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Anterior sagittal anorectoplasty: An alternative to posterior approach in management of congenital vestibular fistula

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ABSTRACT

Background: Better exposure, possibility of extension if needed and precise placement of the anal canal within the external sphincter complex have made the posterior and anterior sagittal approaches more popular and established for the correction of anovestibular fistula. The mini posterior sagittal anorectoplasty (PSARP) was the procedure of choice for female ARM at our center till date. As an alternative surgical option, we performed anterior sagittal anorectoplasty (ASARP) in 15 cases of anovestibular fistula and compared them with 12 cases of vestibular fistula operated by PSARP technique. **Patients and Methods:** Fifteen female infants with vestibular fistula who had anterior sagittal anorectoplasty (ASARP) procedure were reviewed. The procedure and its outcome were evaluated. Results: The manoeuvering during anesthesia and operative access were quite easier in ASARP compared to PSARP. Delineation of plane in ASARP between rectum and vagina was easier and clearer in comparison to PSARP. Rent occurred in the posterior vaginal wall in three cases of ASARP and two cases of PSARP. There were two cases of wound infection in each group. Three cases of PSARP group developed anal stenosis and constipation while one in the ASARP group developed constipation. Conclusion: Anesthesia and access in ASARP makes it an easier alternative option to PSARP in the management of anovestibular fistula in girls.

Key words: Anorectal anomalies, anterior sagittal anorectoplasty, female

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INTRODUCTION

Anorectal malformation is one of the major disabling congenital malformations in children; accounting for one in 5000 live births.[1] Vestibular fistula is the commonest anorectal malformation in the female child.[2] Different surgical techniques have been described for the correction of such anomalies including cutback procedure, anal transplantation, YV plasty, and posterior sagittal anorectoplasty (PSARP) which was introduced by Alberto Pena and Devries in early 1980s.[3] For so many years we were managing all cases of anorectal malformations by PSARP only, but from year 2010 onwards we included the anterior sagittal anorectoplasty (ASARP) as an optional technique for management of vestibular fistula. The objective of this study was to see the results of this as an alternative approach (ASARP) in management of vestibular fistula over a well-established procedure (PSARP).

PATIENTS AND METHODS

From January 2010 to February 2012, 15 female ARM with vestibular fistula were operated with ASARP procedure. Their ages ranged from neonate to 9 years. None of the cases had any previous cut back operation or any other procedure. The bowel preparation was carried out with daily enema washouts, keeping patients on intravenous fluids (IV) and gut sterilization with IV third-generation cephalosporin, aminoglycoside, and metronidazole in divided doses for 48 hours, preoperatively.

Surgical technique

Under general anesthesia and caudal block, the patient was positioned in a supine position with elevation of lower back to ensure good access to the perineal area and legs hanging from above in squatting position [Figure 1]. The center of the external anal sphincter was assured by the anal dimple and electrical stimulation and marked with silk sutures and marking pen [Figure 2].

A circumferential incision in the mucocutaneous junction was made around the ectopic anal orifice and then a vertical skin incision was extended to reach up to the posterior limit of the external sphincter (already marked). The rectal wall was then meticulously dissected from the posterior vaginal wall anteriorly with sharp and blunt dissection. Mobilization of the rectal pouch was continued laterally and posteriorly until it reached the new anal site without tension. Repair of the perineal body started from above downwards with 3/0 vicryl interrupted stitches taking care to include the rectal wall in some stitches to prevent retraction of the rectum. The rectum was finally sutured to skin around the perineum in the sphincter muscle complex [Figure 3]. Postoperatively; the child was kept nil orally and on IV fluids for 5 days along with IV antibiotics and IV metronidazole. The wound was dressed with sterilized gauze piece for 24 hours and left open after that. None of the cases required covering pelvic colostomy in ASARP group except one who developed complete wound dehiscence in postoperative period [Figure 4]. The PSARP group patients, operated in prone position, also had similar type of bowel deformity and undergone bowel preparation. Regular anal dilatations were carried out in both groups.

