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Case Report

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Caecal Bascule Causing Bowel Obstruction: A Case Report on a Rare and Important General Surgical Pathology

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Abstract

Introduction: Caecal bascule, a rare variant of caecal volvulus, accounts for <2% of large bowel obstructions and 5-20% of caecal volvuli. Unlike classic volvulus, it lacks axial twisting and results from an antero-medial folding of the caecum, leading to obstruction. Presentation typically includes nausea, vomiting, abdominal pain, distension, and constipation. Prompt diagnosis is critical to prevent ischaemia or perforation. This report presents an 85-year-old female with a small bowel obstruction secondary to caecal bascule.

Case Presentation: An 85-year-old female presented with a 2-day history of worsening right-lower-quadrant pain, nausea, and mild appetite loss, but no vomiting or fever. Examination revealed abdominal tenderness and mild distension without rigidity. Imaging identified distal ileal obstruction and a flipped, dilated caecum consistent with caecal bascule. Conservative management failed, prompting surgical intervention. A laparoscopy converted to laparotomy revealed a caecal bascule with ischaemic mucosa. Right hemicolectomy with ileocolic anastomosis was performed. Postoperative ileus required parenteral nutrition, but recovery was prompt and the patient was discharged by day 10. Histopathology showed obstruction and ischaemia with incidental appendiceal mucinous adenoma without malignancy. Follow-up revealed no complications.

Discussion: Caecal bascule, first described in 1899, arises from embryologic mal-fixation of the caecal mesentery. Diagnosis relies on clinical assessment and CT imaging. While non-operative management has low success, resection or colopexy prevents recurrence. Early surgical intervention improves outcomes, as mortality can reach 14% with delayed treatment.

Conclusion: This case emphasizes the importance of timely diagnosis and surgical management for caecal bascule, a rare but significant cause of bowel obstruction.

Keywords: Caecal bascule; Cecal bascule; Caecal volvulus; Cecal volvulus; Bowel obstruction; Intestinal obstruction; General surgery; Colorectal surgery; Laparotomy

Introduction

Caecal (or cecal) bascules are a rare variant of caecal volvulus and are the cause for <2% of all large bowel obstructions and 5-20% of caecal volvuli. In contrast to a classic caecal volvulus, bascules have no axial "twisted" component and instead are due to an antero-medial folding up of the caecum along a horizontal plane, leading to bowel obstruction [1,2].

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Presentation is much in keeping with most bowel obstructions with nausea, vomiting, abdominal pain, distension and constipation. A prompt diagnosis is required to prevent ischaemic bowel injury or perforation [3].

In this article, we present the case of an 85-year-old female presenting with a small bowel obstruction (SBO), subsequently diagnosed as being secondary to a caecal bascule on imaging.

Case Presentation

The case report details an 85-year-old who presented to a tertiary hospital in Victoria, Australia on the 20th of August 2024 with a 2-day history of colicky, sharp, pain localised to her right-lower quadrant (RLQ), which had gradually worsened. Associated with this was nausea with no vomiting, a normal bowel pattern with bowels opening on day of presentation and flatus being passed, no urinary symptoms, no fevers, but a mild loss of appetite that day.

The patient had a prior history of chronic back pain secondary to osteoarthritis, unrepaired bilateral inguinal hernias, stroke with no ongoing deficits, a laparoscopic cholecystectomy and an open hysterectomy. She took pantoprazole, irbesartan, duloxetine, gabapentin, and aspirin, with no known drug allergies. She did not have any known family history of cancer or other medical issues. She rarely drank alcohol and was a non-smoker, from home with family and independent at baseline. She did not have an advance care directive on admission.

All her observations on presentation showed a sinus HR of 60bpm, BP of 163/68, RR of 18, SpO_2 of 95% on room air, and a temperature of 36.2C. She had a GCS of 15 and was comfortable at rest. Her abdomen was mildly distended with tenderness and localised guarding in the RLQ, no rigidity and no percussion tenderness. No clinically obvious hernias were appreciated at this time.

