



ANTERIOR SAGGITAL ANORECTOPLASTY; THE TREATMENT OF ANORECTAL MALFORMATIONS IN FEMALE CHILDREN

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ABSTRACT... Anorectal malformation is the common congenital malformation. Ectopic anus and vestibular fistula are Intermediate types of anorectal malformations (ARM), which are the most common in female babies. Many surgical procedures have been described for the treatment of ARM. Anterior Saggital Anorectoplasty (ASARP) is not only convenient for the anesthetist for maintenance of anesthesia but also gives better exposure of surgical structures during surgery. **Objectives:** To determine the technical suitability and outcome of ASARP in intermediate types of ARM in female children. **Design:** This Descriptive study with prospective collection of data according to a set protocol. **Setting:** The study was carried out at the department of Pediatric Surgery, Military Hospital, Rawalpindi, Pakistan. **Period:** November 2010 to March 2014, over the period of 3 years and 5 months. **Patients and Methods:** The data of all female patients presenting with intermediate types of ARM and undergoing ASARP, during the study period were analyzed, with respect to age, type, associated anomalies, complications and cosmetic outcome. **Results:** A total of 36 patients of intermediate variety underwent ASARP. Age ranged from 6 months to 22 years. All patients had colostomy prior to this procedure. During surgery, posterior vaginal wall tear occurred in 2 patients (5.5%). Postoperatively, 2 patients (5.5%) had retention of urine, 2 patients (5.5%) developed wound infection with superficial disruption, anal stenosis occurred in 2 patients (5.5%) and 1 patient (2.7%) had rectal mucosa prolapse. None of them required re_ do surgery. Cosmetic outcome was excellent in 31 patients (86.1%), while it was satisfactory in 5 (13.8%) patients. **Conclusions:** Anorectoplasty through anterior approach is not only technically easy but has good cosmetic results in intermediate type of imperforate anus in female children.

Key words: Anorectal Malformation (ARM), Rectovestibular Fistula.

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INTRODUCTION

Anorectal malformations (ARM) are the major congenital anomalies with incidence of 1 in 5000 live births with male preponderance¹. In females children, vestibular fistula and ectopic anus are the most common varieties^{2,3}. Despite better knowledge of embryology, anatomy, physiology and improved surgical techniques, there is still a surgical challenge in terms of post operative results of cosmesis and continence⁴.

Many surgical procedures including cut back, V-Y plasty, anal transposition and Posterior Saggital Anorectoplasty (PSARP) are in practice for the treatment of these anomalies⁵. Since the introduction of PSARP in 1980, many surgeons

have adopted this technique exclusively. The greatest advantage of PSARP quoted is, it's better exposure of the muscle complex and rectal wall⁶.

Practically, the prone position in PSARP is difficult to manage. It limits the anesthetist's approach to the face of the patient. Special care of pressure points is needed, for which abdominal rolls and jelly pads are placed to avoid pressure injuries on nerves. Hyperextension of the spine has to be avoided by placement of cotton rolls under the patient. In cases of high type of imperforate anus when it has to be combined with abdominal approach, patient has to be turned to the supine position, which not only compromises the sterilization of surgical field but also disturbs

the entire surgical and anesthetic teams. During surgery, it also limits the exposure for operating surgeon, when the whole anatomy is reversed¹. Performing anorectoplasty through anterior approach is an alternative, thus avoiding all these positional compromises with almost same cosmetic and functional results as reported in many studies¹. The objective of this study is to determine the results of position of the patient during surgery and early outcome of Anterior Saggital Anorectoplasty (ASARP) in female children.

PATIENTS AND METHODS

This was a descriptive study with prospective collection of data starting from November 2010 to March 2014, over the period of 3 years and 5 months, 36 female patients of intermediate variety of ARM, underwent ASARP, at the Department of Pediatric Surgery Military Hospital, Rawalpindi, were included. Age ranged from 6 months to 22 years. In all patients initial colostomy was done either at our hospital or at hospital where patient was presented initially. Distal stoma wash outs were carried out for 24 hours prior to surgery with normal saline 10cc/kg, twice a day.

