THE NEW ARMENIAN MEDICAL JOURNAL
Volume19 (2025), Issue 4, p.97-103

DOI: https://doi.org/10.56936/18290825-2025.19v.4-97

COMPARISON OF POST-DEFINITIVE-SURGERY COMPLICATIONS BETWEEN PATIENTS WITH HIGH AND LOW ANORECTAL MALFORMATIONS IN MAKASSAR, INDONESIA

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Received 10.11.2024; Accepted for printing 21.10.2025

Abstract

Introduction: Managing anorectal malformations generally includes posterior sagittal anorectoplasty. We compared complications in patients with high and low anorectal malformations after definitive posterior sagittal anorectoplasty.

Methods: Data for this descriptive, analytic, retrospective cohort study were obtained from medical records of anorectal malformation patients who had undergone posterior sagittal anorectoplasty and colostomy closure between 2017 and 2019.

Results: Among the 45 patients included, most were aged ≤30 years (57.5%) and were male (64.4%). High anorectal malformation was more prevalent (84.4%) than low. Most high anorectal malformation patients presented without fistula (52%); among those with fistula, the most prevalent form was rectourethral (18.4%) followed by recto-vestibular (15.6%). Among low anorectal malformation patients, 71.4% presented with perineal fistula and 28.6% presented without. This study showed that chronic complications were the most type of complication from anorectal malformation, where chronic complications are mostly found in High type anorectal malformation, but not significantly with type anorectal malformation.

Conclusions: Incontinence was more prevalent in patients with high anorectal malformations, while constipation was more common with low anorectal malformation, although this was not statistically significant. Chronic complications occurred more frequently than early complications regardless of the type of anorectal malformation. High anorectal malformations had more complications than low anorectal malformations, but this difference was not statistically significant.

Keywords: *anal stenosis, anorectal malformation, constipation, incontinence, posterior sagittal anorectoplasty.*

Cite This Article as:

Winoto S., Habar T.R., Hendarto J., Kusuma M.I., Prihantono P., Mariana N., Nurmantu F., Ahmadwirawan A., Sulmiati S., Faruk M. (2025). Comparison of post-definitive-surgery complications between patients with high and low anorectal malformations in Makassar, Indonesia; The New Armenian Medical Journal, vol.19 (4), 97-103; DOI: https://doi.org/10.56936/18290825-2025.19v.4-97

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INTRODUCTION

Anorectal malformations represent a spectrum of congenital anomalies involving the distal hindgut, rectum, and anal canal, and are frequently associated with abnormalities of the urogenital tract. The global incidence of anorectal malformations is estimated to be 1 in 4,000–5,000 live births, with a higher prevalence among males [*Cassina M et al, 2019*]. These anomalies result from a disruption in the embryological division of the cloaca, which normally separates into the rectum and urogenital sinus during early fetal development. Incomplete partitioning leads to various degrees of anorectal and urogenital connection or absence of anal opening [*Grosfeld J, 2006*]. Based on the position of the rectal pouch relative to the levator ani muscle, Anorectal malformations are broadly classified into high, intermediate, and low types. Low malformations are usually less complex and more amenable to surgical correction, whereas high malformations are often associated with greater pelvic dislocation and neurogenic dysfunction [*Peña A, 2006; Bischoff A et al, 2014*].

The introduction of posterior sagittal anorectoplasty by Peña and De Vries in 1982 transformed the surgical management of anorectal malformation, as it allowed direct visualization and reconstruction of the sphincteric complex [*Gangopadhyay A, Pandey V, 2015*]. Currently, posterior sagittal anorectoplasty remains the gold standard for definitive repair of high and intermediate Anorectal malformations, while limited posterior sagittal anorectoplasty or perineal anoplasty is used for low lesions [*Huang C et al, 2012*]. Despite substantial improvement in survival and functional results, the overall success of posterior sagittal anorectoplasty depends not only on surgical accuracy but also on postoperative management, nutritional support, and rehabilitation programs [*Levitt M et al, 2010*].

