Rectal Perforation Following High-Pressure Distal Colostogram: A Case Report

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ABSTRACT

Pressure colostogram is an important investigation in patients of anorectal malformations with colostomy. It provides information about the type of anorectal malformation and the location of fistula, if any, thus helping in planning for a surgery. High-pressure distal colostogram-related perforations are extremely uncommon but may be fatal. We describe a case of an infant who experienced this potentially fatal complication and was managed conservatively.

Key Words: *Anorectal malformations, High-pressure distal colostogram, Rectal perforation.*

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INTRODUCTION

Anorectal malformations (ARMs) are congenital birth defects involving the anus and rectum. ARMs range from mild to severe malformations with good or poor outcomes in terms of urinary and fecal continence, respectively. They can be repaired primarily or in three stages (colostomy at birth, definitive reconstruction and colostomy reversal). Males with imperforate anus are safely treated by making a colostomy at birth.[1]

A high-pressure distal colostogram is a standard preoperative investigation ordered to identify the type of malformation and plan a surgery. A sufficient amount of pressure must be applied during this investigation in order to distend the distal rectum and identify a potential rectourinary fistula. Inadequate pressure gives the false impression of ARM without a fistula and provides incorrect information to the surgeon. However, excessive pressure can cause rectal perforation.[2] Four cases of this complication are reported presently in the literature.[3,4] We aim to present an additional case of rectal perforation after pressure colostogram managed at our institution along with the literature review and ponder on the pitfalls to prevent this fatal complication.

CASE REPORT

A 7-month male infant was a diagnosed case of ARM. His pelvic divided colostomy was made on the 2nd day of his life. Pressure colostogram was requested as part of the standard pre-operative workup before the definitive procedure.

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During the study, the baby suddenly began to wail a lot, followed by vomiting and abdominal distension. His colostogram showed extravasation of water-soluble contrast material (gastrografin) into the peritoneal cavity (Figure 1). He was found to have rectal perforation as a complication leading to gastrografin-induced peritonitis. The patient was urgently shifted to the emergency department where immediate resuscitation was initiated.

He was admitted to the high-dependency unit (HDU) for stringent monitoring and conservative management. The baby was kept NPO and IV fluids along with IV antibiotics were started. The patient remained vitally stable, and his condition improved. He was discharged on the 5th day.

A second distal loop colostogram was performed three months later, and it revealed no spillage into the peritoneal cavity (Figure 2). Rectal perforation had completely healed and the baby was fit to undergo the definitive procedure, the posterior sagittal anorectoplasty (PSARP). During PSARP, rectal wall was adherent to the surrounding tissues, most probably at the site of iatrogenic perforation. A careful dissection was performed and rectal pouch was mobilised. The rectobulbar fistula was identified on opening the rectal pouch. The surgery was completed uneventfully and patient was discharged on 3rd postoperative day. He was doing well on the one-year follow-up.

DISCUSSION

The most crucial and reliable diagnostic method for identifying the location of the rectum and a fistula in ARM patients is a high pressure distal colostogram. It was initially described in 1972 by Cremin *et al.* A correctly performed distal colostogram provides information regarding the distance between the distal part of the rectal pouch and the radiopaque marker, the length of the distal colon, and the presence of a fistula between the rectum and the urinary tract.[2-4]

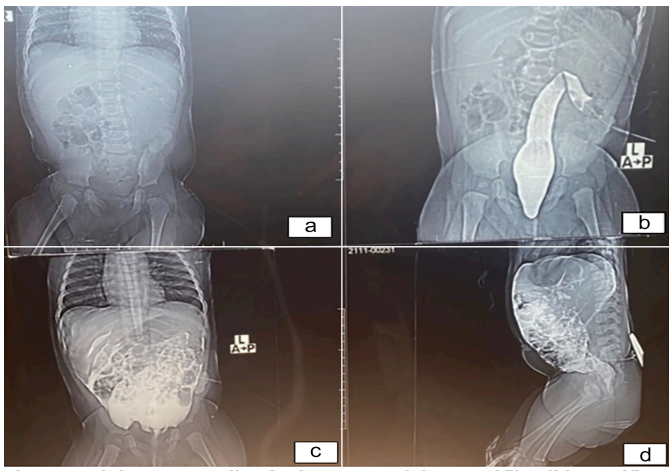

Figure 1: High-pressure distal colostogram. (a) Control film. (b) Opacification of distal colon. (c) Extravasation of contrast into peritoneal cavity after rectal pouch perforation- AP view. (d) Lateral view.

