One-Stage Correction of Imperforate Anus and Rectovestibular Fistula in Girls: Preliminary Results

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Background/Purpose: This prospective study was designed to assess the safety, cost effectiveness, and advantages of performing posterior sagittal anorectoplasty without colostomy on girls with imperforate anus and rectovestibular fistula.

Methods: Four girls with imperforate anus and rectovestibular fistula were entered into the study. Chest x-ray, renal ultrasound scan, and lateral fistulogram were done. Rectal pouches were washed through the fistula with NaCl and aqueous povidone-iodine solutions. Peña's posterior sagittal anorectoplasties were done in the prone positions. Cephalosporin and metronidazole were given as perioperative antibiotics.

Results: All patients had intermediate anomalies. There were no other major associated congenital anomalies. Washout through the fistula was easy. There were no particular problems with posterior sagittal anorectoplasty in the prone positions. Two patients had perianal skin excoriations; one had superficial infection of the posterior sagittal wound. Two patients have undergone follow-up for a year. All are having monthly dilatations. All patients pass stool without need of stool softeners or enemas.

Conclusions: This preliminary study shows that it is feasible for girls with imperforate anus and rectovestibular fistula to have safe posterior sagittal anorectoplasty without colostomy. The advantages of one, instead of 3 major operations, are many, especially in developing countries.

INDEX WORDS: Imperforate anus, rectovestibular fistula, colostomy, posterior sagittal anorectoplasty.

SIXTY-SIX PATIENTS with imperforate anus have been seen at the University Teaching Hospital, Ilorin over the last 10 years, 19 of them girls. Of those 19 girls, one died immediately after colostomy in the neonatal period. Three discharged against medical advice because colostomy was unacceptable socially. Eleven had colostomy at various ages, one at 14 years. Three were lost to follow-up after colostomy and must have died. All patients who had colostomy had some sort of colostomy complication, mostly skin excoriations and prolapse. Many had multiple admissions for colostomy diarrhea or prolapse. Only 9 patients (47.4%) lived to have definitive repair after the traditional 3-stage operation.[1] Because of this high wastage rate from colostomy-related complications, time for 3 admissions, and the cost of 3 major operations, a prospective study was designed to perform definitive surgery on these girls without colostomy.

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MATERIALS AND METHODS

Four girls who presented with imperforate anus and rectovestibular fistulas were used for the study. They presented at ages 1 1/2 years, 1 year, 6 months; and 3 days. The neonate had her operation deferred for 4 months. Apart from routine blood tests, chest x-rays were done to rule out gross cardiac or pulmonary pathologies. Abdominal ultrasound scans were done to assess renal anomalies. Fistulogram with lateral views were done to show the levels of the rectal pouches. Parents signed informed consent with the understanding that a colostomy may be necessary if postoperative perianal sepsis became unacceptable. Patients then were prepared for elective large bowel operation. Ethical approval was received for the study.

Low residue diet was allowed untill 3 days before operations. Oral thalazole and neomycin also were given. Only fluids were allowed the day before operations. Patients had washout of rectal pouches with saline and dilute aqueous povidone-iodine solution through the fistulas twice daily for one week. Under general anesthesia, patients were catheterized, then 10 mL of undiluted aqueous povidone-iodine was injected through the fistulas into the rectal pouches. Patients then were turned prone, and routine posterior sagittal anorectoplasty (PSARP) as described by de Vries and Peña[2] were done. After the operations, 2-mL syringes with ends cut off (but plungers left as obturator) were inserted as vents. Plungers then were removed and the syringe flanges stitched to perianal skin (Fig 1). Cephalosporin and metronidazole were given intravenously at induction of anesthesia and continued for 72 hours, then orally for a week. Fluid drinks were allowed freely the first postoperative day, semisolids the second, and regular diet the third day. Catheters were removed 48 hours postoperatively and the syringe vents during change of dressing at 72 hours. Nylon stitches used to close the PSARP wound were removed 10 days postoperatively. PDS was used for neoanal anastomosis.

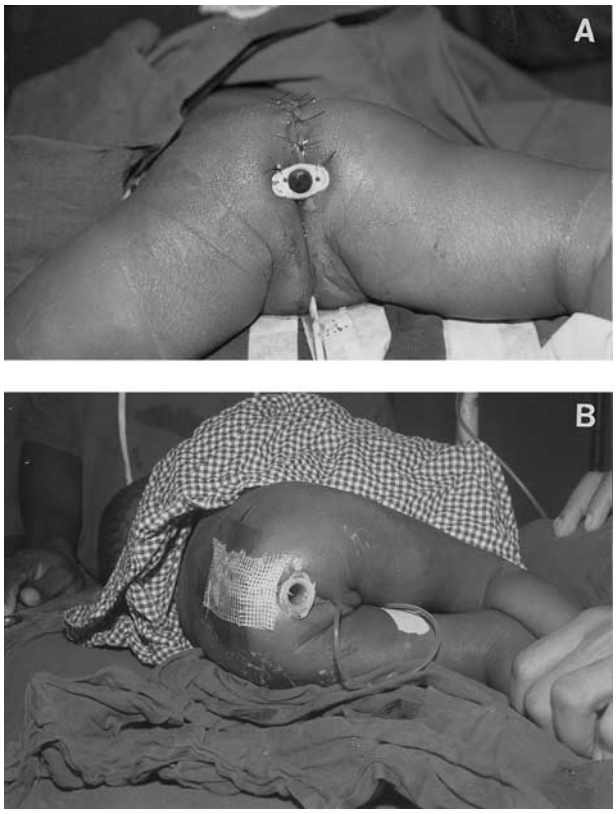

Fig 1. Immediately after PSARP. (A) Patient prone with syringe vent in position. (B) PSARP wound dressed separate from new anus.

