

Original research article

# A clinical comparative study of vaginal hysterectomy with prophylactic sacrospinous ligament fixation v/s vaginal hysterectomy alone for stage 3 and 4 uterovaginal prolapse

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**Abstract**

**Objectives:** To compare Vaginal hysterectomy with prophylactic sacrospinous ligament fixation with vaginal hysterectomy alone in terms of

1. Intra-operative and post-operative complications.
2. One year anatomical and functional outcomes in patients who had stage 3 and stage 4 utero-vaginal prolapse.

**Material and Methods:** Patients who underwent vaginal hysterectomy alone and patients who underwent vaginal hysterectomy with prophylactic sacrospinous ligament fixation during 01 august 2020 to 30 august 2022 for stage 3 and stage 4 uterovaginal prolapse were studied for their intra-operative, immediate post-operative complications and followed up to one year to know the anatomical and functional outcomes of the surgical procedures. Thirty patients from each group were analyzed.

**Results:** There was no significant difference in the occurrence of complications in both the groups in the intra-operative and immediate post op period ( $\chi^2 = 0.883$ ,  $p=0.347$ ,  $df= 1$ ). There was a significant improvement in the quality of sexual life among patients who underwent Vaginal hysterectomy with sacrospinous ligament fixation (Fischer's Exact p value = 0.003). Complications were significantly higher among patients who had undergone vaginal hysterectomy alone ( $\chi^2 = 4.287$ ,  $p=0.038$ ,  $df= 1$ ). Most important was the vaginal vault prolapse which was seen among 8 out of the 30 patients underwent vaginal hysterectomy alone when compared to zero patients in vaginal hysterectomy with sacrospinous ligament fixation.

**Conclusion:** Including sacrospinous ligament fixation after vaginal hysterectomy in repair of 3<sup>rd</sup> and 4<sup>th</sup> degree uterovaginal prolapse is a beneficial procedure. However further studies with longer follow up duration and larger sample size are needed.

**Keywords:** Vaginal hysterectomy, prophylactic sacrospinous ligament fixation, uterovaginal prolapse

**Introduction**

Pelvic organ prolapse is one of the common clinical conditions met in a day-to-day gynaecological practice especially among the parous women <sup>[1]</sup>. Uterine prolapse is common condition especially among elderly women. Uterus is held in its normal position by its supports. Weakness or injury to the normal supports of uterus results in uterovaginal prolapse. In most cases, damage to supports occurs as a result of a mismanaged childbirth. Withdrawal of hormonal support following menopause, raised intraabdominal pressure, chronic constipation, chronic obstructive airway diseases also play a role in the development of pelvic organ prolapse <sup>[2]</sup>.

The surgical therapy that is typically adopted in this health issue is vaginal hysterectomy. One major criticism which are often raised against the operation is the risk of subsequent vault prolapse, especially in these days where the longevity has increased. Vault prolapses after hysterectomy has a reported incidence of 0.2 to 43% depending on the patient's condition and surgical skills of the operator. This condition is highly distressing and for those affected it nullifies the purpose of performing hysterectomy <sup>[3]</sup>.

Many surgical procedures have been designed in preventing the prolapse of the vaginal vault. There is a growing appreciation that support of the vaginal apex provides the cornerstone for a successful prolapse repair. Sacrospinous ligament fixation is one of the most popular procedures for apical suspension. The vaginal apex is suspended to the sacrospinous ligament unilaterally or bilaterally using a vaginal extraperitoneal approach <sup>[4]</sup>.

The aim of the study was to compare vaginal hysterectomy with prophylactic sacrospinous ligament with vaginal hysterectomy alone in terms of Intra-operative and post-operative complications and one year anatomical and functional outcomes in patients who had stage 3 and stage 4 utero-vaginal prolapse.

### Materials and Methods

**Study Design:** Observational prospective cohort model.

This study was conducted at Karnataka institute of medical sciences hubballi, in department of obstetrics and gynecology. Ethical committee approval was taken prior to the recruitment of the patients. Thirty patients who had undergone vaginal hysterectomy alone and thirty patients who had undergone vaginal hysterectomy with sacrospinous ligament fixation for 3<sup>rd</sup> and 4<sup>th</sup> degree uterovaginal prolapse were studied from 01 august 2020 to 30 august 2022. Women with prior pelvic floor or prolapse surgery, women with known malignancy and women who wish to preserve fertility were excluded from the study. Patients' chief complaint, menopausal status, parity, BMI, medical history, pre-operative degree of uterovaginal prolapse noted. Surgical procedure undergone, duration of the procedure, duration of hospital stay, intra-operative complications like nerve injury, bladder injury, rectal injury, hemorrhage, fever episode noted.

