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Research Article

Sacrospinous fixation for prevention and treatment of vault prolapse: institutional experience from South India

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ABSTRACT

Background: Vaginal Vault Prolapsed (VVP) is defined as descent of vagina apex or vaginal cuff scar below a point that is 2 cm less than Total Vaginal Length (TVL) above the plane of hymen. VVP following hysterectomy is due to pre-existing weakness of pelvic floor tissue. Incidence is 0.2% and on clinical examination incidence is 45%. It is reported to be more common in Asian women (67%) compared to Caucasian (26%) or African (28%) women.
Methods: 15 cases of prolapse cases were operated during a period of 2 year attending our department. The efficacy of the Sacrospinous Ligament Fixation of the Vault (SSLF) was evaluated. We performed prophylactic SSLF following vaginal hysterectomy in 5 cases and therapeutic SSLF in 10 cases of vault prolapse. Surgical repair of vault prolapse is to address the need to preserve or improve the function and restore the normal anatomy.
Results: There was significant improvement in severity of prolapsed with preoperative staging ranging in stage 2 to 4 and postoperative staging in stage -3 to stage 1. Anterior vaginal wall prolapse was reduced immediate post- operative period most of the patients who had stage 2 and stage 3 were reduced to stage 1 and -3. No bladder or bowel injuries in this series.
Conclusions: SSF is suitable in physically frail women, requires lesser operating time, rapid recovery, lesser blood loss and hospital stay in addition to being cost effective with patient satisfaction (91%). Sacrospinous fixation is chosen procedure for primary vault prolapse repair.

Keywords: Total vaginal length (TVL), Sacrospinous ligament fixation (SSLF), Vaginal vault prolapse (VVP), Pelvic organ prolapse-quantification (POP-Q), Abdominal sacrocolpopexy (ASC)

INTRODUCTION

Vaginal vault prolapse (VVP) is defined as descent of vagina apex or vaginal cuff scar below a point that is 2cm less than Total Vaginal Length (TVL) above the plane of hymen.[1] VVP following hysterectomy is due to pre-existing weakness of pelvic tissue. Incidence is 0.2%and on examination incidence is 45%.[1] It is reported to be more common in Asian women (67%) compared to Caucasian (26%) or African (28%) women.[2] The condition occurs in equal numbers after abdominal and vaginal hysterectomy for benign conditions. The incidence of VVP is 11.6%, when hysterectomy done for genital prolapse compared to 1.8%, when hysterectomy done for benign disease. The incidence of vault prolapse is expected to be on increase as life expectancy increases. Prevalence of the condition is difficult to ascertain due to underreporting or failure to seek care for vaginal prolapse. Out of several options available, sacrocolpopexy is a potential surgical procedure with promising results.[3-5] In this context, we set forth to

analyse the efficacy of sacrospinous ligament fixation in preventive and therapeutic settings in our experience.

METHODS

Fifteen cases of VVP managed in Gynaecology department at our institute (tertiary care teaching hospital) have been evaluated for the efficacy of the SSLF procedure. We performed prophylactic SSLF following vaginal hysterectomy in 5 cases and therapeutic SSLF in 10 cases of vault prolapse. Detailed history and examination were done to establish diagnosis and for grading the extent of prolapse by POP-Q staging has been done. Patients have been evaluated for the severity of the complaints like extent of prolapse, bowel and bladder symptoms. Pre-operative evaluation has been done for surgery. Patients have been counseled regarding the procedure that is performed to prevent recurrence and treatment of vault prolapse and consent taken from them.

Detailed operative procedure (Technique)

In patients with UV prolapse surgery involved performing vaginal hysterectomy, followed by anterior cystocele repair and then proceeded to SSLF. In patients with vaginal vault prolapsed, initially anterior cystocele repair was done followed by U-SSLF.

1) On the posterior vaginal wall at the mucocutaneous junction a transverse incision was given and extended vertically upwards leaving a part of vaginal mucosa intact
2) Para-rectal spaces were dissected and with blunt and sharp dissection SSL is reached. Fat over the ligament is cleared by blunt dissection
3) Right SSL is caught with Allis forceps, 2 sutures with no.1 prolene passed through SSL and passed through vaginal mucosa by pulley's stitches.
4) Posterior vaginal mucosa was partially closed and prolene stitches were tightened and vaginal mucosa pulled towards SSL, the vaginal mucosa is approximated, the muscle approximated and skin was closed with mattress suture.

