

The Outcome of Single Stage versus Two Stage Repair in Anorectal Malformations with Recto-Vestibular Fistula

SHAFIQ-UR-REHMAN¹, MUHAMMAD RIAZ-UL-HAQ², ZARLISH FAZAL³, YASIR MAKKI⁴, MUHAMMAD ANWAR⁵, FAREENA ISHTIAQ⁶

¹Assistant Professor, ²Associate Professor, ⁴Senior Registrar, Department of Paediatric Surgery, Sahiwal Medical College Sahiwal

³House Officer, Sir Ganga Ram Hospital, Lahore

⁵Associate Professor, Department of Paediatric Medicine, Rashid Latif Medical College Lahore

⁶Postgraduate Trainee, Paediatric Surgery, University of Child Health Sciences, The Children's Hospital Lahore

Correspondence to Dr. Shafiq-ur-Rehman, E-mail: shafiqangriyal@gmail.com, Cell: 0300-9695031

ABSTRACT

Background: Imperforate anus with recto-vestibular fistula is one of the most common anorectal malformations in females. Wound infection and disruption after recto-vestibular fistula repair may affect the fecal continence and functional outcome. Fecal incontinence may cause long term social, economical and psychological problems in children. Although a protective colostomy reduces the infectious complications and dehiscence, it is also associated with many problems.

Aim: To compare the safety, feasibility, post operative complications and functional outcomes of limited posterior sagittal anorectoplasty with or without colostomy.

Study design: Prospective descriptive study.

Place and duration of study: Department of Pediatric Surgery, Sahiwal Teaching Hospital Sahiwal, from 1st January 2019 to 31st December 2021.

Methodology: Forty-one patients with congenital recto-vestibular fistula were managed by two techniques. Patients were divided into two groups. Group A (19 patients): were operated by single stage limited posterior sagittal anorectoplasty without covering colostomy. Group B (22 patients): were operated by two stage technique. Limited posterior sagittal anorectoplasty and covering colostomy in first stage and stoma closure was done in second stage. The patients in both groups were evaluated for hospital stay, operation time, postoperative complications, fecal continence, constipation, bowel function.

Results: The age of patients ranged from 11-56 months (mean 26.93 months) in Group A and 9-60 months (mean 27.03 months) in Group B. The total length of hospital stay in Group A ranged from 7-11 days (mean 9.20 days); however, in Group B, it ranged from 4-6 days (mean 5.01 days) for first stage procedure and 8-11 days (mean 9.27 days) for second stage colostomy closure procedure. In Group A, complications were, wound infection 03 (15.78%), anal stenosis 02 (10.52%), mucosal prolapse 01 (5.26%), constipation 04 (21.05%), soiling 04 (21.05%), perineal excoriation 03 (15.78%) and recurrent H-type recto-vestibular fistula 01 (5.26%). In Group B, during the first stage of repair, one patient (4.54%) developed wound infection. Mucosal prolapse was observed in one patient (4.54%). Constipation was reported in 03 (13.63%) and soiling in 01 (4.54%). Peri stoma skin excoriation was seen in five patients (22.72%). Stomal prolapse was observed in two patients (9.09%). Two patients (9.09%) developed wound infection after colostomy closure.

Conclusion: Single stage repair of congenital recto-vestibular fistula increases the risk of postoperative complications. Two stage approach is associated with less postoperative complications. However it is associated with lengthy hospital stay, long operation time and complications related to stoma formation and closure.

Keywords: Recto-vestibular fistula, Limited posterior sagittal anorectoplasty, Single stage technique, Two stage technique.

INTRODUCTION

Anorectal malformations include a wide spectrum of congenital defects ranging from very simple to highly complex anomalies. An anorectal malformation occurs in one out of every 4000 to 5000 newborns. Recto-vestibular fistula is one of the most common types of anorectal malformations in newborn girls.¹ So many procedures have been used to repair anorectal malformation with recto-vestibular fistula. However it can be managed either by a single stage definite repair or conventional two or three staged approach². In Single stage repair, limited posterior sagittal anorectoplasty is performed without covering colostomy. Two stage repair is limited posterior sagittal anorectoplasty and colostomy as the first procedure and colostomy closure as the second stage. Consensus could not be developed on the role of colostomy in the management of recto-vestibular fistula. It is still an unresolved issue. Single stage repair of recto-vestibular fistula has been accepted by many surgeons as a safe procedure with minimal complications^{3,4}. Single stage limited posterior sagittal anorectoplasty is less traumatic and can be done safely and effectively with promising functional outcome⁵. On the other hand single stage repair without covering colostomy increases the risk of wound infection and dehiscence and exposes the child to risk of damage to sphincteric mechanism⁶. Two stage limited posterior sagittal anorectoplasty has been recommended by others to avoid the wound complications that may compromise the functional

outcome.^{7,8} Two stage repair of congenital recto-vestibular fistula with protective colostomy is advantageous strategy.⁹ Presence of protective colostomy is associated with good functional outcome of the management of recto-vestibular fistula.¹⁰ However the colostomy has its own problems which are not tolerated well by children and their parents^{11,12}.

