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Comparing the Long-Term Outcome of Uterosacral and Sacrospinous Ligament Suspension Surgeries in Apical Pelvic Organ Prolapse

ABSTRACT

Objective: We aimed to compare the long-term outcomes of the sacrospinous ligament suspension (SSLS) and uterosacral ligament suspension (ULS) procedures used for the treatment of apical pelvic organ prolapse (POP).

Methods: Fifty-two patients, diagnosed with apical POP, were included in this retrospective study. Twenty of these patients underwent The ULS procedure (Group 1), thirty-two patients (Group 2) were treated with bilateral SSLS. Operation type and time, objective and subjective cure rates, patient satisfaction rates and complications were obtained from hospital records at the operation time and 12-months, 36-months.

Results: The objective cure rates were 80% of group 1, 78.1% of group 2 at 12-month follow-up and %70 of group 1, 71.8% of group 2 at 36-month follow-up; the subjective cure rates were defined as 100% of group 1, 87.4% of group 2 at 12-month follow-up and %100 of group 1, 84.3% of group 2 at 36-month follow-up ($p>0.05$). Very satisfied patients were significantly higher in the ULS group compared to the SSLS group ($p=0.048$) but when compared totally satisfied (very satisfied and greatly improved) and dissatisfied patients, there was no significant difference between groups ($p>0.05$).

Conclusions: It was found that ULS and SSLS were not superior to each other according to success rates and patient's satisfaction in the comparison of two commonly used methods apical prolapse by vaginal approach.

Keywords: Apical Pelvic Organ Prolapse, Apical Prolapse, Uterosacral Ligament Suspension, Sacrospinous Ligament Suspension, Pelvic Organ Prolapse

Apikal Pelvik Organ Prolapsusunda Sakrospinöz Ligaman Fiksasyonu ve Uterosakral Ligaman Fiksasyonu Ameliyatlarının Uzun Dönem Sonuçlarının Karşılaştırılması

ÖZET

Amaç: Bu çalışmada, apikal pelvik organ prolapsusu (POP) tedavisinde kullanılan sakrospinöz ligaman fiksasyonu (SSLS) ve uterosakral ligaman fiksasyonu (ULS) ameliyatlarının uzun dönem sonuçlarını karşılaştırmayı amaçladık.

Gereç ve Yöntem: Retrospektif çalışmamıza apikal POP tanısı almış 52 hasta dahil edildi. Bu hastaların yirmisi ULS (Grup 1) ile, otuziki bilateral SSLS (Grup 2) ameliyatı ile tedavi edildi. Hastane bilgi sisteminden operasyon verilerine, 12. ve 36. aydaki muayene bilgilerine, hasta memnuniyet oranları, objektif ve sübjektif kür oranları ve komplikasyonlara ulaşıldı.

Bulgular: Objektif kür oranları, 12. ayda grup 1'in %80, Grup 2'nin %78.1 iken; 36. ayda Grup 1'in %70, Grup 2'nin %71.8 bulundu ($p>0.05$). Sübjektif kür oranları, 12. ayda grup 1'in %100, grup 2'nin %87.4 iken; 36. ayda grup 1'in %100, grup 2'nin %84.1 olarak saptandı ($p>0.05$). Memnuniyeti çok olan hastalar ULS grubunda SSLS grubuna kıyasla anlamlı oranda fazla bulundu ancak memnun olan tüm hastalar (çok memnun ve büyük oranda memnun) ile memnun olmayanlar kıyaslandığında, gruplar arası istatistiksel olarak anlamlı bir fark bulunmadı ($p>0.05$).

Sonuç: Apikal pelvik organ prolapsusu hastalarında vaginal olarak sık uygulanan iki yöntem olan ULS ve SSLS'nin, başarı oranları ve hasta memnuniyetleri kıyaslandığında birbirine üstün olmadığı sonucuna varıldı.

