

Caecal bascule: a rare cause of intestinal obstruction

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SUMMARY

Caecal bascule is a rare clinical entity, in which a mobile caecum folds anteriorly on the ascending colon without any mesenteric torsion. It accounts for 1–2% of all colonic intestinal obstructions and can progress to a closed-loop obstruction in the presence of a competent ileo-caecal valve. We report a case of a middle-aged man with a history of craniotomy and tumour debulking for pineal parenchymal tumor who was admitted to neurosurgical ward for management of breakthrough seizure and was later found to have a 3-month history of intermittent abdominal pain and distension. The finding of a grossly distended air-filled large bowel on supine abdominal radiograph suggestive of caecal volvulus prompted further imaging with computed tomography scan of the abdomen and pelvis to rule out bowel ischaemia. This was shown to be features of caecal bascule. In addition, the appendix was prominent with a measurement of 0.9 cm in its outer diameter. The patient underwent laparotomy, appendectomy and caecopexy to the lateral abdominal wall and had since recovered well. The case aims to highlight the importance of holistic approach in managing patients with advanced cancer who may have multiple coexisting diseases requiring concurrent treatment. The early diagnosis had led to appropriate management with good patient outcomes and improved quality of life.

INTRODUCTION

Caecal bascule is an uncommon subtype of caecal volvulus, in which a mobile caecum folds anteriorly on the ascending colon without any torsion.¹ There are three subtypes of caecal volvulus, a rare medical condition with an average incidence of 2.8–7.1 per million people per year, described in the literature, and caecal bascule is the rarest subtype. Caecal bascule was first described by Treves in 1884,² but it was only in 1938 that the first detailed clinical and radiological description was described by Weinstein.³ It accounts for 5–17% of all cases of colonic volvulus and can progress to a closed-loop obstruction, particularly in the presence of a competent ileocaecal valve, leading to bowel ischemia, necrosis or perforation.^{4,6} The clinical presentation of caecal bascule is usually less acute than the two other subtypes of caecal volvulus as there is no axial rotation of bowel with mesenteric vascular compromise. The main complaints are generally of recurrent intermittent abdominal pain or symptoms related to intestinal obstruction. The diagnosis is often made with computed tomography (CT) scan or at laparotomy.⁶ Surgical intervention is the most common primary treatment modality, ranging from caecopexy to

right hemicolectomy, with non-resectional surgery considered in the absence of bowel ischaemia.⁴ Our case highlights the importance of holistic approach in the evaluation of an individual with advanced malignancy presenting with a rare clinical entity that could have been missed as the chief complaint of breakthrough seizure was a non-related complaint. Accurate clinical assessment had led to early diagnosis and surgical treatment, with good outcomes.

CASE PRESENTATION

A man in his 50s, wheelchair-bound, was admitted to the neurosurgical ward for breakthrough seizures secondary to hyponatremia and was treated with antiepileptic medications. He was diagnosed with pineal parenchymal tumour of indeterminate differentiation and had undergone a posterior fossa craniotomy and tumour debulking 2 years ago, followed by adjuvant radiotherapy. He developed progressive bilateral lower limb weakness and was diagnosed with spinal metastasis on a recent surveillance magnetic resonance imaging of the spine, and the focus of the neurosurgical team was mainly towards palliative care. Apart from the seizure episodes, he also complained of a 3-month history of intermittent abdominal discomfort with distension, associated with not passing stool for the past 1 week and no flatus for the past three days. The abdomen was distended with no clinical peritonism. He was initially treated with oral laxatives, but his symptoms worsened, resulting in a surgical consult.

INVESTIGATIONS

Initial laboratory investigations showed hyponatremia of 119 mmol/L (normal range 135–145 mmol/L), a normal corrected calcium of 2.25 mmol/L (normal range 2.2–2.7 mmol/L) and mild hyperlactatemia of 2.1 mmol/L (normal range <1.0 mmol/L). There was no leukocytosis or arterial blood gases abnormalities. A supine abdominal radiograph showed a grossly distended right sided large bowel extending from the right lower quadrant of the abdomen towards the epigastrium (Figure 1) suspected dilated caecum. As the radiograph findings were inconclusive, we proceeded to contrast enhanced CT scan of the abdomen, which showed an upward folding of a dilated caecum (maximum diameter of 7.4 cm) towards the midline. The ileocaecal valve was displaced laterally, and the appendix was prominent, measuring up to 0.9 cm in its outer diameter. There were no signs of mesenteric torsion, the small bowel was not dilated,

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Fig. 1: Supine plain radiograph of the abdomen showing a grossly distended air-filled large bowel extending from the right lower quadrant of abdomen toward the epigastrium (black arrow). Descending colon loops in the left quadrant of the abdomen can also be seen (white star).