Postoperative complications following anorectal malformation repair can be divided into early and chronic types. Early complications include wound infection, anal stenosis, and rectal prolapse, while chronic complications mainly involve constipation, fecal incontinence, and soiling [*Divarci E, Ergun O, 2020*]. These long-term problems remain a global concern because they significantly affect the patient's quality of life. Previous studies have shown that the incidence and type of complications vary according to the anatomical classification of anorectal malformation. Patients with high anorectal malformation tend to experience fecal incontinence due to defective pelvic floor musculature and impaired neural control, whereas constipation is more frequent among those with low anorectal malformation, possibly related to rectal hypomotility or postoperative fibrosis [*Rintala RJ, Pakarinen MP, 2010; Nam SH et al,2016*].

Functional outcomes in anorectal malformation patients also rely heavily on consistent bowel management and long-term follow-up. However, in many low- and middle-income countries, including Indonesia, limited access to specialized pediatric colorectal services, delayed presentation, malnutrition, and inadequate postoperative care remain significant barriers to optimal outcomes [*Banu T et al, 2020*]. Consequently, many patients experience preventable complications, which underscores the need for region-specific data to improve postoperative protocols.

Several population-based studies have attempted to quantify functional outcomes and complication rates following definitive anorectal malformation repair. Krickenbeck's classification identified constipation rates of 21% in perineal fistula, 28% in recto-vestibular fistula, and 42% in rectourethral fistula [*Levitt M et al, 2010*]. Peña's study involving 792 patients reported constipation in 43% of low anorectal malformation cases and 18% of high anorectal malformation cases [*Peña A, Levitt M, 2006*]. However, these figures vary widely across countries, likely due to differences in genetic, nutritional, and environmental factors, as well as disparities in postoperative bowel care [*Cassina M et al, 2019; Makrufardi F et al, 2020*].

Although extensive literature exists from Western and multicenter Asian studies, limited data are available from Indonesia, particularly in Eastern regions such as Makassar. Wahidin Sudirohusodo Hospital, as a major tertiary referral center, provides an ideal population base to examine the outcomes of anorectal malformation surgery within this context. Understanding the pattern of postoperative complications can guide local clinicians in refining surgical timing, optimizing bowel management programs, and providing better counsel-

ing for families.

Therefore, this study aimed to compare postoperative complications between patients with high and low anorectal malformations following definitive posterior sagittal anorectoplasty at Wahidin Sudirohusodo Hospital, Makassar. Specifically, this study evaluated the types and timing of complications—both early and chronic—and their correlation with the anatomical type of anorectal malformation. By identifying the predominant complication patterns, this research seeks to contribute to improved prediction of functional outcomes and to the development of standardized postoperative care strategies suitable for resource-limited healthcare settings.

Material and Methods

This study had a descriptive, analytic, retrospective cohort design. Data were obtained from the medical records of patients who had an anorectal malformation and underwent posterior sagittal anorectoplasty and colostomy closure between January 2017 and December 2019. This study was approved by the Health Research Ethics Committee of Hasanuddin University (Reference No. 542/UN4.6.4.5.31/PP36/2020).

The research population was selected based on inclusion and exclusion criteria. The inclusion criteria were as follows: 1) patients with anorectal malformation that had undergone limited posterior sagittal anorectoplasty for low-level lesions and full posterior sagittal anorectoplasty and colostomy closure for high anorectal malformation; and 2) patients with sufficient data in their medical records. Patients were excluded if: 1) they had other vertebral, anal, cardiac, tracheoesophageal, renal, and limb comorbidities; 2) their data were lost on follow up; and 3) they had incomplete medical records.

The descriptive data included the following: age, gender, location of lesion, type of fistula, type of posterior sagittal anorectoplasty, and complications after definitive surgery. Statistical analyses to determine the relationship between anorectal malformation type after posterior sagittal anorectoplasty and subsequent complications were carried out with the chi-square test ($p < 0.05$ was considered statistically significant). Results were presented by narrative description, tables, and graphics. Data were analyzed statistically using SPSS version 22 (IBM SPSS Statistics for Windows, Version 22.0. IBM Corp., anorectal malformationonk, NY).

