

Anorectal Malformations Management and Outcome: An Observational Study

ANSARI MOHAMMED ABDUL MAQTADIR, SURESH R HARBADE, VISHRAM S PANDEY, SAROJINI P JADHAV

ABSTRACT

Introduction: During the last decade and a half, there has been a considerable refinement in the surgical management of Anorectal Malformations (ARM). Surgeons either employ primary definitive repair in a single stage or the traditional three-stage repair.

Aim: The present study describes the management and outcome of ARM at the Surgery Department of a tertiary care hospital from the Marathwada region of Maharashtra.

Materials and Methods: It is a prospective, observational and descriptive study. All cases of ARM admitted in Department of Surgery, GMCH Aurangabad during the study period (September 2013 to November 2015) were enrolled. 105 cases were included as per the criteria during the study period. Management and outcome were described with respect to the treatment modality used, complications and related details.

Results: Out of 105 cases of ARM, one case succumbed to death. Out of 104 live babies, 15 cases were managed by primary single stage anoplasty by PSARP. From the rest 89 babies with initial colostomy, 39 babies were later managed by definitive repair with PSARP, and 5 babies were managed with ASARP. Ten cases did not follow up for further management, while 35 cases were waiting to be operated. Among the 54 operated cases of PSARP, the most common complication observed was perineal excoriation seen in 11 (20.4%) cases, wound dehiscence in 8 (14.8%) cases, wound infection in 7 (13%) cases and constipation, mucosal prolapse in 1 (1.9%) case each. Out of five cases operated by ASARP, 2 (40%) cases developed wound dehiscence and required resuturing.

Conclusion: Posterior Sagittal Anorectoplasty (PSARP) was the preferred definitive operative treatment and the results were found to be satisfactory.

Keywords: Colostomy, Posterior sagittal anorectoplasty, Wound dehiscence

INTRODUCTION

Surgeons, especially paediatric surgeons are often consulted for the management of ARM. During the last decade and a half, there has been a considerable refinement in the surgical management of ARM. Surgeons either employ primary definitive repair in a single stage or the traditional three-stage repair. Although the single stage repair is convenient and requires a single surgery, the wound dehiscence rates are high, and sphincter function loss due to fibrosis is often reported [1-3]. However, recent literature has put forth evidence that primary PSARP procedure requires a more skilful surgeon and anaesthetist but has an excellent outcome in males with intermediate and high ARM as well as females with vestibular fistula [4].

MATERIALS AND METHODS

It is a prospective, observational and descriptive study. It was done in the Department of Surgery at Government Medical College, Aurangabad in Marathwada region of Maharashtra state of India. Study duration was September 2013 to November 2015. Ethics Committee of the institute approved the study protocol. All cases of ARM admitted in Department

of Surgery during the study period including those who came with already done colostomy were enrolled for the study. Treated cases of anorectal malformation that already had some definitive surgery were excluded from the study. Informed written consent was taken from the legal guardian prior to inclusion in the study. Sample size was 105 cases included as per the criteria during the study period. In all babies, the diagnosis was made initially by careful clinical examination to see for perineal fistulas and presence of other anomalies. An invertogram was performed in babies presenting without fistula to see the level of the rectal pouch and also sacral anomalies. Abdominal ultrasonography was done to screen the abdomen for any anomalies and perineal ultrasonography was done in cases without fistula to see for pouch-perineum distance. Oesophageal atresia exclusion was done by inserting a nasogastric tube. The presence of meconium particles was checked by placing a piece of gauze on the penis tip. If no meconium particles detected, the examination of urine was done. According to the level of anomaly, patients were operated for either primary anoplasty or diverting colostomy. Babies with colostomy were then followed up with



[Table/Fig-1]: Positioning of baby.



[Table/Fig-2]: Incision for PSARP showing Muscle Complex.



[Table/Fig-3]: Mobilisation of Rectum and Subsequent Placement in Muscle Complex.



