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Comparison of classic and direct approach for sacrospinous ligament fixation with vaginal hysterectomy

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SUMMARY

AUTHORS' CONTRIBUTION: (A) Study Design · **(B)** Data Collection . **(C)** Statistical Analysis · **(D)** Data Interpretation · **(E)** Manuscript Preparation · **(F)** Literature Search · **(G)** No Fund Collection

Purpose: Two techniques of (SSLF) in the terms of intraoperative parameters (time, complications) and 1-year anatomic outcomes and symptoms in patients who presented with stage 3 or 4 pelvic organ prolapse and undergoing vaginal hysterectomy.

Method: This study included 60 patients, divided into 2 groups: Group 1: will undergo SSLF in the classic way included 32 patients. Group 2: will undergo SSLF with direct approach included 28 patients. Both groups will be compared in the terms of intraoperative parameters (time, complications) and 1-year anatomic outcomes.

Results: There was a significant difference in the operating time, and associated bleeding between the 2 groups, being less in the second group. However, no significant difference in the rate of complications in both.

Conclusion: This modified direct approach has the advantage of shorter operative time and less bleeding than the classic method including post vaginal wall dissection and has the same short term results as the classic method can be used when the specialized instrument for suture placement are not available.

Keywords: Sacrospinous ligament; Vaginal hysterectomy

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INTRODUCTION

Vaginal hystrectomy is currently the leading treatment method for patients with symptomatic uterine prolapse [1]. Several surgical techniques have been suggested to be performed at the time of vaginal hysterectomy to avoid potential recurrence of prolapse. Of these, vaginal techniques are the most frequently adopted because of the following advantages: shorter length of operation, faster healing, and lower rates of adhesion. Sacrospinous ligament fixation (SSLF) is one of these techniques [2,3].

Currently, sacrospinous ligament fixation (SSLF) is the most common transvaginal procedure described in the literature [4]. It is a highly effective procedure with success rate of more than 90% [5]. It is also associated with fewer complications, less postoperative pain, greater cost-effectiveness, shorter hospital stays [6]. However the procedure requires sufficient experience and has a learning curve [7].

SSLF is done classically as described by Randall CL and Nichols DH [2] the rectovaginal space is opened to the vaginal apex, the right pararectal space is entered using blunt dissection; the ischial spine is palpated. The pararectal fascia is penetrated, and the space is enlarged using blunt dissection; the rectum is retracted to the left, thereby exposing the sacrospinous ligament. There is a palpatory direct approach by palpating the ischical spine and and making a small incision over it then dissecting over it to expose the ligament thus avoid dissection of the whole rectovginal space.

The aim of this study is to compare the two techniques of (SSLF) in the terms of intraoperative parameters (time ,complications) and 1-year anatomic outcomes and symptoms in patients who presented with stage 3 or 4 pelvic organ prolapse and undergoing vaginal hysterectomy.

METHOD

This study was carried out in the Department of Obstetrics and Gynecology at Ain shams university hospital from January 2020 to November 2021. Ethical approval was obtained from the ethical committee.

Informed written consent was taken after explaining about the purpose, risk and benefit of the procedure. This was a prospective randomized controlled study. Randomization was performed on the day before surgery, using patient protocol numbers in a computer program.

This study included 60 patients. Inclusion criteria

included; patients >40 years, who had POP-Q stage 3 or 4 prolapse .exclusion criteria include uterine pathology as malignancy, previous suspension surgery as abdominal sling. Excluded from group 2 patients requiring posterior repair. Patient will be divided into 2 groups both will undergo vaginal hysterectomy then.

Group I will undergo SSLF in the classic way included 32 patients.

Group II will undergo SSLF with direct approach included 28 patients.

Pelvic organ prolapse was characterized and staged according to the International Continence Society Pelvic Organ Quantification (ICS POP-Q) staging system (**Tab. 1.**). Any required associated surgery done as anterior repair, post repair (but not in group II), transobturator tape for stress urinary incontinence will be mentioned.

The operation will be done by 3 experienced gynecological surgeons who have performed at least 50 vaginal hysterectomies and SSLF each.

Patients received 1 g of intramuscular cefatriaxone preoperatively. Operations were performed under local or general anesthesia in the lithotomy position. After vaginal hysterectomy was completed by the Heaney technique then SSLF was done according to each group.

In group (I) SSLF classically done by 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, cocygealsacrospinous ligament (CSSL) complex was exposed using a pair of Breisky-Navratil retractor and suture (delayed absorbable PDS 1) was passed through CSSL two fingers medial to ischial spine by standard needle holder. Then the second suture was placed one cm medial to the first. Then, each end was sewn into undersurface of vaginal apex followed by closure of posterior vaginal wall incision lastly; posterior repair and perineoplasty were performed.

The palpation approach was done as follow the ischial spine is palpated, then 2 long alles forceps are used to pull the vagina over the spine then incision about 4 com between two alles forceps, then blunt dissection of the pararectal space until the ligament is seen using a pair of Breisky-Navratil retractor,then sutures are taken as in group 1. However, here no dissection of the post vaginal wall or exposure of the rectovaginal space is needed.

Primary outcome will be follow up after 1 year by POP-Q staging to detect recurrence

Secondary outcome include operative time, bleeding, complications.

RESULTS

Both groups were homogenous in their demographic criteria including age, parity, BMI, menopausal status, associated medical comorbidity and POP-Q staging with no statistical significance were seen between both groups (**Tab. 2.**).

There was a significant difference in the operating time between the 2 groups, (600 -1200) seconds with average for group 1,(400-820) with average for group 2 with p value. Also significant difference exists in the associated bleeding (50-150) cc with average, (20-70) cc with average.