After routine administration of anesthesia in supine position, patient was placed in lithotomy position. As compared to prone position in PSARP, this was not only convenient for the patient but for the managing teams as well, giving good exposure to the structures during dissection and reconstruction. Bladder was catheterized in all patients. Proposed anus was marked with the help of muscle stimulator. A racket shaped incision was given, encircling the fistula and extending posteriorly up to the proposed anal site. Sphincter complex was identified under vision. After applying stay sutures to fistula, fistulous tract was dissected carefully from posterior vaginal wall avoiding damage to the rectal wall. Posterior and lateral dissection was very easily done. Common wall between rectum and vagina was dissected anteriorolaterally and then anteriorly. After achieving the adequate length of rectum, it was placed in sphincter complex. Perineal body was reconstructed, taking anchoring stitches of

anterior rectal wall, and wound was closed after approximating muscles. Anoplasty was done. Standardized post operative care was provided with the advice of keeping the wound clean. After discharged, first follow up was after 2 wks. On first follow up after wound examination, anal dilatation was started.

Patients were further followed up at 1, 3 and 6 months. Early post operative complications and cosmetic results were noted. Appearance of perineum, site and caliber of neo anus and sphincter tone was judged by clinical examination. Results were considered good if anus was perfectly placed in middle of sphincter. Results were labeled satisfactory, if anus was slightly anteriorly placed or stenosed but could be managed by anal dilatations only. Results were labeled unsatisfactory if anus is considerably out of sphincter, eccentric, stenosed and required re-do surgery.

In cases of good and satisfactory results, colostomy closure was done minimum after 1 month of ASARP.

DATA ANALYSIS

Data has been analyzed using SPSS version 15. Continuous variable like age was derived as mean while categorical variable like types of lesion, cosmetic outcome of surgery and complications were described in percentages/frequencies

Exclusion Criteria

Imperforate anus without fistula, Urogenital sinus, Cloaca, absent vaginal opening were excluded from studies.

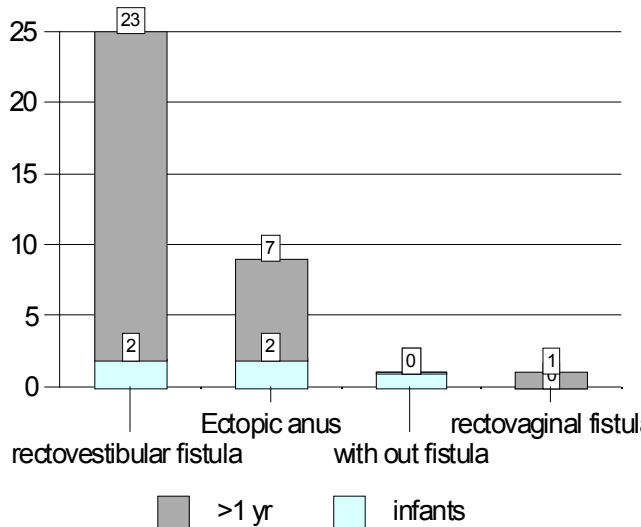
RESULTS

A total of 36 patients, age ranged from 5 months to 22 years underwent ASARP. Five of them were infants (13.8%). (Tab -I).

In all patients prior colostomy (loops or divided) was done. Commonest variety was the vestibular fistula (69.4%), followed by ectopic anus (19.4%). (Graph-1).

Age of the patient	Number of patients
Less than 1 yr	5
1-3 yrs	27
3-5 yrs	2
More than 18 yrs	2

Table-I. Ages of patients



Graph-1. Types of ARM

Vaginal tear occurred in 2 patients (5.5%), 2 patients developed initial wound infection with superficial disruption (5.5%), anal stenosis occurred in 2 patients (5.5%) and 1 patient had mucosal prolapse (2.7%) (Fig- 1). No retraction or recurrent fistula was found. None of them required redo surgery. Cosmetic outcome was assessed after 1month. It was good in 31 patients (86.1%) and satisfactory in 5 patients (13.8%). Functional outcome (continence) can only be assessed after colostomy closure and toilet training on long term follow up.