[Table/Fig-4]: Post Operative Suture Line in PSARP.

distal colostogram and finally definitive repair with PSARP/ Anterior Sagittal Anorectoplasty (ASARP) at a mean age of 10 months. Distal colostography was done for detection of fistula in cases with clinical evidence of intermediate or high ARM. Management and outcome were described with respect to the treatment modality used, complications and related details. [Table/Fig-1-5] show the steps in PSARP.



[Table/Fig-5]: Post Operative Healed Suture Line in PSARP.

RESULTS

Out of 105 cases of ARM, 73 cases had Initial sigmoid loop colostomy done at our centre, 16 cases already came with colostomy, and 15 cases were managed by primary anoplasty, i.e., definitive surgery in the form of PSARP whereas, one (1.1%) case succumbed to death prior to any intervention. Distal colostogram was done in 51 cases. [Table/Fig-6] shows the findings of the investigation.

Out of 105 cases, 54 cases had fistulous track on clinical examination; hence invertogram was not done in these babies, and these cases were categorised into low anomalies.

Invertogram detected 26 cases with high anomaly, and 25 cases with intermediate anomaly. 51 cases who were additionally investigated with transperineal USG showed pouch–perineal distance of up to 15 mm in 30 babies likely suggestive of low anomaly. The remaining 21 cases had pouch–perineal distance of >15 mm mostly suggestive of high anomaly, indicating that it can be useful non-invasive adjunct for diagnosis in ARM. Out of total 105 cases, 104 cases had favourable sacral ratio > 0.6 and remaining only one case had

S.no.	Distal Colostogram	Cases	Percentage
1	No Fistula	35	68.6%
2	Recto Bulbar Fistula	9	17.6%
3	Recto Prostatic Fistula	6	11.8%
4	Recto Vesicular Fistula	1	2 %
Total		51	100%

[Table/Fig-6]: Distal colostogram findings.

sacral ratio 0.52 having recto-vesicular fistula which is known to have poor functional outcome with regards to continence.

Definitive Management: Fifteen cases with perineal fistula type of anomaly were managed by primary anooplasty. There were nine males and six females among these 15 cases. Out of 89 babies who underwent sigmoid colostomy; [Table/ Fig-7] describes the management status among the study population.

S.no.	Definitive Management	Cases	Percentage
1	PSARP	39	43.8%
2	ASARP	05	5.6%
3	No Follow Up	10	11.3%
4	Waiting For Operation	35	39.3%
Total		89	100%

[Table/Fig-7]: Definitive management of anorectal malformation among study population.

In 39 operated cases of PSARP after initial colostomy, there were 23 females with recto-vestibular fistula and 16 males. In 16 males, there were two babies of recto-prostatic fistula, eight babies of recto-bulbar fistula, and six cases were imperforate-anus. Out of six babies who were diagnosed preoperatively as imperforate anus, five cases during the time of surgery showed recto-bulbar fistula, which was missed on distal colostogram.

Five females with recto-vestibular fistula underwent ASARP procedure.

Among the 54 operated cases of PSARP, the most common complication observed was perineal excoriation seen in 11 (20.4%) cases, wound dehiscence in 8 (14.8%) cases, wound infection in 7 (13%) cases. Constipation and mucosal prolapse was seen in 1 (1.9%) case each. Out of five cases operated by ASARP, 2 (40%) cases developed wound dehiscence and required resuturing.

DISCUSSION

Our study observations reflect that the initial colostomy followed by definitive surgery in the form of predominantly PSARP or ASARP in some cases, is the most frequent type of surgical management at our tertiary care centre. Initial colostomy was done in all the cases of intermediate level or high level ARM. This was followed by the management by definitive surgery. The low level ARM was managed by primary anooplasty in most of the cases. The outcome was satisfactory with the number of complications like wound dehiscence, infection, perineal excoriation found to be in line with reported literature from other tertiary centres across the country. Long term follow up and outcome measures like sphincter function and other late complications data are not available limiting the impact of the study findings.

