

Outcome of Sacrospinous Ligament Fixation of the Vault during Repair of Pelvic Organ Prolapse

Ganesh Dangal,¹ Rekha Poudel,¹ Ranjana Shrestha,¹ Aruna Karki,¹ Hema Kumari Pradhan,¹ Kabin Bhattachan,¹ Nishma Bajracharya¹

¹Department of Obstetrics and Gynecology, Kathmandu Model Hospital, Kathmandu, Nepal.

ABSTRACT

Background: Pelvic organ prolapse includes descent of anterior/ posterior wall and apical (vault) prolapse with significant morbidity. In this study we evaluated the outcome of sacrospinous ligament fixation of vault through vaginal approach as part of the repair for massive uterovaginal (pelvic organ prolapse stage III and stage IV) and vault prolapse.

Methods: This study on sacrospinous ligament fixation along with repair for pelvic organ prolapse at Kathmandu Model Hospital from November 2016 to April 2018 was done to assess the outcome in terms of early (during hospital stay) and delayed (six months) post-operative complications, need of removal of sacrospinous fixation suture and recurrence of prolapse.

Results: Out of 95 pelvic organ prolapse patients, 80 (84%) were post-menopausal, 28 (29.4%) were in the age group of 70-79 years. There were 61 (64%) POPQ stage III. The post-operative complications during post-operative hospital stay were pain over right buttock in 42 (44%), urinary retention in 7 (7%) and UTI in 7 (7%). Sacrospinous suture was released in two patients for severe pain over right buttock. At one-week follow-up, 35 (36%) had right buttock pain of moderate severity and 8 (8%) had vaginal cuff infection. Sacrospinous suture was removed in one patient for neuropraxia two weeks following surgery. At four weeks follow-up, 25 (26%) patients had mild right buttock pain relieved by oral NSAIDs on need. At six months follow-up, five had occasional buttock pain, six had some recurrences and two had some vault prolapse and one each had short vagina and stress incontinence.

Conclusions: Sacrospinous ligament fixation is a good procedure for the management of pelvic organ prolapse with better long-term outcome if performed with good surgical expertise.

Keywords: Prolapse; repair; sacrospinous fixation; vaginal hysterectomy.

INTRODUCTION

Pelvic organ prolapse (POP) affects 40% of parous women over 50 years of age with significant influence on quality of life (QOL).¹ Globally, the prevalence of POP is between 2.9% and 8%.² In Nepal, POP prevalence is estimated at 10% among women of reproductive age and 24% among post-menopausal women.^{3,4} Frequent births, heavy workloads, unattended birth, poor nutrition and smoking practice are contributing factors to high prevalence of POP in Nepal.⁵

A recurrence of vault prolapse after surgery is seen in 0.2-12.8% subjects.^{6,7} Sacrospinous fixation of vault / colposuspension is done for uterovaginal and vault prolapse, especially for the prevention of vault prolapse and maintenance of normal vaginal length.¹ It is associated with less risk of recurrence, maintenance of total vaginal length (TVL), pelvic floor repair (PFR)

at same setting, avoidance of laparotomy, a shorter hospital stay, decreased blood loss and preservation of coital function.⁸

Sacrospinous fixation of vault is done regularly at Kathmandu Model Hospital. However, there is lack of published data on this topic from Nepal. We aim to share our early experience of vaginal sacrospinous fixation and its outcome in POP surgery.

METHODS

This study was carried out in the Department of Obstetrics and Gynecology at Kathmandu Model Hospital, Nepal during November 2016 to April 2018. Ethical approval was obtained from the Institutional Review Committee of pfect-NEPAL/ Kathmandu Model Hospital. All women with major degree (stage III and IV) of POP or vault prolapse (95 in total) who required

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Correspondence: Prof Dr Ganesh Dangal, Department of Obstetrics and Gynecology, Kathmandu Model Hospital, Nepal. Email: ganesh.dangal@gmail.com, Phone: +9779851055036.