Haemoglobin (116 g/L), White Cell Count (WCC) (6.3 $x10^9$/L) and C-reactive protein (CRP) (2.2 mg/L) were within normal limits and liver function tests, Troponin I, and lipase were all unremarkable. There was a mildly reduced eGFR at 74, with urea at 10 mmol/L and a normal creatinine of 66 mmol/L and a bicarbonate of 30 mmol/L. Lactate was 0.8 mmol/L at this time.

A computerised tomography (CT) of her abdomen and pelvis with intravenous contrast demonstrated a dilated distal ileum with faecalised content and an abrupt reduction in calibre of bowel lumen at the terminal ileum approximately 7 cm from the ileocecal valve, consistent with distal small bowel obstruction. Additionally, the caecum was mildly dilated with an abnormal orientation being flipped upwards, consistent with a caecal bascule. (See *Figures 1 and 2).* There was no evidence of perforation or bowel ischaemia. There was a small volume of free fluid in the right lower quadrant with no collection and no lymphadenopathy.

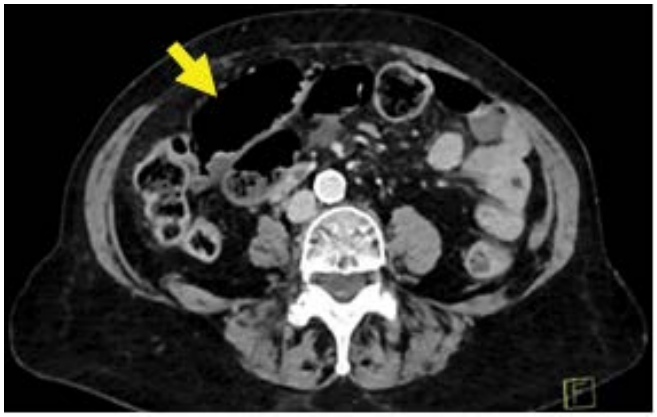

Figure 1: Axial image from computerised tomography showing dilated caecum (yellow arrow).

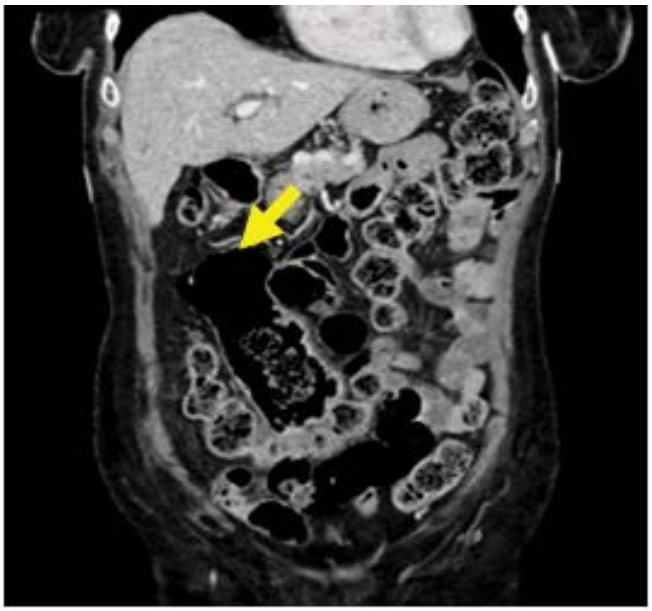

Figure 2: Coronal image from computerised tomography showing dilated caecum (yellow arrow) with antero-medial reflexion.

In the emergency department, the patient was made nil by mouth and initial treatment was started with 14 French naso-gastric tube (NGT) insertion and chest x-ray showing good tube position post insertion, analgesia, intravenous fluid therapy (2 L of compound sodium lactate (Hartmann's) gradually infused in the first 24 hours. A 16 French indwelling urinary catheter (IDC) was also inserted to help monitor fluid status.

Unfortunately, the patient's SBO did not resolve with this conservative management and by the next day she had a progression of peritonism from the RLQ to across the lower abdomen. Her WCC had risen to 10.8 $x10^9$/L with a neutrophilia of 9.5 $x10^9$/L. Her lactate had increased to 2.0 mmol/L.

