

Surgical Management of Anterior Ectopic Anus: A Case-Based Approach

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ABSTRACT

Anterior Ectopic Anus (AEA) is a rare congenital anorectal malformation characterised by the anterior displacement of the anal opening and occurs more commonly in girls. Patients may present with constipation, difficulty in stool passage, and straining. To describe the clinical presentation, diagnosis, surgical management, and postoperative outcome of a 5-year-old girl with anterior ectopic anus. A case of a 5-year-old girl presenting with difficulty in stool passage for one month and a history of constipation was evaluated. The abnormal anterior location of the anal opening had been noticed when she was 6 months old; however, she had not undergone clinical evaluation or treatment. The diagnosis of AEA was established clinically, and posterior anorectal transposition was planned. The patient underwent posterior anorectal transposition under general anaesthesia. Postoperatively, she received intravenous fluids, analgesics, and antibiotics. The postoperative period was uneventful, with no complications observed. The patient remained clinically stable, tolerated oral feeding, and achieved normal bowel movements. She was mobilised on the third postoperative day and discharged in stable condition after one week. Early recognition and appropriate surgical management of anterior ectopic anus are essential to prevent persistent bowel dysfunction and associated complications. Posterior anorectal transposition resulted in a favourable postoperative outcome in this patient.

Keywords: Anterior Ectopic Anus, Constipation, Posterior anorectal transposition.

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INTRODUCTION

Ectopic Anus (EA) is a congenital abnormality in which the anal opening is located outside its normal anatomical position. Traditionally, the term has been used to describe an anus that is displaced, most commonly in an anterior direction (Ottolenghi *et al.*, 1994). The various ectopic anus are Anterior Anus (AA), Anterior anus with stenosis, Perineal fistula, and Congenital anal stenosis (Amerstorfer *et al.*, 2022).

Anterior Ectopic Anus (AEA), also commonly referred to in the literature as anterior anus or anteriorly displaced anus, is characterised by an anal opening situated closer to the external genitalia than expected. It occurs more frequently in females. The reported incidence of AEA ranges from approximately 2.27% to 2.84% in females and from 1.14% to 2.10% in males (Herek and Polat, 2004).

The clinical presentation of AEA varies considerably, with some children remaining asymptomatic and being identified incidentally during routine examination, while others develop gastrointestinal symptoms during infancy or childhood. The most commonly reported manifestations include constipation, difficulty in passing stools, straining and pain during defecation, hard stools, incomplete evacuation, and faecal retention. In cases of severe or chronic constipation, abdominal discomfort or distension may occur, and prolonged faecal retention may result in faecal soiling or overflow incontinence (Leape and Ramenofsky, 1978).

The diagnosis of anterior ectopic anus is primarily based on clinical examination, assessment using the Anal Position Index (API), and evaluation of anal calibre and sphincter position. Clinical examination involves careful inspection of the perineum to determine the position of the anal opening, its distance from the genital structures, and the presence of any associated perineal abnormalities. The API provides an objective measurement of anal position by calculating the ratio between specific anatomical distances; in girls, it is calculated as the distance from the vaginal fourchette to the centre of the anus divided by the distance from the vaginal fourchette to the coccyx. Finally, assessment of anal calibre and confirmation that the anal opening is completely surrounded by the sphincter muscle complex are essential to



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differentiate a true anterior anus from congenital anal stenosis or a perineal fistula, as these conditions may require different management approaches (Liman *et al.*, 2024; Caruso *et al.*, 2023).

Treatment of anterior ectopic anus should be individualised according to the patient's symptoms, anatomical findings, anal calibre, and relationship of the anal opening to the sphincter complex. Conservative management is generally considered the first-line approach for children with a true anterior anus and may include dietary modification, adequate fluid intake, stool softeners, laxatives, bowel management, and rectal irrigation when clinically indicated (Duci *et al.*, 2021). Anal dilatation may be considered in patients with associated congenital anal stenosis but is not routinely recommended for a normally calibrated anterior anus. Surgical management is reserved for patients with persistent or refractory constipation despite adequate conservative treatment, significant anal stenosis, perineal fistula with inadequate sphincter encirclement, or anatomical abnormalities causing impaired defecation. Surgical techniques include Posterior Anorectal Transposition (PAT), in which the anteriorly positioned anal opening is relocated posteriorly; posterior anoplasty, which corrects the abnormal anal position; Anterior Sagittal Anorectoplasty (ASARP), commonly used for selected low anorectal malformations and perineal fistulas, particularly in females; and Posterior Sagittal Anorectoplasty (PSARP), which allows reconstruction and appropriate placement of the rectum within the sphincter muscle complex (Tuggle *et al.*, 1990; Al-Salem, 2014).

