ORIGINAL RESEARCH

Comparative study of outcome following primary posterior sagittal ano-rectoplasty and primary anterior sagittal ano-rectoplasty for vestibular fistula

[1]Dr. Vinod Kumar, [2]Dr. Sanjeev Kumar, [3]Dr. Gaurav Gupta, [4]Dr. Dheeraj Raj, [5]Dr. Himanshu Sangwan

[1]Assistant Professor, [2-4]Professor, [5]MS, LLRM Medical College, Meerut, Uttar Pradesh, India

Corresponding Author
Dr. Himanshu Sangwan
MS, LLRM Medical College, Meerut, Uttar Pradesh, India

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ABSTRACT

Background: To compare the postoperative complications and bowel function following primary PSARP and primary ASARP. **Methods:** This prospective study was carried out over a period of 2 years. Patients above 4 months, who needed surgical repair for vestibular fistula were included in study. They were randomly allocated into PSARP group and ASARP group. After surgical intervention, patients of both groups were compared with respect to post-operative complications, voluntary bowel control, constipation, need for laxatives. **Results:** 22 patients were enrolled in the study. Of these, 11 patients were allocated to primary PSARP group while remaining patients underwent ASARP. 3 patient from each group was lost to follow-up and hence, excluded from the final analysis. The two groups were comparable with respect to age, maturity at birth, weight at the time of surgery, blood investigations. During the postoperative period, two patients from PSARP group and one patients from ASARP group had superficial wound infection of perineal incision which was managed conservatively. One patient in PSARP group had a major breakdown of perineal wound with retraction of pulled rectum which required colostomy. There was no recurrence of fistula in any patient. Stenosis of neo-anus occurred in one patient in ASARP group. No patient had anterior displacement of rectum. Functional assessment of bowel function was done in all patient. Voluntary bowel movements were observed in 73% of cases in the ASARP group compared to 37 % in PSARP group. 18% patients of PSARP group and 9% patients with ASARP had soiling. Though the difference was not statistically significant, nearly 36.4% of the patients after PSARP, needed laxative for normal bowel habit compared to 27% patients in ASARP group. **Conclusions:** ASARP promises many advantages in the treatment of vestibular fistula in comparison to PSARP. Comparable post-operative complications, good cosmetic results, excellent continence with less need for laxatives are the advantages of ASARP.

INTRODUCTION

Anorectal malformations (ARM), with an estimated prevalence ranging between 1 in 3500 and 1 in 5000 live births, are among the most common congenital anomalies encountered in paediatric surgery.[1,2] According to several research, the prevalence of admissions resulting from ARM in India can reach 15%.[1,3,4]Anal stenosis, perineal fistula, and other low-complex anorectal malformations like the recto-bladder neck fistula or the cloaca require simple anoplasty while high-complex malformations like the recto-bladder neck fistula or cloaca require difficult and time-consuming staged or multi-staged operative procedures.

The most typical ARM in females is a vestibular fistula.3 The anal entrance in this low deformity is situated between the vagina and the fourchette (vestibule). When properly handled, it has a great functional prognosis. Ironically, after an unsuccessful attempt at correction, girls with these flaws experience more problems. Cutback anoplasty, sacroperineal repair, perineal anal transplant, sacroperineal repair, Y-V and X-Z-plasty, limited posterior sagittal anorectoplasty (PSARP), and anterior sagittal anorectoplasty (ASARP) are a few of the surgical techniques that have historically been described for the treatment of patients with vestibular fistulas.[3-7]For vestibular fistula, limited PSARP, as described by de Vries and Pena, greatly improved the functional and clinical postoperative prognosis.[6,8,9] Traditionally, the procedure is done in three stages which includes a colostomy, PSARP and colostomy closure. However,

there are various studies which suggest the PSARP can be done in single stage without colostomy with equally good results.[10,11]

ASARP with or without colostomy is being practiced as an alternative to PSARP in some centers with better cosmetic and functional outcome by reducing postoperative constipation compared to PSARP.[12,13] The primary advantage of ASARP is that, only the anterior aspect of the sphincteric muscle complex is divided and continence mechanism is preserved.[14] Though differences of opinion still exist, primary ASARP is a good and acceptable technique for vestibular fistula in females.[15,16]

However, there are very few studies which compare the outcome following primary PSARP and primary ASARP.[17] With this background, we designed this study, to compare the postoperative complications and bowel function following primary PSARP and primary ASARP.

