



Delayed repair of an anorectal malformation in a 12-year-old girl using perineal body–sparing technique in a resource-limited setting: A case report

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ABSTRACT

Background: Anorectal malformations (ARM) are congenital anomalies that require early surgical correction to achieve optimal functional outcomes. However, in many resource-limited settings, restricted access to specialized care often delays definitive repair, leading to prolonged colostomy dependence and substantial psychosocial consequences.

Case: A 12-year-old girl from northwestern Uganda presented for surgical evaluation during a pediatric surgical outreach. In her first week of life, she failed to pass meconium and developed progressive abdominal distension. At one week of age, she underwent a diverting colostomy at a regional referral hospital in northwestern Uganda. Before she turned one year old, her mother left her in her grandmother's care, later remarrying. She then lived with a colostomy for 12 years. This led to embarrassment, social withdrawal, and bullying at school, and she ultimately discontinued formal education shortly after enrolling at age five. She was later scheduled for definitive repair and underwent a perineal body–sparing posterior sagittal anorectoplasty (PSARP). During this procedure, the vestibular fistula was identified and closed from within the posterior sagittal incision, preserving the perineal body. At the two-week postoperative visit, the neo-anus was patent, and the wound was healing well. She subsequently underwent scheduled anal dilatations for eight weeks following the PSARP procedure, after which colostomy closure was performed. Her postoperative course was uneventful, and she continues to do well on follow-up.

Conclusion: The perineal body–sparing PSARP technique seems to be a safe and effective option for the delayed repair of a rectovestibular fistula.

1. Introduction

Anorectal malformations (ARM) are congenital defects characterized by abnormal development of the distal anus and rectum and are frequently associated with fistulous connections to the urogenital tract in females. The incidence of ARM ranges from 1 in 4000 to 5000 live births [1,2]. In resource-limited settings, limited access to specialized pediatric surgical services and socioeconomic barriers often result in prolonged colostomy dependence, with profound psychological and social consequences for school-aged children and

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adolescents [3–11].

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2. Case presentation

A 12-year-old girl from northwestern Uganda presented for surgical evaluation during a pediatric surgical outreach. In the first week of life she failed to pass meconium and developed progressive abdominal distension. At one week of age, she underwent a diverting colostomy at a regional referral hospital in northwestern Uganda. Before she was one year old, her mother left her in the care of her grandmother and later remarried. For the following 12 years, she lived with the functional colostomy. This caused embarrassment, social withdrawal, and bullying at school, ultimately leading her to discontinue formal education shortly after starting going to school at the age of five years.

On examination, she was in a stable general condition. Abdominal examination revealed a functioning colostomy, while perineal examination demonstrated a vestibular fistula. No other abnormalities were detected on systemic examination. We decided to take her to the operating room for a perineal body-sparing posterior sagittal anorectoplasty (PSARP). Under general anesthesia with endotracheal intubation. The patient was positioned in the jack-knife position with a Foley catheter in situ. After aseptic preparation and draping, the sphincter complex was identified with a nerve stimulator, and the limits were marked anteriorly and posteriorly using silk 4/0 stay sutures. A midline posterior sagittal incision was made within the marked limits of the sphincter complex. The parasagittal fibers and sphincter muscle complex were divided symmetrically. The rectal wall was then identified and mobilized circumferentially with traction sutures. The posterior, lateral, and anterior mobilization was performed to obtain adequate rectal length. Silk traction sutures (4/0) were placed on both sides of the posterior rectal wall, and the rectum was opened in the midline. The rectal incision was then extended distally, along the midline, down to the fistula, and the latter was closed from within the posterior sagittal incision, sparing the perineal body, followed by anoplasty using 4/0 Vicryl sutures. The neoanus was calibrated to Hegar size 16. Postoperatively the patient received intravenous antibiotics and analgesics for three days. The Foley catheter was removed after 72 hours, and she was discharged home. At the two-week postoperative visit, the neo-anus was patent, and the wound was healing well. She then began scheduled anal dilatations for eight weeks following PSARP, after which closure was performed. Her recovery was uneventful, and she continues to do well on follow-up.

