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Case Series

Comparative study between vaginal sacrospinous ligament fixation with abdominal sacrocolpopexy

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ABSTRACT

Vaginal vault prolapse is about 4-6 per 1000 but it is increasing with increase in life expectancy with more number of years in menopausal age. It is not a common condition following abdominal and vaginal hysterectomy. It has a negative impact on the quality of life of women due to incontinence of urine, irregular defecation symptoms and sexual dysfunction along with psychosocial problems. This study compares the efficacy of most two successful surgeries which were done by abdominal and vaginal route for correcting post hysterectomy vault prolapse by postoperative assessment and at least 6 to 12 months follow up. This is the retrospective case series among post hysterectomy women attending the Gynae OPD in SVBP hospital associated with LLRM medical college Meerut from January 2022 to January 2023. Study population included 19 women divided into two groups; group 1 includes 8 women who underwent unilateral sacrospinous ligament fixation and group 2 includes 11 women who underwent abdominal sacrocolpopexy. In demographic and clinical features between the two groups, there is no statistically difference found in terms of mean age, mean weight, mean BMI and mean parity. Hence, both groups are comparable. The operating time is longer in ASC (85.90 ± 40.23 minutes) group when compared to SSF group (43.43 ± 6.9 minutes) (p value= 0.00096), blood loss reported in ASC (341.72 ± 37.14 ml) slightly more than in SSF group (237.5 ± 32.84 ml) (p value= 0.0001) and mean hospital stay is longer in ASC (6 ± 5.1 days) than SSF group (3.2 ± 0.9 days) (p value=0.0001). Other complications like postoperative pyrexia, wound infection, urinary complaints were higher in ASC group and at follow up, the mean vaginal length was longer in ASC (6.9 ± 0.8 cm) then SSF (5.2 ± 0.8 cm) group (p value=0.0005). We concluded that as the ultimate aim of vault prolapse surgery is to improve the function and restoring anatomy and to improve the quality of life, in that respect, both abdominal sacrocolpopexy and sacrospinous ligament fixation both are effective methods and less complications are noted in SSF group. It also depends on the hands of an expert, though recovery time is faster in SSF than ASC group.

Keywords: Vault Prolapse, Vaginal sacrospinous ligament fixation, Abdominal sacrocolpopexy

INTRODUCTION

Vault prolapse is about 4-6 per 1000 but it is increasing with increase in life expectancy with more years in menopausal age. Vaginal vault prolapse is a common condition following abdominal or vaginal hysterectomy. It is the defect of apex of vagina from its normal anatomical position or it is an apical defect which occurs after hysterectomy (abdominal and vaginal) due to weakness

and deficiency of level 1 support mainly cardinal and uterosacral ligaments according to De Lancey classification and other causative factors (raised intrabdominal pressure due to COPD or chronic constipation). Inadequate support of vaginal vault at time of hysterectomy or failure to detect and treat enterocele at time of prior surgery is usually the cause. It has negative impact on the quality of life of a women due to micturition, defecation and sexual dysfunction along with psychosocial

problems. If the impaired pelvic floor function of women and vaginal vault prolapse is severe enough, surgical correction is needed. The surgical options for the correction of vault prolapse based on patient's age, comorbidity, previous surgery and level of physical activity.¹ Vault prolapse has been defined by the international continence society (ICS) as a descent of the vaginal cuff below a point that is 2 cm less than the total vaginal length above the plane of hymen.² There are many surgical procedures to correct this potential recurrence of prolapse but two surgical procedures are most successful one namely; Sacrospinous ligament fixation (SSF) vaginally and abdominal sacrocolpopexy. Hence, we tried to compare these two surgical procedures i.e. abdominal sacrocolpopexy with vaginal SSF in terms of feasibility, patient satisfaction and post op outcome.

Table 1: International continence society pelvic organ quantification (ICS POP-Q) staging system.

Stages	ICS POP Q classification system
Stage 0	No prolapse is demonstrated
Stage 1	The most distal portion of the prolapse is more than 1 cm above the level of the hymen.
Stage 2	The most distal portion of the prolapse is more than 1 cm or less proximal or distal to the hymenal plane.
Stage 3	The most distal portion of the prolapse protrudes more than 1 cm below the hymen but no farther than 2 cm less than the total vaginal length.
Stage 4	Vaginal eversion is essentially complete.

Table 2: Pre-operative groups.

Pre-Op POP-Q		
Aa	Ba	C
+3	+3	+8
GH	PB	TVL
4.5	1.5	8
Ap	Bp	D
3	10	6

Table 3: Post-operative groups.

