enema with a 5% success rate in de-torsion of sigmoid volvulus in adults.[3]

In patients with suspected bowel perforation or peritonitis, barium enemas can be life-threatening and water-soluble contrast enemas should be used to confirm the diagnosis.[4]

In up to 80% of cases, sigmoid volvulus can be diagnosed from the supine abdominal radiograph alone. If this is not diagnostic, a single-contrast water-soluble enema should be performed.[5]

In Ericksen *et al.*'s review, barium enemas were used in 83% of patients initially diagnosed with large-bowel obstruction and were 100% accurate in localising the site of obstruction.[4]

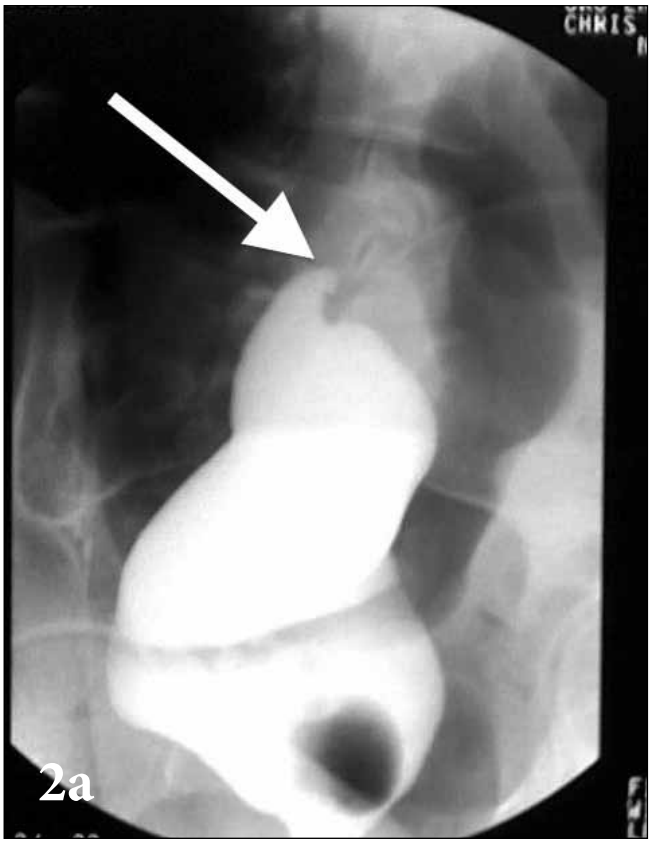


Fig. 2a. Contrast enema demonstrating 'bird beak' sign at torsion point (arrow).

