

## Single Stage Repair of Rectovestibular Fistula in Neonates: Indications and Outcome

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### Abstract

**Purpose:** Rectovestibular fistula is the commonest anorectal malformation in the female child. This article reports the treatment and follow-up of 23 patients of vestibular fistula treated by anterior sagittal anorectoplasty (ASARP) in a single stage in neonatal age group.

**Material and Methods:** From 2010 - 2017, 23 patients of vestibular fistula admitted and operated on at the Department of pediatric surgery, Madinah, KSA. Age group was between 2 - 11 days. Single stage ASARP was done in these cases in the lithotomy position, the fistula was freed and a sufficient length of the rectum was obtained after separation of the vagina. The proposed anal position was marked via a midline incision and the freed anorectum was pulled back and anoplasty was done. Patients were evaluated for per-operative time, time to start oral feeds and hospital stay. On follow-up visits, all cases were assessed for continence and need to anal dilatation in addition to cosmetic appearance.

**Results:** Operative time ranged between 70 - 135 minutes. Patients passed stool in good frequency from the first day post-operatively and oral feeds was allowed at fifth day. Follow-up ranges from 18 months to 24 months. Wound infection was seen in two cases (8%), mucosal prolapse in five cases (21%) and constipation in six cases (26%). Anal dilatation was routinely done 1 week postoperatively. Continence results was good (80%).

**Conclusions:** This experience with ASARP showed a good results in a single-stage procedure and we recommend it as the procedure of choice for vestibular fistula in females at early neonatal age putting in consideration important keys mainly, direct rectovaginal dissection and good perineal reconstruction.

**Keywords:** Vestibular Fistula; Anterior Sagittal Anorectoplasty

### Introduction

Anorectal malformations (ARM) are one of the most common congenital defects in females, having a wide spectrum of lesions from low types to a very complex cloacal anomalies [1,2]. The reported incidence is between 1 per 1500 to 1 per 5000 live births [3,4].

Recto- vestibular fistula (RVF) is the most common ARM in females and easily diagnosed by perineal inspection that shows a normal urethral, normal vaginal and another orifice which is the rectal fistula in the vestibule [5].

Management of ARM in the neonatal period is important as it detects the future of child as regarding fecal continence and cosmoese. Pena recommended a limited posterior sagittal anorectoplasty (PSARP) with a preliminary colostomy for this anomaly [6].

The anterior sagittal approach (ASARP) was described with sparing the levator muscle and pushing the rectum to normal location [7].

Multiple stage surgery for RVF increases the time, cost of treatment and psychological stress for the family. In addition, creation of colostomy carries many complications namely, skin excoriation, prolapse, parastomal hernia and bowel obstruction due to abdominal adhesions. Similarly, colostomy closure is not a simple surgery and carries a significant morbidity and mortality [8].

In our study patients of RVF were treated by primary single stage ASARP in the neonatal age group without through bowel preparation before surgery and without diverting colostomy.

### Aim of the Study

The aim of this series is to show our experience with single stage ASARP in managing RVF in female neonates with special concern about functional and cosmetic outcomes.

### Methods

The medical records of 23 patients with RVF admitted at pediatric surgery department, Madinah maternity and children hospital, KSA between February 2010 to March 2017 were reviewed. Ages ranged from 2 - 11 days.

All patients has a preoperative hemogram, hemoglobin level of 10 gm/dl is the minimum of surgery. Ultrasound of the abdomen was done for all patients to rule out associated renal problems. Echocardiography was done in those patients showing clinical features of cardiac anomaly.

Preoperative preparation consisted of saline washouts, holding of feeds 4 - 6 hours as required for anesthesia.

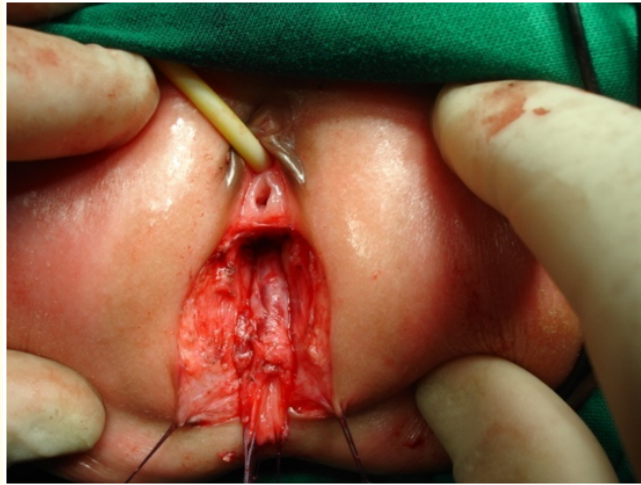
Preoperative doses of I.V. antibiotics (cephalosporins and metronidazole) were given. The operation was performed under general anesthesia with end tracheal intubation in lithotomy position.

### Surgical technique

*Proposed anal position was identified by muscle stimulator and skin incision is made in the midline (Figure 1). The fistula was identified by stay sutures, then freed from all surrounding structures with care not to cause vaginal injury (Figure 2). Dissection was deepened to provide a sufficient length of the rectum to be mobilized posteriorly. Finally anoplasty was performed with vicryl stitches 4/0 and the perineal body is reconstructed (Figure 3).*



**Figure 1:** Skin incision and identification of the fistula.



**Figure 2:** The anorectum is dissected from the vaginal wall.



**Figure 3:** Anoplasty is completed.

Patients were passing stool in good frequency from the first day postoperatively and good cleaning was advised by normal saline solution. The wound was kept undressed from the second day postoperatively and inspected daily for infection, wound gaping, anal retraction, anal stenosis and mucosal prolapse. After discharge patients were followed in outpatient clinic for 18 - 24 months.

