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A Systematic Review of A Series of Cases of Vaginal Vault Prolapse Treated With Sacrospinous Ligament Fixation

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ABSTRACT

Symptomatic vaginal vault prolapse occurs with 0.2 to 43% of hysterectomies. The definitive management of vaginal vault prolapse is surgical, and as such successful treatment must ensure restoration of anatomy, re-establishment of normal function, and relief of symptoms. Vaginal and abdominal surgical approaches for vaginal vault prolapse have similar efficacy. However , the vaginal approaches produces shorter hospital stays, less discomfort, rapid return of bowel function and allow for repair of coexisting defects through the same incision. The most common current transvaginal procedure described in the literature is the unilateral sacrospinous ligament fixation (SSLF) technique. SSLF may also be used prophylactically for total procidentia at hysterectomy. The sacrospinous ligament has been used for over 50 years as a convenient structure for tethering the vault with good post-operative outcome.

KEYWORDS : Vaginal Vault Prolapse , Sacrospinous Ligament Fixation

Introduction

Vaginal vault prolapse has been defined by the International Continence Society as descent of the vaginal cuff below a point that is 2 cm less than the total vaginal length above the plane of the hymen[1]. It occurs when the vaginal apex bulges into or outside the vagina. Coexistent pelvic floor defects which may be a cystocoele, rectocoele or enterocoele are present in 72% of patients with vault prolapse [2]. Vault prolapse after hysterectomy has a reported incidence of 0.2 to 43% depending on the patient's condition and surgical skill of the operator[3]. This condition is highly distressing and for those affected, it nullifies the purpose of performing a hysterectomy. Prolapse does have a negative impact on these women's quality of life due to associated urinary, anorectal, as well as coital dysfunction. A clear understanding of the support mechanisms of the uterus and the vagina is important in order to make the right choice of the corrective procedure and also to minimise the risk of post-hysterectomy vault prolapse. When the vault descends enough to be symptomatic, it needs to be pushed up vaginally or pulled up abdominally and hitched to a tough structure securely. The operation must ensure that the vault never descends again, bladder and bowel function remains intact and most importantly, vagina has enough length to allow coital function. The choice of procedure, then, should be based on the patient's age, co-morbidity, previous surgery and the level of physical and sexual activity [4]. Also, the experience of the surgeon influences the choice of operation. Satisfactory correction of vaginal vault prolapse is a formidable surgical challenge and many techniques have been described for the correction of this deeply distressing problem. The aims of prolapse surgery, therefore, are to restore normal vaginal supports reliably, whilst maintaining vaginal capacity and coital function. Two methods which have stood the test of time are transvaginal sacrospinous colpopexy and transabdominal sacrocolpopexy. The vaginal route is preferred over the abdominal route due to the simplicity of the procedure. Further, it avoids painful abdominal scars, resultant debility and prolonged hospital stays[5].

This is a systematic review of a series of cases of vaginal vault prolapse to evaluate the effectiveness of sacrospinous ligament fixation for vault suspension.

2. Aims and Objectives :

The objective of this study is to assess the effectiveness of sacrospinous ligament fixation in the treatment of vault prolapse in terms of recurrence of prolapse, quality of life, urogenital symptoms, complications, post-op recovery, hospital stay and satisfaction of patients.

3. Materials and Methods :

We reviewed a series of five patients of vault prolapse who were operated for vault prolapse repair with sacrospinous ligament fixation in the tertiary care centre in Mumbai. All the five patients presented with II or III stage vault prolapse. Patients readily accepted the vaginal approach of sacrospinous colposuspension in lieu of the abdominal alternative; on thorough counselling. All cases were studied prospectively over a period of 18 months.

A detailed history was taken. Details of previous operation (abdominal/vaginal hysterectomy) were noted. General examination, systemic examination and local examination was done.

Intra-operative and post-operative complications if any and complaints were noted. Patients were discharged after 4-6 days and were asked for follow-up after 15 days, 3 months , 6 months, 1 year and 18 months.

Per speculum examination was done at the time of follow up and status of vault, vaginal walls and perineum was noted.