The patients were asked to follow up 6 weeks after the surgery and again requested to follow up after one year. And one year follow up of anatomic and functional outcomes such as prolapsed vaginal vault, rectocele, cystocele, constipation, dyspareunia, improved sexual function data collected. Patients were reminded about the follow up over the phone. A total of 60 patients were analyzed. Shaw's classification of uterovaginal prolapse was used to classify the degree of prolapse.

**Surgical Technique:** The patients were reexamined under anesthesia in a lithotomy position after cleansing the surgical site and positioning sterile drapes. The patients then underwent vaginal hysterectomy, which was followed by a preliminary repair for stage 3 or 4 uterovaginal prolapse. Then, unilateral right sided SLF was performed (using the technique defined by Nichols)<sup>[12]</sup> as follows: after the rectovaginal space was opened to the vaginal apex, the right pararectal space was entered using blunt dissection; the ischial spine was palpated and taken as the reference to pinpoint the sacrospinous ligament, which extends from the ischial spine medially to the coccyx and the lower portion of the sacrum. The pararectal fascia was penetrated, and the space was enlarged using blunt dissection; the rectum was retracted to the left using two retractors, thereby exposing the sacrospinous ligament. No 1 non-absorbable suture (Prolene) was placed 2-2.5 cm medially to the ischial spine, and one end of the suture was passed through the vaginal vault; surplus tissue located in the posterior vaginal wall was excised and the upper 1/3 of the vaginal mucosa was repaired. Following the vaginal vault repair, the vaginal vault was suspended from the right sacrospinous ligament by tying together the sacrospinous sutures located proximal to the apex of the vaginal vault. Lastly, posterior repair and perineoplasty were performed, which marked the end of the procedure. All surgeries were performed by expert surgeons.

**Statistical Analysis:** The participants in the two interventions and the outcomes such as duration of surgery, duration of hospitalization, complications, improvement in sexual life and post op satisfaction after 1 year were compared using tests of significance. A p value of less than 0.05 was considered statistically significant.

**Results:** 22 out of the 30 patients underwent vaginal hysterectomy alone had 3<sup>rd</sup> degree UV prolapse and 8 of them had 4<sup>th</sup> degree UV prolapse. Whereas 17 out of the 30 patients underwent vaginal hysterectomy with SSLF had 3<sup>rd</sup> degree utero-vaginal prolapse (table 1). There was no significant difference in the occurrence of complications in both the groups in the intra-operative and immediate post op period ( $\chi^2 = 0.883$ ,  $p=0.347$ ,  $df= 1$ ) (table 2). Out of the thirty women underwent only vaginal hysterectomy 17 were sexually active and 8 of them expressed improved sexual function at one year follow-up. Incidentally 17 out of the 30 women underwent vaginal hysterectomy with sacrospinous ligament fixation were also sexually active and 16 out of them expressed improved sexual function. There was a significant improvement in the quality of sexual life among patients who underwent Vaginal hysterectomy with sacrospinous ligament fixation (Fischer's Exact p value = 0.003) (table 3). Complications were significantly higher among patients who had undergone vaginal hysterectomy ( $\chi^2 = 4.287$ ,  $p=0.038$ ,  $df= 1$ ) at one year follow-up (table4). Most important complication being the vaginal vault prolapse which was seen among 8 out of the 30 patients underwent vaginal hysterectomy alone when compared to zero patients in vaginal hysterectomy with sacrospinous ligament fixation. Other complications noted during the one-year follow were perineal injury-1, excessive bleeding-4 and fever in 3 among the patients that underwent vaginal hysterectomy with SSLF. Whereas 3 cases of excessive bleeding and 2 cases of fever complications were seen in vaginal hysterectomy alone cohort. Mean duration of surgery for VH group was 70.1min +/- 3.4 min and 89.5 +/- 3.02min in SSLF group. This difference was statistically significant (t value= -23.31,  $p= 0.000$ ). Mean duration of stay in hospital for VH group was 5.67 +/- 0.75 days and 5.37 +/- 0.71 days in SSLF group. This difference was not

statistically significant (t value= 1.57, p= 0.06) (table5). Mean satisfaction score in VH group was 3.9 +/- 0.48, which was lower than satisfaction score in the SSLF group which had a mean score of 4.57 +/- 0.32. This difference was statistically significant (t value= -4.905, p= 0.000)

Table 1: Uterovaginal prolapse grade

	Vaginal hysterectomy with sacrospinous ligament fixation	Vaginal hysterectomy	$\chi^2$ value, (p value, df)
3 <sup>rd</sup>	17	22	1.831 (p=0.176, df =1)
4 <sup>th</sup>	13	8	

Table 2: Intraoperative and immediate postoperative complications

	Vaginal hysterectomy with sacrospinous ligament fixation	Vaginal hysterectomy	Total
Complications	8	5	13
No complications	22	25	47
Total	30	30	60