CASE PRESENTATION

A 5-year-old girl presented with difficulty in passing stools for one month. According to her mother, an abnormal position of the anal opening had been noticed when the child was 6 months old; however, this finding had not previously been reported to or evaluated by a healthcare professional. The patient had a history of constipation but no history of bleeding per rectum, pain, fever, or vomiting. She consumed a mixed diet and had previously maintained normal bowel and bladder habits.

On general examination, the patient was alert, conscious, afebrile, and fairly hydrated. Systemic examination revealed normal cardiovascular and respiratory findings and a soft abdomen. Bilaterally enlarged lymph nodes were palpable in the upper region. Her vital signs were as follows: blood pressure, 101/55 mmHg; respiratory rate, 25 breaths/min; heart rate, 115 beats/min; Oxygen Saturation (SpO₂), 98%; and Capillary Refill Time (CRT), <3 sec. Based on clinical examination, the patient was diagnosed with anterior ectopic anus and was planned for posterior anorectal transposition. Preoperative and postoperative laboratory investigations were performed, and the results are presented in Table 1. Overall, the preoperative and postoperative laboratory values are within normal limits, with no significant abnormality noted.

Preoperative preparation included administration of clear fluids, including water, tender coconut water, and Oral Rehydration Solution (ORS), as advised. Intravenous fluid therapy with D ½ NS was administered at 30 mL/hr. Additional bowel preparation was provided as per the prescribed regimen. Blood grouping, typing, and cross-matching were performed, and vital signs were monitored preoperatively.

In the operating theatre, intravenous access was established through a 22-gauge Intravenous (IV) cannula in the right forearm. General anaesthesia was administered through endotracheal intubation. Premedication consisted of Inj. Glycopyrrolate 0.075 mg, Inj. Midazolam 0.75 mg, and Inj. Fentanyl 30 µg. The patient was preoxygenated with 100% oxygen at 10 L/min for 3 min. Anaesthesia was induced using Inj. Propofol 30 mg and Inj. Atracurium 7.5 mg, followed by intubation with a 4.5-mm internal diameter cuffed endotracheal tube. Equal bilateral air entry was confirmed. Intraoperative medications included Inj. Paracetamol 225 mg, Inj. Ceftriaxone 750 mg, inj. Hydrocortisone 30 mg, and Inj. Ondansetron 1 mg. After the procedure, spontaneous respiratory efforts were reversed with Inj. Glycopyrrolate 0.15 mg and Inj. Neostigmine 0.75 mg. Following thorough suctioning, the patient was successfully extubated.

RESULTS

The patient underwent posterior anorectal transposition under general anaesthesia. The immediate postoperative period was stable, and the patient was alert, active, and afebrile. Her postoperative vital signs were blood pressure of 101/59 mmHg, pulse rate of 125 beats/min, and SpO₂ of 98% on room air, with bilateral air entry.

Following surgery, the patient was shifted to the intensive care unit for postoperative monitoring. She complained of pain at the operative site but had no fever or other immediate postoperative complications. Postoperative treatment included Inj. Paracetamol 20 mL, three times daily and Inj. Cefotaxime 500 mg intravenously, three times daily. The patient was maintained Nil Per Oral (NPO) for two days and received IV D ½ NS with potassium chloride 5 mL at a rate of 50 mL/hr.

The postoperative recovery was uncomplicated. On the third postoperative day, the patient was advised to sit and ambulate. She subsequently tolerated oral feeds and demonstrated appropriate stool passage. The patient remained clinically stable throughout the postoperative period and was discharged within one week without any reported complications.

DISCUSSION

AEA is the anterior displacement of the anus along the perineum when the anal opening is completely covered by the sphincter complex and is of normal calibre, a condition that was previously referred to as anterior ectopic anus.

The demographics and the presentation of the current patient fits the characteristics of many cases described in the literature before. For instance (Leape and Ramenofsky 1978), describe a case of anterior ectopic anus predominantly occurring in girls with constipation since early childhood and straining during defecation.

In symptomatic patients requiring surgical correction, several procedures have been described, including anoplasty, anal shift, PAT, PSARP, and ASARP. The choice of procedure depends on the anatomical position of the anus, degree of stenosis, relationship of the anal canal to the sphincter complex, and the surgeon's experience (Deshmukh, 2017).

Shah *et al.*, 2003, described the anal shift procedure in 12 girls with anterior ectopic anus. At 12-24 months of follow-up, all patients had normal anal function and satisfactory vulvo-anal distance without stenosis; one patient developed superficial wound dehiscence and subsequently underwent reoperation with good results. The authors emphasised that anal shift avoids lateral dissection and therefore preserves rectal support and the neurovascular supply, while the absence of an anterior suture line may reduce the risk of postoperative stricture.

ASARP has also been widely used for female anorectal malformations and provides direct access to the anorectal region with relatively limited external sphincter division. In a 22-year single-centre retrospective study of 594 female patients treated with ASARP, good continence outcomes were reported in the majority of assessed patients. However, postoperative complications included anal stricture in 5%, rectal prolapse in 3.4%, anal retraction in 0.7%, and anterior anal migration in 6.7% of patients. Constipation was initially observed in 27% of patients during the first postoperative year but decreased to 7% subsequently. Although these results demonstrate that ASARP can provide satisfactory functional outcomes, they also indicate that postoperative complications remain possible (Elrouby *et al.*, 2020).