DISCUSSION

Anorectal malformations (ARM) are the common congenital anomalies, mostly in male babies. In females, ectopic anus and ano/rectovestibular fistula are the commonest variants. The aim of treatment is to restore the anatomic location of anus within sphincter complex which ultimately leads to the restoration of physiologically acceptable outcome, which is continence¹. Many

surgical procedures have been devised for this purpose. In 1980s Alberto Pena and Devaries described the posterior saggital approach for anorectoplasty^{6,7}. Soon this became very popular owing to its good exposure during surgical procedure and good anatomical and physiological outcomes. But the inverted jack knife position during PSARP was difficult to manage for anesthetists and surgeons^{1,5}. Apart from difficulty in maintaining intravenous access, it has risk of endotracheal tube dislodgement, eye injury, femoral nerve compression and spine hyperextension. Restricted abdominal movements during breathing in this position may lead to compromised ventilation and impaired cardiac output⁵. In 1992, ASARP was introduced by Okada and since then it is gaining popularity. Some surgeons using it exclusively, as it overcame the disadvantages of prone position in PSARP⁸. The lithotomy position provides easy access for anesthetist, at the time of induction of anesthesia and throughout the procedure. It provides good anatomical exposure and minimizes dissection and the damage to sphincter, rectal and vaginal walls during surgery. Sphincter is only cut anteriorly with avoidance of extensive posterior dissection. Convenience of the position aids in placement of rectum precisely through the exact middle of sphincter complex and adequate reconstruction of perineal body with maximum use of native tissues⁴. Under vision optimal reconstruction is possible without extensive straining of surgeon’s head and neck.

Zamir et al and Choudhary et al reported their results of ASARP done as single stage procedure^{1,4}. Covering colostomy was thought mandatory in all of our patients considering several factors. Poor nutritional and hygienic status of our patients makes them vulnerable to develop wound infections. For primary ASARP patients are kept nil per oral for 5-7 days and kept on parental nutrition^{3,9}. Such prolong admission and parental nutrition is not possible in our set up owing to high turnout of patients and limited resources respectively. Many of our patients presented in delayed age groups. Reasons of delayed presentation are either delayed

awareness of problem on part of parents or poor access to the appropriate facilities, as reported by Sinha et al¹⁰. Due to such delayed presentation, already occurred distal rectal dilatation needs colostomy prior to definitive procedure¹⁰. Two of our patients were adults; one of them was a failed attempt of PSARP. We found it a lot easy to operate through anterior approach in re do surgery, as many surgeons keep ASARP reserved for re do surgeries only^{11,12,13}.

As anterior approach is specifically described for the surgery of vestibular fistula and anteriorly placed anus^{2,4,11}. But apart from ectopic anus and rectovestibular fistula, we have also operated one case of intermediate variety of rectovaginal fistula and imperforate anus without fistula which were diagnosed on distal cologram, through anterior approach as well. (Fig 1, 2) both cases went well.

Association of other anomalies is known with 40-50% of low and intermediate types of ARM^{4,14}. In our series 28% of patients had associated anomalies also. Three patients had Septate vagina, 2 had lower limbs anomalies, 2 had cardiac anomalies, 1 had vertebral anomalies, 1 had atrophic kidney, while 1 baby had genital duplication with parasitic limb. (Fig- 3)

During surgery, in our experience it's always mandatory to separate common rectal and vaginal wall even in ectopic anus. Lithotomy position made this dissection quite convenient as reported in other studies as well^{4,5}. Waheeb et al in 2005 described in their study, that the construction of perineal body over anterior rectal wall prevents anterior migration of anus in future and is very important in normal look of perineum¹².

Reconstruction of perineal body was done with particular consideration; hence no anterior migration of anus was seen in any of our cases in follow up.

Early post operative complications were noted during surgery and in ward. Though in literature, hemorrhage, recurrence of fistula, retraction of rectum, and disruption of wound are reported but

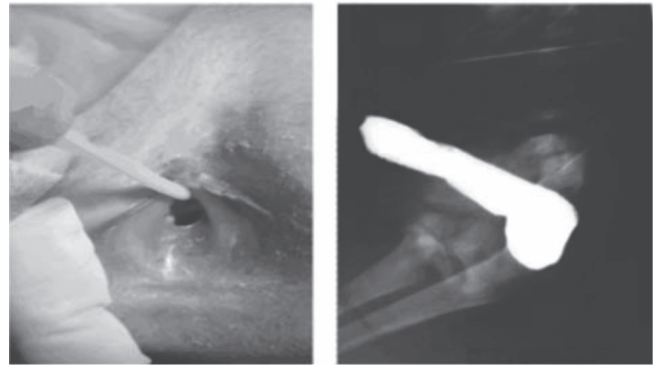


Fig-1. Pt of imp anus without fistula cologram showed intermediate type rectal pouch

