

Single Stage Posterior Sagittal Anorectoplasty in Patients with Imperforated Anus and Recto Vestibular Fistula

Murtadha Abdul Kadhim*, Kawthar Fakhri**, Hasan K Gatea***

ABSTRACT:

BACKGROUND:

Malformations of the anorectum include a series of congenital lesions, ranging from a slight malposition of the anus to complex anomalies of the hindgut and urogenital organs. An anorectal malformation (ARM) occurs in one out of every 4000 to 5000 newborns and is slightly more common in males. There is no specific cause of ARM has been described.

The most frequent defect in males is imperforate anus with a recto urethral fistula while in females is a recto vestibular fistula. Imperforate anus without a fistula is unusual defect, occurring in about 5% of the entire group of malformations, and is associated with Down syndrome.

OBJECTIVE:

This prospective study was undertaken to evaluate the safety and feasibility of primary anorectoplasty without a protective colostomy using the posterior sagittal anorectoplasty (PSARP) technique in patients having vestibular fistulae, its complications, results, and outcome.

METHODS:

From January 2012 to November 2014, 20 patients with imperforate anus and vestibular fistulae subjected to single-stage surgical correction at Children Welfare Teaching Hospital in Medical City in Baghdad were followed prospectively for six months; their ages were range from 2 days - 2 months. Routine blood investigations such as hemoglobin, blood sugar, renal function tests, serum electrolytes, blood group and Rh in addition to blood preparation was done. X-ray for the chest and pelvic spine with abdominal ultrasound and echocardiography also done to rule out any associated congenital anomalies. Patients who had undergone a staged repair were excluded from the study. All patients were assessed for complications including stenosis, infection, prolapse, excoriation, dehiscence and constipation.

RESULTS:

Anal stenosis (10%), mucosal prolapse (10%), superficial wound infection (10%), wound dehiscence (5%), constipation (5%) and excoriation (5%). Mortality was nil. Apart from one patient who needed re-do operation with protective colostomy, all patients with complications were successfully managed by local wound care, antibiotics, laxatives, enema, anal dilatation, and dietary changes.

CONCLUSION:

Single stage anoplasty without protective colostomy can be done safely and effectively as 3 stages operation in patients with imperforate anus and recto vestibular fistula in selected patients with less burdens on the baby and family.

KEY WORDS: children welfare teaching hospital, anorectal malformation

INTRODUCTION:

Anorectal malformations include a series of congenital lesions, ranging from a slight malposition of the anus to a complex anomalies of the hindgut and urogenital organs.⁽¹⁾ An anorectal malformation (ARM) occurs in one out of every 4000 to 5000 newborns and is slightly

more common in males⁽²⁾. There is no specific cause of ARM has been described³. The most frequent defect in males is imperforate anus with a recto urethral fistula while in females is a recto vestibular fistula.⁴ Imperforate anus without a fistula is unusual defect, occurring in about 5% of the entire group of malformations, and is associated with Down syndrome^(4,5)

Recto vestibular Fistulas:

Recto vestibular fistula is the most common defect in females and its treatment has an

*Specialist of Pediatric Surgery –Welfare Children Teaching Hospital-Medical City.

**Specialist of Pediatric Surgery.

***Chairman of Scientific Council of Pediatric.

excellent functional prognosis. The diagnosis is based on clinical examination. A meticulous inspection of the newborn's genitalia allows the clinician to observe a normal urethral meatus and a normal vagina, with a third orifice in the vestibule, which is the recto vestibular fistula (Fig. 1). About 5% of these patients will have two hemi vaginas with a vaginal septum⁽⁵⁾.

This defect can be fixed without a protective colostomy by experienced surgeons^(6,7,8). The advantage of this approach is that it avoids the potential morbidity of a colostomy and reduces the number of operations to one from as many as three (colostomy, main repair, and colostomy closure). Many patients do very well with a primary neonatal operation without a

protective colostomy. However, a perineal infection followed by dehiscence of the anal anastomosis or perineal body, or recurrence of the fistula provokes severe fibrosis that may interfere with the sphincter function. If these complications occur, the patient may have lost the best opportunity for an optimal functional result because secondary operations do not render the same prognosis as a successful primary operation. Thus, a protective colostomy is still the best way to avoid these complications for most surgeons. The decision to perform a colostomy or primary repair in these cases must be made individually by the surgeon based on experience and the clinical condition of the patient. At our institution, neonates without significant associated defects undergo repair without a colostomy⁽⁹⁾.