Results

Of the 45 patients in our study population, the most common ages of presentation were <1 and >6 months (18 patients and 40% for both), followed by 3–6 months (six patients, 13%). Among these patients, 29 (64.4%) were male and 16 (35.6%) were female. Patients with high anorectal malformation were most prevalent (38 patients, 84.4%). Among those with high anorectal malformation, most patients presented without fistula (20 patients, 52.6%), and the most common type was recto-urethral (seven patients, 18.4%). Out of seven patients in the low anorectal malformation group, the majority had perineal fistula (five patients, 71.4%) and two patients presented without fistula (28.6%). A summary of the baseline characteristics is shown in Table 1.

Table 1.
Characteristics of Anorectal malformations

Variable	Case (n)	Percentage (%)
Age at presentation (month)		
<1	18	40.0
1–3	3	6.7
3–6	6	13.0
>6	18	40.0
Total	45	100.0
Gender		
Male	29	64.4
Female	16	35.6
Total	45	100.0
Type of Anorectal malformation		
High	38	84.4
Low	7	15.6
Total	45	100.0
Distribution of fistula in high Anorectal malformations		
Recto-urethral	7	18.4
Recto-vesical	1	2.6
Recto-vaginal	4	10.5
Recto-vestibular	6	15.8
Without fistula	20	52.6
Total	38	100
Distribution of fistula in low Anorectal malformations		
Perineal fistula	5	71.4
Without fistula	2	28.6
Total	7	100

Table 2 shows that 76.3% of the high anorectal malformation patients had complications after definitive surgery, while the rate in the low anorectal malformation group was 71.4%. There were no statistically significant differences in complication rates among patients with high and low Anorectal malformations (p = 0.782).

Cross tabulation of anorectal malformation and complication types (Table 3) revealed that among high anorectal malformation patients the most common complication was incontinence (31.6%), whereas in low anorectal malformation patients the most common complication was constipation (57.1%).

Table 4 shows that the frequency of incidence of chronic complications for each type of Anorectal malformation was higher than for early complications; long-term complications occurred more often in all types of Anorectal malformation.

DISCUSSION

This study analyzed 45 patients with anorectal malformation who underwent definitive surgery between 2017 and 2019. The majority of patients were male (64.4%), consistent with the global trend showing a male predominance in anorectal malformation cases [*Cassina M et al, 2019; Banu T et al, 2020*]. The slight gender disparity may be attributed to the higher prevalence of high-type ARM in males, as well as variations in genetic and embryological determinants of cloacal development [*Bischoff A et al, 2014*]. Studies from Italy and multicenter analyses across Asia have also reported similar findings, reinforcing that sex-related differences in anorectal malformation incidence are likely biologically determined rather than regionally specific [*de Blaauw I et al, 2013; Danu T et al, 2020*].

In this study, 84.4% of patients presented with high-type anorectal malformation, while 15.6% had low-type lesions. The predominance of high-type anorectal malformation could reflect a referral bias, as Wahidin Sudirohusodo Hospital functions as a tertiary center that typically receives more severe or complex cases. A similar pattern was reported in tertiary hospitals in Bangladesh and China, where high-type anorectal malformation accounted for 70–80% of the surgical population [*Banu T et al, 2013; Han Y et al, 2017*]. Anatomically, high lesions often involve a higher rectal pouch and frequently coexist with rectourethral or rectovesical fistulas, whereas low lesions are mostly perineal fistulas [*Peña A, Levitt M, 2006; Huang C et al, 2012*]. In our findings, more than half of the high anorectal malformation patients had no fistula (52.6%), while among the low anorectal malformation group, the majority had perineal fistula (71.4%). This distribution aligns with

TABLE 2.

Relationship between Anorectal malformations type and complications

Complications		Anorectal malformations type		p-value
		High	Low	
Present	n	29	5	0.782
	%	76.3	71.4	
Absent	n	10	2	0.782
	%	23.7	28.6	

TABLE 3.

Relationship between ARM and type of complication

Complication type		ARM type		p-value
		High	Low	
Rectal prolapse	n	3	0	0.442
	%	7.9	0	
Anal stenosis	n	1	1	0.169
	%	2.6	14.3	
Wound infection	n	2	0	0.664
	%	5.3	0	
Constipation	n	5	4	0.028
	%	13.2	57.1	
Incontinence	n	12	0	0.083
	%	31.6	0	
Soiling	n	5	0	0.309
	%	13.2	0	
No complications	n	10	2	0.782
	%	26.3	28.6	

TABLE 3.

