Original Article

Surgical Outcomes and Feasibility of Transvaginal Sacrospinous Ligament Fixation through Anterior Approach for Women with Pelvic Organ Prolapse

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ABSTRACT

Introduction: Supporting vaginal vault or apex is a central component of primary therapy and to prevent recurrence of prolapse. This study aims to review the surgical outcomes and feasibility of the anterior approach following both sacrospinous fixation (SSF) and sacrospinous hysteropexy (SSHP) in a single center over a specific period. And also to review its impact on quality of life. **Materials and Methods:** This was a retrospective study that included all women who underwent unilateral SSF or SSHP through anterior approach for pelvic organ prolapse (POP) from May 2021 to May 2023 after institutional ethical approval for the study. The anterior approach was undertaken in 47 patients which were included in final review. A retrospective case note review to assess urinary symptoms was undertaken at baseline and 3 months by urinary distress inventory 6 score. The main outcome measure was recurrence of prolapse, predominant compartment for prolapse, presenting complaints, concomitant surgeries performed, and associated urinary complaints. **Results:** The mean age was 56.17 ± 11.95 years and the average body mass index was 26.12 ± 3.11 kg/m^2. Except for 4 cases of SSHP, remaining women were postmenopausal at the time of surgery. Ten women presented with urinary complaints as their chief complaint. On examination, POP Quantification evaluation, 35 cases have Ba as leading point, 10 have Ap as their leading point and in two cases C was the leading point. **Conclusion:** Anterior unilateral sacrospinous ligament fixation is a safe, effective strategy to treat POP and other concomitant surgery can also be well combined with it.

Keywords: *Anterior approach, concomitant surgeries, sacrospinous fixation, sacrospinous hysteropexy, urinary distress inventory 6 score*

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Introduction

The incidence of pelvic organ prolapse (POP) requiring surgical intervention in lifetime is 11.8%.[1] Supporting the vaginal vault or apex is a central component of primary therapy and to prevent recurrence of prolapse.[2] Anterior vaginal wall prolapse may present as urgency, stress urinary incontinence (SUI), mixed urinary incontinence, or voiding dysfunction alone or in combination.[3] A posterior vaginal wall prolapse may present with bowel complaints to no bowel complaints. POP usually presents with other urinary or bowel complaints.[4]

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Transvaginal sacrospinous fixation (SSF) can be done for vault prolapse, can be combined with vaginal hysterectomy or can be done as sacrospinous hysteropexy (SSHP) too.[5] Conventionally, the posterior approach via a posterior vaginal wall incision and dissection through the pararectal space is described.[6] The anterior approach is less well described and researched when compared to the traditional

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posterior approach, although it dates back to 2001.[7] This technique is particularly helpful in women who do not have posterior prolapse and do not require posterior vaginal incision and dissection.[8] This study aims to review the surgical outcomes and feasibility of the anterior approach following both SSF and SSHP in a single center over a specific period. And to review its impact on quality of life.

Materials and Methods

This was a retrospective study that included all 51 women who underwent unilateral SSF or SSHP through an anterior approach for POP from May 2021 to May 2023 after institutional ethical approval for the study as shown in Figure 1. The inclusion criteria included women with POP stages 3 and 4 who underwent unilateral SSF through the anterior approach. Exclusion criteria were women with POP who underwent any other apical suspension and who underwent SSF, but through posterior approach or bilateral, incomplete data. A total of 47 patients were included in final review. Examination using POP Quantification (POP-Q) was undertaken either by urogynecology fellow or a consultant urogynecologist.[9] POP was characterized and staged according to the International Continence staging system.[10] A retrospective case note review to assess urinary symptoms was undertaken at baseline and at 3 months after surgery by urinary distress inventory (UDI) 6 score.

The main outcome measure was recurrence of prolapse, pre-dominant compartment for prolapse, presenting complaints, concomitant surgeries performed, and associated urinary complaints. Secondary outcome measures were intraoperative and postoperative complications, and urinary symptoms affecting quality of life. Baseline patient demographics, intraoperative and postoperative variables were recorded. The mean follow-up was at around 14 months.