AIMS AND OBJECTIVES

To study the outcome in post operative patients of posterior sagittal ano-rectoplasty and anterior sagittal ano-rectoplasty in terms of –

EARLY COMPLICATIONS

- Wound infection and wound dehiscence
- Requirement of colostomy
- Rectal retraction
- Perianal excoriation

LATE COMPLICATIONS

- Soiling
- Constipation/Need for laxative
- Faecal incontinence
- Anal stenosis
- Anterior anal displacement
- Rectal mucosal prolapse

COST EFFICIENCY

- Suture materials used
- OT duration
- Duration of stay in hospital

BOWEL FUNCTION

- Feeling of anorectal sensation of fullness
- Control of defecation at will/desire
- Frequency of defecation/bowel habit

MATERIALS AND METHODS

A retrospective (from June 2017 to April 2019) and prospective (from May 2019 to October 2020) comparative study of patients who needed a surgical repair for vestibular fistula performed over last 3 years at our institute. Approval was obtained from the Institutional Ethical Committee. Patients were subsequently enrolled only after obtaining consent from the patient's legal guardian.

All patients who presented with vestibular fistula constituted study population. If a baby with vestibular fistula was decompressing well, presented in neonatal period, she was followed for six months, or until she attains more than 6 kilograms of weight before definitive surgery.

However the babies with large fecoliths which could not be managed with washes,patients operated outside, patients with associated pouch colon and the patients with major vertebral anomaly that affect continence were excluded from the study.

Intervention:

The subjects were allocated into two groups: Group I were planned for ASARP and group II for PSARP. There were total 28 patients out of which 15 were studied retrospectively and 13 prospectively. In retrospective group 8 patients underwent ASARP (Group I) & 7 underwent PSARP (Group II). In prospective group 6 underwent ASARP and 7 underwent PSARP. The girls in two groups were comparable in terms of age and weight. Among these, 2 patients of ASAPRP group had large fecoliths and 1 patient had pouch colon and hence were excluded from the study. Also 1 patient of PSARP group had vertebral anomaly and parents of 2 patients+ didn't consented for follow up and were excluded from study.

OBSERVATION AND RESULTS

Total 28 patients with vestibular fistula attended our department during study period. Among these, 2 patients of ASAPRP group had large fecoliths and 1 patient had pouch colon and hence were excluded from the study. Also 1 patient of PSARP group had vertebral anomaly and parents of 2 patients didn't consented for follow up and were excluded from study.

So after applying exclusion criteria 22 patients were enrolled in the study. Of these, 11 patients were of group I and were managed by primary ASARP while remaining patients underwent PSARP and constituted group II. The mean age in ASARP group was 12.09±4.45 similarly it was 11.27±4.00 in PSARP group (p value=0.6555). For ASARP group mean weight was 10.8±2.41 and like-wise for PSARP group it was 10,4±2.3 (p value=0.76).

The mean haemoglobin level (gm/dl) was 10.97±1.05 in ASARP group and was 11±1.06 in PSARP group (p value=0.812). Both the groups were also comparable regarding Total leukocyte count, serum albumin and serum creatinine as well as other investigations at the time of definitive surgery as p values were insignificant (Table 1).

Table 1: Patients characteristics

PARAMETER (Units)	Group I (ASARP) n=11	Group II (PSARP) n=11	P-Value
Mean Age(Months)	12.09±4.45	11.27±4.00	0.6555
Mean Wt (Kg)	10.8±2.41	10.4±2.37	0.76
Hemoglobin(gm/dl)	10.97±1.05	11±1.06	0.812
Total Leukocyte Count(per mm^3)	7860±1629.29	7760±1643.29	0.781
Serum creatinine (mg/dl)	0.90±0.10	0.98±0.11	0.921
Serum Albumin (gm/dl)	3.89±0.5	3.82±0.51	0.877

Parmeters were comparable in both groups as p value was insignificant

COMPLICATIONS IN EARLY POST OPERATIVE PERIOD

Post-operatively, all patients had good perineal body and neo-anal contraction. The neo-anus for all patients was calibrated to size18 Hegar dilator. During the postoperative period, two patients in PSARP group and one patient in ASARP group had superficial wound infection of perineal incision (not involving neo-anus) which was managed conservatively. The P value for this finding was 0.9836(>0.05) i.e, statistically not significant. The wound healed well in all these patients.