surgery/repair were included. Informed written consent was taken after explaining about the purpose, risk and benefit of the procedure. Degree of prolapse was based on POP-Q classification. Patients with uterovaginal prolapse/ POP were operated with vaginal hysterectomy with right-sided sacrospinous fixation and patients with vault prolapse were offered sacrospinous fixation and repair. After spinal anesthesia patients were put in high lithotomy position. Prophylactic antibiotics (ceftriaxone and metronidazole) were given as a routine procedure and 16 Fr Foley's catheter inserted in all women. Vaginal hysterectomy with pelvic floor repair was done with standard technique in cases of uterovaginal prolapse. Then, vaginal apex was identified and longitudinal incision was given in posterior vagina and dissection of vaginal epithelium was done to expose rectovaginal space. A window was created in rectal pillar and pararectal space was entered. Then, coccygeal-sacrospinous ligament (CSSL) complex was identified then, coccygeal-sacrospinous ligament (CSSL) complex was identified digitally and suture (delayed absorbable PDS 1) was passed through CSSL 1.5 cm medial to ischial spine. The loop of suture was then pulled through using hook and second suture was placed on the medial side of the first. Then, each end was passed through the vaginal wall (with a mayo needle), 2 cm below the vaginal vault.

Then posterior colporrhaphy and perineorrhaphy were done followed by tying the sacrospinous fixation sutures in the vagina. Inadvertent entry into rectum was ruled out by per-rectal examination. Vaginal packing was done and patient shifted to post-operative ward where routine parenteral antibiotics, analgesics and IV fluids were continued for 24 hours while vaginal pack and Foley's catheter were removed after 48 hours. Adequate pain management was done with oral analgesics and parenteral ones if needed. Oral antibiotics were prescribed for five days and Sitz bath was continued for five days. Patients were discharged after three to four days of postoperative stay after normal bowel and bladder habit.

Immediate complications such as bleeding, pain, fever and so on during and after operation were recorded and managed accordingly. Patients were followed up in OPD to assess the outcome and any complications at one week, four weeks and six months. When regular follow-up was not possible, patients were followed up via phone and asked to visit us if problems such as severe pain, something coming out PV, foul smelly vaginal discharge arise. Data recorded was analyzed with SPSS 17 software.

RESULTS

Out of 95 women, 28 (29%) were in 70-79 years of age, 80 (84%) were post-menopausal and 42 (44%) had parity index of more than four (Table 1).

Table 1. Age, parity and menstrual status of woman with pelvic organ prolapse (n=95).

Variables	Age Group	Number (%)
Age (years)	40-49	18 (18.9 %)
	50-59	26 (27.4 %)
	60-69	23 (24.2 %)
	70-79	28 (29.5 %)
Parity	Zero	2 (2.1 %)
	One	4 (4.2 %)
	Two	12 (12.6 %)
	Three	10 (10.5 %)
	Four	25 (26.3 %)
Menstrual status	More than four	42 (44.2 %)
	Menstruating	15 (15.8 %)
	Post-menopausal	80 (84.2 %)

Co-morbid conditions such as hypertension, diabetes, chronic obstructive pulmonary disease, and hypothyroidism were present in 28 (29%). Uterovaginal prolapse was present in 81 (85%) and vault prolapse was in 14 women (15%). Among those with vault prolapse, 8 (57%) were following vaginal hysterectomy and 6 (43%) were following abdominal hysterectomy. In 67 (70%) women the prolapse was of POP-Q Stage III (Table 2).

Table 2. The POP Q stage in 95 women.

POP Q Stage	Number (%)
Stage I	0 (0%)
Stage II	0 (0%)
Stage III	67 (70.5%)
Stage IV	28 (29.4%)

After surgery, during hospital stay, 42 women had right buttock pain requiring injectable analgesics (Table 3) and two of them required removal of sacrospinous suture due to severe pain not relieved by medications. During hospital stay, seven had urinary retention requiring re-catheterization, seven had urinary tract infection (UTI), three had wound infection, one had decreased movement of right lower limb which improved with physiotherapy and one had post-spinal headache. During one-week follow-up, 35 women had pain over right buttock requiring oral analgesics, eight had vaginal infection/

cuff cellulitis and six had UTI. In one-month follow-up (n=93), 25 women had right buttock pain managed with oral analgesics and four had vaginal infection and four had UTI and three had urinary retention (Table 3). Similarly, within one month of surgery, three women came with urinary retention and one came with urinary incontinence. One patient came with complaint of decreased movement of right lower limb after two weeks of surgery. She underwent removal of sacrospinous suture for neuropraxia and underwent regular physiotherapy (Table 4).