Outcome of vault suspension with Sacrospinous ligament fixation (S.S.L.F.) was analyzed. The distance between the apex of vaginal vault from pubic symphysis (vaginal length) was measured to evaluate the success of S.S.L.F.

Inclusion criteria :

1. Patients with stage II and III vault prolapse.
2. Patients with symptomatic stage I vault prolapse.

Exclusion criteria was the presence of an adnexal mass or any condition requiring mandatory abdominal exploration.

SURGERY :

All surgeries were performed by an experienced senior surgeon,with special expertise in sacrospinous fixation. Follow-up examinations were made in all these women. These were interviewed and underwent thorough pelvic examination. The interviews were performed with a detailed questionnaire covering satisfaction with operation, urinary & bowel function, urinary incontinence and sexual function or recurrence.

The technique comprises dissecting the paravaginal space and identifying the ischial spine. Two sutures either absorbable or non-absorbable were placed through the sacrospinous ligament, one and a half to two fingerbreadths medial to the ischial spine. One end of each suture was attached to the under surface of the posterior vaginal

wall at the apical area. When the posterior colporrhaphy reaches the mid-portion of the vagina, the sacrospinous sutures were tied, firmly attaching the vaginal apex snugly to the surface of the coccygeal-sacrospinous ligament complex with no intervening bridge of suture material. Inadvertent entry into rectum was ruled out by frequent per-rectal examination through-out this procedure. Several modifications of this technique are described and mainly involve different methods of placing the sutures into the ligament. The Miyazaki technique uses the Miya hook ligature carrier[6], and the Sharp technique uses the Shutt suture punch system[7]. We use a stout Mayo's needle with a number 1 Vicryl suture. We have devised an innovative method of exposing the coccygeus-sacrospinous ligament complex using three strategically placed Dever's retractors. The anterior one retracts bladder, the medial one retracts the rectum while the lateral one retracts ischio-rectal pad of fat (as shown in figure). Before closing the vaginal incision, addition measure to secure hemostasis in the form of fibrin sealant (Tisseel, VH, Baxter Healthcare, IL, USA) , by spray technique was used. Tisseel acts as a haemostat, a sealant, a glue and supports the wound healing process.

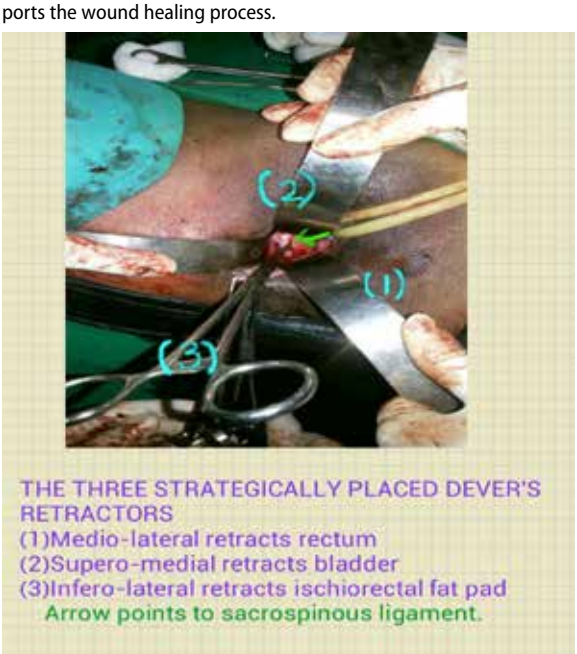

FIGURE : Original photo of surgery done in our hospital

4. Results :

Table 1 : Age wise distribution of cases of vault prolapse

Age-group	Present study	Percentage
<40 yrs	-	-
40-50 yrs	-	-
>50yrs	5	100%

Table 2 : Distribution of cases according to menstrual status of women

Menstrual status	Present study	Percentage
Peri-menopausal	-	-
Post-menopausal	5	100%

All the patients (100%) were >50 years old and were post-menopausal.

Table 3 : Parity wise Distribution of cases of Vault prolapse

Parity	Present study	Percentage
1	-	-
2	-	-
3	1	20%
4	4	80%

80% patients (4out of 5) were of parity 4 and remaining 1 (20%) was para 3.