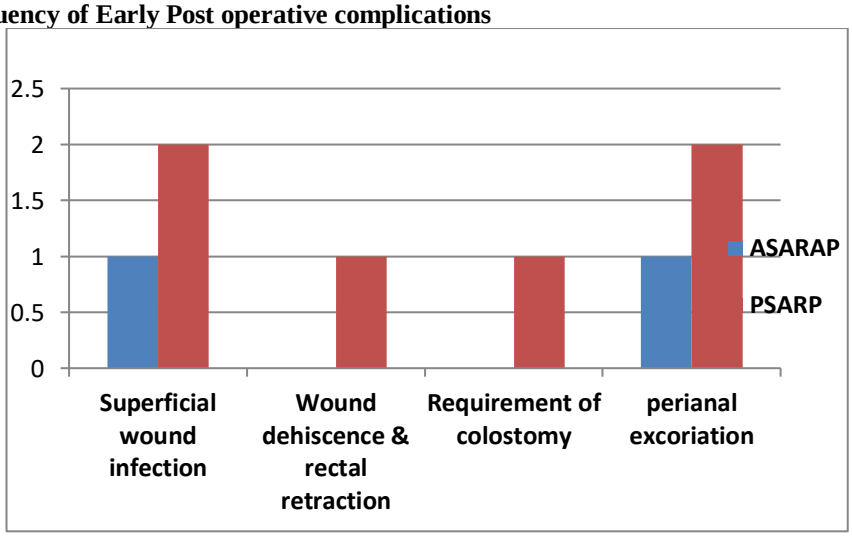
Table-2: Frequency of Early Post operative complications

Complications	ASARP group	PSARP group	P-value
Superficial wound infection	1	2	0.9836
Wound dehiscence & Rectal retraction	0	1	0.99995
Requirement of colostomy	0	1	0.99995
Perianal Excoriation	1	2	0.9836

Wound dehiscence and rectal retraction was seen in one patient in PSARP group and was not seen in ASARP group in any patient. P value for this was 0.99995 (>0.05) so statistically not significant. The one patient which developed rectal retraction was managed with colostomy. Again the P value being 0.99995 which is statistically not singnificant. In follow up, she required re- do PSARP and colostomy closure. Perianal excoriation was seen in 1 patient in ASARP group and 2 patients in PSARP group with P value being 0.9836 which is statistically insignificant.

At 1 month follow-up, all patients (including patients with superficial wound infection) had normal looking perineal body and neo-anus with good contraction.

Figure-1: Frequency of Early Post operative complications



COMPLICATIONS IN LATE POSTOPERATIVE PERIOD

In late post op period there was no recurrence of fistula in any patient. No patient had anterior displacement of rectum.

Voluntary bowel movements characterised by feeling of urge, capacity to verbalize and hold the bowel movement; without any soiling or the need for diet changes or laxative was observed in 8 out of 11 (73%) cases in the ASARP group compared to 4 out of 11 (37%) in PSARP group. 2 out of 11 (18%) patients of PSARP group and 1 out of 11(9%) patients with ASARP had soiling. P value for which was 0.9999 (>0.05) so statistically not significant. The patient who had re-do PSARP, had grade 2 soiling. Of the 4 patients who had constipation in PSARP group, 3 required laxatives while only one patient in ASARP group required laxatives for management of constipation.