Statistical analysis

Data were analyzed by statistical software Stata 14.0 (Stata Corp LLC) Licence to Deptt of Biostatistics AIIMS, New Delhi, India. Wilcoxon–rank-sum test was used to compare UDI 6 score between the groups, and the signed-rank test was used to estimate change UDI 6 score before and after surgical intervention at 3 months. $P < 0.05$ was considered statistically significant.

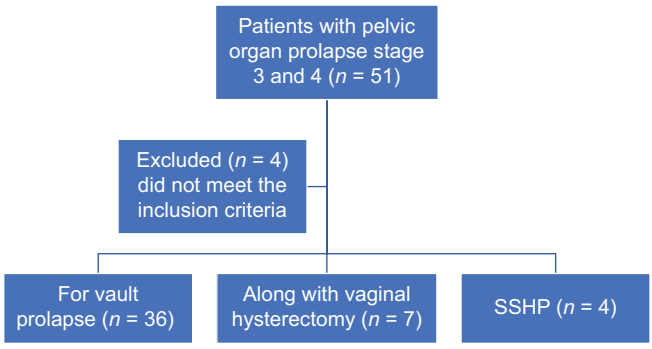

Figure 1: Flow diagram of enrollment

Surgical technique

All procedures were performed under spinal anesthesia with patients in the dorsal lithotomy position. A midline vertical incision was given over the anterior vaginal wall to enter the right Para-vesical space.[11] If any concomitant surgery was a part of the procedure, then it was performed in the sequence as per the surgeon's discretion. After palpating the ischial spine and the right sacrospinous ligament, access to the sacrospinous ligament was achieved by tactile perception.[12] Two polypropylene no. 1 sutures on the sacrospinous ligament were taken 1 cm apart, 1.5–2 cm medial to the ischial spine. Ends of sutures were then passed through the mucosa of the vaginal vault or cervix at the level of uterosacral ligaments. Vaginal skin closed with continuous closure using polyglactin suture 0. Anterior vaginal wall repair was then performed using an absorbable suture (polyglactin suture 2-0). polypropylene sutures were then tied down using 7 knots on the vaginal mucosa or cervix, ensuring no gap was left between knots. Ends were then cut short to about 0.5–1 cm length and buried under the mucosa.

Postoperatively nonsteroidal anti-inflammatory drugs or paracetamol were given for analgesia and opioid analgesics if required. Patients were discharged with laxatives and advised regarding general and pelvic care.

Results

We found that the mean age was 56.17 ± 11.95 years and the average body mass index was 26.12 ± 3.11 kg/m^2. The baseline characteristic of the study population is listed in Table 1. Except for 4 women with SSHP, remaining were postmenopausal at the time of surgery.

Ten women presented with urinary complaints as their chief complaint, along with concomitant prolapse. They were bothered by urinary symptoms, of which one presented as urinary retention, 3 as SUI and 6 as urinary urge incontinence. Apart from this, 65.95% of women have some sort of associated urinary complaint. Voiding difficulty was the most common urinary complaint as in 11 women [Table 2]. On POPQ evaluation, 35 women had Ba as leading point, 10 had Ap as their leading point and in 2 cases C was the leading point.

Details of concomitant surgeries performed are given in Table 3.

The median follow-up of cases was around 14 months. UDI 6 score improved postoperatively significantly. *P* value was found to be <0.002. A description is represented in tabular form [Table 4].