Table 4 : Association of Vault prolapse with routes of Delivery

Route of Delivery	Present study	Percentage
Only Vaginal Delivery	5	100%
Only Caeserean Section	-	-
Vaginal And Caeserean Section	-	-

All the patients (100%) had delivered by vaginal route.

Table 5 : Route of Hysterectomy in cases of vault prolapse

Route of Hysterectomy	Number	Percentage
Abdominal Hysterectomy	2	40%
Vaginal Hysterectomy	3	60%

We found that out of these 5 cases, 3 (60%) had undergone vaginal hysterectomy and 2 cases (40%) had developed vault prolapse after vaginal hysterectomy.

Table 6 : Surgical procedure done along with Hysterectomy

Associated Pelvic Surgery	Number	Percentage
Anterior colporraphy	2	40%
Posterior colporraphy	2	40%
Vaginal suspension	3	60%

In two patients (40%) anterior colporraphy was done along with hysterectomy for cystocele. In two patients (40%) posterior colporraphy was done for rectocele. In three patients vault suspension was done to prevent future vault prolapse.

Table 7 : Distribution of cases according to stage of vault prolapse :

Stage of vault prolapsed	Number of cases	Percentage
Stage I	2	40%
Stage II	3	60%
Stage III	-	-

60% patients were of stage III vault prolapse and 40% were of stage II.

Table 8 : Distribution of cases in relation to time-interval between Hysterectomy and Presentation of vault prolapse :

Time-Interval between hysterectomy and symptomatic vault prolapse	Number	Percentage
6 months-1 year	1	20%
1 year-2year	3	60%
>2 years	1	20%

80% patients presented with vault prolapse within 2 years of hysterectomy.

Table 9 : Chief complaints in cases of Vault Prolapse

Chief Complaints	Number of cases	Percentage
SCOPV	5	100%
Menstrual complaints	-	-
Urinary problems	1	20%
Bowel complaints(major/minor)	Major-nil minor-5	-/100%
Abdominal pain,backache	2	40%

All the patients (100%) included in our study presented with complaint of something coming out per vagina (SCOPV). Urinary problems were found in 1 (20%) case, which included difficulty and straining at micturation, incomplete evacuation, frequency. Back pain was found in 2/5 (40%) cases. All patients (100%) had minor bowel complaints such as difficulty in evacuation & incomplete evacuation. None had any major bowel complaint.

Table 10 : Cases distribution according to type of sacrospinous ligament fixation (Unilateral/Bilateral) performed :

Type of sacrospinous ligament fixation	Number of cases	Percentage
Unilateral Fixation (right side)	3	60%
Bilatertal Fixation	2	40%

In three patients (60%), unilateral sacrospinous fixation (right side) was done and bilateral fixation was done in two patients(40%).

Table 11: Duration of sacrospinous ligament fixation.

Duration of sacrospinous ligament fixation	Number	Percentage
<20 min	1	20%
20-30 min	3	60%
>30 min	1	20%

Average duration of surgery was 20-30 minutes.

Table 12 : Intra-operative difficulties faced during procedure

Intra-operative difficulties	No. of cases	Percentage
Difficulty in access to sacrospinous ligament	-	-
Difficulty in grasping the ligament/ tying the sutures	1	20%
Haemorrhage	-	-
Injury to surrounding structures	-	-

In our present case series, the only intra-operative difficulty we faced in 1 patient (20%) was difficulty in grasping the sacrospinous ligament and tying the sutures through the ligament. As detailed earlier, strategic placement of the three Dever retractors helped to minimised this concern.

Table 13: Post-operative complications

Post-Operative Complications	No. of cases	Percentage
Buttock Pain	2	40%
Haematoma	-	-
Fever	-	-
Urinary Retention	-	-
UTI	-	-
Wound Infection	-	-
SUI	-	-

Buttock pain occurred in two women (20%) . It was noted that patients with bilateral sacrospinous fixation had more buttock pain as compared to others. Incidence of febrile morbidity was nil.

TABLE: 14) Distance of vault from pubic symphysis after Sacrospinous ligament fixation at the time of discharge:

Distance of Vault above Pubic Symphysis(PS)	Number	Percentage
0 to 2 cm	-	-
2 to 4 cm	-	-
4 to 6 cm	-	-
6 to 8cm	4	80%
>8cm	1	20%

Most women had vaginal length of 6-8 cm following surgery ; as the procedure doesn't require any excision of vagina.