Table-3: Frequency of Late Post operative complications

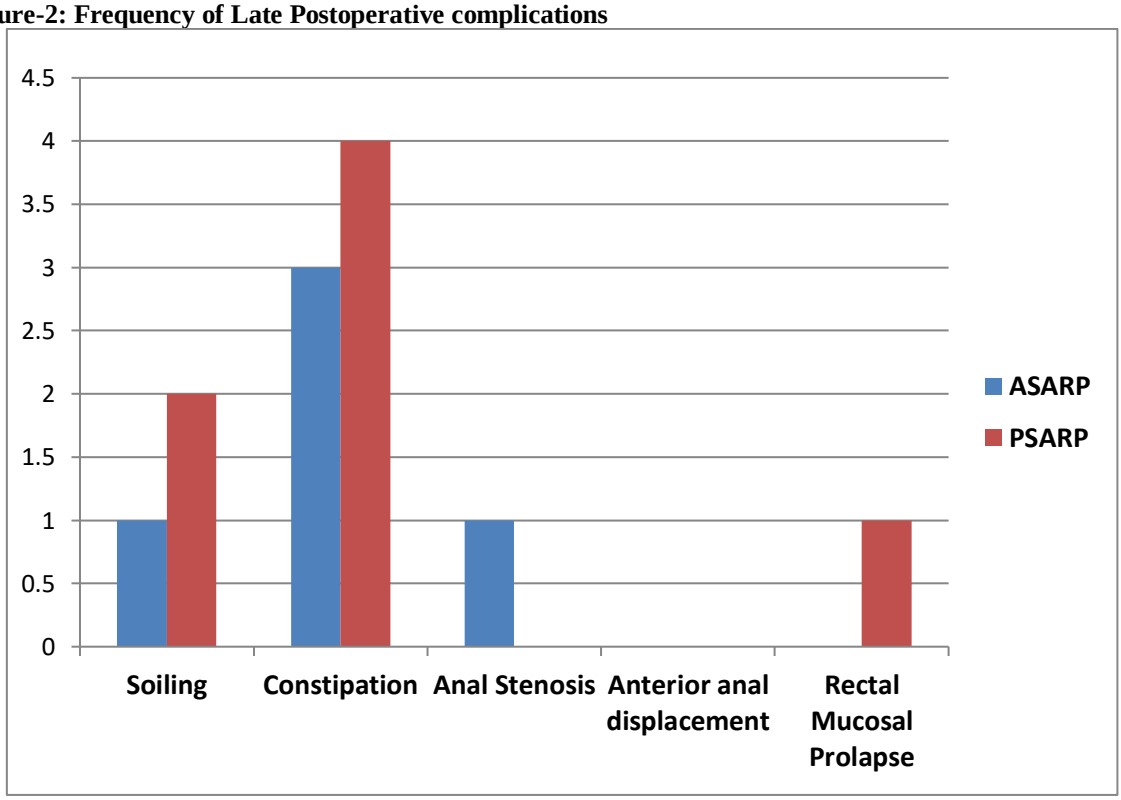
Complications	ASARP group	PSARP group	P value
Soiling	1 (9%)	2 (18%)	0.99999
Constipation	3 (27%)	4 (36.4%)	0.993149
Faecal incontinence	1 (9%)	2 (18%)	0.99999
Anal stenosis	1(9%)	0	0.99995
Anterior anal displacement	0	0	1.000
Rectal mucosal prolapse	0	1	0.99995

Though the difference was not statistically significant, 4 (36.4%) of the patients after PSARP, needed laxative for normal bowel habit compared to 3 (27%) patient in ASARP group.

Overall constipation was seen in 3 (27%) patients in ASARP group and 4 (36.4%) patients in PSARP group P value being 0.993149 (>0.05) i.e, statistically not significant.

Anal stenosis occurred in 1 (9%) patient in ASARP group and no patient in PSARP group (P value=0.99995). Rectal mucosal prolapse occurred in 1 patient in PSARP group but no patient in ASARP group had it. P value being 0.99995 (>0.05) so statistically insignificant.

Figure-2: Frequency of Late Postoperative complications



COMPARISON OF COST EFFICIENCY

The average duration of operation for ASARP group was 2 hrs and 58 minutes while it was 3 hrs and 22 minutes for PSARP group.

P value being 0.6088 (> 0.05) so statistically insignificant. The average duration of stay in hospital in ASARP group is 10.55 days and for PSARP group was 11.27 days. P value for it being 0.1118 i.e, statistically not significant. In the ASARP group the duration of operation for most patients was between 2-3 hours while it was between 3-4 hours for PSARP group.

Table 4: Comparison of Operation time and Duration of hospital stay

		Group I ASARP	Group II PSARP	P Value (For Mean)
OT Time	2-3 hrs	8	3	0.6088
	3-4 hrs	2	6	
	4-5 hrs	1	2	
Hospital stay	8-10 days	1	2	0.1118
	10-12 days	6	7	
	12-14 days	4	1	

DISCUSSION

The primary goal in the management of ARM is early repair with restoration of ano-rectal continuity with optimal sphincter function. Minimising the number of stages of surgery without affecting the results, early establishment of the defecation reflex, reduction of physical and psychological stress to the patient and family; are the other objectives. Limited PSARP is a widely practised technique for the management of vestibular fistula. Various studies describe its benefits in these patients. ASARP, originally described for various conditions like postoperative fecal incontinence, vestibular anus, rectal prolapse, and perineal trauma was used as an alternative approach to PSARP with equally good outcome.

However, very few studies directly compared the outcome following PSARP and ASARP. Our study addresses this issue. It describes the postoperative results and bowel function after PSARP and ASARP in a well matched cohort.