One of the contributing factors for the success of PSARP has been the distal colostogram which is helpful in delineation of recto-urinary fistula and the blind rectal pouch [5].

The choice of primary anooplasty or the three stage colostomy, definitive repair, colostomy closure remains a matter of debate. Single stage procedure has been reported to be cost effective with low morbidity and mortality. Also, continence results are better likely to be due to the advantage of early restoration of anatomy leading to feeling of rectal fullness which is a prime stimulus for development of cerebral fibres during first year of life. The single stage repair surgery is considered to offer an easier surgical dissection due to virgin tissue planes in the neonate and also the probability of fibrosis is less. Colostomy which is not acceptable in society is not needed in primary single stage repair. Also, the hospital resources can be better utilised as time can be saved which is crucial in public hospitals where no patient is turned away and limited timings are allotted for neonatal and paediatric surgeries. However, the single stage repair needs anaesthetist expertise especially during emergency hours, then the neonate has to withstand surgery in prone position which requires good general condition, and most importantly the surgeon needs to be skilled enough, as the single stage repair has a blind approach with chances of injury to other structures. Also, the chances of wound dehiscence are high unless the faecal diversion is achieved [3,5-8].

Similar to our study, Mfinanga RJ et al., have also reported three stage definitive repairs with PSARP to be the most common surgical management of ARM with few cases managed by primary anooplasty. They reported that senior surgeons performed the definitive repair surgeries in their resource limited settings [9].

In our study, no case of intermediate or high ARM in males was managed with single stage PSARP. However, Menon P et al., reported one of the most extensive series of intermediate or high ARM in males managed with single stage PSARP in neonates at PGIMER, Chandigarh. They recommended that single stage PSARP can be a better option for management of even intermediate or high ARM if a reasonably skilled surgeon in neonatal surgery and operation theatre facilities are available. The survival rate was better, and the continence results were also satisfactory in their study [10]. Ibrahim IA, studied the one stage PSARP for management of intermediate and also high ARM at birth and found that it is feasible as well as safe provided it is done by experienced surgeons in properly identified patients [11]. Abo Halawa NA et al., study from Egypt reported that the invertogram is still used as the principal diagnostic modality prior to surgical intervention. They also observed that among males with high ARM, PSARP is the preferable definitive surgical management technique

[12]. Other researchers in the field have also stressed that although the three stage procedure is still commonly used by surgeons, the one stage definitive repair is also increasingly being successfully utilised for management of ARM and further studies on the efficacy of various treatment options have been recommended [12-17].

LIMITATION

Limitations of our study are observational study design and data limited by study duration. Randomised trials need to be done for assessing the pros and cons of various treatment options available for management of ARM.

CONCLUSION

PSARP was the most commonly employed definitive operative treatment among the study population and the results were found to be satisfactory. However, the cases with initial colostomy and three stage repair were significant. So, there is a need for awareness regarding feasibility of definitive one stage surgical management in most cases of ARM and further studies need to be done in the region with experimental study design to ascertain the practical applicability of various surgical treatment options in ARM.