RESULTS

The age distribution ranged from neonate to 9 years [Table 1]. The follow-up ranged between 6 and 22 months. The external appearance of the perineum was satisfactory in all patients except one with wound infection and dehiscence. Conduct of anesthesia and patient manoeuvring during dissection was uneventful and subjectively better in all 15 cases of ASARP in comparison to 12 cases done by PSARP because of supine position in former vis-à-vis prone jack knife position in latter cases. Delineation of plane in ASARP between rectum and vagina was straight forward due to upright anatomical orientation. There was no injury to



Figure 1: Supine position with elevation of lower back to ensure good access to the perineal area and legs hanging from above in squatting position



Figure 2: The center of the external anal sphincter marked with silk sutures and marking pen



Figure 3: The pulled rectum is finally sutured to skin around the perineum in the sphincter muscle complex



Figure 4: One of the cases developed wound infection and wound dehiscence

rectum in ASARP group. The rent in posterior vaginal wall occurred in three cases of ASARP and two cases of PSARP [Table 2]. Two cases in each group developed wound infection, out of which one developed complete wound dehiscence [Figure 4]. Three cases in PSARP group developed anal stenosis and constipation while one of the cases developed constipation in ASARP group [Table 3].

DISCUSSION

Several surgical techniques have been described for the correction of anovestibular fistula which usually results in an anal opening made in the center of the sphincter muscle complex. The posterior sagittal anorectoplasty (PSARP) reported by Alberto Peña and Devries in early 1980s[3] has good anatomical exposure, but jack knife position results in great inconvenience during the dissection due to reversal of anatomy. The difficult manoeuvring in jack knife prone position in PSARP makes it mandatory for anaesthesiologists to be vigilant for possible complications viz., accidental extubation, endotracheal tube migration, eye injuries, dislodgement of IV access and monitoring lines, abdominal compression with impaired ventilation, and decreased cardiac output.[4]

These disadvantages have been offset by the ASARP technique. ASARP was introduced by Okada in 1992 for treatment of rectovestibular and anovestibular fistula.[5] The advantages of ASARP over the previously mentioned techniques are: Separation of posterior vaginal wall from rectum, which is considered the most important step of the operation, takes place under direct vision; the rectum is placed and anchored within the muscle complex and the perineal body is accurately reconstructed. There is also comfortable position of the patient and operative surgeon with good anatomical orientation during procedure. Although we did all our cases without covering colostomy, Wakhlu *et al.*, advocated that until sufficient experience is gained, it may be safer to operate on patients with rectovestibular fistula under cover of a protective colostomy.[6]

ASARP is an optimal technique although only for treatment of intermediate ARM in girls. We observed no difference in outcome on comparison of complications of two procedures. Although our series is too small for any statistical analysis, but Shehata, in his recent series, also observed no statistical significant difference in cosmetic and functional outcome between two groups.[7] Similarly Zamir N *et al.*, from Pakistan also published their satisfactory results with anterior sagittal approach.[8]

Table 1: Age distribution

Age	No of cases (ASARP-15)	%	No. of cases (PSARP-12)	%
Neonate	01	06.66	00	00.00
1–6 m	06	40.00	02	16.67
7–12 m	05	33.34	06	50.00
1–2 y	02	13.34	03	25.00
>2 y	01	06.66	01	08.33
Total	15	100	12	100

Table 2: Intraoperative complications

Intra operative Complication	No. of cases (ASARP - 15)	No. of cases (PSARP - 12)
Rectal injury	00	02
Vaginal injury	03	02

Table 3: Postoperative complications

Postoperative Complications	No. of cases (ASARP - 15)	No. of cases (PSARP - 12)
Early		
Bleeding	00	01
Minimal wound infection	02	02
Major wound infection	01*	01**
Complete wound dehiscence	01*	01**
Late		
Anal stenosis	00	03
Mucosal prolapse	01	01
Anterior migration	00	00
constipation	01	02
Acquired fistula	00	00

*Same Case, **Required protective colostomy; ASARP, Anterior sagittal anorectoplasty; PSARP, Posterior sagittal anorectoplasty