Relationship between malformation type and complication time

Time of complication		ARM type		p-value
		High	Low	
Short term	n	5	1	0.936
	%	13.2	14.3	
Long term	n	23	4	0.763
	%	60.5	57.1	
No complication	n	10	2	0.782
	%	26.3	28.6	

global data but shows a slightly higher rate of "no fistula" cases, possibly due to delayed diagnosis or incomplete documentation at initial presentation.

The postoperative complication rate observed in this study—76.3% among high anorectal malformation and 71.4% among low anorectal malformationv - was not statistically significant (p = 0.782). This indicates that the anatomical classification alone does not fully determine postoperative outcomes. However, the clinical pattern of complications differed between groups. Incontinence was more frequent among high anorectal malformation patients, while constipation predominated among those with low anorectal malformation. These findings are consistent with the functional outcomes reported in multiple international studies [*Levitt M, et al, 2010; Rintala R, Pakarinen M, 2010; Divarci E, Ergun O, 2020*]. The greater incidence of fecal incontinence in high-type anorectal malformation is primarily due to the impaired innervation and abnormal development of the sphincteric complex, whereas constipation in low-type anorectal malformation may result from inadequate bowel motility or postoperative anal stenosis [*Nam SH, Kim DY, Kim SC, 2016*].

The most common chronic complications following anorectal malformation repair in this study were incontinence (31.6%) and constipation (13.2%), whereas early complications such as anal stenosis and wound infection were less frequent. This predominance of long-term over short-term complications agrees with the meta-analysis by [*Divarci E, Ergun O, 2020*], which demonstrated that chronic sequelae, including constipation, incontinence, and soiling, account for more than 60% of all postoperative morbidities in anorectal malformation patients. Early complications like wound dehiscence or infection are now less common due to improved surgical technique and perioperative care, yet functional problems remain an ongoing concern.

Incontinence after posterior sagittal anorectoplasty has been linked to three primary mechanisms: (1) misplacement of the neo-anus outside the sphincter muscle complex, (2) intrinsic neuropathy of the pelvic floor, and (3) sacral anomalies leading to impaired voluntary control [*Herman R, Teitelbaum D, 2012; Minneci P et al, 2019*]. Anatomical studies and MRI analyses have confirmed that patients with high-type anorectal malformation often have reduced sphincter mass and defective innervation, which limit functional recovery even with technically successful reconstruction [*Rintala R, Pakarinen M, 2010*]. Conversely, constipation in low-type anorectal malformation is often functional, caused by slow colonic transit, outlet obstruction, or poor compliance with bowel training. If not adequately managed, chronic fecal retention may lead to rectal dilatation and overflow pseudo-incontinence, further complicating the clinical course [*Levitt M et al, 2010*].

Several studies have sought to identify predictors of good postoperative continence. Favorable factors include a normal sacrum, intact sphincter anatomy, absence of spinal anomalies, and low-type lesion [*Arnoldi R et al, 2014; Stenström P et al, 2014*]. However, even in patients with favorable anatomy, outcomes may vary significantly depending on nutrition, surgical precision, and long-term bowel management compliance [*Cassina M et al, 2019; Makrufardi F et al, 2020*]. Malnutrition, in particular, has been recognized as a critical determinant of postoperative functional outcome. Malnourished children exhibit delayed myelination and poor pelvic muscle development, both of which impair continence and contribute to chronic constipation [*Makrufardi F et al, 2020*]. This highlights the importance of holistic preoperative optimization and postoperative nutritional rehabilitation in managing anorectal malformation patients in low-resource settings.

The present study also observed that chronic complications occurred more frequently than early complications, regardless of anorectal malformation type. This suggests that long-term follow-up and bowel management programs are as essential as the surgical intervention itself. A structured bowel management protocol—including dietary regulation, laxatives, enemas, and parental education—has been proven to significantly reduce chronic complications and improve quality of life [*Levitt M, 2010; Nam S et al, 2016*]. Unfortunately, such programs are often underutilized in developing countries due to resource limitations, lack of specialized centers, and insufficient caregiver awareness [*Banu T et al, 2020*].

