CASE REPORT

Successful colonoscopic-guided balloon dilation of post-anastomotic stricture in infant: a preliminary report from a tertiary care hospital in Karachi-Pakistan

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Abstract

Post-anastomotic strictures, particularly those arising from surgical interventions like right hemicolectomy for necrotising enterocolitis (NEC), present a prevalent and challenging issue in the paediatric setting. This report presents an intriguing case of a neonate admitted to the Neonatal Intensive Care Unit (NICU) with a post-anastomotic stricture following NEC surgery. It provides a comprehensive clinical profile, including radiological, systemic findings, and a detailed outline of the management approach. The patient underwent a successful colonoscopic-guided balloon dilation procedure, achieving a dilation of up to 12 mm. However, recurrent strictures occurred even after a successful dilation of up to 12 mm, which lead to the decision for resecting the stricture and revising the anastomosis. The outcomes demonstrated significant improvement, highlighting the efficacy and potential of this approach. This case report offers valuable insights into the effectiveness of innovative intervention, providing essential information for paediatric healthcare practitioners.

Keywords: Post-anastomotic strictures, necrotising enterocolitis, colonoscopic-guided balloon dilation.

DOI: https://doi.org/10.47391/JPMA.20220

Introduction

Post-anastomotic strictures pose a significant clinical challenge in paediatric patients and are considered the most prevalent cause of postoperative morbidity.[1] The prevalence of anastomotic strictures ranges from 3% to 30% in infants, with only 5% of them presenting symptoms of intestinal obstruction.[2] Various predisposing factors, including the use of specific suture materials during anastomosis, anastomotic leakage, anastomotic tension, and prematurity, contribute to the development of these strictures.[3]

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Submission complete: 16-04-2024 **First Revision received:** 09-07-2024
Acceptance: 26-01-2025 **Last Revision received:** 25-01-2025

In cases of intestinal perforation and inadequate clinical characteristics, surgical procedures such as right hemicolectomy, colon resection, and stoma creation are frequently required.[4] However, subsequent strictures at the anastomosis site might elicit symptoms such as nausea and abdominal distention.[5] Although, literature on neonatal post-anastomotic strictures is limited, minimally invasive treatments such as colonoscopic balloon dilatation offer a viable treatment option.

In this case report, we present a successful colonoscopic-guided balloon dilatation for a post-anastomotic stricture following surgery for NEC in an infant. Our report aims to address the existing knowledge gap by providing insights into the management of anastomotic strictures using colonoscopic balloon dilatation.

Consent was obtained from both parents for publishing this case report.

Case Report

A preterm baby boy was born at 31 weeks of gestation via C-section, on 7th January 2023 at Aga Khan University Hospital (AKUH), Karachi. He was admitted to the NICU till 5th June 2023, spending only 27 days out of the 5 months of life, since birth. At the age of 4.5 months (27th May 2023), he developed NEC and was managed conservatively with measures such as withholding oral feedings or nil per os (NPO), administering antibiotics, and providing parenteral nutrition. Despite these interventions, the baby continued to experience persistent abdominal distension once feedings were initiated. As a result, a contrast enema was performed, revealing a stricture in the transverse colon. Subsequently, the baby underwent an exploratory laparotomy and was subjected to a right hemicolectomy with ileocolic anastomosis. However, his postoperative course was complicated by sepsis, necessitating an escalation of medical therapy. Due to worsening abdominal distension, an X-ray was performed to investigate the possibility of pneumoperitoneum. Supine and lateral decubitus X-rays were conducted, which showed no free air under the diaphragm (Figure 1 a). During this period, the baby was admitted to the ward at AKUH from 27th May 2023 to 5th June 2023.