TABLE: 15) Complaints and findings at the time of Post-Operative Follow Up visits:

Post Operative Complaints	Present Study	Percentage
Number of patients who came for Follow Up	5	100%
Buttock Pain	1	20%
White P/V Discharge	-	-
Urinary Infection	-	-
Bleeding	-	-
Cystocele	-	-
Rectocele	-	-
Recurrence of Vault Prolapse	1	20%

With a total of 18 months follow-up reflected that, out of five patients, three, did not have any complaints, which accounts to 60%. One patient (20%) had complaints of gluteal pain, which persisted for three months & resolved spontaneously on its own after 3 months. One patient had recurrence of vault prolapse (20%) after 15 days of surgery. Various other complaints such as cytocele, rectocele, discharge per vaginum, bleeding, urinary tract infection were not found in any of the patients.

Discussion :

Repair of the vault prolapse is based on use of native tissues or synthetic materials. There is no consensus on the mechanism and management of vault prolapse, but what is accepted by all, is the need to properly assess these patients, involve them in the management and to agree on the type of surgery that will be suitable for their own peculiar circumstance. In this study, we set out to assess the clinical outcome, complications, patients'satisfaction and quality of life after sacrospinous colpo-hysteropexy. The prevalence of buttock pain is estimated at 10 to 15 %[8]. This pain can be explained by injury to surrounding nerves of the sacral plexus and branches of the pudendal nerve. In an anatomical study, the relationship of the pudendal nerve to the sacrospinous ligament was found to be variable (one branch of the pudendal nerve piercing through the ligament was found in 11%)[9] . Barksdale et al. also showed that nerve tissue is present and widely distributed within the sacrospinous ligament[10]. Therefore, although the placement of the suture two centimetres medial to the ischial spine protects against major nerve injuries, the complications of buttock pain cannot be prevented in all women. Fortunately, this buttock pain was shown to resolve spontaneously in most cases, as we also demonstrated in our series.

It is noted that bilateral sacrospinous fixation causes more buttock pain than unilateral fixation and also bilateral fixation is not possible in all cases. Therefore unilateral fixation is done more often. However, bilateral fixation is better for vault prolapse than unilateral colposuspension because it allows a symmetrical vaginal reconstruction and provides additional vaginal vault support.[11,12] In the one case that could not be cured we had done unilateral fixation.

The bilateral technique has previously been associated with clinically insignificant increases in bloodloss and operative time[11]. In our series, operative time and estimated blood loss was almost same as the unilateral group. We attribute this to the efficiency of the primary surgeon uniformly performing all the cases of sacrospinous fixation and thus becoming more efficient with experience. Morbidity rates with bilateral SSLF do not appear to be higher than those with unilateral SSLF. Therefore, we believe that bilateral SSLF can be used as a viable alternative to unilateral SSLF. Future efforts should obtain prospective data and gather long-term follow-up data from a larger pool of patients to clarify potential anatomic outcome differences.

The recurrence rate of prolapse reported in the literature after sacrospinous ligament fixation of the vaginal vault is 18%[13]. In our case series the recurrence rate of vault prolapse was 20% (1/5), which was in stage I and did not require any treatment.

The procedure has a reasonable learning curve. If the spaces are correctly identified & cautiously dissected, approaching the sacrospinous ligament shouldn't be a problem. Good exposure of ligament is assured with the use of strategically placed Dever's retractors. The sacrospinous ligament can be easily engaged using a long Babcock's forceps & suture passed through it. We did not use any of the needles developed for this purpose.We used newer hemostatic agents to close the space ,followed by a snug vaginal pack to ensures that haemorrhagic events are minimised.

Conclusion :

In this case series, we set out to assess the clinical outcome, complications, patient's satisfaction and quality of life after sacrospinous ligament fixation. In the mean follow-up period of 18 months, recurrence of descensus uteri was rare, satisfaction rate was high and almost all women would recommend this procedure to others. We intend to keep follow-up of these patients and other new cases coming to our hospital to have further re-inforce our belief in this uncommon procedure.

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