Case Report
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NSAID Induced Spontaneous Rectal Perforation

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ABSTRACT

NSAID related spontaneous rectal perforation is a rare and severe condition with potentially life-threatening outcomes. We report a case of a 75-year-old woman with a mid-rectal perforation related to prolonged NSAID use. She presented with sudden rectal and lower abdominal pain. Imaging revealed a localised gas collection in the pre-sacral space without widespread peritonitis. Management included laparoscopic loop sigmoid colostomy and IV antibiotics. The patient recovered well and showed complete resolution at follow-up. This case highlights the importance of judicious use of NSAIDS in high-risk patients and underscores the need for individualised management strategies.
Keywords: *NSAID, Spontaneous Rectal Perforation, Sigmoidoscopy*

Introduction

Non-Steroidal Anti-Inflammatory Drugs (NSAIDs) are widely accessible over-the-counter medications commonly used for various conditions (Bindu *et al*., 2020). These include, but are not limited to, pain such as musculoskeletal pain, fever, gout, osteoarthritis, and menstrual cramps (Bindu *et al*., 2020). Despite their widespread use, NSAIDs are linked to several adverse effects affecting the cardiovascular, renal, hepatic, and gastrointestinal tract. They are the second most common cause of peptic ulcer disease, following Helicobacter Pylori infection (Tai and McAlindon, 2021). NSAIDs can cause mucosal erosions or shallow ulcers, which may lead to gastrointestinal bleeding (Tai and McAlindon, 2021), and deep ulcers can result in perforation (Tai and McAlindon, 2021). The mechanism behind the gastrointestinal side effects of NSAIDs is well understood. NSAIDs interfere with the phospholipid bilayer of the mucosal lining in the gastrointestinal tract, primarily by inhibiting cyclooxygenase enzymes COX1 and COX2. Inhibition of COX1 leads to reduced prostaglandin levels, which in turn causes mucosal damage (Bjarnason *et al*., 2018).

This case discusses a 75-year-old woman who developed a mid-rectal perforation associated with NSAID use.

Case Report

The patient experienced sudden rectal and lower abdominal pain for less than 24 hours before admission. She had a history of sigmoid diverticular disease, identified during colonoscopy two years prior. She had been taking Naproxen daily for Osteo-arthritis of her right shoulder for the previous 12 months. She also has hypertension on her remains medications include Rosuvastatin, Esomeprazole, Nu-seals, and Losartan.

Investigations

Clinical examination revealed mild lower abdominal tenderness without signs of peritonitis, and digital rectal examination was unremarkable. A CT scan showed a mid-rectal perforation without generalised intra-abdominal fluid or free gas (Fig. 1). MRI of the pelvis revealed a 4.5 cm x 4.5 cm gas collection at a right lateral rectal wall perforation, approximately 14 cm above the anorectal junction (Fig. 2), with no obstructing tumour or foreign body.

Figure 1: CT AP: Transversal pelvic view which shows right para-rectal fluid and gas within the meso-rectal fascia, with no generalised free intraperitoneal gas.

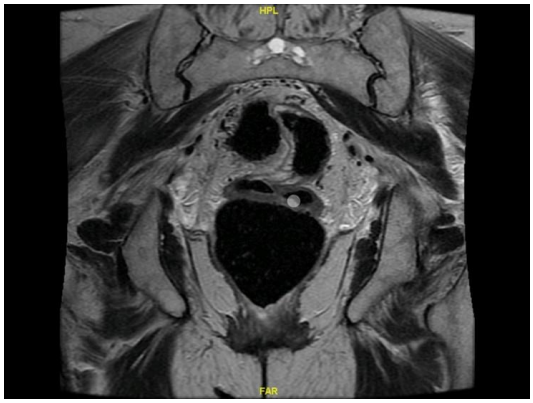


Figure 2: MRI: Coronal FRFSE showed a 4.5 x 4.5cm collection of gas positioned along the right lateral wall.