RESULTS

Four girls seen during the period were included in the study. There were no gross cardiac, pulmonary, or renal anomalies. Fistulogram showed intermediate anomalies in all patients. There were no particular problems washing out the rectal pouches through the fistulas. No major problems were encountered during the Peña operations (PSARP). Rectal mobilization was minimal, and there were no difficulties separating rectum from vagina. In one patient, the rectal pouch almost abutted on the anal skin. She must have had a low anomaly.

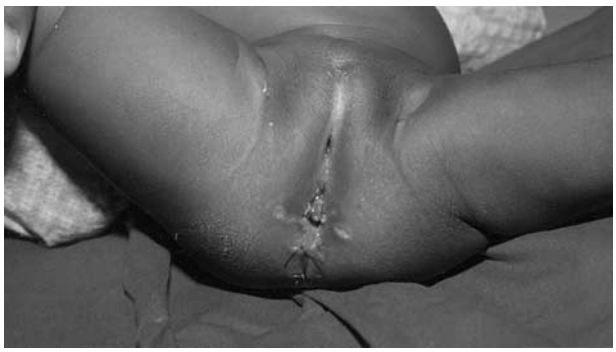

Fig 2. Anteroposterior view of PSARP wound completely healed (10th postoperative day). There are only minor perianal excoriations.

The syringe vents allowed gas and liquid feces to flow out freely immediately postoperatively and served as a conduit to divert feces from the posterior sagittal incision.

The 6-month-old and 4-month-old babies needed less postoperative analgesia, because taking the breast and closeness to the mother were of some considerable extra comfort. Two patients had minor perianal excoriations (Figs 2 and 3). One had superficial infection of the PSARP wound that resolved within a week of oral cephalosporin and metronidazole and Sitz baths. The earlier 2 patients have been followed up and dilated (up to 11 Hegar) regularly for more than a year.

They remain well. All patients have been defecating spontaneously without the aid of oral medications or rectal stimulation or enemas.

DISCUSSION

Efficacious and cost-effective care of patients with anorectal anomalies begin with a carefully thought out plan in the neonatal period.[3]

The traditional surgical correction entails a diverting colostomy, usually in the neonatal period, posterior sagittal anorectoplasty at about a year, and closure of colostomy several months later.[3,4] Neonatal surgery is in its

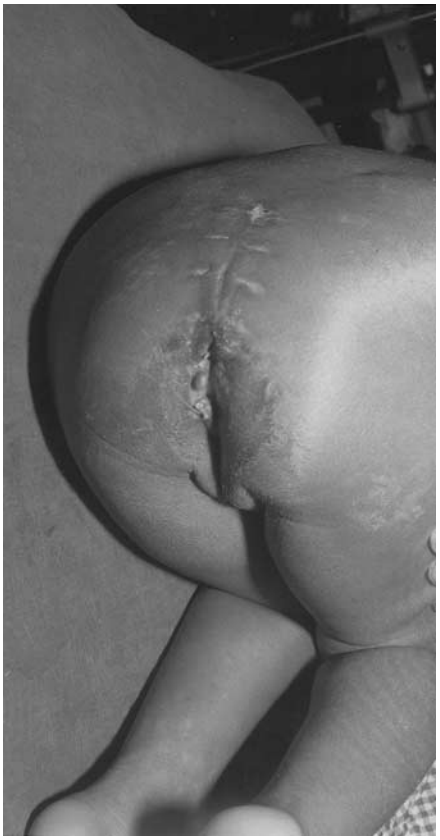

Fig 3. Lateral view of Fig 2.

infancy in most developing countries. Diverting colostomy in a female neonate with fistula is unnecessarily putting the patient at risk because the gastrointestinal tract already is decompressing itself. One patient from our review died immediately after neonatal colostomy.[1] Moreover, up to 61% of these children have associated anomalies[5] that may make neonatal general anesthesia considerably risky. Unnecessary neonatal surgery should, therefore, be avoided.