Table 3. Post-operative complications at different time-interval after sacrospinous ligament fixation.

Complications	Immediate (n=95)	One week (n=95)	One month (n=93)
Right buttock pain	42 (44.2%)	35 (36.85%)	25(26.8%)
Urinary retention	7 (7.3%)	1(1%)	3(3.2%)
Urinary tract infection	7 (7.3%)	6 (6.3%)	4(4.3%)
Vault infection	3(3.1%)	8(8.4%)	4(4.3%)
Post-spinal headache	1(1%)	0(0%)	0(0%)
Recurrence	0(0%)	0(0%)	0(0%)

Table 4. Cause and time of removal of sacrospinous suture (n=3).

Cause	Time of removal
Severe right buttock pain	Second post-operative day
Severe right buttock pain	Seventh post-operative day
Neuropraxia	Fifteenth post-operative day

On six months follow-up, five women complained of occasional right buttock pain, five patients had cystocele, which did not require surgery, two patients had vault prolapse and one patient had urinary incontinence (Table 5). All women (except for two recurrent vault prolapse cases) were comfortable in their day-to-day life and while passing stool and urine.

Table 5. Outcome of 38 patients at six months follow-up following sacrospinous ligament.

Complications	Number (%)
Right buttock pain	5 (13.1%)
Urinary tract infection	0 (0%)
Vaginal infection	0 (0%)

Recurrence - Cystocele Stage II	3 (7.8%)
Cystocele Stage III	2 (5.2%)
Rectocele Stage II	1 (2.6%)
Vault prolapse Stage III	2 (5.2%)
Short vaginal length	1 (2.6%)
Stress incontinence	1 (2.6%)

DISCUSSION

Majority had improvement in symptoms of prolapse, quality of life, urogenital symptoms, and minimal recurrence of POP (Table 5). Regarding the demographic profile of women with POP, it was common in post-menopausal with higher parity index more than four. In a study done by Chhetry et al,⁵ the mean age of women with occurrence of POP was 28 years. In another study,⁹ third degree POP (38.6%) was commonest among all POP cases and maximum numbers of women with POP (65%) were multipara.

Most common early complication in our study was buttock pain in 35 (36.8%), which was managed by injectable and oral analgesia depending upon its severity (Table 3). Two patients underwent sacrospinous suture removal for severe right buttock pain. One patient who developed neuropraxia underwent removal of sacrospinous suture followed by physiotherapy (Table 4). None of the other patients had major neurovascular injury. Transvaginal sacrospinous ligament fixation is a good procedure for management of POP.¹⁰ This procedure has a short-term efficacy of up to 96-98% with or without uterine preservation and it also provides good long-term favorable outcomes with cost effectiveness. The commonest complications of sacrospinous ligament fixation are hemorrhage and buttock pain.¹¹

Tseng et al⁶ in a systemic review have summarized the complications as neurovascular injury (7.4%), urinary retention (13.4%), urinary tract infection (8.8%), cuff infection (5.6%), and cysto- or enterotomy (1.1%). In a study performed by Demirci et al,¹¹ 8.3% patients complained of urinary retention. In a review,⁶ twenty-four studies reported an overall cure rate of 84.6% and 21 studies reported the following recurrence rates: apex-5.3%; anterior-18.3%; and posterior-2.4%. Valecha et al.¹ in their studies (n=17) reported immediate complications as buttock pain-17.6%, fever-11.7% and urinary retention-5.8%. They reported 5.8% (1/17) recurrence rate of vault prolapse which was stage I and required no treatment.