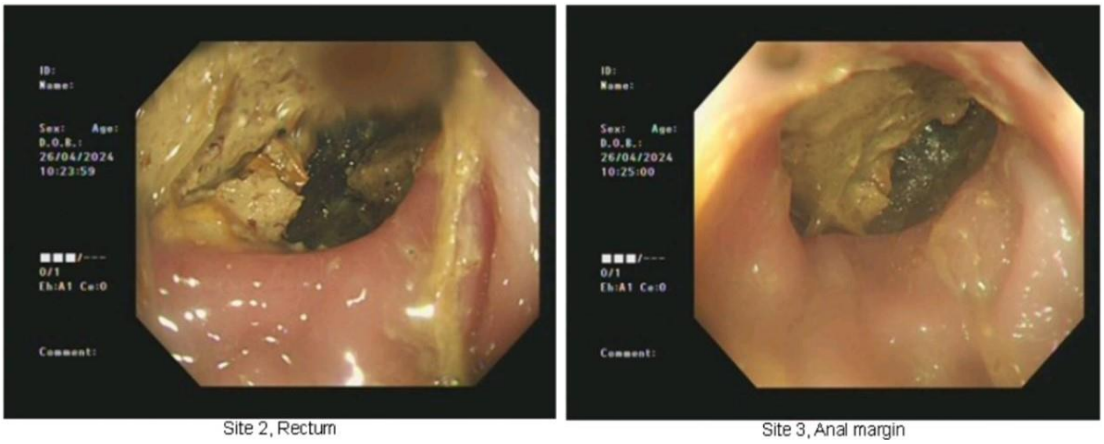
Laboratory results indicated an acute inflammatory response (shown in Table. 1).

Table 1: Laboratory results showing acute inflammatory response.

	Patient Results	Reference Range
White Cell Count (x10^9/L)	27.29	4.5-11.0
Haemoglobin (g/dl)	13.2	Dec-16
CRP (mg/L)	66	< 8 - 10
Creatinine (µmol/L)	120	62 - 106
Platelets (x10^9/L)	259	150 - 400
Blood Urea Nitrogen (mmol/L)	11.9	2.1 - 8.5
K (mmol/L)	4.9	3.9 - 5.2
Na (mmol/L)	136	135 - 145

Treatment

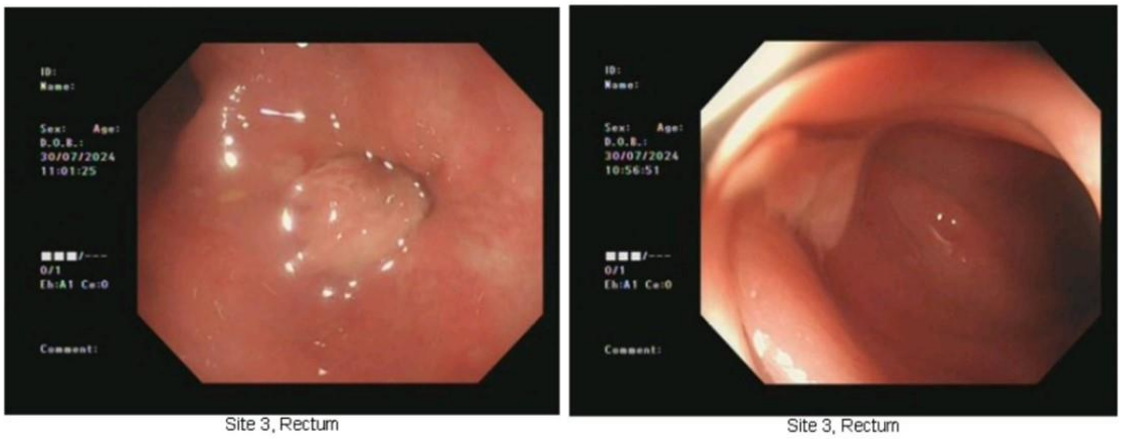
The initial management was conservative, with the patient kept NPO and administered intravenous fluids, proton pump inhibitors, and antibiotics. Sigmoidoscopy confirmed a rectal perforation (Fig. 3 and Fig. 4). The following day, diagnostic laparoscopy revealed minimal reactive fluid in the paracolic gutters without faecal contamination or generalised peritonitis. Following these findings, the surgical team decided to perform a loop colostomy and extensive saline lavage of the pelvis.



Figures 3 and 4: Endoscopic view of area of rectal perforation.

Outcome and Follow-Up

The patient recovered well and was discharged 13 days after surgery. Three months later, follow-up colonoscopy and OGD revealed a healed rectal perforation with benign biopsy results (Fig. 5 and Fig. 6). Currently, four months after the operation, the patient has fully recovered and is considering colostomy reversal.



Figures 5 and 6: Endoscopic view of rectal area with previous perforation, now 3 months post-surgery, completely healed and covered by scar tissue.