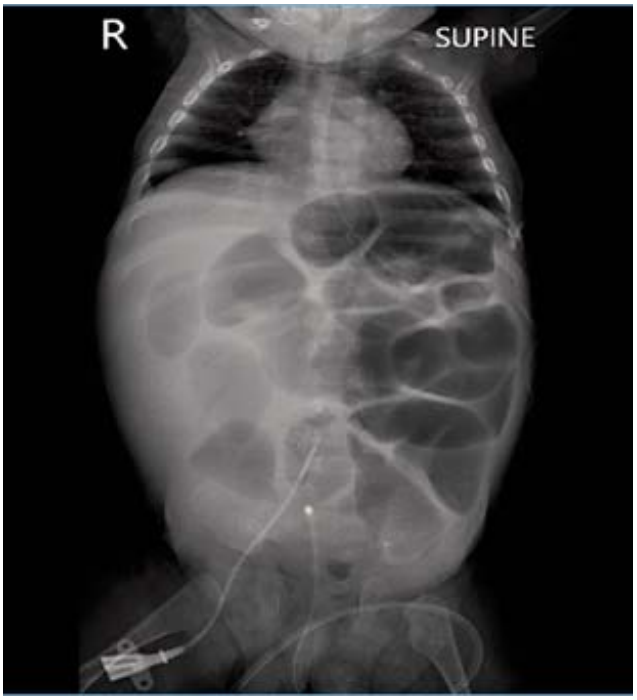

Figure-1: (a): Supine decubitus X-rays showing absence of free air under the diaphragm.

Figure-1: (b): Contrast enema confirming a stricture at the anastomotic site

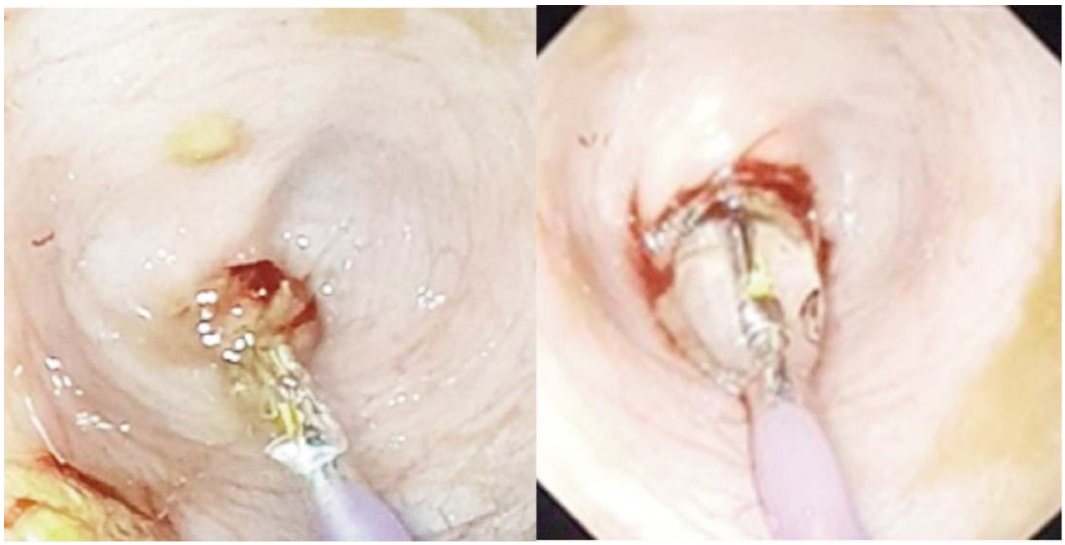

Figure-2: Neonatal colonoscopy revealing a tight stricture at the anastomotic site

The baby initially responded well to IV antibiotics and parenteral feeding, but symptoms persisted post discharge, requiring a contrast enema for ruling out an anastomotic stricture. Two months later, the baby was readmitted, presenting a dull overall appearance, and weighing 3.5 kg (15th centile). Physical examination revealed a soft and distended abdomen, while the rest of the examination was unremarkable. Based on the initial assessment, early-onset inflammatory bowel disease with sepsis and a motility disorder were suspected. The patient received medical management, including intravenous (IV) fluids, steroids, domperidone, and a combination of antibiotics (meropenem, amikacin, and fosfomycin). NPO status was maintained and feeding was gradually reintroduced. To provide comprehensive care, a multidisciplinary team (MDT) comprising experts from paediatric surgery, genetics, endocrinology, and gastroenterology was consulted. A lower gastrointestinal (GI) study was conducted, revealing a pinpoint stricture at the anastomotic site (Figure: 1 b and 2).