Anahtar Kelimeler: Apikal Pelvik Organ Prolapsusu, Apikal Prolapsus, Uterosakral Ligaman Fiksasyonu, Sakrospinöz Ligaman Fiksasyonu, Pelvik Organ Prolapsusu

INTRODUCTION

Pelvic organ prolapse (POP) is defined as the descent of the anterior vaginal wall, the posterior vaginal wall, or the apex of the vagina (1, 2). POP is a prevalent condition, and the prevalence of surgery due to prolapse among women has been determined as 11-19% in their lifetime (3, 4). However, the actual prevalence of POP is believed to be higher, because not all women who suffer from POP consult their physician or undergo surgery (5). Apical compartment prolapse is further classified as descent of the cervix or vaginal cuff after hysterectomy.

The management of POP is comprised of surgical and nonsurgical therapies which vary in accordance with patient expectation, physician guidance and the severity of the symptoms. The conservative approach to POP includes observation in mild cases, pelvic floor physical therapy (PFPT), Kegel exercises and pessary placement in mild to moderate cases (6). Surgically, the most common transvaginal approaches for apical POP are sacrospinous ligament suspension (SSLS) and uterosacral ligament suspension (ULS) (7). These procedures are typically performed using a native tissue and include the use of delayed absorbable and/or permanent sutures or mesh.

Although surgical treatments have been applied for quite some time, their results remain unimpressive. It has been found that as many as 30% of the patients who are treated surgically will require repeat surgery at some point in their lifetime (3, 8). Given that these surgeries can be considered serious interventions; such problems need to be addressed to determine a successful initial surgical approach. Although there are numerous studies that have evaluated the SSLS and ULS approaches separately, data comparison of these two approaches are limited (9,10). Our aim was to compare the long-term outcomes of the SSLS and ULS procedures used for the treatment of apical POP in women.

MATERIAL AND METHODS

Study group: Between January 2012 and March 2018, a total of 52 cases, operated for apical POP in a private hospital, were included in the study. Twenty of these patients underwent The ULS procedure (Group 1), thirty-two patients (Group 2) were treated with SSLS bilaterally. The patients' demographic data, preoperative, intraoperative and postoperative findings and results were assessed from the hospital information processing system, retrospectively.

The grading of pelvic organ prolapse was performed according to the Pelvic Organ Prolapse Quantification (POP-Q) system and operated patients with apical prolapse stage ≥ 2 was included in the study Exclusion criteria were: pregnant

women, patients with do not give the informed consent, lost to follow-up.

Pelvic and vaginal examinations, POP-Q grading, all the operations evaluated in this study were performed by a single experienced surgeon.

Surgery: The sacrospinous ligament suspension (SSLS) procedure was performed under spinal anesthesia in the lithotomy position. A foley catheter was inserted into the bladder. A sagittal vaginal incision was made from 1 cm below of the external urethral meatus up to the bladder base followed by careful vesicovaginal dissection and bilateral opening of the paravesical fossa. Blunt dissection was performed to identify bilateral ischial spines, and the sacrospinous ligament was palpated. A suture capturing device (Capiro Slim, Boston Scientific) was used to pass two non-absorbable sutures (number-0) through the sacrospinous ligament which were fixated to the mesh. The distal arms of the mesh were passed from the vaginal apex which was then fixated to the sacrospinous ligament. The process was done in the same way on the other side.

The uterosacral ligament suspension (ULS) procedure was also performed with the vaginal approach under spinal anesthesia while the patient was within the lithotomy position. Three sutures were applied bilaterally on the uterosacral ligament from the medial to the lateral with the help of a suture capturing device (Capiro Slim, Boston Scientific). A microporous polypropylene mesh was used, and the arms of the mesh were fixed to the anterior vaginal wall via two to three polypropylene sutures (number-2/0). In patients with cuff prolapse, the same procedure was applied after adhesions of the vaginal cuff were dissected and cleared from the peritonea.