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Thus, the decision was made to progress to surgical management. This was conducted by a colorectal surgeon and fellow as primary operators and a surgical registrar as primary assistant on the day after presentation. The procedure was a right hemicolectomy and adhesiolysis that started laparoscopically, but was converted to laparotomy after a congested mesentery was noted and bowel resection need was confirmed on inspection. Findings were noted to be of a small bowel band adhesion + caecal bascule causing obstruction with murky/turbid fluid in the pelvis along with a darkened and non-viable area of caecal mucosa.

First, a WHO Safety Checklist time-out was performed with the team. Induction was done by a consultant anaesthetist with general anaesthetic and an endotracheal tube for airway securement. Preparation was done with iodine 1% in alcohol 70%. 2g of IV cefazolin and 500mg IV metronidazole were given at this time. Standard Hasson entry was used to facilitate insertion of a 10 mm port infraumbilically and then two 5mm ports were also placed. Given the above findings, the procedure was then converted to laparotomy. The laparotomy was made via a midline incision. The small bowel was delivered and the band adhesion seen and divided. The right colon required limited mobilisation as it was already mostly free with minor adhesions present. During dissection, moderate oozing was found and controlled with a combination of sutures and Ligasure along with Floseal application. This was thought to be secondary to hepatic flexure veins. Total blood loss was not noted on documentation. At this time, the patient had a period of haemodynamic instability with hypotension down to systolic 30s, requiring IV metaraminol 1 mg, ephedrine 6 mg, and adrenaline 30 mcg. The systolic blood pressure increased subsequently to 150 with no further intraoperative issues. Mesenteric dissection was performed with Ligasure, with ileocolic vessel ligation using haemolocks. Side-to-side stapled ileocolic anastomosis was performed with 2 firings of 80 Blue GIA stapler. 3.0 PDS crotch stitches and 3.0 PDS were used to over-sow the transverse staple line. 20.5cm of bowel in total was resected. Haemostasis was adequate and a washout was done with 2.5L normal saline. A 15Fr Blakes drain was left in the lesser sac. TAPP blocks were performed bilaterally with 20mL of 200mg/20mL of Ropivacaine 1%. Closure of fascia was with loop 0 PDS and closure of skin with 3.0 Monocryl. The wound was dressed with a Prevena negative pressure dressing. A 3-lumen internal jugular Central Venous Catheter (CVC) was also inserted post-operatively by the anaesthetist.

After the procedure, the patient was sent to the Intensive Care Unit (ICU) for monitoring given her intraoperative hypotension episode. She maintained her blood pressure well with no ionotropic or vasopressor supports required. She was discharged from the ICU approximately 36 hours after her operation.

Post-operatively, venous thromboembolism prophylaxis was with T.E.D. anti-embolic stockings and 40mg of subcutaneous enoxaparin daily throughout her admission.

The drain tube outputs were haemoserous only with 130mL drained the first day after the operation. The tube was removed day 5 postoperatively when outputs had reached <100 mL per day.

Ileus was a postoperative complication in this patient. She gradually developed an increasingly more distended abdomen with a lack of bowel sounds and no output of stool or flatus. The NGT was kept in with outputs of up to 1.2L daily while on free drainage with 6-hourly aspirations. Dieticians were consulted and partial parenteral nutrition (PPN) commenced on day 4 after the operation. IDC was removed after day 5. A two-lumen peripherally inserted central catheter (PICC) was placed in the patient's right arm on day 6 with the CVC being removed at this time and PPN changed to total parenteral nutrition (TPN). Bowels began to open on day 6 postoperatively, but she remained distended and nauseous with high NGT outputs. During this time, she was on sips of clear fluids as tolerated orally until day 7 postoperatively, by which time nausea had settled, and NGT outputs were down to 40mL in 24 hours. At this time, the NGT was removed and the patient diet was increased to free fluids, then a light ward diet next day. She tolerated adequate amounts of oral nutrition on an increased full ward diet and Sustagen supplements by day 8 postoperatively and the TPN was ceased.

Postoperatively was pain management was an ongoing issue. Given the patient's chronic pain background, the hospital's Acute Pain Service were consulted during her admission with sublingual buprenorphine utilised to good effect.