A colonoscopy was performed under general anaesthesia to confirm the diagnosis and explore therapeutic intervention. Using a neonatal colonoscope, a tight stricture was identified at the anastomotic site (Figure: 2). A small Caliber balloon dilator was passed through the working channel of the colonoscope, and gradual inflation and deflation were performed, resulting in successful dilation of the stricture up to 8 mm. Following the procedure, antibiotics were discontinued, the patient tolerated feedings well, and bowel symptoms completely resolved.

In the following weeks, the patient's obstructive symptoms returned, necessitating a repeat colonoscopy, which showed a recurring stricture at the anastomotic site. Despite effective dilatation to 12 mm, the stricture progressively narrowed. The decision was made for surgical resection and revision of the anastomosis, which was done via exploratory laparotomy. The baby recovered well postoperatively, resumed feedings on the second day, and was discharged on the fourth day, tolerating full feeds.

Overall, the patient's clinical course involved multiple challenges, including the development and management of postoperative complications, recurrent stricture formation, and the need for surgical intervention. Effective communication and collaboration among various medical specialties were crucial in ensuring comprehensive care and ultimately achieving a successful outcome for the patient.

Discussion

This case supports colonoscopic balloon dilatation as the recommended treatment for post-anastomotic strictures in newborns due to its less invasive nature, efficacy and cost-effectiveness compared to alternatives such as stenting, steroid injection, or bioabsorbable stents.[6] The progression of these strictures is regulated by factors such as intestinal ischaemia, inflammation, anastomotic leakage, and patient characteristics.[7]

Post-anastomotic strictures in paediatrics increase morbidity, leading to consequences including sepsis, obstruction, and surgical intervention.[8] While managing these strictures remains a challenge, yet survival rates have improved.[3,7] A multidisciplinary strategy incorporating neonatologists, gastroenterologists, and imaging techniques such as contrast enema or colonoscopy is required for a successful treatment.

Mild or asymptomatic strictures can often be managed conservatively, with close monitoring of the patient's clinical progress and supportive care. In contrast, symptomatic strictures may require surgical intervention, but colonoscopic balloon dilatation can be considered as an alternative approach to surgical resection. Various studies have reported the effectiveness of balloon dilatation, as it significantly reduces shear stress by applying the dilating force radially and uniformly along the length of the stricture.[8]

In cases where colonoscopic interventions fail or recurrent strictures develop at the anastomotic site, more extensive surgical procedures may be required, including resection and anastomosis, as in our presented case.[9,10]

In Pakistan, colonoscopic balloon dilatation is a less invasive and cost-effective treatment option for post-anastomotic strictures. Increasing awareness among healthcare providers about early referral and intervention is critical for improving patient outcomes. However, the efficacy of this procedure is confined to one centre. Every case needs an individual judgement and decision.

Conclusion

This is the first case report from our institute that emphasizes the significance of colonoscopic balloon dilatation in managing post-anastomotic strictures in infants, with surgical resection as an alternative if dilatation fails.

Acknowledgement: We extend our sincere gratitude to all who supported and helped in the writing and publication of this case report. Special thanks to Dr. Junaid Iqbal for his critical review of this document.

Disclaimer: The case report presented was not previously published in any conference and is not a part of a research, PhD, or thesis project.

Conflict of Interest: None.

Funding disclosure: None.

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AUTHOR'S CONTRIBUTION:
DS: Drafting.
BD: Data acquisition and drafting.
KS & SI: Concept, design, data analysis and interpretation.