Congenital recto-vestibular fistula is considered as a good prognosis type of anorectal malformation. The patient should not suffer from fecal incontinence just because of wrong strategy and deficient surgical care.

The current study aimed to evaluate the results obtained after treatment of imperforate anus with recto-vestibular fistula by limited posterior sagittal anorectoplasty with and without protective colostomy and to define which approach is safer and more beneficial for the management of patients with congenital recto-vestibular fistula.

MATERIALS AND METHODS

After IRB permission, this prospective descriptive study was carried out in the Department of Pediatric Surgery, Sahiwal Teaching Hospital Sahiwal from 1st January 2019 to 31st December 2021. Forty-one patients with congenital recto-vestibular fistula were managed by two techniques. Patients were divided into two groups. Group A (19 patients): were operated by single stage limited posterior sagittal anorectoplasty without covering colostomy. Group B (22 patients): were operated by two stage limited posterior sagittal anorectoplasty. All girls with congenital rectovestibular fistula presented between nine months to five years

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of age were included in the study. The patients who were managed with diverting colostomy in the neonatal period were excluded from the study. Patients with major associated anomalies were also excluded. All patients were admitted two days before surgery and evaluated with meticulous clinical examination and routine laboratory investigations. Abdominal sonography was performed in all patients to assess the associated anomalies. Other investigations like echocardiography and x-ray was performed only in selected patients. Gut preparation was carried out in all patients. Bowel irrigation was started 48 hour before surgery. The patients were kept nothing per mouth one day preoperatively. Antibiotics, ceftriaxone and metronidazole, were started at the night of operation and continued for 3-7 days post operatively. In Group A, Oral feeding was started after regaining of intestinal motility. In Group B, patients were kept fasting for 5-7 days. In Group A single stage limited posterior sagittal anorectoplasty, without covering colostomy, was performed. In Group B, all patients were operated by two stage limited posterior sagittal anorectoplasty. Sigmoid colostomy and limited posterior sagittal anorectoplasty was performed in first stage and colostomy closure was done in second stage. The basic principles of posterior sagittal approach were followed in both groups. Data regarding age, type of anomaly, type of procedure, operation time and hospital stay was recorded. Complications of colostomy formation, limited posterior sagittal anorectoplasty, and stoma closure were also noted.

Constipation and fecal incontinence was evaluated according to Krickenbeck classification. Whereas Kelly's clinical score was used to assess anal sphincter. Bowel habits were evaluated in girls above three years of age. The regular follow up was done in outdoor patient department till the child became toilet trained. All the data was recorded and analyzed using SPSS-25. Chi square test was applied to compare the complication between two procedures. P-value <0.05 was taken as significant.

RESULTS

The mean age was 26.93 months in Group A and 27.03 months in Group B. The total length of hospital stay in Group A ranged from 7-11 days (mean 9.20 days); however, in Group B, it ranged from 4-6 days (mean 5.01 days) for first stage procedure and 8-11 days (mean 9.27 days) for second stage colostomy closure procedure. The total operative time of Group A ranged from 65-85 min (mean 78.02 min), whereas, in Group B, it ranged from 85-105 min (mean 92.23 min) for first stage procedure and 45-56 min (mean 51.88 min) for second stage colostomy reversal. In Group A, three patients (15.78%) developed wound infection. Two patients improved with antibiotics, whereas one patient complicated by H-type recto-vestibular fistula and required colostomy. In Group B, wound infection was noticed in one patient (4.54%). However, three patients (%) developed infection at colostomy site wound. Two patient (9.09%) in this group developed wound infection after colostomy closure procedure. All patients responded to antibiotics. Complications related to colostomy formation and closure occurred in Group B. All patients responded to conservative management. Two patients (10.52%) developed anal stenosis in Group A and responded well to regular anal dilatation. No patient developed anal stenosis in Group B.

Table 1: Demographic information of the patients

Variable	Range	Mean
Group A		
Age (months)	11-56	26.93
Hospital stay (days)	7-11	9.20
Operation time (minutes)	65-85	78.02
Group B		
Age (months)	9-60	27.03
Hospital stay 1 st stage (days)	4-6	5.01
Hospital stay 2 nd stage (days)	8-11	9.27
Operation time 1 st stage procedure (minutes)	85-105	92.23
Operation time 2 nd stage procedure (minutes)	45-56	51.88

Constipation was recorded in four patients (21.05%) in Group A and three patients (13.63%) in Group B. All patients were grade II and responded to laxatives and dietary management. Soiling was noticed in four patients (21.05%) in Group A and one patient (4.54%) in Group B.

All patients settled with the passage of time. True incontinence was not noted in any patient. Bowel habits were assessed in patients above the age of three years. In group A, 13(68.42%) and in group B, 14(63.63%) patients were above the three years of age. All patients had good feeling of urge to use toilet (Tables 1-4).