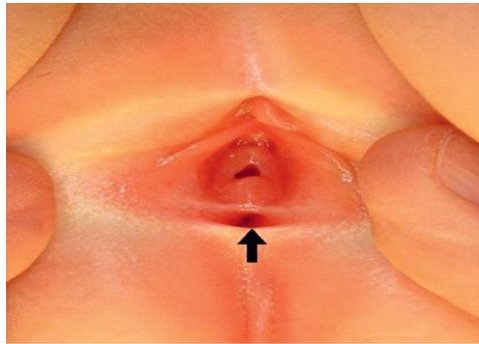


Fig 1: Rectovesibular fistula.²

PATIENTS AND METHODS:

This was a prospective study done from January 2012 to November 2014 in Children Welfare Teaching Hospital in Medical City Complex. Twenty females' patients who presented to outpatient and emergency departments were included in this study. Their ages were ranging from 2 days to 2 months. Detailed history and clinical examination was carried out including the perineum, buttocks, spine and other systems for any associated anomalies.

Preoperative preparations:

Routine blood investigations such as hemoglobin, blood sugar, renal function tests, serum electrolytes, blood group and Rh in addition to blood preparation was done. X-ray for the chest and pelvic spine with abdominal ultrasound and echocardiography also done to rule out any associated congenital anomalies. An informed written consent for primary one stage procedure was taken and option was given to choose between single stage and multi-stage procedure. Parents also informed that a colostomy may be necessary if postoperative perianal infection

occurs unacceptable. Ethical approval was received for the study.

All patients were admitted to the ward, dilatation of the fistula and normal saline enemas performed several times before commencement of surgery. The patients were kept fasting for at least 24 hour before surgery in addition to intravenous fluid and triple antibiotic cover (ampiclox, ceftriaxon and metronidazole) given intravenously.

Surgical technique:

Under general anesthesia, patients were catheterized, and then were turned prone, and posterior sagittal anorectoplasty (PSARP) as described by de Vries and Pen˜a were done. The average operative time ranged from 60-115min.

Postoperative care:

Patients were kept on intravenous fluids and similar parenteral broad-spectrum antibiotics during this period. Oral feeding was started in day 5 post operatively and urinary catheter was removed on the sixth postoperative day then discharged home. Mothers were informed to keep

the perineal area clean with application of povidone iodine solution over the operated wound and neoanus several times a day, and after each bowel movement, antibiotic ointment was applied three to four times a day. Anal dilation was done with Hegar's dilator after 2 weeks of operation. All patients were followed for a minimum period of at least 6 months. They were

regularly followed, weekly within the first month, once every two weeks for the next 2 months; then monthly for the remaining of the 6 months. Perineal area was inspected for any excoriation, wound infection, wound dehiscence as well as anal stenosis, retraction, or recurrence of fistula.

RESULTS:

Table 3.1: Shows age distribution of patients at presentation.

Age group	Number of case	percentage
1-10 days	10	50 %
11-20 days	3	15%
21-30days	3	15%
More than 30 days	4	20%
Mean age is 19.35 days		

Table 3.2: Shows associated congenital anomalies.

Congenital anomalies	Number of cases	percentage
Cardiovascular	3	15%
Skeletal	2	10%
Down syndrome	2	10%
Renal	1	5%

Table 3.3: Shows operative time and postoperative stay.

Time	Range	Average
Operative time(minutes)	60-115	83.05
Post-operative hospitalization(days)	5-10	6.8

Table 3.4: Shows postoperative complications.

Postoperative complications	No. of patients	percentage
Stenosis	2	10%
Infection	2	10%
Mucosal prolapse	2	10%
Constipation	1	5%
Excoriation	1	5%
Dehiscence	1	5%

Table3.5: Shows postoperative complications related to geographical distribution of patients weather urban or rural.

area	Complications		Total
	complication	none	
Rural 13 (65%)	8 (61%)	5	13
Urban 7 (35%)	1 (14%)	6	7
Total	9	11	20
Chi square test p-value=0.043			

Table 3.6: Shows relation between patient's age and rate of complications.

Age	Complications		Total
	complication	none	
age less than 7 days	0 (0%)	7	7
age more than 7 days	9 (69%)	4	13
Total	9	11	20
Chi square test p-value=0.003			

None of the patients needed a tapering of the rectum during anoplasty operation.

DISCUSSION:

Twenty female patients with imperforate anus and recto vestibular fistula were included in this study.

One stage P.S.A.R.P. was done successfully for all patients. No anesthesia related complication was recorded as the operation was well tolerated by all the included babies.

Although few patients were included in this study, but results were promising compared to other studies.

Stenosis in this study occur in 2 patients (10%), while it is 15.5% according to Holschneider⁹ and 5.1% according to Ashrarur Rahman Mitul et al¹⁰, that corroborates with the reported incidence of 2.9% - 6.8%¹¹⁻¹⁴. Anal stenosis in this study was associated with wound infection and dehiscence in the postoperative period and irregular or absence of anal dilatation. Those patients required frequent dilatation under anesthesia then returned to the usual dilatation pattern according to their ages.