In a study by De Castro et al,¹² buttock pain was reported as the commonest. Evaluating the vaginal vault after a

year revealed that 95% of the patients were in stage zero and that 5% were in stage 1. For cystocele, 10% were in stage 0, 50% were in stage 1 and 40% were in stage 2. For rectocele, 15% were in stage 1, 5% in stage 2 and 80% had no prolapse.

In a study (n=32) done by Gupta,¹³ one woman had post-operative UTI, two had buttock discomfort, one had ischiorectal abscess and two had cuff cellulitis. One had small cystocele following three years of surgery. Two women complained of dyspareunia after eight months, but in the following visit 12 months later, there were no further complaints.

No major complications have been reported in our study, which may also be due to small sample size and poor long-term follow up. Therefore, larger studies with in-person long-term follow up is recommended for more validity.

CONCLUSIONS

Sacrospinous ligament fixation is a good procedure for the management of POP with better long-term outcome if performed with good surgical expertise. However, long term follow-up is necessary to correctly report the rate of recurrence.

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REFERENCES

1. Valecha SM, Dhingra D. A Prospective Observational Study of Sacrospinous Ligament Fixation. *Open Journal of Advanced Drug Delivery*. 2014;2(4):493-502. [\[Full Text Link\]](#)
2. Geynisman-Tan J, Kenton K. Surgical Updates in the Treatment of Pelvic Organ Prolapse. *RMMJ*. 2017;8(2). [\[PubMed\]](#)
3. Fitchett JR, Bhatta S, Sherpa TY, Malla BS, A Fitchett EJ, Samen A, Kristensen S. Non-surgical interventions for pelvic organ prolapse in rural Nepal: a prospective monitoring and evaluation study. *JRSM Open*. 2015;6(12):2054270415608117. [\[DOI\]](#)
4. Gurung G, Rana A, Amatya A, Bista KD, Joshi AB, Sayami J. Pelvic organ prolapse in rural Nepalese women of reproductive age groups: what makes it so common? *NJOG*. 2007;2(2):35-41. [\[Link\]](#)
5. Chhetry DB, Upreti SR, Dhawal G, Subedi PK, Khanal MN. Impact evaluation of uterine prolapse surgery in Nepalese women. *J Nepal Health Research Counc*. 2012;10(21):167-71. [\[Link\]](#)
6. Tseng LH, Chen I, Chang SD, Lee CL. Modern role of sacrospinous ligament fixation for pelvic organ prolapse surgery: a systemic review. *TJOG*. 2013;52(3):311-7. [\[Full Text\]](#)
7. Barrington JW, Edwards G. Post-hysterectomy vault prolapse. *Int Urogynecol J Pelvic Floor Dysfunct*. 2000;11:241-5. [\[Link\]](#)
8. Choi KH, Hong JY. Management of pelvic organ prolapse. *Korean J Urol*. 2014;55(11):693-702. [\[Link\]](#)
9. Dangal G. A study of reproductive morbidity of women in the Eastern Terai Region of Nepal. *NJOG*. 2008;3(1):29-34. [\[Link\]](#)
10. Rady HA. Sacrospinous Ligament Fixation in Patients with Second degree Uterine Prolapse. *J South Asian Feder Obstet Gynecol*. 2017;9(3):235-8. [\[Link\]](#)
11. Nyssönen V, Talvensaar-Mattila A, Santala M. Posterior intravaginal slingplasty versus unilateral sacrospinous ligament fixation in treatment of vaginal vault prolapse. *ISRN Obstetrics and Gynecology*. Vol. 2013, Article ID 958670, 5 pages, 2013. [\[DOI\]](#)
12. de Castro EB, Juliato CR, Piedemonte LA, dos Santos Júnior LC. Impact of sacrospinous colpopexy associated with anterior colporrhaphy for the treatment of dome prolapse on all three vaginal compartments. *Revista Brasileira de Ginecologia e Obstetrícia/RBGO Gynecology and Obstetrics*. 2016;38(02):077-81. [\[DOI\]](#)
13. Gupta P. Transvaginal sacrospinous ligament fixation for pelvic organ prolapse stage III and stage IV uterovaginal and vault prolapse. *Iran J Med Sci*. 2015;40(1):58. [\[PubMed\]](#)