Figure 1: Intraoperative images showing various steps of sacrospinous fixation: A) Apex of vagina is marked; B) Anterior cystocoele repair; C, D) Sacrospinous dissection; E, F) Sacrospinous fixation.

All the operative steps are pictorially displayed in Figure 1.

Post-operative care

Bladder was catheterised for 48 hours and mobilised within 12 hours. Post Void Residue (PVR) done following catheter removal. Patients were followed up for 1 month, 3 months and 6 months. And were analysed for the efficacy, complications and patient satisfaction.

RESULTS

The clinical presentation was varied and symptoms were protean as depicted in Table 1.

Table 1: Clinical spectrum and symptomatology.

Symptoms	Percentage
Mass pv	10
Incomplete emptying of bladder	2
Apareunia/dyspareunia	10
SUI	-
UUI	7
Bowel disturbance (Incomplete emptying)	2

The age of patients along with frequencies of prophylactic and therapeutic surgical procedures performed are detailed in subsequent Tables.

Table 2: Prophylactic SSLF following vaginal hysterectomy.

Age (following prolapse surgery) (years)	Prophylactic SSLF
50-55 years	3
55-60 years	2
60 -65 years	-

In this study most of the patients were in the age group of 50 -55 years.

Table 3: Therapeutic U-SSLF for vaginal vault prolapsed.

Age (years)	Therapeutic SSLF
45-50	1
55-60	3
60-65	7
>65	-

Most of the patients in therapeutic group ranged between 60-65 years.

Vault prolapse often occurs, where anterior or posterior vaginal wall prolapse is present and not corrected, failure to identify descent of the uterus and vagina prior to

surgery or failure to perform fixation procedure at the initial surgery or when the closure of the vault was done outside or at the introitus. In these cases, the onset of VVP occurs faster following vaginal or abdominal hysterectomy, as shown in this series, where most of the patient had VVP within one year following surgery.

Table 4: No. of years following hysterectomy.

No. of years	Incidence of prolapse
1	6
2-5	2
5-10	2
>10	-

Table 5: Per operative details including complications.

No. of years	Incidence of prolapse
1	6
2-5	2
5-10	2
>10	-

Incidence of buttock pain was in 6 cases .Suture placement medial to the portion of the ligament where pudendal complex and sciatic nerve usually travel underneath the lateral one-third of the ligament and superficially as practical and never across the whole thickness minimize the complications.

Severity of prolapse based both on pre-operative and post-operative staging are depicted in Tables 6 and 7.

Table 6: Pre-operative staging.

	Stage 1	Stage 2	Stage 3	Stage 4
Level 1	-	2	1	7
Level 2	-	-	-	-
Ba	-	4	6	
Bp	-	3	3	4

In 7 patients there was total eversion of the vaginal vault and 2 patients had the vaginal cuff with scar just 1 cm outside the introitus. 6 patients had stage 3 cystocele and 3 patients had stage 3 posterior vaginal wall prolapse and 4 patients had stage 4 posterior vaginal wall prolapse.

Table 7: Post-operative staging.

	Stage -3	Stage 1	Stage 2	Stage 3
Level 1	10	-	-	-
Level 2	-	-	-	-
Ba	2	8	-	-
Bp	10	-	-	-

After surgery level 1 was completely reduced and it was -3 at immediate post-operative and 3 and 6 months follow up. Anterior vaginal wall prolapse was reduced immediate post-operative period most of the patients who had stage 2 and stage 3 were reduced to stage 1 and -3. Therapeutic SSLF was done within 25-45 min. Prophylactic SSLF following hysterectomy took 1 ½ to 2 hours. On average blood loss was between 100-500 ml. More blood loss was following vaginal hysterectomy and pelvic floor repair with sacrospinous ligament fixation. No bladder or bowel injury in our case series.

DISCUSSION

The aim of surgical correction of VVP is reconstruction of vaginal tube, reestablishment of suspension, lateral attachment of reconstructed vagina and excision of redundant peritoneum with vaginal mucosa .There are various procedures for prevention and treatment of vault prolapse. Out of several procedures like McCall's culdoplasty, abdominal Moscowitz, Halban's procedure - SSLF is more efficacious than others. Common cause of vault prolapse following vaginal hysterectomy is due to deep pouch of Douglas, pre-existing weakness of pelvic tissues. The short success rate following SSLF is 90-95%. There is a significant difference in severity of prolapse before and after surgery in vault prolapse, cystocele, rectocele and quality of life. The success rate of 92-97% in literature.[6-9]

All patients in this series were included following disease specific validated quality of life questionnaires, assessment of symptoms and impact of the condition and examination is made according to quantifying tools such as POPQ. Assessment for stress incontinence was done in partially full bladder after reducing the prolapse with sponge holder. Vaginal sacrospinous fixation is suitable for physically frail women, because of the morbidity associated with abdominal surgery.[10] Most of the patients in this series were beyond 60 years and with medical complications requiring faster surgery and rapid recovery with shorter stay in hospital.