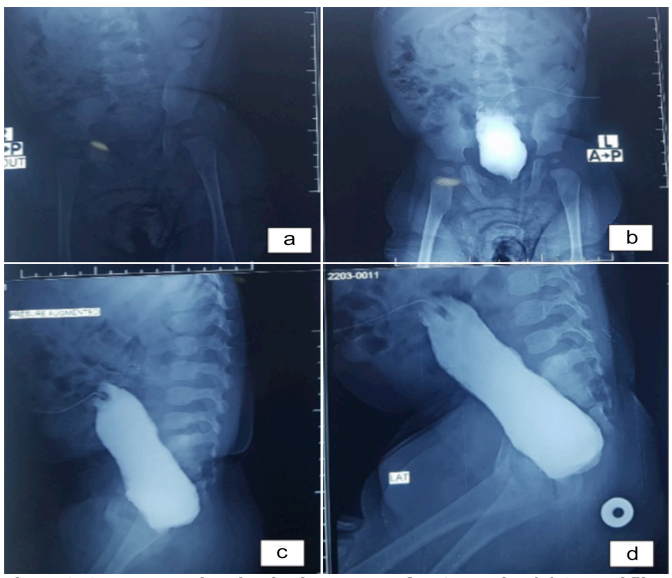

Figure 2: Contrast study. Distal colostogram after 3 months. (a) Control film. (b) Opacification of distal colon with no extravasation- AP view (c) Lateral view. (d) Injection of more contrast opacified distal colon but no fistula identified- Lateral view.

Since there is no device to monitor the contrast pressure in real-time, this investigation is carried out under fluoroscopic guidance. Once the rectum distends and becomes convex, further contrast injection must be done with extreme caution to avoid rectal perforation.[5,6]

In the literature, there are four cases of rectal perforation following high-pressure distal colostograms. Two cases were documented by Pena, both of which were intraperitoneal perforations and no information regarding the type of ARM was provided. One case was initially managed conservatively but due to clinical deterioration, it ultimately required laparotomy and repair of the colonic perforation.[3] Another case series by Brisighelli *et al.* reported two additional cases. The first case was intraperitoneal, and the second and the sole case described in the literature was of extraperitoneal perforation. The patient with intraperitoneal perforation was syndromic and had complex heart anomalies. Initially, he was managed conservatively but could not survive despite the operative intervention. The second case was extraperitoneal, and he developed necrotising fasciitis. He was managed by aggressive and extensive wound debridement.[4] Our case report, described the fourth intraperitoneal perforation event, and it was managed conservatively with an excellent outcome.

In conclusion, rectal perforation is extremely rare complication following high-pressure distal colostogram. ARM without a fistula may be considered the most common type encountering this event, though it was not required in this case. This complication can be prevented by timely aborting the study once the rectum is distended, extends past the pubococcygeal line, and has a convex shape. Rectal perforation should be aggressively managed, with surgery, if necessary, to avoid potentially life-threatening complications.

PATIENT'S CONSENT:
Informed consent was obtained from the patient's guardian.

COMPETING INTEREST:
The authors declared no conflict of interest.

AUTHORS' CONTRIBUTION:
AM: Data collection and analysis, drafting of the manuscript.
JJ: Revised the data and case report critically.
MF: Final approval of the manuscript.
LR: Literature review and critical analysis.
All authors approved the final version of the manuscript to be published.

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