CASE REPORT

Unique case of herniated small bowel infarction within a colonic stomal prolapse

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SUMMARY

The number of permanent colostomies carried out in the United Kingdom is approximately 6400 per year¹. Stomal prolapse is a known complication of colostomy formation. We presented the first case of small bowel herniation into a healthy stomal prolapse with subsequent ischaemia of the herniated bowel in a 102-year-old patient. This rare sequela of a relatively common stomal complication highlights an important consideration when faced with a large prolapse presenting acutely. It also raises an important discussion point for the management of our ever-ageing patient population.

BACKGROUND

Stomal prolapse is a relatively common, known, long-term complication of stoma formation. The quoted incidence is 2%–26%,² with transverse loop colostomies carrying the highest risk and involvement of the distal loop being more common.² Prolapse will not normally impede function, but can be symptomatic causing pain and psychological distress. Incarceration is rare and most cases can be managed conservatively with manual reduction. Failing this, local application of an osmotic agent, such as sugar, to reduce the bowel oedema can be used.³ Failure of reduction may precipitate mucosal irritation with ulceration and bleeding. Rarely, surgical intervention may be required to correct the prolapse.

Surgical options to treat late stomal complications are summarised in Husain and Cataldo's review.² These include using a technique similar to an Altemeier perineal proctectomy, allowing excision of the prolapse without additional enlargement of the skin defect, a modified Delorme's technique to address the mucosal prolapse⁴ or a linear stapler for amputation of the prolapse.⁵ Some techniques can be successfully performed under local anaesthetic, offering a significant advantage to patients with a high general anaesthetic risk.⁶

We describe a case of stomal prolapse and concurrent small bowel parastomal herniation in a 102-year-old man requiring an adapted surgical technique in favour of the hernia. We reviewed the literature for similar cases and present some transferable, important learning points.

CASE PRESENTATION

A 102-year-old man presented acutely 6 months after open transverse colectomy with formation of

end colostomy and mucus fistula for a T4bN1M1R0 adenocarcinoma. The indication for surgery was impending obstruction and bleeding, with associated anaemia. Anastomosis was not considered due to the high-risk nature of such an approach in a man of this age. After discussion with the multidisciplinary team (MDT), he was deemed not suitable for adjuvant chemotherapy.

The stomal prolapse, extending 15 cm beyond the abdominal wall, had been present for some time. All efforts had been made to manage it conservatively in light of the patient's age, comorbidities, a reduced physiological reserve and the prolapse remaining healthy with the low risk of prolapse complications. His comorbidities included chronic kidney disease (stage 3), osteoporosis, glaucoma, macular degeneration, asthma, benign prostatic hyperplasia, benign cerebral meningioma and general frailty. He had a supportive family and an established package of care in place.

He presented acutely with increasing, severe, generalised abdominal pain and progressive increasing stomal prolapse size. For the preceding 2 weeks, he had been suffering from a respiratory tract infection and cough, for which the general practitioner had started oral antibiotics. He was nauseated without vomiting and had a progressively reduced stoma function.

On examination, he was haemodynamically stable. He had an obvious stomal prolapse of approximately 17 cm in length with a 7 cm diameter (figure 1A). The mucosa was healthy looking, pink and warm.

INVESTIGATIONS

At presentation, he had a white cell count of $14.2 \times 10^9/L$ and C-reactive protein of 2.2 mg/L. He had an acute kidney injury on the background of chronic kidney disease: sodium 139 mmol/L, potassium 5.1 mmol/L, urea 13.6 mmol/L, creatinine 148 $\mu\text{mol/L}$ and an estimated glomerular filtration rate of 38 mL/min/1.73 m². A venous blood gas demonstrated a lactate of 1.0 mmol/L. His abdominal X-ray showed a non-specific small bowel pattern without dilated bowel loops.

TREATMENT

The patient was initially managed conservatively with intravenous fluids, analgesia, application of an osmotic agent and attempted manual prolapse reduction. This was unsuccessful. Subsequently on review 2 hours postadmission, the prolapse

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Figure 1 (A) Stoma prolapse at presentation. (B) Stoma prolapse in theatre. (C) Ischaemic small bowel herniated into prolapsed stoma. (D) Excised portion of non-viable small bowel.

developed slightly dusky areas (figure 1B) with the output further reducing and becoming watery. The pain was progressive and not relieved with opioid analgesia. The patient became systemically unwell, with a drop in blood pressure, tachycardia and a rising lactate (3.3 mmol/L), despite fluid resuscitation. The decision to intervene surgically was therefore made, with full involvement of the patient, their family and in consultation with anaesthetic and intensive care unit colleagues.