Interestingly, although this study did not find statistically significant differences between high

and low anorectal malformation groups, the pattern of complications corresponds with the expected physiological outcomes described in previous literature. The absence of significance might be related to the relatively small sample size, which limits statistical power. Similar studies with larger populations have demonstrated that functional outcomes are strongly correlated with the level of malformation when adjusted for confounding factors such as sacral ratio and associated anomalies [*Peña A, Levitt M 2006; Minneci P et al, 2019*]. Future multicenter studies using standardized outcome scoring systems, such as the Krickenbeck classification, are necessary to validate these findings and to allow cross-regional comparisons.

Another point worth noting is that postoperative outcomes are not solely determined by the anatomical level of the lesion but also by surgical expertise. Technical nuances, such as identifying the exact sphincter center line during posterior sagittal anorectoplasty, maintaining the integrity of the muscle complex, and avoiding overzealous dissection, significantly affect long-term continence [*Peña A, Levitt M 2006; Han Y et al, 2017*]. Furthermore, early postoperative dilation and anal calibration are vital in preventing anal stenosis, which remains a common cause of functional constipation [*Huang C et al, 2012*]. In our cohort, only 2.6% of patients experienced anal stenosis, suggesting that postoperative care was generally adequate.

Despite these insights, the present study has several limitations. The retrospective design inherently restricts data completeness and may introduce selection bias. The absence of objective functional evaluation tools such as anorectal manometry or MRI-based sphincter assessment limits the precision of continence grading. Moreover, the small sample size reduces the ability to detect subtle statistical differences. Future research should incorporate prospective data collection with standardized postoperative follow-up and functional scoring systems. Additionally, multicenter collaboration across Indonesia could enhance statistical power and generalizability of findings.

Nevertheless, this study contributes valuable regional data regarding postoperative outcomes of anorectal malformation in Eastern Indonesia. To our knowledge, it is among the first to systematically analyze the relationship between anorectal malformation type and complication patterns following definitive posterior sagittal anorectoplasty in this population. The results emphasize that chronic complications such as incontinence and constipation remain prevalent and require long-term management strategies. Therefore, integrating surgical precision with structured follow-up and patient-centered bowel rehabilitation programs may represent the most effective approach to improving long-term outcomes in anorectal malformation patients.

CONCLUSION

Incontinence was the most common complication in patients with high anorectal malformation, while constipation was more prevalent among those with low anorectal malformation, although this effect was not statistically significant. Chronic complications were more frequent compared with early complications, regardless of the type of anorectal malformation. High anorectal malformation had more complications compared with low anorectal malformation, but this was not statistically significant.

REFERENCES

1. *Arnoldi R, Macchini F, Gentilino V, Farris G, Morandi A, Brisighelli G & Leva E (2014),* Anorectal malformations with good prognosis: variables affecting the functional outcome, *Journal of Pediatric Surgery* 49(8), 1232–1236, DOI: 10.1016/j.jpedsurg.2014.01.051
2. *Banu T, Chowdhury TK, Roy A, Hoque M, Saha SK & Ahmed S (2013),* Cloacal malformation variants in male, *Pediatric Surgery International* 29(7), 677–682, DOI: 10.1007/s00383-013-3322-8
3. *Banu T, Karim A, Adel MG, Lakhoo K, Aziz TT, Das A, Sharmeen N, Yapo B, Ferdous KMN, Kabir KA, Zahid MK, Ford K, Ahsan MQ, Akter M, Alam MA, Hoque M (2020),* Multicenter Study of 342 Anorectal Malformation Patients: Age, Gender, Krickenbeck Subtypes, and Associated Anomalies, *European jour-*