Table 1: Baseline characteristics of the study population (*n*=47)

Characteristics	Mean±SD, median or *n* (%)
Age	56.17±11.95
Parity	3 (0–9)
BMI	26.12±3.11
Co-morbidity	27 (57.44)
Age at menopause	43.55±7.65
Prior surgery for prolapse	22 (46.81)
Baseline POPQ stage	
Stage 3	28 (59.57)
Stage 4	19 (40.43)
Leading point (predominant compartment)	
Ba	35 (74.46)
Ap	10 (21.27)
C	2 (4.25)
Presenting complaint	
Prolapse	37 (78.72)
Urinary complaint	10 (21.27)
Constipation	17 (36.17)
Sexually active	19 (40.43)
Duration of presenting complaint (years)	5.57±5.16

BMI: Body mass index, POPQ: Pelvic organ prolapse quantification, SD: Standard deviation

Table 2: Types of urinary complaints

Urinary complaint	Number of cases
No urinary complaint	16
SUI	2
UUI	10
MUI	5
Voiding difficulty	11
>2 type of urinary complaint	3

SUI: Stress urinary incontinence, UUI: Urgency urinary incontinence, MUI: Mixed urinary incontinence

Table 3: Concomitant surgery performed

Surgical procedure	Number of cases (*n*=47)
Anterior colporrhaphy	47
Bladder neck suspension	2
Sling surgery for SUI	5
Autologous	1
Synthetic	4
Trachelectomy	1
Enterocele repair	22
Posterior colporrhaphy	36
Perineal body reconstruction	38
Rectal prolapse repair	1
Vaginal hysterectomy	7

SUI: Stress urinary incontinence

No major intraoperative complications were noted except one which required blood transfusion. Table 5 describes perioperative complications. Immediate postoperative complications such as mild hemorrhage occurred in 3 women who responded well to supportive measures. Three women required readmission within 30 days of surgery for cuff cellulitis, urosepsis, and hemorrhage, which were managed medically. One required reintervention for the removal of intravaginal adhesion under local anesthesia. One developed SUI on postoperative follow-up, which was mild and responded to conservative measures.

All women noted significant improvement UDI 6 score postoperatively at 3 months, neither this was not affected by a higher stage of prolapse nor by the prior history of prolapse surgery as described in Table 6.

Discussion

In this study, out of 47 cases, 11 did not have posterior compartment prolapse. Anterior vaginal prolapse is the most common form of prolapse.[13] The prevalence

Table 4: Clinical characteristics of study population

Clinical characteristics	Number of cases (*n*=47)/median
Baseline POPQ stage	
Stage 1	0
Stage 2	0
Stage 3	28
Stage 4	19
Recurrence	
Stage 1	1
Stage 2	2
Stage 3	0
Stage 4	0
Baseline UDI 6*	25 (12.5–41.66)
At 3 months, UDI 6*	4.16 (4.16–8.33)

*Data expressed as median (minimum–maximum). UDI: Urinary distress inventory, POPQ: Pelvic organ prolapse quantification

Table 5: Perioperative complications

Parameters	Number of cases
Need for blood transfusion	1
Cuff cellulitis	1
Urosepsis	1
Hemorrhage	3
Buttock pain	2
Intravaginal adhesion	1
Readmission within 30 days	3
Reintervention required	1
Recurrence	
Anterior compartment	2
Apical compartment	1
Posterior compartment	0
De novo SUI	1

SUI: Stress urinary incontinence

Table 6: Urinary distress inventory 6 score between stages of prolapse and with prior history of prolapse surgery

Variable	UDI 6 at baseline*	UDI 6 at 3 months*	*P*#
Stage of POP			
Stage 3	25 (12.5–41.66)	4.16 (4.16–12.5)	<0.001
Stage 4	29.1 (16.6–41.66)	4.16 (4.16–8.33)	<0.001
P (total)	0.815	0.394	
Prior history of prolapse surgery			
Yes	27.08 (12.5–41.66)	4.16 (4.16–8.33)	<0.001
No	25 (16.66–41.66)	4.16 (4.16–12.49)	<0.001
P (total)	0.637	0.865	