Daily inpatient physiotherapy was consulted to help encourage the patient to sit out of bed and gradually increase her mobility postoperatively, as well as to provide her with guidance on chest physiotherapy.

During the admission, inflammatory markers increased appropriately postoperatively to a WCC of 17.8 $x10^9$/L and a CRP of 143 mg/L Lactate increased also to 3.0 mmol/L. By day of discharge, these had decreased to a WCC of 6.9 $x10^9$/L, CRP of 12.9 mg/L and lactate of 0.9 mmol/L.

By day 10 postoperatively, she was cleared by medical and allied health teams for discharge back home with family.

She was followed up via an in-person clinic outpatient clinic appointment 3.5 weeks after her operation. During this time, her wounds had fully healed without complication, she had no pain, and was back to her usual levels of activity at home.

Review of the histopathology of the right hemicolectomy specimen at this time revealed organising fibrinous serositis

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and serosal fibrosis, an attenuated caecal wall suggestive of obstruction, and an appendiceal mucinous adenoma. Three sampled mesenteric lymph nodes showed no significant abnormality.

The finding of the appendiceal mucinous adenoma was followed up with a colonoscopy approximately 4 months after the operation. The only findings at this time were of moderate sigmoid diverticular disease and grade 1 haemorrhoids. The ileocolic anastomosis was inspected and found to have no issues.

The patient has not had any further issues at time of the writing of this case report.

Discussion

Caecal volvulus itself is a rare presentation of colonic obstruction with an incidence of 2.8-7.1 per million people per year, meaning 1-2% of all large bowel obstructions [2]. Even rarer is the subclass of caecal volvulus known as a caecal bascule or a Type 3 caecal volvulus, first described in 1899 by Treves, and accounting for up 5-20% of caecal volvuli [1,4].

Caecal bascules lack the axial "twisted" component of Type 1 and 2 caecal volvuli and instead had a hypermobile caecum that folds anteriorly and superiorly on itself along a horizontal axis due to abnormal caecal fixation [1]. This mal-fixation of the caecal mesentery to the retroperitoneum is thought to be embryogenic in nature [5]. As it mainly affects males and younger patients in their second or third decade of life, it is rare to find patients presenting as octogenarians with issues [1,2]. Obstruction of the bowel can occur at this folded portion and can lead to increasing distention of the caecum and bowel wall ischaemia if not reduced promptly [6].

Presentation is often with symptoms and signs of bowel obstruction, specifically abdominal pain, distension, nausea, vomiting, and constipation [3,7]. While distinction from caecal volvulus is difficult clinically, they are able to be differentiated radiologically. CT is the preferred imaging modality for diagnosis and differentiation. In volvulus with axial torsion, the caecum is shown to have a classical "whirl" defining the point of ileocaecal twist at the point of obstruction.[7][8] This is distinct from caecal bascules which may be seen often with a coffee bean or comma sign seen on axial imaging of the dilated caecum, which is often fluid/air filled [9].

Management of such patients is rarely non-operative due to the high risk of perforation if unsuccessful, although there have been some successful cases described [4,10]. Non-operative success rates have been described to be as low as 3.8% [2]. Operative management is the recommended course of action by the vast majority if patient, surgeon, and location factors allow. This often involves an ileocolic resection with an additional colopexy of the remanent right colon or further colonic resection via a right hemicolectomy to prevent recurrence [1-9]. Some cases have advocated for caecopexy alone or with caecostomy tube if the cecum is viable, citing low rates of recurrence [2,3,11].

Once diagnosed, prompt operative management if the most important factor affecting outcomes. Recurrence was seen in one systematic review to be 1 out of 26 cases and only occurred in the patient that was treated by reduction only [2]. Other studies found recurrence rates to range from 0% to 28% and mortality rates of up to 14% [3].

Conclusions

A rare case of caecal bascule causing bowel obstruction is presented in this report.

While an uncommon pathology, high clinical suspicion and thorough assessment, along with CT radiological investigation lead to earlier intervention. Non-operative management is rarely successful and an operation with resection is the preferred intervention in such patients and results in favourable outcomes.

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Conflict of interest

All authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as potential conflicts of interest.

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