3. Discussion

Delayed presentation of ARMs is a major challenge in low- and middle-income countries (LMICs), driven by poor access to pediatric surgery, socioeconomic barriers, and weak referral systems [14–22]. Here, the patient lived with a colostomy for 12 years without definitive repair, revealing limited access to Pediatric surgery. Additionally, geographic barriers, long travel distances, and limited access to specialized services contribute to delayed presentation and prolonged colostomy dependence. The resulting socioeconomic burden is profound and well-documented. Previous studies show that families of children with colorectal conditions face substantial out-of-pocket costs, with at least 28–64% incurring catastrophic health expenditure (CHE) from transportation costs alone. To cover healthcare expenses, many families are compelled to sell household assets or rely on external financial support. These findings reflect broader patterns of systemic financial vulnerability in LMICs, in which repeated hospital visits and staged surgical care significantly increase the economic burden borne by households [9–11,23–25].

These findings demonstrate the burden of colostomy in LMICs, where there is a lack of conventional colostomy appliances, and prolonged colostomy dependence leads to school dropouts and social isolation, thereby highlighting the broader societal impact of delayed surgical care of ARMs [10,23].

PSARP remains the gold standard for definitive repair of ARM [26,27]. In delayed presentations, however, modifications such as the perineal body-sparing approach can offer distinct advantages. By preserving the perineal body, this technique maintains the anatomical separation between the rectum and vagina, thereby reducing the risk of rectovaginal fistula, wound breakdown, and perineal scarring. Additionally, limiting disruption of the pelvic floor musculature may improve functional outcomes, particularly continence, even in older children. The favorable postoperative recovery in this case, with minimal complications, supports the safety and feasibility of the perineal body-sparing approach in late presenters [28,29].

Emerging evidence supports adopting strategies that minimize colostomy duration and related morbidity. Comparative studies of staged versus primary repair approaches indicate that one- or two-stage repairs can significantly shorten the duration of colostomy while not increasing the risk of postoperative complications [30,31]. Furthermore, delays in care are typically multifactorial and can be understood through the Three Delays model, which outlines barriers to seeking, reaching, and receiving care. Across all three types of delay, financial constraints, limited caregiver knowledge, and weak referral systems consistently emerge as major contributors. It is critical to address these barriers by enhancing newborn screening, strengthening referral pathways, and improving the training of primary healthcare providers [16,20–22,32–35].

This case highlights that, even with delayed presentation, definitive repair of ARMs can be successfully achieved in LMICs when supported by adequate surgical expertise and perioperative care. For late presenters, the perineal body-sparing PSARP offers a safe and effective approach, providing both anatomical and functional benefits [28,29]. To further improve outcomes and reduce delays, it is crucial to address upstream determinants, including timely diagnosis, better access to pediatric surgical services, financial risk protection strategies, and broader health system strengthening.

4. Conclusion

The perineal body-sparing PSARP technique seems to be a safe and effective option for the delayed repair of a rectovestibular fistula.

Ethics, consent to participate, and consent to publish declarations

Written informed consent of the caretaker was obtained.

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CRediT authorship contribution statement

Caroline Asimwe: Conceptualization, Data curation, Writing – original draft. **Denis Oluka:** Data curation, Writing – original draft. **Yasin Ssewanyana:** Data curation, Writing – original draft. **Eden Belay Tilahun:** Writing – review & editing. **Felix Oyania:** Conceptualization, Data curation, Writing – original draft, Writing – review & editing.

Declaration of competing interest

All authors declare no conflict of interest.