Oral feeds were allowed at the fifth day postoperatively and patients was discharged after tolerating feeds. Anal dilatation was done regularly once daily one week after the operation. All cases was followed for at least 6 months at our out patients clinics for cosmetic appearance, wound infections, mucosal prolapse and functional outcome. Functional outcome was assessed by history of soiling noticed by the mother and Kelly's method after the age of two years.

## Results

The age of our cases ranged from 2 - 11 days. Associated anomalies were seen in 4 cases (17%), one had sacral anomaly, one had myelomeningocele and 2 had cardiac lesions.

Mean operative time was 90 minutes (range 70 - 135 minutes).

List of complications is demonstrated in table 1.

Complications	Number of cases	Percentage
Vaginal injury	1	4,3%
Wound infection	2	8%
Mucosal prolapsed	5	21%
Anal stenosis	2	8%
Constipation	2	8%

**Table 1:** Postoperative complications in the postoperative period and on follow up visits.

Wound infection occurred in two cases (8%) and responded to frequent dressing and antibiotics.

Five cases developed partial mucosal prolapse (Figure 4) that was complete in the first two cases of our series and partial in the last three cases. They need mucosectomy six to nine months later.



**Figure 4:** Postoperative mucosal prolapse.

Anal stenosis and constipation were observed in six cases (26%) and improved after 2 months of regular dilatation and laxatives.

### Discussion

Vestibular fistula is the commonest anorectal anomaly in female children where the bowel opens between the vagina and the fourchette [9]. Most reports classify this anomaly as low type, however, Heinen has considered it as intermediate type [10].

Surgical treatment of AVF involved many techniques starting from cut back operation, anal transposition, Y-V and X-Z plasty and most recently, the limited posterior sagittal anorectoplasty [11]. Okad., *et al.* [7] was the first who described anterior sagittal anorectoplasty for vestibular fistula in 1993, where he did the incision anterior to proposed neanus thus, it is easier to perform this operation in the lithotomy position.

All surgical techniques for repair of anovestibular fistulae were treated - traditionally - by three stage operations. However, single stage repair of this anomaly in neonates start to become popular with less complications [12]. The value of colostomy is to protect the perineal wound from contamination by stool, thus enhancing good healing, but it carries many complications including prolapse, stenosis, retraction and skin irritations. The option of single stage repair in vestibular fistula in early neonatal period was supported by good bowel preparation that can achieve the colostomy goals. In addition, the meconium formed in early neonatal period is sterile and its effect on wound healing is weak [13]. There is evidence that early restoration of gastro-intestinal continuity is very important to establish the brain defecation reflexes early. Also, the early training of sensory input from the peri-anal skin and synapses are important components of continence, thus enhancing the chance of normal or near normal defecation functions [13].

Many studies were conducted to compare single stage and three stages techniques for repair of recto-vestibular fistula with support to the single approach [14]. Even in high types of ARM in both males and females, single stage repair become performed by many centers with insignificant complications [15]. Also, Scott S., *et al.* [16] documented that single stage repair of ano-vestibular fistula can be done safely beyond the neonatal period.

Dissection of the rectal wall from the vagina can be carried out with safety if the surgeon used his finger to be inserted in the rectum and a feeding tube to identify the fistula [17].

In our study, we have included 23 cases of AVF presented in the neonatal period (less than 15 days of age). Wound infection occurred in two cases (8%) and responded to frequent dressing and antibiotics. This rate was lower than Dare S., *et al.* [18], Vijai D., *et al.* [19], Vijai D., *et al.* [8] although they did through bowel preparation. This can be explained by different numbers of cases different approaches in each series and multiple policies of antibiotic administrations.

Anal stenosis and constipation were observed in six cases (25%) and improved after 2 months of regular dilatation and laxatives. Our rates were higher than Vijai D (15%) and lower than Dare S (33.3%). This can be explained by multiple definitions of constipation in different institutes.

The value of our series is the performance of the repair without a diverting colostomy, through bowel preparation was not required, oral feeds allowed after 5 days and patient went home by the sixth day postoperatively.

Continence results according to Kelley's method were good in 17 cases (73%), fair in four cases (17%) and poor in two cases (10%). The latter two cases had meningocele and was repaired one week before our intervention. Cosmetic results were good. Table 2 shows postoperative complications in different series of single stage ASARP for neonatal vestibular fistula.

Complications	Vijai D., et al. (2007) [19]	Vijai D., et al. (2008) [8]	Dare S and Shi Ec (2005) [18]	Our series
Vaginal wall injury		2/40 cases (5%)	2/12 cases (16.6%)	1/23 cases (4,3%)
Mucosal prolapse		4/40 (10%)	1/12 (8.3%)	5 (21%%)
Wound infection	3/27(11%)	3/40 (7.5%)	2/12 (16.6%)	2 (8,6%)
Anal stenosis		2/40 (5%)	4/12 (33.3%)	2 (8,6%)
Constipation (Difference is due to definition of constipation)		6/40 (15%)	4/12 (33.3%)	2 (8,6%)

**Table 2:** Postoperative complications of different series of single repair of vestibular fistulas.

## Conclusion

In conclusion, ASARP can be done in one-stage procedure for correction of vestibule fistula in the neonatal period with safety. The most important keys are direct rectovaginal dissection and good perineal reconstruction. Our experience suggests this technique safe, easy, cosmetically and functionally good and feasible in all cases of neonatal rectovestibular fistulas.

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