Two patients (10%) had simple mucosal prolapse compared to 5% according to Holschneider⁹. This difference may be due to fixation of rectum which in this study done with mild tension to prevent prolapse and to gain the normal appearance of anal orifice dimpled in the perineum. Those patients are treated by simple mucosectomy after completing the dilatation program.

Constipation occurs in one patient (5%) in this study, while Henien reported post-operative functional constipation in 50% in cases of vestibular fistula¹⁵, and Yeung and Kiely reported intractable constipation in 28% of their patients¹⁶. The difference in incidence of constipation between our study and other studies may be due to short follow up period in our study which was 6 months only while in other studies may reach up to 3 years so increase incidence of constipation in these may occur after introduction of food after 6 months of age. Constipation in this patient responds well to dilatation and laxative.

One patient (5%) had perineal excoriation, which is generally approximate to 3.125% in Chaudhary et al¹⁷. The perianal excoriation treated by local care and topical barrier creams.

Two patients (10%) had superficial surgical site infection that was treated by local wound care and fucidic acid cream, and one patient (5%) had complete wound dehiscence who required re-do operation with protective colostomy, this result is consistent with same results in Vijay D. Upadhyaya et al¹⁸ and with Ibrahim, Ali, et al¹⁹. Menon and Rao in their series of 72 patients reported only 5 mild wound infection²⁰. In a study of 47 patients with rectovestibular fistula, who underwent fistula

transposition without colostomy, there was no wound infection or dehiscence²¹. The infection in our study occur in 2 patients operated when they beyond neonatal period and one neonate from rural area and her mother is non-compliant, while patients whom operated on in meconium stage period gave less infection rates probably due to sterile meconium.

Age of the patients had a significant effect on the outcome of the operation, according to the results in this study, patients who had been operated on early (within first week of life), had no complications compared to 69% rate of complications occurred in patients older than 1 week. This might be due to the easy and delicate dissection of tissue at this age due to virgin tissue planes with no fibrosis due to pouchitis as seen in the older patients of staged procedure and sterile meconium which lessen the risk of infection and these results are convenient with other studies¹⁰. The area from which the patient came also plays a role in results of patients. In this study complications occurred in about 61% of patients from rural areas while it was only 14% in patients from rural areas. This might be due to that patients from urban area would be easy to follow such patients and usually the family would be more educated and more compliant to the instructions of dilatation schedule and local

wound care, which positively affect the results, in addition to that the patients from rural areas took long time to attend to hospital frequently due to long distances this results are approximate to results got by Adeniran J. O. et al in Nigeria⁽²²⁾.

Operative time in this study and that spent by anorectoplasty in 3 stages operation was approximately similar while postoperative hospitalization was much shorter in single stage than 3 stages procedures. These results were consistent with findings in other studies^(23, 24).

Gangopadhyay et al, 2006, found the dissection to be easier in the neonatal period due to virgin tissue planes with no fibrosis due to pouchitis as seen in the older patients of staged procedure⁽²²⁾. In this study, we were able to do the definitive procedure in all cases through a posterior sagittal approach.

Finally if the same functional results can be achieved in a single rather than a multi-stage procedure, why don't we move in this direction? We agree with Peña's comment in Albanese et al's review that "we should all move in the direction of repairing anorectal anomalies earlier and in a single operation". This is even backed by the increasing reports in the literature on this single-stage procedure^(23,24,25).

CONCLUSION:

Single stage PSARP without protective colostomy can be done safely and effectively as 3 stages operation in patients with imperforate anus and recto vestibular fistula in selected patients with less burdens on the baby and family, with less complication, good results.

Recommendations

Operating the patient in meconium stage period is giving better results due to sterile meconium which lessen the risk of infection.

Selection of the family who are well educated and compliant to give best results.

Well pre-operative preparations and postoperative care with strictly committed with the scheduled dilatation are extremely important in succeeding this operation.

REFERENCES:

1. Pediatric Surgery, Second Edition, Edited by, David M. Burge FRCS FRCPCH Consultant Paediatric Surgeon, 2005.
2. Ashcraft pediatric surgery, sixth edition, George W. Colcomb III, MD MBA, J. Patrick Murphy, MD, Daniel J. Ostlie, MD, Associate Editor Shawn D. St. Peter, MD, 2014.
3. Pediatric surgery, seventh edition, editor in chief Arnold G. Coran, MD, associate editors N. Scott Adzick, MD, Thomas M. Krummel, MD, Jean-Martin Laberge, MD, 2012.
4. Levitt MA, Peña A. Anorectal Malformations. In: Orphanet, [serial online] <http://www.OJRD.com/content/2/1/33>
5. Breech L. Gynecological concerns in patients with anorectal malformations. *Semin Pediatr Surg* 2010;19:139–45.
6. Moore TC. Advantages of performing the sagittal anoplasty operation for imperforate anus at birth. *J Pediatr Surg* 1990; 25:276–77.
7. Upadhyaya VD, Gopal SC, Gangopadhyaya AN, et al. Single stage repair of anovestibular fistula in neonate. *Pediatr Surg Int* 2007; 23:737–40.
8. Menon P, Rao KL. Primary anorectoplasty in females with common anorectal malformations without colostomy. *J Pediatr Surg* 2007; 42:1103–6.
9. Peña A, Grasshoff S, Levitt A. Reoperations for anorectal malformations. *J Pediatr Surg* 2007; 42:318–25.
10. Elhalaby EA. Primary repair of high and intermediate anorectal malformations in the neonates. *Ann Pediatr Surg* 2:117- 122, 2006.
11. Gangopadhyaya AN, Gopal SC, Sharma S et al. Management of anorectal malformations in Varanasi, India: a long-term review of single and three stage procedures. *Pediatr Surg Int*. 2006;22:169-72.
12. Holschneider AM. Treatment and functional results of anorectal continence in children with imperforate anus. *Acta Chir Belg* 1983; 82:191-204.
13. Trans-Fistula Anorectoplasty (TFARP): Our Experience in the Management of Anorectovestibular Fistula in Neonates Ashrarur Rahman Mitul, K M N Ferdous, Md. Shahjahan, Jaglul Gaffar Khan Department of Pediatric Surgery, Dhaka Shishu (Children) Hospital, Dhaka. Dhaka Medical College & Hospital Dhaka, Bangladesh. *J Neonat Surg* 2012;1:36.
14. Demirbilek S, Ataurt HF. Anal transposition without colostomy: functional results and complications. *Pediatric Surgery Int*. 1999;15:221-23.
15. Upadhyaya VD, Gangopadhyaya AN, Pandey A, Kumar V, Sharma SP, Gopal SC, et al. Single-stage repair of rectovestibular fistula without opening the fourchette. *J Pediatr Surg* 2008;43:775-79.
16. Kulshreshtha S, Kulshreshtha M, Sing B, Sarkar B, Chandra M, Gangopadhyaya AN. Anterior sagittal anorectoplasty for anovestibular fistula. *Pediatric Surgery Int* 2007;23:1191-97.

16. Pratap A, Yadav RP, Shakya VC, Agrawal CS, Singh SN, Sen R. One-stage correction of recto-vestibular fistula by trans-fistula anorectoplasty (TFARP). *World J Surg.* 2007; 31:1894-97.
17. Heinen FL: The surgical treatment of low anal defects and vestibular fistulas. *Semin Pediatr Surg.* 1997;6:204-16.
18. Yeung CK, Kiely EM: Low anorectal anomalies: a critical appraisal. *Pediatr Surg Int.* 6:333-335, 199.
19. Single stage Anterior Sagittal Anorectoplasty (ASARP) for Anorectal Malformations with Vestibular Fistula and Perineal Ectopic Anus in Females: A New Approach, 1Dr. Ramananda Prasad Chaudhary, MBBS.MS. Consultant Pediatric Surgeon, Dr. Bijay Thapa, 3Dr. Santosh Thana, Dr. Pradeep B. Singh. Medical Officers, Kanti Children's Hospital, Kathmandu, Nepal. January-June, 2010; 30/Issue 1.
20. Single stage repair of anovestibular fistula in neonate Vijay D. Upadhyaya S. C. Gopal D. K. Gupta & A. N. Gangopadhyaya S. P. Sharma Vijayendra Kumar *Pediatr Surg Int* 2007; 23:737-40 DOI 10.1007/s00383-007-1965-z.
21. Evaluation of One-Stage Posterior Sagittal Anorectoplasty for the Repair of High and Intermediate Anorectal Malformations Akram Elbatarny, Mahmoud Elafifi, Khaled Ismail, Mohamed Metwally, Amel Hashish, Mohamed Elmahalawy, Elsayed Hasaballa, Essam Elhalaby Pediatric Surgical Unit, Tanta University Hospital, Tanta, Egypt *Annals of Pediatric Surgery Vol* 2009;5:36-45.
22. Adeniran JO. One stage correction of imperforate anus and rectovestibular fistula in girls: preliminary results. *J Ped. Surg.* 2002;37:E16.
23. Moore TC. Advantages of performing the sagittal anoplasty operation for imperforate anus at birth. *J Pediatr Surg.* 1990; 25:276-77.
24. Caroline F, Aronson DC. Anterior or posterior anorectoplasty without colostomy for low type anorectal malformation: how to get a better outcome? *J Pediatr Surg.* 2010;45:1505-8.
25. Moore TC. Advantages of performing the sagittal anoplasty operation for imperforate anus at birth. *J Pediatr Surg.* 1990; 25:276-77.

