

FOURCHETTE PRESERVATION PRIMARY POSTERIOR SAGITTAL ANORECTOPLASTY FOR INTERMEDIATE ANORECTAL MALFORMATIONS WITH RECTOVESTIBULAR FISTULA IN FEMALE INFANTS

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ABSTRACT

BACKGROUND

Rectovestibular fistula is the most common intermediate type of anorectal malformation in female. Traditionally rectovestibular fistula is treated with 3 stage procedure by creation of colostomy, definitive surgery, and subsequent colostomy closure. The aim of this study is to determine the feasibility, safety, cost effectiveness, outcome and advantage of performing new technique of Fourchette Preservation Primary Posterior Sagittal Anorectoplasty for treatment of intermediate anorectal malformations with rectovestibular fistula in female infants.

METHODS

20 female neonates presented with rectovestibular fistula were included in the study from January 2013 to January 2016. The age of the operation is between 30-45 days. All female infants presenting with anorectal malformations were diagnosed by clinical examination, with presence of meconium stain in vaginal introitus, and probing the fistula tract with small Hegar's dilator for presence of fistula. The inclusion criteria included clinically probe diagnosed fistula tract with passing stool. Initially all the patients were put on fistula tract dilatation once in a week for 1 to 4 weeks. Subsequently all the patients underwent Fourchette Preservation Primary Posterior Sagittal Anorectoplasty within age of 30-45 days and kept nil by mouth strictly for first 4 to 5 days postoperatively. Patients with rectovaginal fistula, none detected rectovestibular fistula with abdominal distension and associated major anomalies were excluded from the study. This is a retrospective study of female infants with Fourchette Preservation Primary Posterior Sagittal Anorectoplasty procedure done for Intermediate Anorectal Malformations with Rectovestibular Fistula in female infants in our institute from January 2013 to January 2016.

RESULTS

All patients had intermediate anomalies. A total of 20 patients was included in the study. Mean operative time was 90 minutes range being 60-120 minutes and blood loss less than 20 ml. Early postoperative complications include 2 cases of opening of posterior vaginal wall and 3 cases of superficial wound infection. No perineal wound disruption, rectal prolapse and anal stenosis were seen. All patients had passed stool 2-3 times per day. No patients required anal dilatations, laxatives and or enema. All patients were followed for 3 to 24 months.

CONCLUSIONS

Fourchette Preservation Primary Posterior Sagittal Anorectoplasty for Rectovestibular Fistula is feasible, safe and cost effective provided strict adherence to inclusion criteria. It has additional advantage of avoiding colostomy and associated complications.

KEYWORDS

Primary Posterior Sagittal Anorectoplasty, Rectovestibular Fistula, Fourchette, Anorectal Malformations.

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BACKGROUND

Anorectal Malformation is one of the most common congenital malformations and represents a wide spectrum of defects. Rectovestibular fistula is the most common

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intermediate type of anorectal malformations in female patients, where the fistula opens immediately behind the hymen in the vestibule.¹ Traditionally rectovestibular fistula is treated with 3 stage procedure by creation of colostomy, definitive surgery, and subsequent colostomy closure. There are several of surgical technique described in the literatures. Albanese C, Jennings RW, Lopo JB et al first described Primary Posterior Sagittal Anorectoplasty in high imperforate anus in the male neonate.² Since then with increased experience of paediatric surgeons and advancement of anaesthesiology with new technology for better postoperative surgical and nursing care, lead to interest most of the surgeons towards the primary procedure than multiple stage operations.

Moore T, described the advantage of early correction of anorectal malformations contributes physiologically to better continence outcome.³ Pena A, De Vries PA described the posterior sagittal anorectoplasty, and in recent time it has revolutionized the management of anorectal malformations by providing complete exposure of the anatomy of the anorectal region during surgery.⁴

Now this is become the most widely used surgical procedure, which provides the exact visualization of the fistula between the rectum and the female genital tract and places the rectum within the striated muscle complex, gives the better chance to continence.⁵

The aim of the study was to evaluate the feasibility, safety, cost effective and outcome of Fourchette Preservation Primary Posterior Sagittal Anorectoplasty for intermediate Rectovestibular Fistula in female infants.

METHODS

20 female neonates presented with rectovestibular fistula were included in the study from January 2013 to January 2016. The age ranged between 30-45 days. All the female infants presented anorectal malformations were diagnosed by clinical examination with presence of meconium stain in vaginal introitus and probing the fistula tract with small Hegar's dilator for presence of fistula tract. The inclusion criteria included clinically probe diagnosed fistula tract with passing stool. Initially all the patients were put on fistula tract dilatation once in a week for 1 to 4 weeks. Subsequently all the patients underwent Fourchette Preservation Primary Posterior Sagittal Anorectoplasty within age of 30-45 days and kept nil by mouth strictly for first 4 to 5 days postoperatively. Patients with rectovaginal fistula, none detected rectovestibular fistula with abdominal distension and associated major anomaly were excluded from the study.