*Data expressed as median (25th percentile–75th percentile), #*P*<0.001 is clinically and statistically significant. UDI: Urinary distress inventory, POP: Pelvic organ prolapse

of uterovaginal prolapse and cystocele is higher than rectocele as seen in our study also.[14] We also saw the feasibility of performing other concomitant surgery along with anterior sacrospinous ligament fixation (SSLF). In our study, there were no incidence of bladder, ureteral, or bowel injury. Case series by Cespedes 2000 by bilateral anterior SSF showed recurrence rate of 4% at mean follow-up of 17 months.[15] Siddiqui *et al*. in 2021 unilateral anterior (SSF + SSHP) showed a recurrence of 8.3% at mean follow-up of 12 months.[7] In our study, we have 6.3% rate of recurrence at mean follow-up of 14 months which is comparable to previous studies. Two cases of recurrence of anterior compartment prolapse had prior history of surgery for prolapse and there was one recurrence presented as stage 2 apical compartment prolapse was observed. Of these, two were asymptomatic and one was symptomatic. None of the prolapse was past the hymen. Marschke *et al*. in 2018 found recurrence of anterior vaginal wall prolapse stage 2 in 49% of cases. They found obesity as one of the factors for recurrence of prolapse. With the results mentioned, they found anatomical, functional, and subjective improvement in 109 cases.[16] This retrospective study on POP confirms previous retrospective and prospective study data of having high chance of recurrence in the anterior compartment.[17] ALthough anatomical recurrences were observed all cases reported good quality of life, improved bladder function, and better UDI 6 score. Even patients who postoperatively develop de novo SUI had better UDI 6 score because of relief of other urinary complaints.

Buttock pain in our series was around 4.2%, which was transient, and resolved over a period of 3 months. Cespedes *et al*.[15] had a buttock pain in 8% of cases, while in series by Siddiqui *et al*.[7] had an incidence of 6.6%. There was no statistically significant difference in postoperative complications and UDI 6 score between stage 3 and stage 4 prolapse in this study. Atthough previous history of surgery for prolapse remains a risk factor for developing prolapse, but we found this does not affect quality of life by urinary symptoms. UDI 6 score improves significantly irrespective of prior history of prolapse.[18]

Goldberg *et al*. found that the anterior access to the sacrospinous ligament resulted in longer vaginal length and decreased apical prolapse recurrence.[19]

Bastani *et al*. from their observational study suggested that the anterior approach was as effective as the posterior approach.[8]

The current study also demonstrates that not all women with prolapse will present with mass coming out of the vagina as their presenting complaint, 21.27% of cases presented with a urinary complaint as their chief complaint. The coexistent prolapse and urinary complaint may be the probable reason for the betterment of UDI 6 score postoperatively in our study. Benson *et al*. in the first randomized comparison between SSF and abdominal sacrocolpopexy, found that women who underwent SSF had satisfactory results, whereas sacrocolpopexy resulted in better objective outcomes.[20] The current study demonstrated that performing concomitant surgery through the most feasible route increases better outcomes objectively and subjectively.

Sarocolpopexy, apical suspension procedure is considered to be gold standard.[21] An approach with a minimal invasive route, avoidance of the use of mesh, which addresses other defects also, with better intraoperative and postoperative outcomes, focusing on improved quality of life needs to be considered.[22]

There are limitations in our study such as the small sample size of the study, the retrospective data analysis, and lack of longer-term follow-up data.

The strengths of this study are the POP-Q measurements postoperatively were performed by a consultant not part of the study, therefore, the results obtained were unbiased. Furthermore, the comparisons of quality of life regarding urinary complaints pre-surgery and post-surgery showed that patients had increased quality

of life benefit after these procedures, which implies SSF done through the anterior approach does not predispose to urinary complaints as in case of the posterior approach.

The anterior approach seems to alleviate many of the limitations and difficulties of the posterior approach.[23] De novo anterior vaginal wall prolapse is common with the posterior approach, vaginal axis gets deviated, and dyspareunia is common.[24]

Conclusion

Female POP is a heterogeneous complex condition and the presenting symptoms may be prolapse or other complaints. Anterior unilateral SSLF is a safe, effective strategy and provides good anatomical and functional outcome.

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Conflicts of interest

There are no conflicts of interest.

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