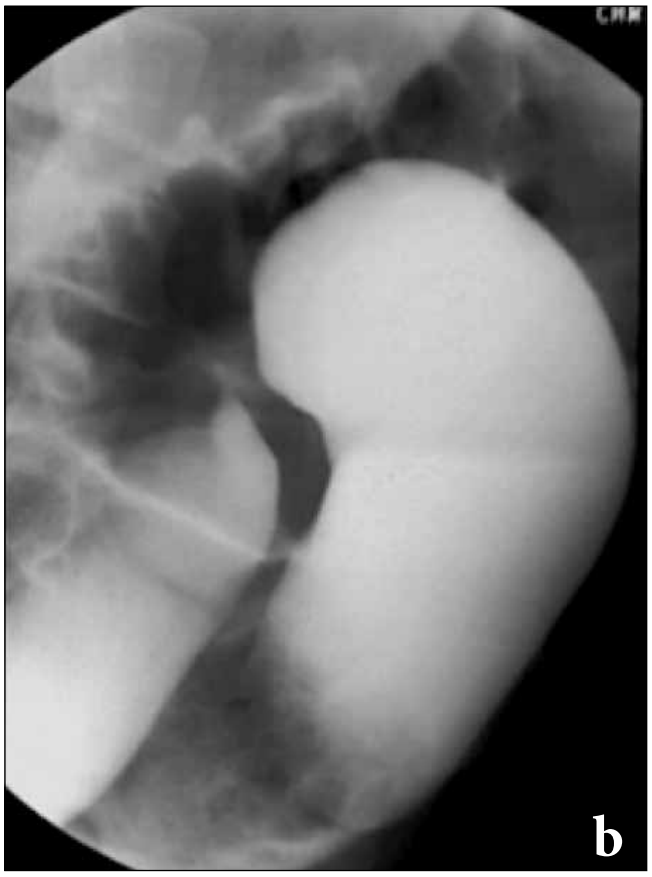
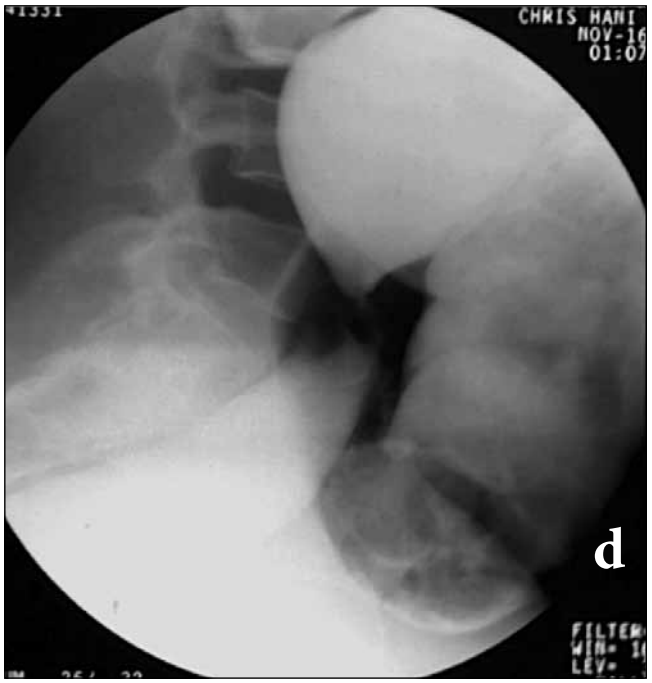
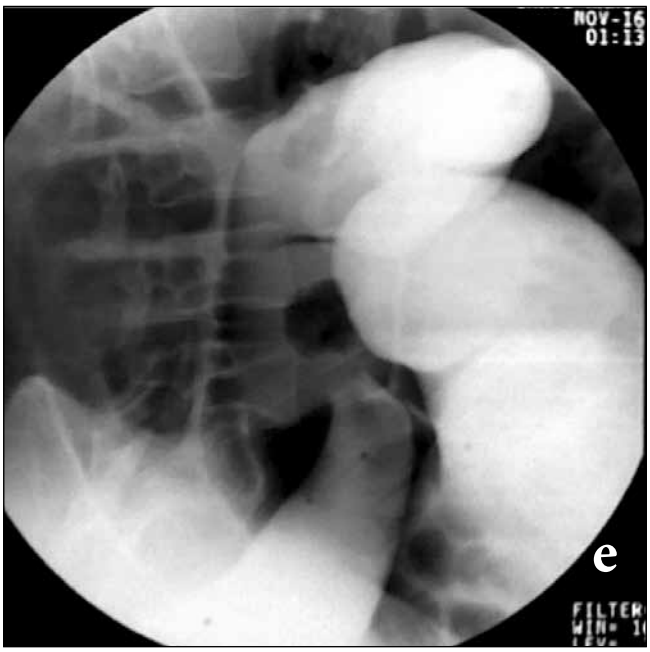
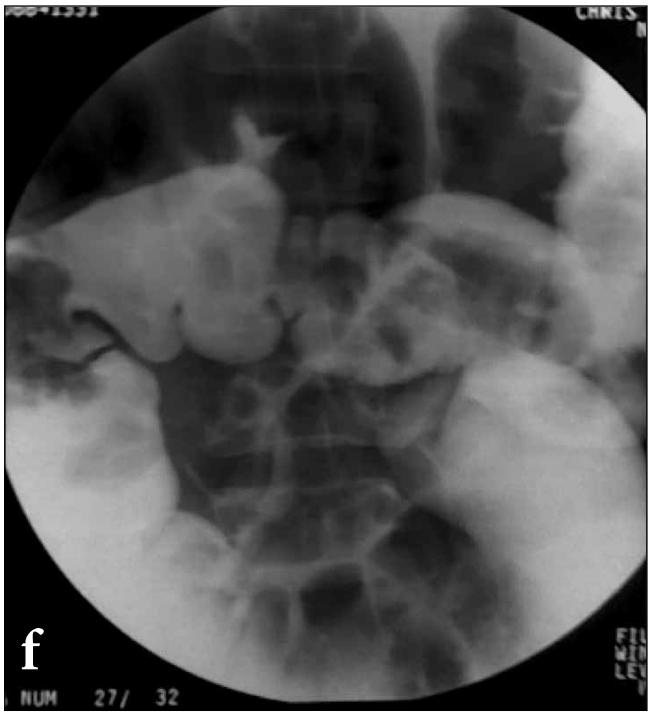


Fig. 2b - f. Sequential radiographs showing detorsion of sigmoid volvulus.



The imaging diagnosis is based on: (*i*) a vertical dense white line on abdominal film, signifying apposed inner walls of sigmoid colon pointing towards the pelvis; (*ii*) gas in the proximal large bowel with no gas in the rectum; (*iii*) inverted U-shape of the sigmoid colon with absent haustra; (*iv*) the 'northern exposure' sign – dilated twisted sigmoid colon projecting above the transverse colon on a supine abdominal film; (*v*) apex of the sigmoid volvulus above T10 vertebra and under the left hemidiaphragm; and (*vi*) 'beaking' seen in the





distal sigmoid colon with contrast enema – smooth tapered narrowing or point of torsion at the rectosigmoid junction.[6]

De-torsion without resection is associated with a high recurrence rate (up to 90%).

Barium enema has been shown to be especially useful in children. Salas *et al.* had a 77% success rate of de-torsion using barium enema under fluoroscopic control (10 out of 13 cases)[7] and Mellor and Drake achieved a 79% success rate (11 out of 14).[8]

In a recent review by Oren *et al.*, a barium enema was used in 13 out of 575 patients (2.3%).[1] The mortality was highest in the barium enema group (7.7%), deaths being related to perforation. De-torsion was successful in 9 out of 13 patients (69.2%). The patients' ages were not mentioned.[1] Arnold and Nance report successful de-torsion in 12 out of 18 attempts using barium enemas (67%).[9] This study also does not mention the patients' ages.

Fig. 3. Post-decompression abdominal radiograph showing thickened sigmoid and descending colon due to inflammation.

In the event of a perforation, barium will cause peritonitis; water-soluble contrast media will reduce this risk. Both Ericksen *et al.* and Salas *et al.* suggest the use of water-soluble contrast where bowel perforation cannot be excluded and where the patients have peritonitis.[4,7]

Decompression of sigmoid volvulus using a Urografin and saline enema as well as extra-abdominal manual massage has not been described before. Only after manual manipulation was the volvulus of the sigmoid colon fully relieved in our patient, thereby avoiding additional colonoscopy or urgent surgery.

We therefore suggest the further study of water-soluble contrast media such as Urograffin with fluoroscopic-guided manipulation for the diagnosis and initial non-operative treatment of sigmoid volvulus.

Conflict of interest: None.

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