Outcomes: Postoperative follow-up studies were scheduled at the 1st day, 12th, 36th month after surgery. Patients were asked to declare whether they were satisfied with the outcome of surgery (*Very satisfied- Cured, Greatly improved, Dissatisfied*). They were asked whether they suffered from pain, incontinence or dyspareunia after the operation. The primary outcome for the surgical intervention (objective cure rates) was defined as regarding the apical descent; POP grade was ≤ 1 according to POP-Q or subjective cure rates based on patient self-assessment as mentioned above, and no bothersome vaginal bulge symptoms.

Ethical Approval: The study protocol was approved by the local ethical committee (2018/149). Informed consent was obtained from all participants and the study was in agreement with the Declaration of Helsinki for Medical Research Involving Human Subjects.

Statistical Analysis: All data were evaluated with the SPSS 15.0 (Statistical Package for Social Sciences) software for the windows

operating system. Normally distributed variables were compared with the student's t-test, while the Mann-Whitney U test was used to compare non-normally distributed variables. The Chi-square test was used to compare categorical variables. P values less than 0.05 were accepted to indicate statistically significant differences.

RESULTS

Descriptive data and demographic properties of the study groups are shown in Table 1. Mean ages were 56.4±16.0 year in group 1 and 48.5±12.8 year (mean±SD) in the group 2 ($p>0.05$).

Patients' dehiscence grade were evaluated as 3 or 4 according to the POP-Q system. The initial comparison of the ULS and SSLS groups showed similarities regarding age, gravidity/parity, operation duration and POP-Q classification (Table 1). In addition, 5 (25%) patients in the ULS group and 8 (25%) patients in the SSLS group were found to be in their reproductive period. While the remaining 15 (75%) patients in the ULS group were in premenopause or menopause and the remaining 24 (75%) patients in the SSLS group were in menopause. There was no significant difference between group distribution ($p>0.05$).

Table 1. Descriptive data and demographic properties of the study groups

	Group 1, n=20	Group 2, n=32	P value
Age (min-max, mean±SD)	30-72, 56.4±16.0	26-76, 48.5±12.8	NS
Gravidity (min-max)	2-8	2-8	NS
Parity (min-max)	1-7	2-8	NS
Operation time (minute, mean±SD)	46.4±13.0	40.4±14.0	NS
Pop-Q (min-max)	3-4	3-4	NS

The significance level is $p<0.05$.

NS; not-significant value

The groups were also similar regarding the distribution of additional operations (Table 2). In terms of intraoperative complications, one patient

in the ULS group suffered bleeding while there were no intraoperative complications among those who underwent SSLS.

Table 2. The distribution of the additional operations

	Group 1, n=20, (%)	Group 2, n=32, (%)	P value
Cystocele	4 (20)	6 (18.7)	NS
Rectocele	6 (30)	4 (12.5)	NS
Cystorectocele	5 (25)	9 (28.1)	NS
Hysterectomy	15 (75)	13 (72.2)	NS
Anti-incontinence surgery (midurethral sling)	4 (20)	5 (15.5)	NS

The significance level is $p<0.05$.

NS; not-significant value

The distribution of postoperative complaints, findings, and patient satisfaction are depicted in Table 3. The very satisfied patients were significantly higher in the ULS group compared to the SSLS group ($p=0.048$) but when compared totally satisfied (very satisfied and greatly improved) and dissatisfied patients, there was no significant difference between groups ($p>0.05$). Additionally, there were two patients who were dissatisfied with the intervention in the SSLS group, while none of the patients who underwent ULS were dissatisfied.

Procedures were defined as an anatomic/objective cure if post-op cystocele grade was ≤ 1 according to POP-Q. Regarding this definition, the objective cure rates were 80% of group 1, 78.1% of group 2 at 12-month follow-up

and 70% of group 1, 71.8% of group 2 at 36-month follow-up. There was no significant difference between groups in every follow-up time ($p>0.05$).