In the present case, posterior anorectal transposition was selected. Posterior transposition was originally described by a study as a technique in which the ectopic anus is incorporated into a flap and transposed posteriorly to its normal anatomical position. An important advantage of this technique is preservation of the mucocutaneous junction and part of the anorectal innervation and blood supply. In the reported series of 24 girls, the repair remained intact despite a high incidence of postoperative sepsis related to less-than-ideal operative conditions. These findings provide historical support for posterior transposition as a technically effective method of correcting the abnormal anal position while maintaining important local anatomical structures (Abeyaratne, 1991).

When compared with anal shift, both procedures aim to relocate the anus to a more appropriate anatomical position while preserving surrounding structures. Anal shift has demonstrated encouraging short- to intermediate-term outcomes, including normal anal function and absence of stenosis in the initial series reported by PAT; however, it has the advantage of specifically incorporating the EA into a transposition flap, thereby maintaining the mucocutaneous junction and part of the blood and nerve supply (Shahin, 2018). Compared with ASARP, posterior transposition may be particularly attractive in an isolated anteriorly displaced anus with an intact sphincter complex because it can correct the anatomical abnormality without necessarily requiring extensive reconstruction of the anorectal unit. However, ASARP has substantially greater published experience, particularly in broader groups of female anorectal malformations, and has demonstrated generally favourable long-term functional results (Saoji and Nagdeve, 2018).

Therefore, the selection of posterior anorectal transposition in the present patient was based on the anatomical characteristics of the lesion and the objective of restoring the anus to a more normal position while preserving the existing sphincteric and local anorectal structures. The procedure provided satisfactory anatomical correction in the present case without the need for a more extensive anorectal reconstruction. The favourable postoperative outcome is consistent with the previously reported effectiveness of posterior transposition and supports its consideration as an appropriate surgical option in carefully selected patients with anterior ectopic anus.

Table 1: Preoperative and postoperative laboratory investigations.

Parameters	Pre operative	Post operative
Haemoglobin (Hb)	12.6 g/dL	12.6 g/dL
Total Leukocyte Count (TC)	7,600 cells/mm ³	11,100 cells/mm ³
Platelet Count	3.8 lakh/ μ L	3.2 lakh/ μ L
Mean Corpuscular Volume (MCV)	74fl	74fl
Mean Corpuscular Haemoglobin (MCH)	23pg	23pg
Mean Corpuscular Haemoglobin Concentration (MCHC)	32 g/dL	32 g/dL
Neutrophils	55%	60%
Lymphocytes	35%	30%
Monocytes	6%	7%
Eosinophils	3%	2%
Basophils	1%	1%

CONCLUSION

We present a case of a 5-year-old girl diagnosed with anterior ectopic anus who presented with difficulty in stool passage and a history of constipation. This case highlights the importance of early recognition and appropriate evaluation of anorectal anomalies, particularly in girls, where delayed diagnosis may contribute to bowel-related symptoms. The diagnosis was established clinically, and the patient underwent posterior anorectal transposition under general anaesthesia. Postoperatively, she received intravenous fluids, analgesics, antibiotics, and appropriate bowel management. The patient had an uncomplicated recovery, remained clinically stable, tolerated oral feeding, and achieved normal stool passage. She was mobilised on the third postoperative day and discharged within one week. This case demonstrates that timely surgical intervention in symptomatic anterior ectopic anus can provide favourable short-term functional and anatomical outcomes. Early identification, careful assessment of symptoms and anorectal anatomy, appropriate surgical selection, and close postoperative monitoring are essential for achieving optimal outcomes in children with this rare congenital anomaly.

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ABBREVIATIONS

AEA: Anterior Ectopic Anus; **EA:** Ectopic Anus; **AA:** Anterior Anus; **API:** Anal Position Index; **PAT:** Posterior Anorectal Transposition; **PSARP:** Posterior Sagittal Anorectoplasty; **ASARP:** Anterior Sagittal Anorectoplasty; **IV:** Intravenous; **NPO:** Nil Per Os; **ORS:** Oral Rehydration Solution; **Hb:** Haemoglobin; **TC:** Total Leukocyte Count; **MCV:** Mean Corpuscular Volume; **MCH:** Mean Corpuscular Haemoglobin; **MCHC:** Mean Corpuscular Haemoglobin Concentration; **SpO₂:** Peripheral Oxygen Saturation; **CRT:** Capillary Refill Time; **AI:** Artificial Intelligence.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

ETHICAL STATEMENT

The authors declare that this study involved no clinical trials or experimental procedures on humans, human tissues, or animals.

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