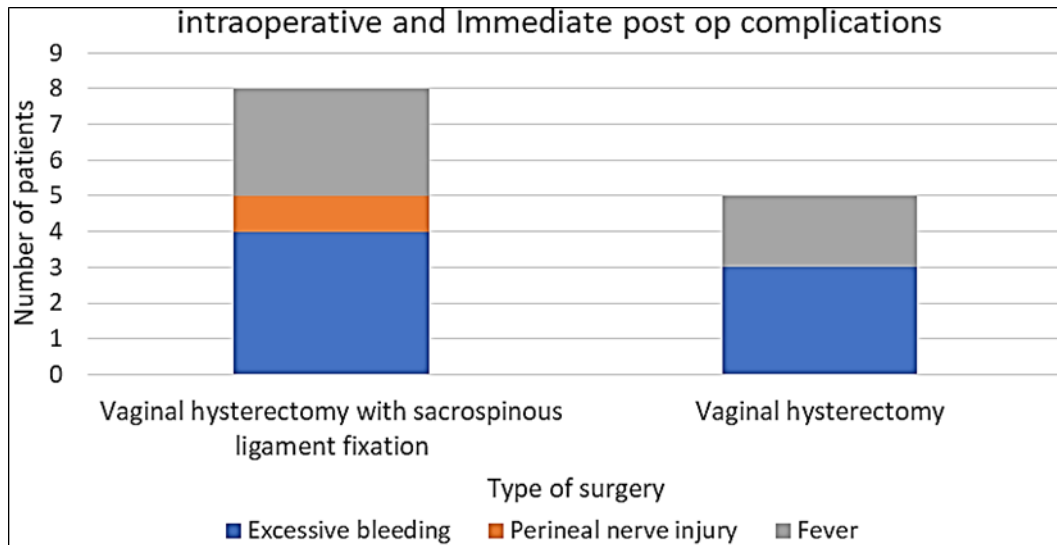


Fig 1: Intraoperative and immediate postoperative complications

Table 3: Improved sexual function at one year follow up

		Vaginal hysterectomy with sacrospinous ligament fixation	Vaginal hysterectomy	
Improved sexual life	Yes	16	8	Fischer's Exact p value = 0.003
	No	1	8	

Table 4: One year follow-up outcome

	Vaginal hysterectomy with sacrospinous ligament fixation	Vaginal hysterectomy	Total
Complications	12	20	32
No complications	18	10	28
	30	30	60