Post-Op POP-Q		
Aa	Ba	C
-3	-3	-8
GH	PB	TVL
3	1.5	6
Ap	BP	D
-2	-2	-

CASE SERIES

This is a case series of 19 patients admitted to gynecology ward in SVBP hospital associated with LLRM medical college Meerut from January 2022 to January 2023 to

compare the effectiveness of SSF and ASC over each other in patients of vault prolapse. In OPD, complete history of the patient and detailed examination (per speculum and per vaginal) is done and all patients were examined thoroughly for pelvic organ prolapse quantification (POPQ) before inclusion according to the recommendation of ICS. Inclusion criteria; age >40 yrs and stage 3 and 4 vaginal cuff prolapse according to POPQ. Exclusion criteria; >65 yrs who have pelvic infection or any other disabling condition, malignancy. After explaining about the procedure, risk and benefit of the surgery explained. Informed written consent was taken. All 19 patients were recruited randomly into two groups, group 1 include 8 patients who had unilateral SSF operations and group 2, 11 patients who had ASC operations. Both the groups were homogenous irrespective of age, parity, BMI and staging of vault prolapse. Pelvic organ prolapse was characterized and staged according to the international continence society pelvic organ quantification (ICS POP-Q) staging system. Statistical analysis was done by using SPSS version 21 (IBM Corp., Armonk, NY, USA).

For SSF: SSF is done classically as described by Randall et al.³ Vertical incision is given on anterior vaginal wall, vault and posterior vaginal wall. Dissection was carried out up to right sided ischial spine in pararectal space after dividing rectal pillar and rectum is mobilized away from site and curved needle was passed through right sacrospinous ligament about 2-3 cm medial to ischial spine by palpating the ligament. Two to three non-absorbable sutures (prolene no.1) are passed through the ligament and held by artery forceps and fixed to vaginal thickness but not through the vaginal mucosa. Sutures held long untied and anterior colporrhaphy and posterior colpo-perineorrhaphy are completed, at the end suture tied.

Table 4: Demographic and clinical features (n=19).

Patients profile	SSF (N=8)	ASC (N=11)	P value
Mean age (years)	51.25±5.6	53.81±6.7	0.0305
Mean weight (kg)	50.0±6.05	51.4±6.31	0.7319
Mean parity	3.62±1.47	3.63±1.50	0.1010
Mean BMI (kg/m ²)	26.53±2.44	24.61±2.87	0.0582
Previous deliver			
Caesarean section	0	3 (27.27)	0.1075
Vaginal delivery	8 (100)	8 (72.72)	
History of type of previous gynaecological surgery			
TAH with BSO	1 (12.5)	3 (27.27)	0.2632
TAH	0	2 (18.18)	
VH with PFR	7 (87.5)	6 (54.54)	
Clinical feature sexual dysfunction, urinary and defecation problems			
2	3 (37.5)	6 (54.54)	0.4625
>2	5 (62.5)	5 (45.45)	

Table 5: Intra-operative events.

Events	SSF (N=8)	ASC (N=11)	P value
Mean duration of surgery (min) (mean±SD)	43.43±6.9	85.90±40.23	0.0096
Mean blood loss (mean±SD)	237.5±32.84	341.72±37.14	0.0001
Transfusion blood, N (%)	0	3 (27.27)	-
Cystocele repair, N (%)	6 (75)	0	-
Rectocele repair, N (%)	5 (45.45)	1(9.09)	0.2568
Visceral/bowel injury, N (%)	1 (12.5)	6 (54.54)	0.0673

For ASC: A sponge holding forceps is put in vagina to provide stability and shape to the vagina during operation meanwhile vertical incision is made on peritoneum of sacral promontory and sharp and blunt dissection done over sacrum to visualize anterior longitudinal ligament. Vagina is elevated with sponge holding forceps and peritoneum over vault incised transversally and bladder dissected 4cm from anterior vaginal wall and 4-6 cm from posterior vaginal wall to dissect rectum.

An inverted Y shape mesh 15×4 cm its anterior part of mesh is sutured with anterior vaginal wall and posterior part of mesh with posterior vaginal wall with 2-0 non absorbable suture. Vertical limb of mesh is passed through sub peritoneal tunnel and sutured with anterior longitudinal ligament near sacral promontory. Peritoneum is closed over the exposed graft. The outcome of both groups compared i/v/o cost effectiveness, optimal blood loss outcome intraoperative, postoperative and complication occur during follow up during the period of 6 and 12 months by pelvic assessment and length of vagina measured and patient satisfaction noted.

The demographic and clinical features of the patients in two groups which include SSF and ASC group there was no statically difference found between two groups in terms of mean age, mean weight, mean parity. There is no significant difference between the past previous delivery status by caesarean section or by vaginal delivery (p=0.1075) and previous gynecological surgeries includes TAH and VH (p=0.2632) hence both the groups are comparable. A single patient can have 2 or more than 2 symptoms therefore in group 1 SSF (37.5%) people have 2 symptoms compared to ASC group (54.54%) and more than 2 symptoms in (62.5%) in SSF group then (45.4%). Hence, if we compare both the groups there is no significant difference between the two groups. The Table 5 includes intraoperative events. (Mean time of surgery, mean blood loss). The operation time was longer in ASC group then SSF group (p=0.00096) which is statically

significant and was more blood loss reported in ACS group when compared to SSF group (p=0.0001).

Table 6: Immediate postoperative complications.