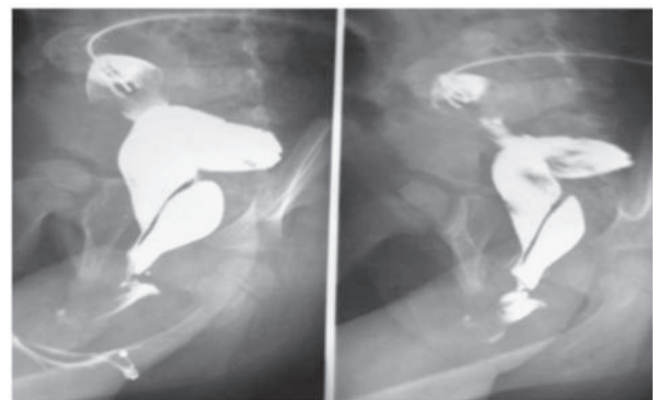
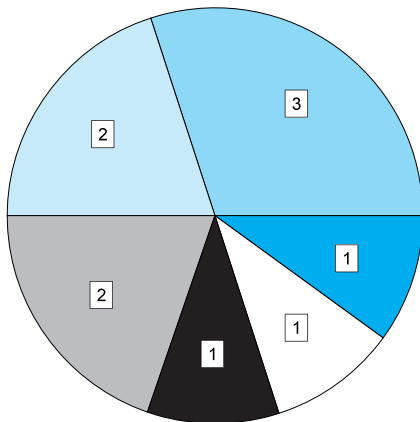


Fig-2. Cologram showing intermediate type rectovaginal fistula

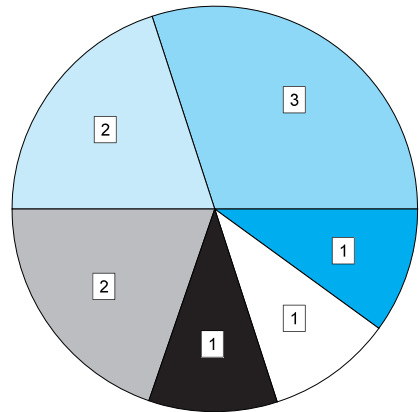
there was no such case noted in our series^{1,4,10}. During surgery, posterior vaginal wall tear occurred in 2 patients. In first 24 hrs, during ward stay, 2 patients had retention of urine, after removal of catheter on first post operative day. In first week, 2 patients developed wound infection with superficial disruption, anal stenosis occurred in 2 patients and 1 patient had mucosal prolapse. (Fig- 4) Anal stenosis was managed by progressive increase in the size of anal dilators. Prolapsed mucosa was trimmed later on.

In delayed follow up, cosmetic outcome was assessed on appearance of perineum, site and size, calibration of neo anus and sphincter tone on clinical examination⁴. It was good in 31 patients (86.1%) and satisfactory in 5 patients (13.8%), who had minor complications. (Fig- 5, 6). Cosmetic outcome is reported to be the superior in ASARP in other studies as well^{5,12,13}.



■ vaginal anomalies ■ cardiac anomaly
■ limb deformity ■ vertebral anomaly
■ atrophic kidney ■ genital dup

Fig-3. Associated anomalies with ARM



■ vaginal anomalies ■ cardiac anomaly
■ limb deformity ■ vertebral anomaly
■ atrophic kidney ■ genital dup

Fig-4. Post operative complications

Continence can only be judged after colostomy closure and toilet training on long term follow up. It is reported that, if anatomical location is good it will leads to superior functional outcome as well^{14,15,16}.