A circumferential incision was made to mobilise the prolapsed colostomy. The whole remaining colon was easily delivered through the stoma. Intraoperative findings show that the remaining right colon had prolapsed and folded over itself to form a sack. The colon itself was fully viable. A 1 m section of small bowel had herniated *within* this and become ischaemic (figure 1C). The slightly 'dusky' regions were in fact infarcted small bowel seen through the colonic wall.

The small bowel was traced to the healthy margins and disconnected from the distal ischaemic segment with an Endo GIA stapler. Ileocolic and right colic pedicles were identified and transected with transection of the remaining mesentery and excision of the ischaemic bowel (figure 1D). The small bowel end was fashioned to form a spouted ileostomy. The patient essentially underwent a completion right hemicolectomy and small bowel resection.

OUTCOME AND FOLLOW-UP

Postoperatively, the patient went to the intensive care unit. He continued intravenous antibiotics, venous thromboembolism prophylaxis and had a nasogastric tube on free drainage. He progressed well and was stepped down to the ward on day 2. He had a high stoma output and subsequent hypotension, which responded to fluid resuscitation. He recovered well and was discharged 2 weeks postoperatively.

However, his postoperative course was complicated by a worsening chronic kidney injury, for which he required readmission and medical management. This was related to difficulty managing a high output stoma in a frail elderly patient. Eventual control of the stoma output was gained by a combination of oral intake limitation and medical therapy, including loperamide and codeine phosphate. At the point of writing, the patient is 10 months postoperative, living independently with

one residential carer. His carcinoembryonic antigen marker remains normal.

DISCUSSION

We are not aware of a published case of small bowel herniation and subsequent strangulation within a healthy colonic stomal prolapse. The only similar stomal complication to be described is a pseudohernia, or subcutaneous prolapse. In this scenario, the bowel protrudes and coils in the extrafascial soft tissue. Clinically, the appearances are more in keeping with a parastomal hernia than a prolapse²; however, the protruding loops could theoretically become incarcerated.

A prolapse of this size in a man of this age has not been previously described in the literature. Despite being 'super-elderly,' surgical intervention was offered, after discussion with the patient and family. We identified one previous case from 1981 of small bowel herniation into a prolapsed large bowel stoma, occurring 2 years after a Hartmann's procedure.⁷ In that report, the patient had a known large stomal prolapse of 13×9 cm and presented acutely with the prolapse showing signs of compromise. Conversely, in our case, despite the massive prolapse, the large bowel appeared healthy. However, the patient's symptoms were disproportionate to the clinical findings. This is an important learning point when assessing large stomal prolapses presenting acutely. The cause of our patient's symptoms was small bowel ischaemia, rather than compromise to the prolapsed bowel, which was the visually apparent abnormality. It is important to remember that the small bowel can herniate into any potential space.

This is the first case of small bowel herniation into a healthy stomal prolapse to be reported, and only the second case of small bowel herniation into a stoma prolapse for over 35 years. Clearly, this is a rare complication but an important consideration when

Patient's perspective

I was pleased with the decision to operate given the overall success of the procedure. At the time, I was aware it was a challenging decision given my age, but necessary given my deterioration and I am very pleased with the outcome. I was pleased to be asked if the case could be written up for publication and would even have been happy for it to not be anonymous!

Learning points

- ▶ Small bowel can herniate into any potential space. It can enter the inside of a stomal prolapse analogous to a hernia sac made of colon. This can lead to infarction.
- ▶ Initial assessment of the stoma may be deceiving in revealing the true pathology, as the colon can remain healthy.
- ▶ Regardless of age, immediate intervention is essential and potentially lifesaving.
- ▶ Discussion of risks, involvement of the family and critical care support is extremely important.
- ▶ We should not discount or give up on very elderly patients simply based on age. Each case must be taken in context. This particular man underwent a general anaesthetic with bowel resections on two occasions within 12 months. Both were successful and he eventually returned home.

faced with a patient with a large prolapse presenting acutely. In this case, the patients preceding respiratory infection and cough may have been the contributing factor due to persistent increases in intra-abdominal pressure.

The initial decision to operatively resect the tumour, without adjuvant therapy, was made based on the patient symptoms and after careful deliberation with the patient, his family and the MDT. European Society for Medical Oncology⁸ and National Comprehensive Cancer Network^{9 10} guidelines could be interpreted to suggest that active treatment should not have been offered. However, as our patient's reflection (see below) and the report highlight, surgery in the comorbid superelderly is possible and can result in good outcomes, when each case is considered on its own merits.

Contributors RLM and DY: conception, planning, conduct, write-up. SMC: conduct and write-up. OJW: planning and manuscript review.

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