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References

- [1] Cheung M, Kakembo N, Rizgar N, Grabski D, Ullrich S, Muzira A, et al. Epidemiology and mortality of pediatric surgical conditions: insights from a tertiary center in Uganda. *Pediatr Surg Int* 2019;35(11). <https://doi.org/10.1007/s00383-019-04520-2>.
- [2] Massenga A, Chibwae A, Nuri AA, Bugimbi M, Munisi YK, Mfinanga R, et al. Indications for and complications of intestinal stomas in the children and adults at a tertiary care hospital in a resource-limited setting: a Tanzanian experience. *BMC Gastroenterol* 2019;19(1). <https://doi.org/10.1186/s12876-019-1070-5>.
- [3] Ozgediz D, Poenaru D. The burden of pediatric surgical conditions in low and middle income countries: a call to action. *Journal of pediatric surgery*, 47; 2012. <https://doi.org/10.1016/j.jpedsurg.2012.09.030>.
- [4] Linden AF, Sekidde FS, Galukande M, Knowlton LM, Chackungal S, McQueen KAK. Challenges of surgery in developing countries: a survey of surgical and anesthesia capacity in Uganda's public hospitals. *World J Surg* 2012;36(5). <https://doi.org/10.1007/s00268-012-1482-7>.
- [5] Smith JD, Poenaru D, Thompson D, Phillips JD. Surgical residency training in the mission setting: current status and future directions. *Christian Journal for Global Health* 2016;3(2). <https://doi.org/10.15566/cjgh.v3i2.135>.
- [6] Yousef Y, Lee A, Ayele F, Poenaru D. Delayed access to care and unmet burden of pediatric surgical disease in resource-constrained African countries. *J Pediatr Surg* 2019;54(4). <https://doi.org/10.1016/j.jpedsurg.2018.06.018>.
- [7] Meara JG, Leather AJM, Hagander L, Alkire BC, Alonso N, Ameh EA, et al. Global surgery 2030: evidence and solutions for achieving health, welfare, and economic development. *The Lancet* 2015;386(9993):569–624.
- [8] Ogwal A, Oyania F, Nkonge E, Makumbi T, Galukande M. Prevalence and predictors of cancellation of elective surgical procedures at a tertiary hospital in Uganda: a cross-sectional study. *Surg Res Pract* 2020;2020. <https://doi.org/10.1155/2020/1464098>.
- [9] Eze AN, Commander SJ, Bingana C, McGinnis O, Barter S, Fitzgerald TN, et al. Financial impact of transportation costs for Ugandan pediatric colorectal patients. *World J Surg*.
- [10] Oyania F, Stephens CQ, Ullrich S, Kotagal M, Shui AM, Tuhumwire C, et al. Impact of reducing time lived with colostomies on social stigma affecting children with anorectal malformations in Southwestern Uganda. *World J Surg* 2025. Published online.
- [11] Oyania F, Stephens CQ, Ullrich S, Shui AM, Kotagal M, Rukundo GZ, et al. Risk factors for catastrophic healthcare expenditure and high economic burden for children with anorectal malformations in Southwestern Uganda. *Int J Equity Health* 2025;24(1):321.
- [12] Badillo A, Tiusaba L, Jacobs SE, Al-Shamailah T, Feng C, Russell TL, et al. Sparing the perineal body: a modification of the posterior sagittal anorectoplasty for anorectal malformations with rectovestibular fistulae. *Eur J Pediatr Surg* 2022;33(6). <https://doi.org/10.1055/a-1976-3611>.
- [13] Soeselo DA, Grimaldy G, Susilawati. Delayed diagnosis of congenital anorectal malformation. *J Pediatr Surg Case Rep* 2020;57:101446. <https://doi.org/10.1016/j.epsc.2020.101446>.
- [14] Divya G, Kundal VK, Debnath PR, Addagatla R, Garbhapu AK, Sen A, et al. Delayed presentation of anorectal malformations in a tertiary care hospital in India. *Pediatr Surg Int* 2021;37(4). <https://doi.org/10.1007/s00383-020-04843-5>.
- [15] Sharma S, Mazingi D, Imam MS, Chowdhury TK, Saldaña LJ, Mashavave NZ, et al. Anorectal malformations in low and middle-income Countries- spectrum, burden and management. *Semin Pediatr Surg* 2023;151349. <https://doi.org/10.1016/j.sempedsurg.2023.151349>. Published online.
- [16] Sohail H, Nawaz T, Mirza MA, Ara J, Nawaz MA, Arif A, et al. Late presentation of anorectal Malformations-A dilemma in modern world: Cross-sectional analysis from a tertiary care hospital, Pakistan. *Pak Armed Forces Med J* 2022;72:S280–3. <https://doi.org/10.51253/pafmj.v72iSUPPL-2.4426>.
- [17] Divya G, Kundal VK, Debnath PR, Addagatla R, Garbhapu AK, Sen A, et al. Delayed presentation of anorectal malformations in a tertiary care hospital in India. *Pediatr Surg Int* 2021;37:451–6.
- [18] Reddy M, Tank N, Bawa M, Kanojia RP, Samujh R. Anorectal malformations: the earlier the diagnosis, the better the outcome. *Indian J Pediatr* 2021;1–5. Published online.
- [19] Oyania F, Faktor K, Ullrich S, Ozgediz D, Kotagal M. Delayed diagnosis of anorectal malformations: a call for standardization of the current definitions. *World J Plast Surg* 2024;7(4).
- [20] Oyania F, Kotagal M, Situma M. 15-year-old with neglected recto-vestibular fistula in Western Uganda: a case report. *J Med Case Rep* 2021;15(1). <https://doi.org/10.1186/s13256-021-02717-5>.
- [21] Oyania F, Stephens CQ, Ullrich S, Kotagal M, Kisitu D, Bajunirwe F, et al. Delays in care for children with low anorectal malformations in Southwestern Uganda. *J Surg Res* 2025;305:156–62. <https://doi.org/10.1016/j.jss.2024.11.013>.