Vaginal Sacrospinous fixation requires adequate vaginal length and vault width to enable reaching the sacrospinous ligament.[11] Incidence of vault prolapse is 11.6 %, when hysterectomy was done for prolapse uterus the reason being failure to identify and correct all the defects, failure to perform the uterosacral and cardinal ligament fixation to the vaginal cuff and circumferential obliteration of the pouch of doughlas[6] and prophylactic sacrospinous fixation when necessary is the reason for the increased incidence. Prophylactic sacrospinous fixation after vaginal hysterectomy is done in patients with marked uterovaginal prolapse, when the vault (point C on the POPQ system) could be pulled to the introitus at the end of anterior vaginal wall closure.[7]

Blood loss during surgery depends on the expertise of the operating surgeon and whether SSLF was done as prophylactic or therapeutic procedure. Most specific

complication following SSLF is buttock pain, for instance, in our case series the incidence of buttock pain was in 6/15 cases as the procedure was done under vision and only superficial placement of the suture through SSL was done. Verdeja et al., (1995) found the position of pudendal complex and sciatic nerve to be 0.9-3.10 medial to ischial spine in smaller pelvis and 1.30-3.30 in larger pelvis.[3]

Pudendal complex and the sciatic nerve travel underneath the lateral one third of the ligament suture placement medial to that portion of the ligament; and as superficial as practical and never across the entire thickness of the ligament reduces complications. Placing the sutures at an arbitrary fixed point (1.5-2.0 cm) medial to the ischial spine could not be justified. Pollak et al. (2007) compared the complications of the techniques used to pass suture through Sacrospinous Ligament (SSL), concluded that passing the suture through SSL under direct visualization may result in less intra and postoperative complications.[8] There is an increase in incidence of anterior vaginal wall prolapse following SSLF due to exaggerated retroversion of vagina. The two procedures which are being evaluated for the prevention and treatment of vault prolapsed are abdominal sacrocolpopexy and sacrospinous fixation. The experts involved in producing international consultation on continence showed equal effectiveness of SSLF and ASC, but the combined rate of apical and anterior vaginal wall prolapse was higher following SSLF, increase in posterior vaginal wall prolapsed with ASC.[13,14] Though ASC is associated with good outcome, normal axis but there is increased blood loss, longer hospital stay, mesh rejection, wound infection and incisional hernia.[13] SSLF is suitable in physically frial women, requires less operating time, rapid recovery, less blood loss and hospital stay and cost effective and patient satisfaction (91%), coexistent anterior and posterior vaginal wall prolapse can be easily managed by anterior and posterior repair unlike ASC where separate vaginal procedure is required.[14] There are some disadvantages of SSLF like high chances of unsatisfactory out come sooner than ASC, longer catheter use, more UTI and urinary incontinence ,more sexual dysfunction when SSLF done along with anterior and posterior repair for the defect causing narrow/short vagina.[15] Laparoscopic technique used to treat this involves performing sacrocolpopexy USL suspension and sacrospinous fixation, it involves high level of expertise and operating time.[16,17]

The other procedures done for treatment of vault prolapse include pessary, USL suspension, ileococcygeal fixation, Sacrospinous fixation, abdominal utero-sacral suspension and laparoscopic uterosacral suspension. Pessaries used cause improvement in bulge sensation, bladder symptoms, sexual behavior with reported satisfaction rate in 70-92% similar outcomes to surgery at 1 year follow-up (11%). Pessary is an option in patients who do not wish to consider surgery due to co-morbid conditions or prior surgery. Pessaries interfere with sexual function so used only in women who are not sexually active. Transvaginal uterosacral suspension support the cephalic 2-3cm vagina. There are different methods involving either placation[3-7,13] or suturing to the ipsilateral angle of vaginal vault to cervical portion of the ligament which was most easily accessible and palpable ureteric obstructions has been noted in 5 cases out of 46.[18]

Ileococcygeal suspension reduces the risk of injury to pudendal and sacral nerves and vessels associated with sacrospinous fixation but no difference in development of anterior vaginal wall prolapse from sacrospinous fixation.