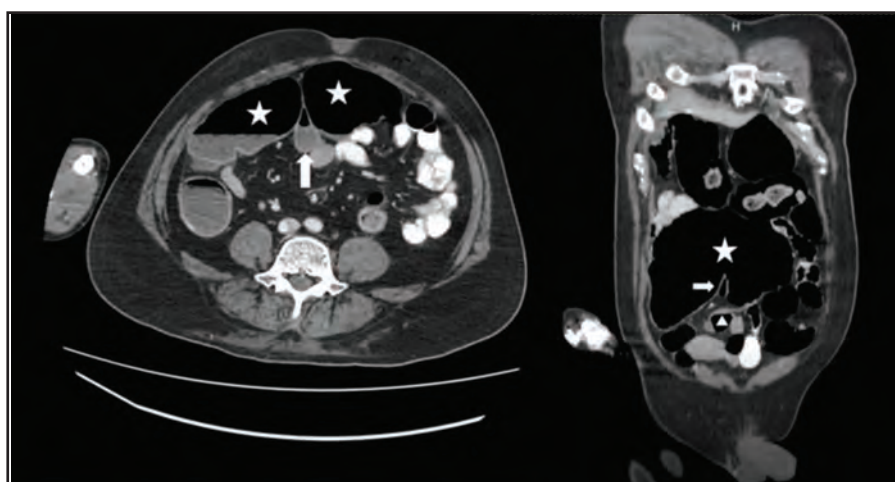


Fig. 2: Axial and Coronal CT Abdomen showing anteromedially migrated dilated caecum (white star) with abnormally located terminal ileum (white arrow) and centrally located appendix (white arrow head).

and bowel wall enhancement confirmed the viability of the caecum. The overall features were suggestive of a caecal bascule (Figure 2).

TREATMENT

The patient was taken to the operating theatre for palliative surgery, where a midline laparotomy was performed. During the operation, there was a grossly distended and mobile caecum folded anteriorly up until the epigastric region. The caecum was otherwise viable with no ischemic changes. The appendix was plastered to the posterior aspect of the caecum, with adhesions noted at the mid-body and faecolith within the lumen. Appendicectomy was performed, and the dilated caecum was decompressed via the appendicular stump. A

caecopexy was performed by anchoring the caecum and ascending colon to the lateral abdominal wall with several interrupted polyglactin 910 3/0 sutures. Small bowel was not dilated.

OUTCOME AND FOLLOW-UP

The patient made a good recovery and was discharged on postoperative day 6. During the follow-up in the surgical outpatient clinic 2 months later, he was well with no wound infection or other complications. He was able to pass motion daily and had complete resolution of his abdominal symptoms. However, he became bedbound in the next few months due to cancer progression and passed away in the fifth month after surgery.

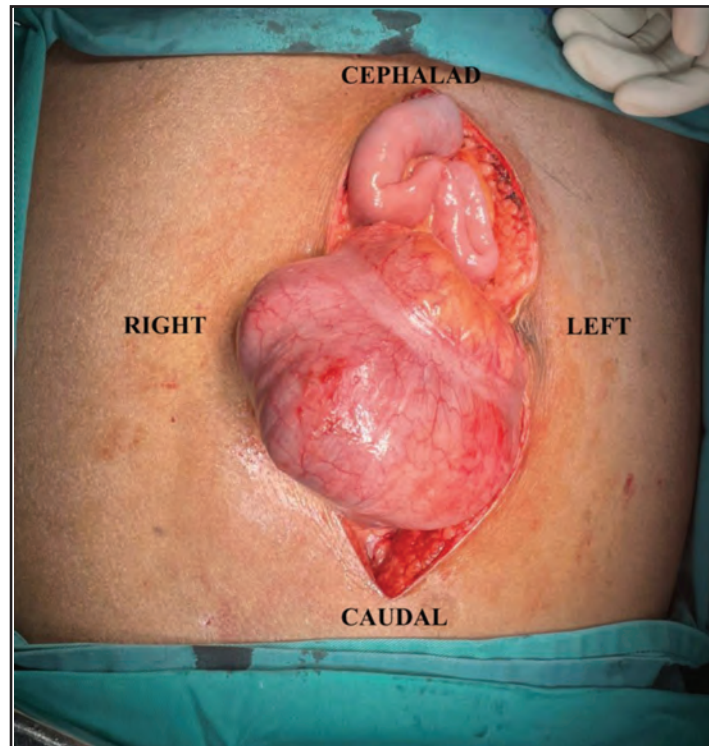


Fig. 3: Intraoperative finding showed a dilated and viable caecum with a viable small bowel located above.

DISCUSSION

One of the suggested aetiologies for caecal bascule is the presence of the mobile caecum with a competent ileo-caecal valve. This prevents caecal contents from flowing back to the small intestine, leading to gaseous and fluid distension of the caecum.⁶ Both congenital and acquired anatomical factors have been reported for the development of mobile caecum.⁶ These include congenital malfixation such as failure of fusion between the right colonic mesentery and the lateral peritoneum as well as acquired peritoneal adhesions to the caecum after abdominal surgery.^{4,6} Other risk factors include distal mechanical obstruction, colonic pseudo-obstruction (Ogilvie syndrome), neurogenic bowel dysfunction, postoperative ileus, chronic constipation, high fibre intake, chronic use of laxative and previous abdominal surgery.⁴ In this context, the combination of risk factors of primary central nervous system tumours, as well as spinal metastasis, chronic constipation due to being wheelchair-bound and previous brain surgery in our patient, may predispose him to reduced colonic motility and subsequent caecal bascule.