- [22] Felix Oyania, Eze Anthony N, Sarah Ullrich, Meera Kotagal, Ozgediz Doruk E. The social challenges of stomas faced by families of children with anorectal malformations in Uganda. *Sage Open Pediatrics* 2025;12:30502225251338536. <https://doi.org/10.1177/30502225251338536>.
- [23] Oyania F, Eze AN, Ullrich S, Kotagal M, Ozgediz D. Methods families use to raise funds for anorectal malformation treatment at a single public referral hospital in Southwestern Uganda. *World J Plast Surg* 2024;7(4).
- [24] Binde AH, Oyania F, Ullrich S, Situma M, Kotagal M, Mulogo EM. Hirschsprung disease: a cost analysis study of the direct, indirect costs and financial coping strategies for the surgical management in Western Uganda. *Pediatr Surg Int* 2024;40(1):37.
- [25] deVries PA, Peña A. Posterior sagittal anorectoplasty. *J Pediatr Surg* 1982;17(5):638–43.
- [26] Peña A, Devries PA. Posterior sagittal anorectoplasty: important technical considerations and new applications. *J Pediatr Surg* 1982;17(6):796–811.
- [27] Ostertag-Hill CA, Nandivada P, Dickie BH. Saving the perineal body—A modification of the posterior sagittal anorectoplasty. *Pediatr Surg Int* 2023;39(1). <https://doi.org/10.1007/s00383-022-05350-5>.
- [28] Hartford L, Brisighelli G, Gabler T, Westgarth-Taylor C. Single-stage procedures for anorectal malformations: a systematic review and meta-analysis. *J Pediatr Surg* 2022;57(9):75–84. <https://doi.org/10.1016/j.jpedsurg.2021.12.024>.
- [29] Oyania F, Ullrich S, Hellmann Z, Stephens C, Kotagal M, Commander SJ, et al. Effectiveness of primary repair for low anorectal malformations in Uganda. *Pediatr Surg Int* 2024;40(1):1–9.
- [30] Walani SR, Penny N, Nakku D. The global challenges of surgical congenital anomalies: evidence, models, and lessons. *Semin Pediatr Surg* 2023;32(6):151348. <https://doi.org/10.1016/j.sempedsurg.2023.151348>.
- [31] Pilkington M, Situma M, Winthrop A, Poenaru D. Quantifying delays and self-identified barriers to timely access to pediatric surgery at Mbarara Regional Referral hospital, Uganda. *J Pediatr Surg* 2018;53(5):1073–9. <https://doi.org/10.1016/j.jpedsurg.2018.02.045>.