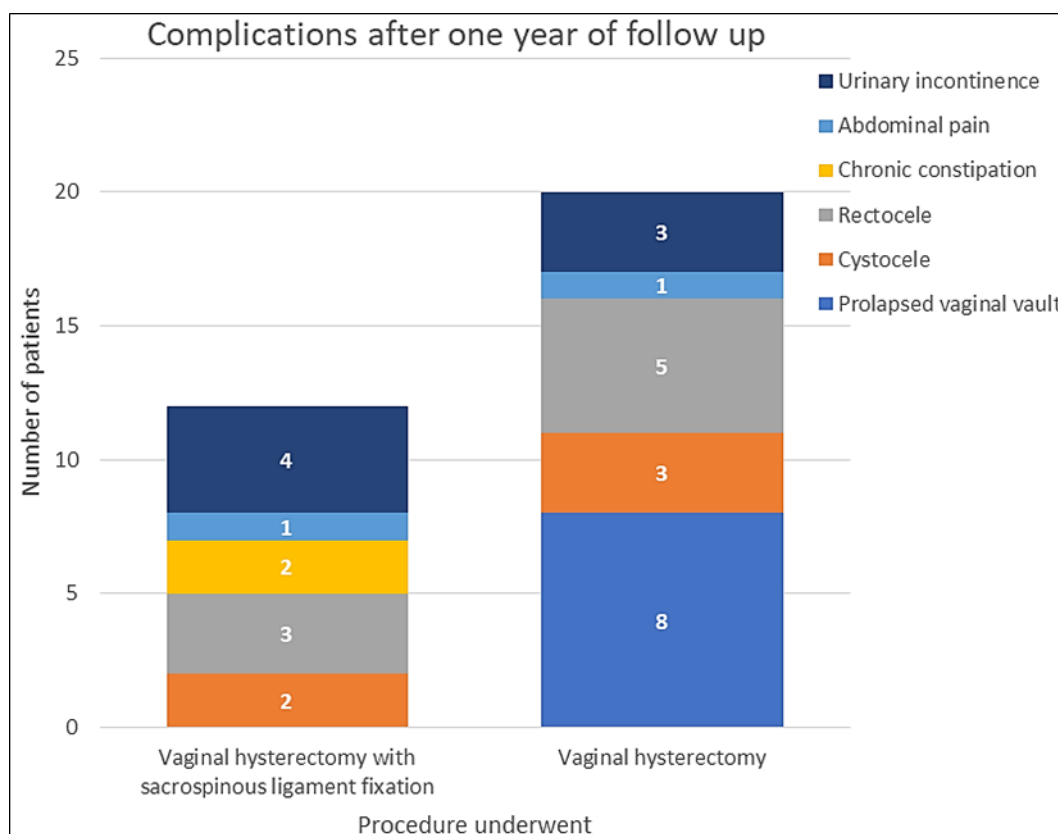


Fig 2: Complications after one year follow-up

Table 5: Duration of the surgery and length of the hospital stay

	Vaginal hysterectomy with sacrospinous ligament fixation	Vaginal hysterectomy	P value
Duration of surgery (in mins)	89.5+/-3.02	70.1+/-3.4	0.000
Duration of hospital stay in days	5.37+/-0.71	5.67+/-0.75	0.06

**Discussions**

In this study we analyzed the intra-operative complications and one year anatomic and functional outcome of both vaginal hysterectomy alone and with vaginal hysterectomy with SSLF. The purpose of the study was to find out if there was any added benefit of including SSLF after routine vaginal hysterectomy in 3<sup>rd</sup> and 4<sup>th</sup> degree utero-vaginal prolapse.

In a study Perioperative complications and long term consequences of sacrospinous ligament fixation and abdominal sacrocolpopexy conducted by Ertan Zan *et al.*, it was observed that peri-operatively One patient in the vaginal SSF group had peri-operative bladder injury and the bladder was primarily repaired. Vaginal cuff infection developed in 2 of the patients who underwent vaginal SSF. Urinary infection was detected in 6 SSF patients [5]. When we analyzed the intra-operative and immediate post-operative period excessive bleeding and fever were the complications seen in both group of patients and perineal nerve injury was seen only among vaginal hysterectomy with SSLF group. Both the groups had equal number of patients experiencing blood loss requiring blood transfusion. In agreement with literature complications like rectal injury, bladder injury was not seen with SSLF [6] (Figure 1).

At follow up after one year the prolapse of vaginal vault was 8 among the group of women underwent vaginal hysterectomy alone whereas there was no case of vaginal vault prolapse among those underwent vaginal hysterectomy with SSLF. Similar observation was done in a study conducted by Elif Ağaçayak *et al.*, It was noted that recurrence of vaginal vault prolapse was significantly more frequent in the patients with vaginal hysterectomy alone compared with those who had both vaginal hysterectomy and SSLF [7]. While the patients with vaginal vault prolapse after 1year was significantly high in vaginal hysterectomy alone patients, there was no significant increase in cystocele or rectocele recurrence in either group of patients.

In a study conducted by Yakup Yalcin *et al.*, named quality of life and sexuality after bilateral sacrospinous fixation with vaginal hysterectomy for treatment of primary organ prolapse it was concluded that the bilateral sacrospinous ligament fixation can improve both quality of life and sexuality in patients with POP [8]. Even in our study the satisfaction post-surgery was seen better in women underwent vaginal hysterectomy with SSLF when compared with women underwent vaginal hysterectomy alone. Also, there was a significant improvement in the quality of sexual life among

patients who underwent Vaginal hysterectomy with sacrospinous ligament fixation (Fischer's Exact p value = 0.003).

Complications seen at one year follow up period like vaginal vault prolapse, cystocele, rectocele, chronic constipation, abdominal pain, urinary in-continnence are shown in the chart (figure 2). In contradiction to the previous study there was no increase in recurrence of cystocele after SSLF<sup>[9]</sup>. Except vaginal vault prolapse there was no significant difference in occurrence of complications at one year follow-up.

In the present study we didn't find any post-operative dyspareunia in either group of patients. In agreement with literature, SSLF following vaginal hysterectomy did not cause additional symptoms and dissatisfaction in the patients compared to vaginal hysterectomy alone<sup>[10]</sup>.

There are limitations to our study, first one being one year follow-up period. In an article 'post hysterectomy vault prolapse: A growing challenge for the gynecologist' Hemakanta sarma states "post hysterectomy prolapse occurs in 1% cases after 3 years follow up and 15% cases after 15years follow up as shown in different studies"<sup>[11]</sup>. So, a longer follow up period would give better understanding of the complications. The other limitation is smaller study group. A study with larger sample size with longer duration of follow up is needed for the better understanding of benefits of including SSLF with vaginal hysterectomy.

In conclusion, including sacrospinous ligament fixation with vaginal hysterectomy is beneficial in preventing vaginal vault prolapse and also improves the sexual function in 3<sup>rd</sup> and 4<sup>th</sup> degree uterovaginal prolapse patients.

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