The clinical presentation of caecal bascule is highly variable, ranging from recurrent intermittent abdominal pain to acute intestinal obstruction.⁴ Abdominal distension and pain are the two most common presenting symptoms.⁴ The intermittent nature of abdominal pain is due to occasional episodes of isolated caecal obstruction that resolve spontaneously when the caecum unfolds into its original position.⁴ Its presentation is generally less critical compared to other types of caecal volvulus as there is no axial torsion of the mesenteric vasculature, and therefore, lower incidence of vascular compromise of the bowel.⁶ However, the 'flap

valve' effect of the folded caecum, in the presence of a competent ileocaecal valve, may lead to a closed loop obstruction and ultimately result in bowel ischemia and perforation.^{6,9} Due to the nonspecific clinical presentation, a high index of clinical suspicion is needed to prompt further imaging investigations. Plain abdominal radiography is usually the first-line imaging investigation for the evaluation of abdominal pain in most patients. In our case, the diagnosis was suspected from the findings of a grossly distended air-filled right-sided colon from the plain abdominal radiograph, which was thought to be either a caecal volvulus, or some form of mechanical obstruction arising from the right-sided colon. In view of these differentials, a contrast-enhanced CT of the abdomen and pelvis was performed. A CT scan of the abdomen and pelvis is the gold-standard diagnostic imaging modality. It is not only able to diagnose caecal volvulus and its complications but is also useful in differentiating the sub-types of caecal volvulus.^{7,9,10}

The management of caecal bascules is primarily surgical intervention in 96% cases⁴, with the exact surgical approach based on intraoperative findings. Nonoperative reduction of caecal volvulus using colonoscopy or barium enema should not be attempted as they are rarely successful (<5%) and may cause perforation.⁶ A right hemicolectomy is often advocated to prevent recurrence, but caecopexy is equally effective with no reported recurrence.⁴

Therefore, we recommend caecopexy to be performed if the caecum is viable, with resectional surgery reserved for cases associated with ischaemia or perforation.

This case highlights the importance of careful history taking and physical examination in a patient with known advanced malignancy presenting with non-specific abdominal symptoms. Early CT scan should be performed if the diagnosis is not apparent after plain radiography. Early diagnosis and prompt surgical treatment can avoid serious complications and morbidity, thus improving patients' quality of life. Caecopexy is a surgical option in cases of caecal bascule where the caecum is viable.

LEARNING POINTS/TAKE HOME MESSAGES

- Caecal bascule is the anterior folding of mobile caecum on the ascending colon without any torsion, whereby it is the rarest subtypes of caecal volvulus and a rare cause of large bowel obstruction.
- Clinicians should have a low threshold for imaging in patients who present with intermittent abdominal pain and CT scan can be performed to establish the diagnosis, which may not be apparent after conventional radiology.
- Careful history-taking and examination are important in a holistic approach to the management of patients with known advanced malignancy.
- Early diagnosis and surgical intervention can avoid serious complications and morbidity.
- Caecopexy is an appropriate surgical strategy for the treatment of a caecal bascule without bowel ischaemia.

REFERENCES

1. Perret RS, Kunberger LE. Case 4: cecal volvulus. *AJR Am J Roentgenol* 1998; 171: 855-60.
2. Treves F. The element of pain in intestinal obstruction. *Br Med J* 1884; 2: 62-4.
3. Weinstein M. Volvulus of the cecum and ascending colon. *Ann Surg* 1938; 107: 248-59.
4. Lung BE, Yelika SB, Murthy AS, Gachabayov M, Denoya P. Cecal bascule: a systematic review of the literature. *Tech Coloproctol* 2018; 22: 75-80.
5. Kairys N, Skidmore K, Repanshek J, Satz W. An unlikely cause of abdominal pain. *Clin Pract Cases Emerg Med* 2018; 2: 139-42.
6. Park JS, Ng KS, Young CJ. Caecal bascule: a case series and literature review. *ANZ J Surg* 2018; 88: E386-89.
7. Naveed M, Jamil LH, Fujii-Lau LL, Al-Haddad M, Buxbaum JL, Fishman DS, et al. American Society for Gastrointestinal Endoscopy guideline on the role of endoscopy in the management of acute colonic pseudo-obstruction and colonic volvulus. *Gastrointest Endosc* 2020; 91: 228-35.
8. Ooi SK, Tan TJ, Ngu JC. Clinics in diagnostic imaging (171). Caecal volvulus with underlying intestinal malrotation. *Singapore Med J* 2016; 57: 598-602.
9. Delabrousse E, Sarlieve P, Sailley N, Aubry S, Kastler BA. Cecal volvulus: CT findings and correlation with pathophysiology. *Emerg Radiol* 2007; 14: 411-5.
10. Rosenblat JM, Rozenblit AM, Wolf EL, DuBrow RA, Den El, Levsky JM. Findings of cecal volvulus at CT. *Radiology* 2010; 256: 169-75.