Associated sacral agenesis/hypoplasia, redundant rectosigmoid or pouch colon, and wound infections with dehiscence are the confounding factors affecting sometime the overall outcome with ASARP or PSARP, but better outcome in terms of continence can be achieved by careful anterior sagittal surgical dissection.[9] Anovestibular fistula can be repaired in one stage with meticulous pre and postoperative bowel management. It is a good option in cases which are not able to afford prolonged hospitalization or are not willing for a colostomy.[10,11] None of our cases had covering colostomy. However, the duration of hospitalization was same as with PSARP because we admitted all patients 48 hours prior to operation for bowel preparation and 5 days after operation to keep baby nil orally to avoid any bowel movement.

The ASARP procedure is recommended even for the management of perineal trauma in female children[12]

and as a redo operation for imperforate anus in properly selected patients with poor anorectal function following the primary operation with satisfactory results.[13] In a modification of the operation, the authors from Australia described the neutral sagittal anorectoplasty (NSARP), which preserves a perineal skin bridge between the neo-anus and the posterior fourchette and the levator muscle for aesthetic appearance of the perineum.[14]

Total gut irrigation preoperatively for 2 days and keeping the child nil orally for the first 5 postoperative days was our protocol to prevent contamination of the wound or to keep it to the minimum in the first postoperative week. Similar practice with excellent results was observed by Menon and Rao from Chandigarh, India, in the management of vestibular fistula by primary posterior sagittal anorectoplasty.[15]

In the anterior approach (ASARP) the incision is much smaller that stops exactly at midpoint of the proposed new anus while in posterior approach (PSARP) it extends more backward up to the coccyx. Anterior approach requires the division of only anterior fibers of external sphincter complex while posteriorly it remains intact. Thus, the amount of tissue dissection in posterior approach is more therefore a larger area would be at risk in case if infection occurs. In the anterior approach anterior dissection i.e., separation of vagina and rectum which is considered to be the most important part of the operation, takes place under direct vision while in posterior approach this dissection is blind. In female ARMs we have two basic aims at operation viz., adequate separation of vagina from the rectum and adequate downward mobilization of rectum to perform a tension-free anastomosis with skin. However, if we consider the AVF, we see that the terminal gut is of normal caliber right up to its termination. So as far as mobilization of rectum is concerned, just separation of rectum all-round gives enough length and we hardly need any extra dissection for the purpose of downward descent.

We realize that as far as AVF is concerned the more important aim among these two is the adequate separation of vagina from the rectum. Thus, the importance of anterior dissection cannot be overemphasized in these cases. The anterior sagittal approach gives better view for the anterior dissection where the separation of vagina and rectum takes place under direct vision. Undoubtedly the posterior approach (PSARP) gives a better view for the posterior dissection of the rectum, but we know that posterior dissection in these cases is much easier or simpler and does not require much exposure. We feel that the wide exposure obtained in PSARP is probably more than what we really need for AVF. We feel posterior sagittal approach is more useful in cases of higher anomalies (rectovaginal or rectovestibular fistula) where we need more extensive downward mobilization of the rectum.

CONCLUSIONS

The expedient supine approach during conduct of anesthesia and easier operative actions in ASARP makes it an alternative option for management of anovestibular fistula. It is better to continue to do what has given good results and keep refining the technique to get better outcomes. The conventional vestibular fistulas can benefit from ASARP or PSARP depending on the preference and experience of the surgeon but in children with cyanotic heart diseases with a higher risk of infundibular spasm, prone position may be better avoided and hence, ASARP with lithotomy can be preferred. For a beginner, it is better to learn PSARP as it is still versatile and perhaps easier, but as soon as one is comfortable with it, it is better to learn ASARP from an experienced person to have that also in your armamentarium. No significant difference found from PSARP in outcome in cases managed with ASARP in our small series but we recommend this approach as an optimal technique for treatment of vestibular anus in girls. A larger series with long follow-up is required to reach concrete conclusions.

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