Table 2: Post-operative complications

Complication	Group A (n=19)	Group B (n=22)
Wound infection	3 (15.78%)	1 (4.54%)
Anal stenosis	2 (10.52%)	Nil
Mucosal Prolapse	1 (5.26%)	1 (4.54%)
Constipation	4 (21.05%)	3 (13.63%)
Soiling	4 (21.05%)	1 (4.54%)
Recurrent H-type RVF	1 (5.26%)	-
Perineal excoriation	3 (15.78%)	-

P-value <0.05

Table 3: Colostomy related complication

Complication	No.	%
Colostomy formation		
Skin Excoriation	5	22.72
Prolapse	2	9.09
Wound infection	3	13.63
Colostomy closure		
Wound infection	2	9.09

Table 4: Assessment of bowel function

Bowl function	No.	%
Group A (n=13)		
Feeling of urge	13	100.0
Capacity to verbalize the feeling of urge	12	92.30
Ability to hold back defecation	12	92.30
Group B (n=15)		
Feeling of urge	15	100.0
Capacity to verbalize the feeling of urge	14	93.33
Ability to hold back defecation	14	93.33

P value<0.05

DISCUSSION

Many procedures have been used to manage girls with congenital recto-vestibular fistula. Optimal strategy should be adopted and it should be based on the available facilities and expertise of the surgeon. It is still an unsettled issue whether the one stage or the two stage approach should be adopted to manage the anorectal malformation with recto-vestibular fistula. Selecting the multi stage or single surgical procedure to manage this anomaly has been the topic of hot discussion for many years¹³. Multiple reasons has been stated in the literature for choosing single stage technique: avoidance of multiple surgeries and anaesthesias, saving time and cost, short hospital stay, less stress for children and parents and avoidance of colostomy related complications. One stage repair for congenital recto-vestibular fistula has been accepted by many authors as a well-recognized strategy in the management of recto-vestibular fistula^{5,13-15}. However, some authors have recommended this approach only in selected patients and by experienced surgeons¹⁶⁻¹⁸. The main reason for choosing the two stage repair is the risk of wound infection and wound dehiscence. The wound infection and wound dehiscence may comprise the expected good functional outcome in this type of malformation. A large number of authors have preferred two stage repair of congenital recto-vestibular fistula^{5,8-10,19}.

The potential complications of limited posterior sagittal anorectoplasty are wound infection and wound dehiscence. In consistent with many studies, present study also demonstrates that single stage repair is associated with increased risk of wound

infection, 3 (15.78%) compared to two stage approach, 1 (4.54%). High incidence of wound infection in single stage repair has been reported in many studies. Naima et al¹⁸ reported high incidence of wound infection after single stage anterior sagittal anorectoplasty. Twelve patients (17.14%) developed superficial wound infection and six patients (8.57%) developed deep wound infection and complete wound disruption leading to colostomy formation and subsequent redo surgery.¹⁸ High incidence of wound infection (40%) after single stage repair of recto-vestibular fistula has been observed by Elsaid et al¹⁹ and Khalifa et al⁸ reported significantly high rate of wound infection (41.7%) in single stage repair and 15.2% in two stage technique. One study reported wound infection and dehiscence in 30% of patients after single stage posterior sagittal anorectoplasty.¹³ In our study, two patients (10.52%) developed anal stenosis in Group A and responded well to regular anal dilatation. No patient developed anal stenosis in Group B. The higher incidence of anal stenosis following single stage posterior sagittal anorectoplasty has been reported in the literature.^{8,18,20} This may be due to the increased incidence of wound infection associated with single stage repair. Poor functional outcome is expected after redo surgery for anorectal malformation with recto vestibular fistula. The wound infection, complete wound disruption, anal stenosis, and recurrent recto-vestibular fistula are the common complications which lead to redo surgery.^{8,21,22} In present study, redo surgery was performed in one patient in group A, who developed H-type recto-vestibular fistula. Rescue colostomy was done immediately and fistula was repaired eight weeks later. The single stage repair of congenital recto-vestibular fistula is associated with high incidence of redo surgery.^{8,13,18,19}

The evaluation of functional outcome and bowel habits is key factor in the postoperative outcome of anorectal malformations. High incidence of constipation has been reported, both in single stage and two stage repair of congenital recto-vestibular fistula.^{8,19} In our study, constipation was reported in four patients (21.05%) following single stage limited posterior sagittal anorectoplasty and in three patients (13.635%) after two stage technique. All patients responded to diet modification and laxatives. True faecal incontinence was not noted in any patient. Soiling noted in four patients (21.05%) in group A and in one patient (4.54%) in group B. Patients in both groups settled during follow up period. The patients with congenital recto-vestibular fistula usually have well developed muscles and nerves. Therefore very good bowel function is expected in every patient. Approximately 90% patients with congenital recto-vestibular fistula are able to develop good bowel habits by the age of three years^{7,23}. In our study good bowel functions were achieved in both groups.

CONCLUSION

Single stage repair of congenital recto-vestibular fistula increases the risk of postoperative complications. Two stage approach is associated with less postoperative complications. However it is associated with lengthy hospital stay, long operation time and complications related to stoma formation and closure. Functional outcome is almost same in both groups. Single stage repair is not associated with reduced fecal continence.

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