nal of pediatric surgery 30(5), 447-451, DOI: 10.1055/s-0039-1695789

4. *Bischoff A, Frischer J, Dickie BH, Peña A (2014),* Anorectal malformation without fistula: a defect with unique characteristics. Surgical management of anorectal malformations, *Seminars in Pediatric Surgery* 30(8), 763-766. DOI: 10.1007/s00383-014-3527-5
5. *de Blaauw I, Wijers CH, Schmiedeke E et al. (2013),* First results of a European multicenter registry of patients with anorectal malformations, *Journal of Pediatric Surgery* 48(12), 2530-2535, DOI: 10.1016/j.jpedsurg.2013.07.022
6. *Cassina M, Fascetti Leon F, Ruol M et al. (2019),* Prevalence and survival of patients with anorectal malformations: A population-based study, *Journal of Pediatric Surgery* 54(10), 1998-2003, DOI: 10.1016/j.jpedsurg.2019.03.004
7. *Divarci E & Ergun O (2020),* General complications after surgery for anorectal malformations, *Pediatric surgery international* 36(4), 431–445, DOI: 10.1007/s00383-020-04629-9
8. *Gangopadhyay AN & Pandey V (2015),* Anorectal malformations: the challenge continues, *Journal of Indian Association of Pediatric Surgeons* 20(1), 10–15, DOI: 10.4103/0971-9261.145438
9. *Hohlschneider A & Hutson JM (2006),* ARM – a Historical Overview, In: Anorectal Malformations in Children. Springer, Berlin, Heidelberg, DOI: 10.1007/978-3-540-31751-7_1
10. *Han Y, Xia Z, Guo S, Yu X & Li Z (2017),* Laparoscopically Assisted Anorectal Pull-Through versus Posterior Sagittal Anorectoplasty for High and Intermediate Anorectal Malformations: A Systematic Review and Meta-Analysis', PLOS ONE, 12(1), e0170421, DOI: 10.1371/journal.pone.0170421
11. *Herman RS & Teitelbaum DH (2012),* Anorectal malformations, Clinics in perinatology 39(2), 403–422, DOI: 10.1016/j.clp.2012.04.001
12. *Huang CF, Chen W, Chen Y, Yu L, Wang H & Shen C (2012),* Constipation is a Major Complication after Posterior Sagittal Anorectoplasty for Anorectal Malformations in Children, Pediatrics & Neonatology 53(4), 252–256, DOI: 10.1016/j.pedneo.2012.06.007
13. *Levitt MA, Kant A & Peña A (2010),* The morbidity of constipation in patients with anorectal malformations, Journal of pediatric surgery 45(6), 1228–1233, DOI: 10.1016/j.jpedsurg.2010.02.096
14. *Hohlschneider A, Hutson J (2006),* Complications after the Treatment of Anorectal Malformations and Redo Operations, In: Anorectal Malformations in Children. Springer, Berlin, Heidelberg. DOI: 10.1007/978-3-540-31751-7_24
15. *Makrufardi F, Arifin DN, Afandy D, Yulianda D, Dwihantoro A & Gunadi (2020),* Anorectal malformation patients' outcomes after definitive surgery using Krickenbeck classification: A cross-sectional study, Heliyon 6(2), e03435, DOI: 10.1016/j.heliyon.2020.e03435
16. *Minneci PC, Kabre RS, Mak GZ et al. (2019),* Can fecal continence be predicted in patients born with anorectal malformations?, Journal of pediatric surgery 54(6), 1159–1163, DOI: 10.1016/j.jpedsurg.2019.02.035
17. *Nam SH, Kim DY, & Kim SC (2016),* Can we expect a favorable outcome after surgical treatment for an anorectal malformation?, Journal of pediatric surgery, 51(3), 421–424. , DOI: 10.1016/j.jpedsurg.2015.08.048
18. *Peňa A. and Levitt MA (2006),* Anorectal Malformations. In: Grosfeld JL, O'Neill JA, Fonkalsrud EW and Coran AG, Eds., Pediatric Surgery, 6th Edition, Mosby Elsevier, Philadelphia, 1566-1589. DOI: 10.1016/B978-0-323-02842-4.50104-2
19. *Rintala RJ & Pakarinen MP (2010),* Outcome of anorectal malformations and Hirschsprung's disease beyond childhood, Seminars in pediatric surgery 19(2), 160–167, DOI: 10.1053/j.sempedsurg.2009.11.021
20. *Stenström P, Kockum CC, Benér DK, Ivarsson C, Arnbjörnsson E (2014),* Adolescents with anorectal malformation: physical outcome, sexual health and quality of life, International journal of adolescent medicine and health 26(1), 49–59, DOI 10.1515/ijamh-2012-0111

THE NEW ARMENIAN MEDICAL JOURNAL
Volume19 (2025). Issue 4

CONTENTS

THE NEW ARMENIAN MEDICAL JOURNAL

Volume19 (2025). Issue 4

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