REFERENCES

- [1] Bhatnagar, V. Postoperative assessment in anorectal malformations. *Journal of Indian Association of Pediatric Surgeons*. 2005;10:80-85.
- [2] Peña A, Hong A. Advances in the management of anorectal malformations. *Am J Surg*. 2000;180:370-76.
- [3] Gupta A, Agarwala S, Sreenivas V, Srinivas M, Bhatnagar V. Primary definitive procedure versus conventional three-staged procedure for the management of low-type anorectal malformation in females: A randomized controlled trial. *J Indian Assoc Pediatr Surg*. 2017;22(2):87-91.
- [4] Menon P. Anorectal malformation: Issues beyond definitive surgery. *J Indian Assoc Pediatr Surg*. 2017;22(2):67-68.
- [5] Lukong CS, Ameh EA, Mshelbwala PM, Jabo BA, Gomna A, Akinyi OT, et al. Management of anorectal malformation: Changing trend over two decades in Zaria, Nigeria. *Afr J Paediatr Surg*. 2011;8(1):19-22.
- [6] Gangopadhyay AN, Pandey V. Anorectal malformations. *J Indian Assoc Pediatr Surg*. 2015;20:10-15.
- [7] Aziz MA, Banu T, Prasad R, Khan AR. Primary anterior sagittal anorectoplasty for rectovestibular fistula. *Asian J Surg*. 2006;29:22-24.
- [8] Freeman NV, Burge DM, Soar JS, Sedgwick EM. Anal evoked potentials. *Z Kinderchir*. 1980;31:22-30.
- [9] Mfinanga RJ, Massenga A, Mashuda F, Gilyoma JM, Chalya PL. Patterns and outcome of surgical management of anorectal malformations at a tertiary care hospital in resource limited setting: a Tanzanian experience. *Tanzania Journal of Health Research*. 2018;20(1):1-11.
- [10] Menon P, Rao KL, Sinha AK, Lokesh K, Samujh R, Mahajan JK, et al. Anorectal malformations in males: Pros and cons of neonatal versus staged reconstruction for high and intermediate varieties. *J Indian Assoc Pediatr Surg*. 2017;22(2):83-86.
- [11] Ibrahim IA. One stage posterior sagittal anorectoplasty for treatment of high and intermediate anorectal anomalies at birth. *Ann Pediatr Surg*. 2007;3:119-24.
- [12] Abo Halawa NA, Abdelgawad AEM, Elhalaby EA. Current management of anorectal malformation in Egypt: a survey of members of the Egyptian Pediatric Surgical Association. *Annals of Pediatric Surgery*. 2017;13:203-06.
- [13] Albanese CT, Jennings RW, Lopoo JB, Bratton BJ, Harrison MR. Onestage correction of high imperforate anus in the male neonate. *J Pediatr Surg*. 1999;34(5):834-36.
- [14] Elhalaby EA. Primary repair of high and intermediate anorectal malformations in the neonates. *Ann Pediatr Surg*. 2006; 2:117-22.
- [15] Liu G, Yuan J, Geng J, Wang C, Li T. The treatment of high and intermediate anorectal malformations: one stage or three procedures? *J Pediatr Surg*. 2004;39:1466-71.
- [16] Adeniran JO, Abdur-Rahman L. One stage correction of intermediate imperforate anus in males. *Pediatr Surg Int*. 2005;21(2):88-90. Epub 2005 Jan 4.
- [17] Nagdeve NG, Bhingare PD, Naik HR. Neonatal posterior sagittal anorectoplasty for a subset of males with high anorectal malformations. *J Indian Assoc Pediatr Surg*. 2011;16(4):126-28.

AUTHOR(S):

1. Dr. Ansari Mohammed Abdul Maqtadir
2. Dr. Suresh R Harbade
3. Dr. Vishram S Pandey
4. Dr. Sarojini P Jadhav

PARTICULARS OF CONTRIBUTORS:

1. Associate Professor, Department of Surgery, Government Medical College, Aurangabad, Maharashtra, India.
2. Associate Professor, Department of Surgery, Government Medical College, Aurangabad, Maharashtra, India.
3. Assistant Professor, Department of Surgery, Government Medical College, Aurangabad,

Maharashtra, India.

4. Professor, Department of Surgery, Government Medical College, Aurangabad, Maharashtra, India.

NAME, ADDRESS, E-MAIL ID OF THE CORRESPONDING AUTHOR:

Dr. Suresh R Harbade,
Associate Professor, Department of Surgery,
Government Medical College and Hospital, Ghati,
Aurangabad-431004, Maharashtra, India.
E-mail: drsharbade@gmail.com

FINANCIAL OR OTHER COMPETING INTERESTS:

None.

Date of Publishing: Jul 01, 2018