IN OUR STUDY

EARLY COMPLICATIONS

1. SUPERFICIAL WOUND INFECTION was seen in 9% in ASARP group and 18% in PSARP group with p value of 0.9836, as compared to 13% in ASARP group and 16.6% in PSARP group in Man Mohan Harjai et.al[18]study and 9% in ASARP and 18% in PSARP group in Rajendra Saoji et.al [19]study.
2. WOUND DEHISCENCE and requirement of colostomy was seen in 9% patients in PSARP group and in none in PSARP group with p value of 0.99995 as compared to 6.7% patient in ASARP group and 8.3% in PSARP group in Man Mohan Harjai et.al[18] study and 9% in PSARP and none in ASARP group in Rajendra Saoji et.al [19]study.
3. PERIANAL EXCORIATION was seen in 9% patients in ASARP group 18% in PSARP group with p value of 0.9836 with same results in Rajendra Saoji et.al19 study.
4. LATE COMPLICATIONS- SOILING was seen in 9% patients in ASARP group 18% in PSARP group with p value of 0.9999 as compared to 7.5% patients of ASARP group and 15% patients in PSARP in Rajendra Saoji et.al [19]study.
5. CONSTIPATION was seen in 27% patients in ASARP group and 36.4% in PSARP group with p value of 0.993149 as compared to 6.7% patient in ASARP group and 25% patients in PSARP group in Mohan Harjai et.al[18] study and 8% patients of ASARP group and 38% patients in PSARP in Rajendra Saoji et.al[19]study.
6. FAECAL INCONTINENCE was seen in 9% patients in ASARP group and 18% in PSARP group with p value of 0.9999 as compared to 7.5% patients of ASARP group and 15% patients in PSARP in Rajendra Saoji et.al [19]study.
7. ANAL STENOSIS was seen in 9% patients in ASARP group and in none in PSARP group with p value of 0.99995 as compared to 25% patients in PSARP group while no one in ASARP group in Mohan Harjai et.al[18]study and in no patient in Rajendra Saoji et.al [19]study.
8. ANTERIOR ANAL DISPLACEMENT was not seen in any patient in our study as well as in Rajendra Saoji et.al[18] study.
9. RECTAL MUCOSAL PROLAPSE was not seen in any patient in ASARP group but in 9% patients in PSARP group with p value of 0.99995 as compared to 6.7% patient in ASARP group and 8.3% patients in PSARP group in Mohan Harjai et.al[18]study and in Rajendra Saoji et.al [19]study no patient had rectal mucosal prolapse in ASARP group while it occurred in 9% patients in PSARP group.

MEAN OPERATION TIME

In our study was 2 hours 58 minutes in ASARP group and 3 hours 22 minutes in PSARP group with p value 0.6088.

Overall outcomes of both procedures were comparable as p-value is insignificant.

CONCLUSION AND SUMMARY

- We conducted our study to evaluate the outcome in post-operative patients in ASARP and PSARP in terms of complications, bowel function and cost efficiency.
- After applying exclusion criteria 22 patients were enrolled in the study. Of these, 11 patients were of group I and were managed by primary ASARP while remaining patients underwent PSARP and constituted group II.
- Both groups were comparable in terms of age, weight and laboratory parameters.
- Superficial wound inection was seen in 9% in ASARP group and 18% in PSARP group with p value of 0.9836.
- Wound dehiscence and requirement of colostomy was seen in 9% patients in PSARP group and in none in PSARP group with p value of 0.99995.
- Perianal excoriation was seen in 9% patients in ASARP group 18% in PSARP group with p value of 0.9836.
- Soiling was seen in 9% patients in ASARP group 18% in PSARP group with p value of 0.9999.
- Constipation was seen in 27% patients in ASARP group and 36.4% in PSARP group with p value of 0.993149.
- Faecal incontinence was seen in 9% patients in ASARP group and 18% in PSARP group with p value of 0.9999.
- Anal stenosis was seen in 9% patients in ASARP group and in none in PSARP group with p value of 0.99995.
- Anterior anal displacement was not seen in any patient.

- Rectal mucosal prolapse was not seen in any patient in ASARP group but in 9% patients in PSARP group with p value of 0.99995

ASARP promises many advantages in the treatment of vestibular fistula in comparison to PSARP including:

- Comparable post-operative complications
- Better cosmetic results & functional outcome
- Less need for laxatives.
- As only the anterior aspect of the sphincteric muscle complex is divided and so continence mechanism is preserved.
- Mean operative time is lesser for ASARP thus making it more cost effective

Factors responsible for better results include better surgical technique and dissection with growing experience, less tissue trauma, adequate rectal mobilization, and absence of haemorrhage leading to hematoma.

Thus, though statistically not significant, ASARP has better results than PSARP in terms of post-operative complications in the management vestibular fistula.

Due to lockdown during covid pandemic, we could enroll only 22 patients in our study and our follow up was based on telephonic conversation due to limited one to one follow up. Thus to establish significance of one procedure over the other we require more number of cases with longer follow up period.

CONFLICT OF INTEREST

NONE SOURCE OF

FUNDING

SELF

ETHICAL COMMITTEE CLEARANCE

TAKEN

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