Preoperative Preparation

Patients were admitted 1 day before the operation. Rectal washouts done with luke-warm normal saline at 6 hourly until the enema became clear. We also do on table rectal wash before the operation. Triple antibiotics a combination of Ceftriaxone, Amikacin, and Metronidazole were given 1 hour before the operation and continued postoperatively for 5 days.

Surgical Technique

Pena A, De Vries PA (4) posterior sagittal anorectoplasty procedure is used in all the patients with new approach of preservation of fourchette. Operation is performed under general anaesthesia with endotracheal tube intubation. Urethral catheterization done with no 6 Fr infant feeding tube. (Figure 1) Fistula was identified and place one red rubber catheter in situ for better identification of rectum during the procedure. (Figure 2) The patient is placed in the prone position; the buttocks are holding by an adhesive plaster in both sides of the surgical table. (Figure 2) The sphincteric muscle complex and center of the muscular complex is identified with sphincteric muscular contraction

using electrical stimulation. There is a modification of incision, where the incision begins from the tip of the coccyx strictly in midline and extended just above the fourchette by preservation of fourchette. (Figure 3) The incision is continued through the subcutaneous tissue, parasagittal and vertical fibers and muscle complex, leaving an equal quantity of muscles on both sides. The dissection is continued using both blunt and sharp dissection. The posterior rectal wall is identified by palpating the in situ red rubber catheter and continued the dissection from below the tip of coccyx to incision mark above the fourchette. Then the dissection starts both lateral wall of posterior wall of rectum up to the incision mark above the fourchette and two stay sutures with Mersilk is placed. The posterior rectal wall is opened in between the stay suture and continues in both sides circumferentially up to the common wall shared by the rectum and vagina. (Figure 4) Now multiple traction stay suture is placed circumferentially on the rectum and create a small areolar tissue cleavage between the rectum and vagina. The most delicate part of the dissection is the separation of the rectum from vagina which is achieved using both blunt and sharp dissection strict to the created anatomical cleavage until obtain full separation of the rectum from the vagina. (Figure 4) Mobilization of the rectum is done adequately to allow relocation within the muscle complex without tension. Once the dissection has been completed the anterior perineum is reconstructed and then an anoplasty is created within the limits of the sphincteric muscle complex previously demarked and identified by electrical stimulation. (Figure 5) The posterior edge of the muscle complex is reapproximated, bridging together the posterior limits of the external sphincter and anchoring the muscle of the rectum to create the ano-rectal angle and prevent rectal prolapse and then perineal skin wound closure is performed. (Figure 5) Long ribbon pack was placed above the anoplasty in rectum in addition paraffin gauge pack in the neoanus.

All the pack placed in the rectum and neoanus are removed on 4th postoperative day. Feeding starts 5th postoperative day onwards. Patients are discharged on 7th postoperative day.



Figure 1. Preoperative View Showing Rectovestibular Fistula Immediately Behind the Hymen and Above to Fourchette



Figure 2. Preoperative Prone Position



Figure 3. Preoperative Incision with Intact (Perineal Body) Fourchette



Figure 4. Identification and Mobilization of Rectum

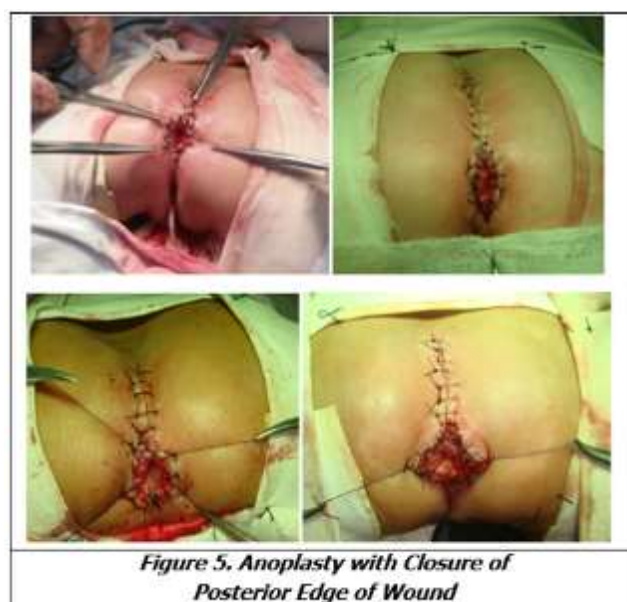


Figure 5. Anoplasty with Closure of Posterior Edge of Wound

RESULTS

20 patients of rectovestibular fistula are included in the study. All the patients had intermediate anomalies. Age of the operation was between 30-45 days. Mean operative time

was 90 minutes ranged 60-120 minutes and blood loss less than 20 ml. Early postoperative complication includes 2 cases opening of posterior vaginal wall, 3 cases superficial wound infection. No perineal complete skin wound disruption. No anal stenosis and mucosal prolapse. Hospital stay ranged 5-7 days. At 1 month postoperative, all patients had pass stool 2-3 times per day. No patients require anal dilations, laxative and or enema. All the patients are follow-up for 3-24 months.