There were few intraoperative complications in group 1 in the form of vault hematoma and vault infection. These seem to be linked to each other. And these might be linked to vaginal hysterectomy or other associated procedure rather than SSLF .buttock pain developed in 4 patients in group 1, and in 3 patients in group 2. However it was relieved by analgesics but resulted longer hospital stay in these patients by 24-48 hours. No major complications were recorded as haemorrhage requiring blood transfusion, or injury to surrounding structure as bladder or rectum. Associated procedures are shown in **Tab. 3.**

Follow up was done after one year to assess mainly recurrence of vaginal prolapse ,results were comparable for both groups, showing that both techniques doesn't have significant impact on short term follow up (**Tab. 4.**).

Tab. 1. International Continence Society Pelvic Organ Quantification (ICS POP-Q) staging system.

POPQ classification system	
Stage 0	No relapse 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 (for example., not all of the vagina has prolapsed).
Stage 4	Vaginal eversion is essentially complete.

Tab. 2. Age, parity, BMI, menopausal status, associated medical comorbidity and POP-Q staging with no statistical significance.

Variables	Group I (n : 32)	Group II (n : 28)	P value
Age(years)	62.76 ± 8.1	61,25 ± 8.7	0.3437
BMI	27.84 ± 4.61	29.173.01	0.1337
Parity	3.88 ± 1.2	4.06 ± lo4	0.4486
History of previous surgery			
Cesarean section	18	17	0.4587
Anterior colporraphy	12	13	0.4647
Posterior colporraphy	13	14	0.4786
Menopausal status	10	11	0.4876

Tab. 3. Associated procedures in Group I and Group II.

Associated Procedures	Group I	Group II
Anterior colporraphy	5 (15.62%)	4 (14.28%)
posterior calporraphy	12 (37.5%)	0
Transobturtator tape	10 (31.25%)	9 (32.14%)

Tab. 4. Follow ups to assess mainly recurrence of vaginal prolapse after one year.

	Group I	Group II
Aa	-1(-3 to +3)	-1(-3 to +3)
Ba	-1(-5 to +3)	-2(-5 to +3)
C	-4.5(-10 to +3)	-5(-10 to +3)
AP	-2(-3 to +3)	-2(-3 to +3)
Bp	-2(-6 to +3)	-1(- 6 to + 3)
TV	8 (5 to 10)	7 (5 to 10)

DISCUSSION AND CONCLUSION

Sacrospinous ligament fixation is an effective way to suspend vaginal vault, but has its own difficulties. It is reasonable to expect fewer complications if the extent of dissection is decreased and suture placement and retrieval are facilitated. So to encourage more common use of the operation, the procedure must be simplified [8]. Contrary to techniques utilizing specialized devices to pass the suture through the sacrospinous ligament by palpation, Morley GW and DeLancey JO [9] placed three retractors to directly visualize the sacrospinous ligament, and used a traditional needle driver to pass the suture through the ligament. Direct visualization of the ligament has been reported to reduce the rate of complications associated with suture placement. On the other hand, direct visualization of the sacrospinous ligament requires more dissection, which may result in additional morbidity. Several insterments were used as Miya hook and Deschamp [10] however these are not widely available and expensive for use in Egypt. So modification of the direct technique was suggested here in this study using the standard needle holder.

In this study we used the direct approach but by modification in one group by avoiding dissection of post vaginal wall and the rectovaginal space and dissecting directly over the ischial spine and exposing the ligament then using traditional needle holder.

There are statistical significant difference between 2 groups as regard operative time and bleeding being less in the second group. These results in group 2 are less also than in other studies in the literature. In a study done by Orhan Seyfi Aksaka, et al. the operative time was 795 ± 190.8 (480–1200) seconds [11]. And in overview done Petri E, Ashok K. found range of time to be 25 to 40 minutes [12] in a study done by Peng P, et al., [8] the average operation time was 65–92 minutes, and the average blood loss was 83–188 ml.

However these results are still higher when compared to techniques using specialized instruments designed for passing a suture through the sacrospinous ligament. These include Deschamps ligature carrier, Miya Hook, Shutt Suture Punch System, the Autosuture Endostitch and the Laurus needle driver [10].

Short term follow up after 1 year showed no statistical difference between two groups as regard recurrence of the prolapse and results were comparable to other studies as in the overview done by Petri E, Ashok K Anatomically, the anterior compartment is the most common site of failure for any given grade of prolapse following SSF (11). Also In a meta-analysis by Morgan, et al. the overall risk of development of anterior compartment prolapse of grade 2 or more following SSF was estimated to be around 21.3%. Although anatomical descent of the anterior vaginal wall appears to be common, it is asymptomatic in most patients. Symptomatic anterior vaginal wall descent requiring treatment occurs in 3–5% of patients undergoing SSF [11]. However long-term results are required since recurrence of prolapse may require longer periods of follow up to appear. Anterior compartment displacement following this procedure has commonly been reported though debate persists with some surgeons believing that these are actually pre-existing defect missed at initial evaluation. Routine anterior repair at sacrospinous fixation has been suggested by some as a way to address this [13,14]. This though is not the universal practice.

This modified direct approach has the advantage of shorter operative time and less bleeding than the classic method including post vaginal wall dissection and has the same short term results as the classic method can be used when the specialized instrument for suture placement are not available, however it needs surgical experience and good accquntince with the anatomy of the sacroccocygeal complex. More studies including larger number of patients with longer periods of follow up may be needed to draw more firm recommendation.

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COMPETING INTEREST

The authors have no relevant financial or non-financial interests to disclose.

CONSENT TO PARTICIPATE

Informed consent was obtained from all individual participants included in the study.

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