Massive Small Bowel Enterolith in Post Cystoprostatectomy Ileal Cul-de-sac : A Unique Presentation of a Rare Clinical Condition

Abstract

Enterolithiasis or formation of gastrointestinal concretions is an unusual medical entity that typically occurs in patients suffering from persistent intestinal stasis. We present a rare case of non-obstructive enterolith wedged in the blind end of bowel reconstruction following cystoprostatectomy and ileal conduit formation due to muscle-invasive bladder cancer. Although we watched it grow over the years, radiological characterisation was made possible when it grew to a significant size. We, herein, will discuss the aetiology and complexities associated with the diagnosis and management of such orphan cases given their non-specific clinical presentations in an already hostile abdomen due to multiple laparotomies.

Keywords: *Crohn's disease, cystoprostatectomy, enterolith, ileal cul-de-sac*

Pallab Kumar Sarkar, Rustam Karanjia, Mansoor Akhtar[1], Edward Streeter

Department of Urology, East Kent Hospitals University NHS Foundation Trust, Canterbury, Kent, [1]Department of General Surgery, East Kent Hospitals University NHS Foundation Trust, Canterbury, Kent, UK

Case Report

A 79-year-old male came under urology care with diagnosis of muscle-invasive bladder cancer in 2013. He had an extensive past medical history, beginning with colitis, surgery for multiple perianal fistulae, open cholecystectomy, small bowel resection due to Crohn's disease in the early 1990s. There was a suspicion that gallstones were spilt into the abdomen during cholecystectomy. Around 20 years back, he again underwent multiple laparotomies, including ileal colonic bypass for adherent terminal ileum and stricture formation and possibly also partial sigmoid resection though full details were unavailable. After his bladder cancer diagnosis, neoadjuvant chemotherapy was followed by open radical cystoprostatectomy plus bilateral lymph node dissection and ileal conduit formation. Final histology confirmed G3 pT2 TCC of the bladder, margins clear, N0 M0 disease.

He had been under regular Gastroenterology follow-up with complaints of reflux, epigastric pain, bloating and loose stools following cystoprostatectomy. Later on, he developed ileo-colonic anastomotic stricture confirmed on colonoscopy and non-obstructive parastomal hernia. The hernia and aforementioned symptoms had been managed conservatively. His follow-up computed tomography (CT) scans reported a large filling defect within the dilated small bowel adjacent to stapled ileo-ileal anastomosis 6 years after cystoprostatectomy which the radiologist tracked retrospectively and opined that it had gradually developed since 2015 from a small calcified lozenge shaped abnormality to a 8-cm calculus [Figure 1]. Multidisciplinary team meeting felt that the abnormality was likely an enterolith related to his previous cholecystectomy or bowel resection. As it was non-obstructive and with the risk of a very hostile abdomen for surgical management, conservative management was again recommended.

His surveillance colonoscopy for Crohn's disease last year reported four colonic polyps. Polypectomy histology revealed well-differentiated adenocarcinoma in the sigmoid colon.

He was counselled for sigmoid resection with a permanent stoma rather than resection-anastomosis due to surgical complexity and scarring. Additionally, the risks of anastomotic leak, ischaemic bowel, vascular complication and long-term risk of faecal incontinence due to poor sphincter function and short remnant colon were thought to be excessively high to perform an anastomosis.

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Address for correspondence:
Mr. Pallab Kumar Sarkar, Department of Urology, 87, St Andrew's Close, Canterbury, CT1 2RT, UK.
E-mail: pallabksarkar02@gmail.com

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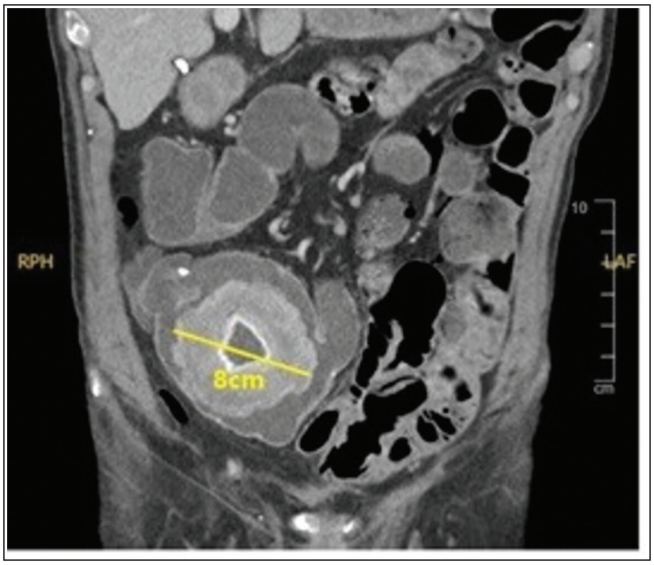

Figure 1: Computed Tomography abdomen and pelvis: Enterolith in ileal cul-de-sac (marked in yellow colour)

The patient, afterwards, underwent laparotomy, sigmoid colectomy, repair of parastomal hernia, extraction of enterolith and formation of permanent colostomy in the same sitting. The enterolith was found to lie in the blind cul-de-sac of the U-shaped stapled side-to-side ileo-ileal anastomosis. Following removal, redundant excess cul-de-sac was excised with a bowel stapler. The sigmoid tumour was excised completely, pathologically pT2 N0 R0. The patient was discharged after 2 weeks and remained well at the initial follow-up.