Colostomy complications are very common, even leading to death of many, especially in developing countries. Sowande et al[6] reviewing 67 patients who had colostomies in Obafemi Awolowo University, Nigeria reported a total of 50 complications in 32 patients (47.8%). Only 30 patients (44.8%) had definitive surgery and eventual closure of colostomy. The 37 patients lost to follow-up could not have been carrying stomas around for so long and must have died. In our 10-year review of anorectal anomalies in University of Ilorin, Nigeria, only 10 boys of 26 (38.5%), and 9 girls of 19 (47.4%) lived to have definitive operations after preliminary colostomy. Thus, less than 50% of patients who had colostomies eventually had definitive surgery and colostomy closure.[1] This indicates an intolerably high waste rate.

Although Peña[7] recognized that colostomy represents a significant source of morbidity he still proposed formation of colostomy for rectovestibular anomalies. Fernando Heinen[8] added some weight to this argument. In his review of a total of 227 patients, 97 girls had rectovestibular fistulas. All had preliminary colostomy before PSARP.

However, other surgeons have argued for a definitive repair without colostomy, even for boys,[4] and very recently, as early as the neonatal period.[9] The advantages of bypassing the colostomy stage are many. First, colostomy complications are eliminated completely. This is even more important in developing countries where colostomy is socially unacceptable, colostomy bags are difficult to come by, most of the parents are illiterates and cannot manage colostomies (which these unfortunate patients have for 6 to 8 months), and there are no stomal nurses. The traditional 3 operations are of immense disadvantage to the baby, the parents, and the entire household (Table 1).

Three operations mean 3 admissions, which means the mother is separated from the rest of the family, and nobody may be able to take proper care of the rest of the 3 or 4 other children. The cost also is significant. It is difficult enough for many of these peasant parents to pay for one operation, but it is more difficult when there are 3 major operations within 6 to 8 months, when the cost of one operation may be equivalent to the parent's annual income. It would therefore be an advantage if the patient can have only one admission, no colostomy is done, and the parents pay only once for an operation.

Table 1. Comparison of One-Stage and Three-Stage Operations in Management of Imperforate Anus

		Three-Stage Operation	One-Stage Operation
1	No. of operations	3	1
2	Cost of total operations	About 50,000*	About 15,000
3	Average total hospital stay	6-9 wk	2-3 wk
4	Colostomy problems	Over 6-8 mo	None
5	Post laparotomy problems	Possible	None
6	Immediate postoperative perianal skin problems	Unlikely	Possible

*50,000.00 Nigeria naira is equivalent to a university professor's monthly basic pay.

We have chosen female patients with rectovestibular fistula for our study for 3 reasons. Firstly, patients decompressed the gastrointestinal tract through the fistulas, and there was no rush to operate in the neonatal period. Second, the short wait provides a window of opportunity to investigate for other congenital anomalies, and third, most of the rectovestibular malformations either are low or intermediate anomalies.[7,8,10] Posterior sagittal anorectoplasty is not as difficult a procedure as in boys in whom the urethra is of utmost concern.

We therefore support those investigators[4,9] who perform PSARP without colostomy on patients with anorectal anomalies, because this will be of great benefit in the developing world.

The last of our patients presented as a neonate, but her operation was deferred for 4 months. This is because we are just developing our learning curve, and facilities for intensive neonatal management are inadequate. We, however, suggest that these patients be operated on between 4 and 6 months (while still on the breast). Breast milk not only provides a "clean complete" diet, but the frequent closeness to the mother to feed provides a much-needed psychological comfort after a major operation, which may decrease need for regular analgesia.

We have devised use of syringe vents for operations around the anal canal. A rich network of somatic nerves supplies the anal canal. Patients can go into urinary or fecal retention postoperatively. The vent not only allows feces to flow freely without the patient pushing, it also directs the fluid feces away from contaminating the posterior sagittal incision.

The first patient, (just coming to 3 years) recently soiled her bed at night on 2 occasions after apparent night control. She is completely continent during the day. The other patients are still undergoing toilet training. We agree with Alberto Peña in his comment about Albanese' review that "we should all move in the direction of repairing anorectal anomalies earlier and in a single operation."[4] It is now theorerized that neuronal frame-

work for normal bladder and bowel function exist at birth, but there is learning or "training" period in which long-lasting, activity-driven, neuronal changes take place during neuronal circuitry development. By delaying the repair of anorectal anomalies, critical time may be lost in which neuronal networks and synapses would have formed resulting in normal or near-normal rectal function.[4] Therefore, theoretically, the earlier the definitive operations are done, the better the chances of patients achieving continence. As we gain more surgical experience, and facilities for neonatal care improve, we plan gradually to shorten the age of operation and hopefully operate on them as neonates.

We have to wait until these patients are properly toilet trained (about 3 years) before we can assess the functional results. The oldest is not 3 years yet. A larger series will be necessary for definitive conclusions, but this preliminary result, if sustained, offers a brand new hope for these children and their poor families.

Most female patients with imperforate anus and rectovestibula fistulas have low or intermediate anomalies easily confirmed by a lateral view of the fistulogram. Posterior sagittal anorectoplasty in the neonatal period without colostomy is feasible in parts of the world where there is adequate neonatal care. In developing countries these girls can have posterior sagittal anorectoplasty safely without colostomy at 4 to 6 months of age, and hopefully, earlier as neonatal services improve.

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