CONCLUSIONS

1) Surgical repair of vault prolapse is aimed at improving the function and restoring anatomy.
2) Sacrospinous fixation is chosen procedure for primary vault prolapse repair and sacrocolpopexy for previous failed vault surgery.

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REFERENCES

1. Abrams P, Cardozo L, Fall M, Griffiths D, Rosier P, Ulmsten U et al. Standardisation. Subcommittee of the International Continence Society. The standardisation of terminology of lower urinary tract function: report from the standardisation sub-committee of the international continence society. Neurourol Urodyn. 2002;21:167-8.
2. Swell CA, Chang E, Sulthana CJ, prevelance of genital prolapse in 3 ethnic groups. J Reprod Med. 2007;52:769-73.
3. Verdeja AM, Elkins TE, Odoi A, Gasser R, Lamoutte C. Transvaginal sacrospinous colpopexy: anatomic landmarks to beaware of to minimise complications. Am J Obstet Gynaecol. 1995;173:1468-9.
4. Valaitis SR, Stanton SL. Sacrocalpopexy: a retrospective study of a clinicians experience. Br J Obstet Gynaecol. 1994;101:518-22.
5. De lancey JO. Anatomical aspects of vaginal eversion after hysterectomy. Am J Obstet Gynaecol. 1998;179:1418-23.
6. Cruikshank SH, Cox DW. Sacrospinous ligament fixation at the time of transvaginal hysterectomy. Am J Obstet Gynaecol. 1990;162:1611-9.
7. Cruikshank SH. Preventing posthysterectomy vaginal vault prolapse and enterocele during vaginal hysterectomy. Am J Obstet and Gynaecol. 1987;155:1433-40.
8. Pollak J, Takacs P, Medina C. Complications of three sacrospinous ligament fixation techniques. Int J Gynaecol Obstet. 2007;99;18-22.

9. Maher CF, Qatawneh AM, Dwyer PL, Cayer MP, Cornish A, Schluter PJ. Abdominal sacral colpopexy or vaginal sacrospinous colpopexy for vaginal vault prolapse: a prospective randomized study. Am J Obstet Gynaacol 2004;190:20-6.
10. Addison WA, livengoodCH, Sutton GP, Parker RT. Abdominal sacrocolpopexy with Mersilene mesh in the retroperitoneal position in the management of post hysterectomy vaginal vault prolapse and enterocele. Am J Obstet Gynaecol. 1985;153:140-6.
11. Randall CL, Nichols DH. Surgical treatment of vaginal inversion. Obstet Gynaecol. 1971;38:327-32.
12. Brubaker L, Bump R, Fynes M, Jacquetin B, Karram M, Kreder K et al. Surgery for pelvic organ prolapse. In: Abrams P, Cardozo L, Khoury S and Wein A, eds. Incontinence. 3rd ed. Paris: Health Publications; 2005: 1371-1402.
13. Maher CF, Murray CJ, Carey MP, Dwyer PL, Ugoni AM. Iliococcygeus and sacrospinous fixation for vaginal vault prolapsed .Obstet Gynaecol. 2001;98:40-4.
14. Benson JT, Lucente V, McClellan E. Vaginal versus abdominal reconstructive surgery for the treatment of pelvic support defects: a prospective randomized study with long-term outcome evaluation. Am J Obstet Gynaecol. 1996;14:59-64.
15. Marinkovic SP, Stanton SL. Triple compartment prolapsed: sacrocolpopexy with anterior and posterior mesh extensions. BJOG. 2003;110:323-6.
16. Grundsell H, Larsson G. Operative management of vaginal vault prolapse following hysterectomy. BJOG. 1984;91:808-11.
17. Paraiso Mf, Falcone T, Walters MD. Laparoscopic surgery for enterocoele, vaginal apex prolapse and rectocele. Int Urogynaecol J Pelvic Floor Dysfunct. 1999;5:217-22.
18. Maher CF, Qatawneh AM, Dwyer PL, Carey MP, Cornish A, Schulter PJ. Abdominal sacrocolpopexy or vaginal sacrospinous colpopexy for vaginal vault prolapsed: a prospective randomized study. Am J Obstet Gynaecol. 2004;190:20-6.

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