Discussion

Introduction

Enteroliths, prevalent in 0.3%–10% of populations develop in the setting of impaired intestinal peristalsis due to acquired or congenital anatomical gut pathology.[1]

The categorisation of enteroliths happens in primary and secondary types. Primary enteroliths form inside the gastrointestinal tract (GIT) when secondary enteroliths, although initially formed outside the GIT, migrate into intestinal lumen through fistulation eventually.[2] Primary enteroliths have true and false subcategories.[3] True types which are extremely uncommon, are concretions of insoluble precipitates of alimentary chyme. Proximal primary enteroliths are composed of choleic acid salts and distal enteroliths are calcified. Mortality of primary and secondary enterolithiasis may reach 3% and 8%, respectively.[1]

In all mechanisms of true primary enterolith formations, asynchronous gut motility, pre-existing intestinal motility disorders, lack of intestinal wall musculature, mucosal valve flap of diverticular origin or an apparent "pocket" like reservoir area on intestinal wall may promote intestinal chyme stasis followed by bacterial overgrowth and microbiome-assisted precipitation of insoluble chemical salts or deconjugation of soluble acids and eventually de-novo enterolithiasis. A functionally related variety of clinical conditions are associated with increased risk of bowel stasis, which includes congenital or acquired ileo-jejunal diverticular disease, afferent/Roux or blind loops, stricturing, infectious or inflammatory bowel disease (tuberculosis, Crohn's disease), post-radiation or ischaemic enteritis, fistula, malignancy and post-surgical anatomical alterations with intra-abdominal adhesions, intestinal resection anastomoses,[4] etc.

Chemical composition of false enteroliths depends on the nature of exogenous indigestible particles

In our case report, the original site of the enterolith, be it primarily in the bowel, or indeed eroded in following previous cholecystectomy, is unknown. It is hypothesised to have become lodged at this site due to the change in calibre of the bowel lumen from wide to narrow at this point, with inadequate peristalsis and stasis preventing passage. It had grown over years, stretching the ileum such that it was firmly wedged into the blind corner, unable to move and without causing bowel obstruction.

Clinical presentation

Enterolith can present in a variety of ways. They can present with acute or subacute bowel obstruction. Historically, the diagnosis was made at laparotomy or autopsy. CT has increased the diagnostic accuracy of both radiopaque and radiolucent stones and can also aid in establishing underlying pathology.

Our patient was asymptomatic from the enterolith. Initial radiology reporting overlooked the enterolith when it was small in size and difficult to interpret due to complex abdominal picture. Nonetheless, the management protocol would have still been conservative if the enterolith were diagnosed earlier due to its non-obstructive nature.

Treatment

Management of enterolithiasis depends on the presentation. If enterolith <2 cm presents with intestinal obstruction, conservative management should be the first approach as often they will pass spontaneously.[1]

Laparoscopic/digital crushing of enterolith and milking into large bowel can make nearly half of patients stone-free when conservative approach fails. Other alternatives include proximal enterotomy of the non-oedematous segment, endoscopic segmental dilatation with manual retrieval or segmental small bowel resection with primary anastomosis if structure is present. There are three case reports of synchronously diagnosed bowel adenocarcinoma and enteroliths in patients with Crohn's disease.[5]

Although the enterolith in our patient remained silent, it was thought to be rational to remove it during laparotomy to reduce future risk of unwanted effects from it which may warrant additional surgery in a complex abdomen

Conclusion

Enterolithiasis, being a rare clinical diagnosis, requires a high index of suspicion preoperatively to avoid misdiagnosis. We postulate that the size of the cul-de-sac should be controlled during side-to-side bowel anastomosis to prevent this complication.

Guarantor

Mr. Edward Streeter, Consultant, Urology (ES).

Informed consent

Written informed consent was obtained via NHSmail from the patient(s) for their anonymized information to be published in this article and saved in Hospital online system

Ethical approval

Not applicable.

Authors' Contribution

Mr Sarkar researched literature and conceived the study. Mr Karanjia helped in reviewing literature. Mr Akhtar was consultant, General surgeon who operated on the patient. Mr. Streeter was Consultant, Urology who joined with Mr Akhtar during the laparotomy and further procedure. Mr Streeter was in charge for the case report. All authors reviewed and edited the manuscript and approved the final version of the manuscript.

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Trial registration

Not applicable

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Conflicts of interest

There are no conflicts of interest.

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