Discussion

Long-term use of NSAIDs in high-risk age groups is known to cause colonic ulceration (Watanabe *et al*., 2020), which is likely the cause of this patient's rectal perforation. Other risk factors for rectal perforation include chronic rectal prolapse, diverticular disease, uterine prolapse, and solitary rectal ulcers (Wiesler *et al*., 2022). Spontaneous rectal perforation often has multiple causes, including sudden increases in intracolonic pressure during defecation, reduced blood flow due to intramural bleeding, and NSAID-induced colopathy (Wiesler *et al*., 2022). NSAIDs are known to damage the colonic mucosa, resulting in NSAID-induced colopathy. Symptoms can range from iron deficiency anaemia and rectal bleeding to strictures, ulcers, or, in rare cases, perforation (Meshikhes *et al*., 2021; Kamboj *et al*., 2021).

NSAIDs interact with phospholipids, leading to mitochondrial oxidative phosphorylation uncoupling, which disrupts the gastrointestinal barrier. This increases intestinal permeability, resulting in inflammation and potentially deep mucosal erosions, which can cause intestinal perforation (Bjarnason *et al*., 2018). The severity of side effects varies with different NSAIDs, with non-selective NSAIDs generally carrying the greatest risk, while ibuprofen is considered safer than naproxen (Tai and McAlindon, 2021). Treatment depends on the condition's severity, with surgical intervention required in cases of bowel evisceration (Wiesler *et al*., 2022). Although laparoscopic methods have been described, open laparotomy is typically recommended (Wiesler *et al*., 2022). In our patient, the absence of generalized peritonitis initially allowed for a conservative approach followed by laparoscopic colostomy.

Conclusion

Spontaneous rectal perforation is an uncommon but severe condition with a multifactorial aetiology. Early diagnosis and appropriate management, including surgical intervention when required, are essential to minimizing morbidity and mortality. This case emphasizes the need for a personalized treatment approach based on the patient's presentation. NSAIDs may play a role in spontaneous rectal perforation, even in individuals without a history of significant gastrointestinal conditions, highlighting the importance of monitoring gastrointestinal health in long-term NSAID users.

Learning Point/ Take Home Message

1. Spontaneous rectal perforation is rare and is often associated with chronic rectal prolapse, but can also occur without significant medical history, as seen in this case.

2. Comprehensive diagnostic workup (including CT, MRI and endoscopy) can effectively identify the location and extent of rectal perforations, guiding both conservative and surgical management appropriately, keeping the clinical findings in mind.

3. NSAIDs may contribute to spontaneous rectal perforation, even in patients without a history of significant gastrointestinal issues, highlighting the importance of monitoring the gastrointestinal health of long-term NSAID users.

References

Bindu S, Mazumder S, Bandyopadhyay U. Non-steroidal anti-inflammatory drugs (NSAIDs) and organ damage: A current perspective. *Biochem Pharmacol* 2020; 180: 114147.

Bjarnason I, Scarpignato C, Holmgren E, Olszewski M, Rainsford KD, Lanas A. Mechanisms of Damage to the Gastrointestinal Tract from Nonsteroidal Anti-Inflammatory Drugs. *Gastroenterology* 2018; 154: 500-514.

Kamboj AK, Moreira RK, Sweetser S. NSAID-Induced Colopathy. *Mayo Clin Proc* 2021; 96: 2724-2725.

Meshikhes HA, Duhaileb MA, Alzahir AA, Almomen SA, Meshikhes AN. Obscure Gastrointestinal Bleeding Due to Non-steroidal Anti-inflammatory Drug-Induced Colopathy. *Cureus* 2021; 13: e20278.

Tai FWD, McAlindon ME. Non-steroidal anti-inflammatory drugs and the gastrointestinal tract. *Clin Med (Lond)* 2021; 21: 131-134.

DOI: https://dx.doi.org/10.47746/FMCR.2025.6103

Watanabe T, Fujiwara Y, Chan FKL. Current knowledge on non-steroidal anti-inflammatory drug-induced small-bowel damage: a comprehensive review. *J Gastroenterol* 2020; 55: 481-495.

Wiesler B, Linke KS, Delko T. Rare case of an 83-year-old woman with transrectal small bowel evisceration caused by spontaneous rectal perforation. *BMJ Case Rep* 2022; 15: e246965.