CONCLUSIONS

Anterior Saggital approach for anorectoplasty, in female for low and intermediate type of imperforate anus is feasible to manage for entire team, gives excellent exposure during surgery and results in good cosmetic outcome. However, long follow up

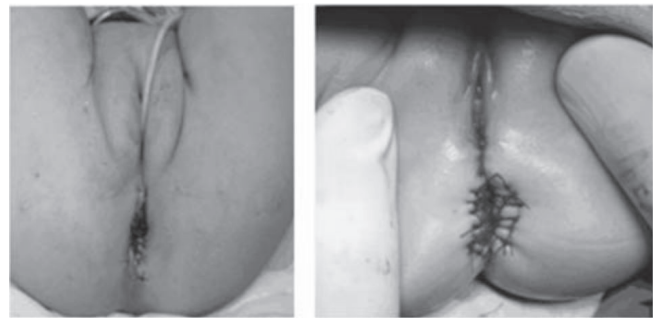


Fig-5. Early appearance of perineum after ASARP



Fig-6. Good cosmetic results after 3 months

and a large series is required for the assessment of functional outcome.

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REFERENCES

- Zamir N, Mirza FM, Akhtar J, Ahmed S. **Anterior sagittal approach for anorectal malformations in female children: Early results.** J Coll Physicians Surg Pak 2008;18:763-7.
- Wakhlou A, Wakhlou AK. **Anterior Sagittal Anorectoplasty.** J Indian Assoc Paediatr Surg 2004;9:74-9.
- V Upadhyaya, A Gangopadhyay, P Srivastava, Z Hasan, S Sharma. **Evolution of management of anorectal malformation through the ages.** The Internet Journal of Surgery. 2007 Volume 17 Number 1.
- Chaudhary Ramananda Prasad, et al. **“Single stage Anterior Sagittal Anorectoplasty (ASARP) for Anorectal Malformations with Vestibular Fistula and Perineal Ectopic Anus in Females: A New Approach.”** Journal of Nepal Paediatric Society 2010; 30: 37-43.
- Harjai MM, Sethi N, Chandra N. **Anterior sagittal anorectoplasty: An alternative to posterior approach in management of congenital vestibular fistula.** Afr J Paediatr Surg 2013;10:78-82
- Pena A, de Vries PA. **Posterior sagittal anorectoplasty: important technical considerations and new applications.** J Pediatr Surg 1982; 17:796-811.

7. Pena A. **Imperforate Anus and Cloacal Malformations in Pediatric Surgery**, 3rd. edn, ed. K.W.Ashcraft, W.B.Saunders company, Philadelphia, 2000: 473- 492.
8. Zanotti AM. **Development of a new operation for the repair of rectovestibular fistulas in females with anorectal malformations.** (Letter to editor). J Pediatr Surg 1993; 28:279.
9. Menon P, Rao KL **Primary anorectoplasty in females with common anorectal malformations without colostomy.** J Pediatr Surg 2007;42:1103–1106.
10. Sinha SK, Kanojia RP, Wakhlu A, Rawat JD, Kureel SN, Tandon RK. **Delayed presentation of anorectal malformations.** J Indian Assoc Pediatr Surg. 2008;13:64–8.
11. Waheeb SM: **The anterior sagittal anorectoplasty technique (ASARP) for treatment of rectovestibular fistulae and vestibular anus in children and neonates.** Annals of Pediatr Surg. 2005;1:54-58.
12. Okada A, Tamada H, Tsuji H, et al. **Anterior sagittal anorectoplasty as a redo operation for imperforate anus.** J Pediatr Surg.1993;28:933–938.
13. Hashmi MA, Hashmi S. **Anorectal malformation in female children-10 year's experience.** J R Coll Surg Edinb 2000; 45:153-8.
14. Mittal A, Airon RK, Magu S, Rattan KN, Ratan SK. **Associated anomalies with anorectal malformation (ARM).** Indian J Pediatr. 2004;71: 509-514.
15. Sehata SM. **Post operative long term functional and cosmetic results of ASARP versus PSARP in treatment of intermediate anorectal malformations in girls.** Pediatr Surg Int 2009;25: 863-68
16. Sham M, Singh D, Phadke D. **Anorectal malformations: Definitive management during and beyond adolescence.** J Indian Assoc Pediatr Surg 2012;17:120-3.



They who can give up essential liberty to obtain a little temporary safety deserve neither liberty nor safety.

Benjamin Franklin