DISCUSSION

Rectovestibular fistula is the most common intermediate type of anorectal malformation in female patients, where the fistula open immediately behind the hymen in the vestibule.⁶ Rectovestibular fistula has been treated by different methods with variable modifications.^{4,7} We are introducing newer modified technique of Fourchette Preservation Primary Posterior Sagittal Anorectoplasty for treatment of rectovestibular fistula in female infants. This is the procedure as described by Pena A, De Vries⁴ with modification of fourchette preservation.

The aim of our study is to evaluate the feasibility, safety, cost effectiveness, and outcome. Some authors described that primary repair of rectovestibular fistula is feasible, safe, cost effective, reduce hospital stay, reduce multiple stage operations and avoid colostomy and its related complications^{8,9,10} which is correlated with our study.

The physiological importance of anal muscle complex in continence as described by author Moore T,³ we believe that early correction of anorectal malformations contributes to good continence outcome. Thus, we inclusion early age to do operation between 30-45 days. (Table 1)

	Present Study	Wakhlu et al	Kumar et al	Udadhaya et al
Mean age (Days/Months)	30-45 days	3-6 months	28 days to 10 years	--
Total operative time (Minutes)	60 (45-90) minutes	--	--	110 minutes
Total hospital stay (Days)	5- 7 days	--	--	5-6 days
Oral feeding (Days)	4-5 days	--	--	3 days

Table 1. Comparison of Operative Findings with Other Studies

In our study the operation time ranged from 60 to 120 minute, with a mean time of 90 minutes, (Table 1) whereas in Upadhyaya et al study¹¹ the mean operative time was 110 minutes.

In our study we found 2 cases of vaginal wall injury (Table 2) whereas Wakhlu et al.¹² reported vaginal injury as most common problem, while rectal injury is uncommon. We reduce the rate of vaginal injury with meticulous dissection mostly avoid rectal than vaginal injury to avoid wound complication by faecal contamination with rectal injury.

Since recent researches concluded that meticulous dissection results in less tissue trauma and hematoma formation with adequate mobilization so that experience surgeon is a critical factor in improving the results of primary

correction without colostomy.¹² In our study we found 3 cases of superficial wound infection, which are responds to conservative treatment with local application of Mupirocin ointment. (Table 2) We achieved to reduce wound infection to minimized by contamination of stool with aggressive cleaning of bowel by preoperative total bowel irrigation and nil by mouth strictly for 5 postoperative days as described by author Menon P, Rao KL.⁸

In our study we have no perineal complete skin wound disruption. (Table 2) In our modified methods we use preservation of fourchette gives extra protection to wound as infection is threat by stool contamination and in the worst scenarios when complete wound disruption occurs and there is no impact on continence. This allowed us to do avoid using covering colostomy and enabled us to do the procedure of primary repair. Wound infections^{9,12} disruption and dehiscence requiring redo surgery were reported in many studies in primary rectovestibular fistula repair.^{9,12}

Rectal prolapse, retraction and anterior migration of anus were reported in several series.^{9,12} In our study we have no rectal prolapse and anal stenosis. (Table 2) This was achieved with adequate mobilization of rectum from vagina, fixation of neorectum to muscle complex and preservation of fourchette. The neonus size is kept medium size to avoid anal stenosis during wound healing stage. No patients required anal dilation, laxative and or enema postoperatively.

	Present Study	Menon P and Rao KL	Kumar et al	Upadhaya et al	Wakhlu et al
Vaginal wall injury	2	--	--	--	2
Wound infection	3	5	3	5	--
Wound disruption	Nil	Nil	2	Nil	--
Mucosal prolapse	Nil	Nil	2	3	--
Anal stenosis	Nil	Nil	--	--	--

Table 2. Comparison of Post-Operative Complications with Other Studies

Rectovestibular fistula patients have well developed muscle and nerves. The prognosis has been considered good in the term of bowel function and continence if they are treated properly.⁸ In our study all the patients passed stool 2-3 time in a day and no patient require laxative and or enema postoperatively. For voluntary bowel movement it required long term follow up as author Wakhlu et al described 90% of patients with corrected rectovestibular fistula will develop normal continence by the age of 3 years.¹²

CONCLUSIONS

Fourchette Preservation Primary Posterior Sagittal Anorectoplasty for intermediate anorectal malformations with rectovestibular fistula is feasible, safe and cost effective provided strict adherence to inclusion criteria. The patient should be kept nil by mouth for first 4 to 5 postoperative days to avoid faecal contamination to the operative wound. A long ribbon pack should be placed in the rectum which will reduce all early complications. Fourchette Preservation Primary Posterior Sagittal Anorectoplasty has additional advantages of one-time anaesthesia, reduced three operations, maintains normal perineal body, good cosmetic appearance, anal continence, and avoidance of colostomy and its complications.

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