Variables	SSF (N=8)	ASC (N=11)	P value
Mean hospital stays (days) (mean±SD)	3.2±0.9	6±1.51	0.0001
Mean urinary catheter duration (days) (mean±SD)	2.5±0.75	3.7±1.67	0.0646
Pyrexia (>37.5), N (%)	1 (12.5)	3 (27.27)	0.3173
Urinary symptoms, N (%)	3 (37.5)	6 (54.54)	0.3231
Skin infection (discharge from stitch line), N (%)	0	3 (27.27)	-

Table 7: Long term events (after 6 and 12 months).

Variables, N (%)	SSF (N=8)	ASC (N=11)	P value
No complain/satisfied patients	5 (62.5)	3 (27.7)	0.1401
Urinary symptoms	3 (37.5)	7 (63.6)	0.2059
Bowel symptoms	2 (25)	7 (63.6)	0.0956
Dyspareunia	2 (25)	1 (9.09)	0.5637
Mean vaginal length (cm) (mean±SD)	5.2±0.8	6.9±0.8	<0.00005
Vaginal discharge and backache	5 (62.5)	2 (18.18)	0.0538

There is no significant difference in percentage of cystocele, rectocele or visceral/vascular injury. Both the cases have equal amount of risk as in case of ASC have internal iliac vein injury and SSF have bladder injury and inferior gluteal vein injury during the placement of sacrospinous ligament fixation.⁴

The Table 6 includes immediate postoperative complications. There is a statically significant difference between the mean hospital stay which is longer in case of ASC then SSF Group (p=0.0001). A patient who underwent ASC developed higher percentage of postoperative pyrexia, wound infection, urinary symptoms. There is no significant difference in mean urinary catheter duration. Blood-stained urine is commonly seen due to vaginal separation from bladder from vaginal vault but it resolves spontaneously.

The Table 7 depicts variables or complain seen after 6 or 12 months of follow up. 5 out of 8 in SSF were totally satisfied with no complain and 2 out of 11 in ASC were having no complain. Women presented with dyspareunia, urinary and bowel complain in both groups but no significant difference found between the two groups,

except the mean vaginal length where measurement showed significantly longer for ASC group than that of SSF groups ($p=0.0005$).

DISCUSSION

The case series specifically for post hysterectomy vaginal vault prolapse are very limited. Complications related to surgeries can only follow up for short term as long term follow up data related with quality of life is infrequent and there are no criteria found which may help to select the exact procedure for patients. Therefore, it is based on the surgeon's own choice. Although several surgical procedures have been described for vault prolapse surgeries. There are several studies which showed that SSF in case of vaginal vault prolapse is safe and effective treatment but there are other several studies showing both the surgeries are equally effective but have their own merit and demerit.

SSF is most commonly performed operation and suitable for obese and old women whereas ASC is an effective option for the correction of advanced POP with highest long term success rate (more than 90%) but is a major operation. It is performed for younger female also. It provides possible long vaginal length for sexually active female. According to my study which shows 5.2 ± 0.82 cm vaginal length for SSF and 6.9 ± 0.89 cm vaginal length for ASC. And it found to be statically significant ($p=0.00004$). Despite of all the benefits seen in ASC it involves longer duration of surgery, mean blood loss is seen in ASC, significant difference seen in mean hospital stay longer for ASC and other postoperative complications like pyrexia, mean urinary catheter duration, wound infection, hematuria, urinary symptoms is higher in ASC as compared to SSF. Whereas in SSF shows fewer complications, shorter duration of operation, faster recovery and lesser hospital stay with almost equal efficacy as compared to ASC.

Various meta-analysis and systemic review which shows that ASC has better anatomical results and lower recurrence at follow up. Abdominal sacrocolpopexy strongly holds the vaginal apex with mesh secured to anterior longitudinal ligament of sacral bone and has lower recurrence rate as compared to SSF when is done only one side and require to pass the suture through the sacrospinous ligament by palpation. Direct visualization of the ligament has been reported to reduce the rate of complications associated with suture placement and on the other hand it requires more dissection for visualization of sacrospinous ligament.

In various published literature, the average follow up after vault prolapse operation ranges from 13.8 months to 4.8 years. Benson et al and Maher et al followed-up cases for 1 year which was similar to our study.⁵⁻⁹ In most of the previous studies, sample size and follow up are not adequate. So, a larger scale meta-analysis with a longer follow up is necessary to draw a conclusion for optimal

surgical technique according to patients symptoms and sign for better results with higher anatomical efficacy.

CONCLUSION

The ultimate aim of vault prolapse surgery to improve the function and restoring anatomy and to improve the quality of life. Both abdominal sacrocolpopexy and SSLF offer an effective alternative to the restoration of apical support. When anatomically durability and sexual function is a priority, ASC is preferred. When considering the lesser operative time. Lesser blood loss and other complication which occur after operation is lesser with SSF is a better option. All aspects of the prolapse pathology, patient's lifestyle, age and sexual function and presence of comorbidities must be taken into account. Prolapse can also be prevented during primary gynecological surgery like Moschowitz repair in abdominal hysterectomy, to perform routine vault suspension (tying vault to uterosacral-cardinal ligament complex pedicle both sides, to perform McCall's culdoplasty at time of vaginal hysterectomy. Therefore, larger sample and adequately powered randomized controlled trials are needed for further evaluation.

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