According to the complaints of patients' bloating and prolapse; subjective cure rates were defined as 100% of group 1, 87.4% of group 2 at 12-month follow-up and 100% of group 1, 84.3% of group 2 at 36-month follow-up ($p>0.05$).

In terms of pain; the groups were similar for lumbar pain, dyspareunia while none of the patients in either group had reported pelvic pain after surgery. Two patients in the SSLS group reported hip pain while none of the patients who underwent ULS had such complaints. The groups were similar regarding postoperative cystocele, rectocele,

cystocele, apical POP recurrence and postoperative incontinence ($p > 0.05$, Table 3).

Table 3. The postoperative outcomes of the patients

	Group 1, n=20, (%)	Group 2, n=32, (%)	P value
Objective cure			
12-months	16 (80)	25 (78.1)	NS
36-months	14 (70)	23 (71.8)	NS
Subjective cure			
12-months	20 (100)	28 (87.4)	NS
36-months	20 (100)	27 (84.3)	NS
Pelvic Pain	-	-	-
Hip Pain	-	2 (6.25)	NS
Dyspareunia	1 (5)	3 (9.37)	NS
Patient satisfaction*			
<i>Very satisfied-Cured</i>	18 (90)	21 (65.6)	0.048
<i>Greatly improved</i>	2 (10)	7 (21.8)	NS
<i>Dissatisfied</i>	-	4 (12.5)	NS
Post-operative conditions*			
<i>Cystocele</i>	3 (15)	3 (9.37)	NS
<i>Rectocele</i>	3 (15)	2 (6.25)	NS
<i>Cystocele</i>	-	2 (6.25)	NS
<i>Recurrence apical POP</i>	-	2 (6.25)	NS
<i>Incontinence</i>	1 (5)	1 (3.1)	NS

* Patient Satisfaction, Post-operative conditions were evaluated at 36. Months.

Objective cure was evaluated as Postoperative POP-Q grade ≤ 1 . Cystocele, Rectocele, Cystocele and recurrence apical POP were accepted POP-Q grade ≥ 2 . The significance level is $p \leq 0.05$. NS; not-significant value

DISCUSSION

In this study, the long-term results of the two most vaginally preferred procedures (ULS vs SSLS) in apical prolapse were compared retrospectively.

SSLF and ULS have been evaluated in numerous prospective and retrospective cohort studies with reported anatomical success rates ranging from 64 to 97% (5, 9, 10). It was reported varying results in terms of complications, and the requirement for repeat surgeries.

A randomized controlled trial performed in 2004 which compared the 2-year outcomes of SSLS and abdominal sacrocolpopexy surgeries reported that anatomic success was similar with a rate of 91% (SSLS) vs. 94% (sacrocolpopexy); however, 19% of the SSLS group had later required repeat surgery (11). Furthermore, Lantzsch et al. reported recurrent vaginal vault prolapse in 3.25%, and recurrent cystocele in 8.1% of their patients who underwent SSLS (12). These unimpressive results were supported by a 2007 meta-analysis which found that 10.3% of SSLS recipients continued to have symptoms after surgery and 13% were dissatisfied with the intervention (13). In addition, the SSLS procedure seems to have higher complication rates in terms of hemorrhage, rectal injury, and pain (14). However, a study by Meschia et al. has reported a high success rate (94%) with

SSLS in the repair of superior vaginal defects (15). In our study objective cure rates were found lesser than these studies and opposed of them no complications were detected. This may be caused by the small number of samples.

In a study by Karram and colleagues, only 5.5% of ULS recipients required reoperation (16), while a meta-analysis showed that the ULS procedure was successful in 98.3% of apical defects. However, the drawback of the ULS procedure was reported to be the high frequency of ureteral injury complication which developed in 1–11% of patients (17, 18). In the current study, 100% of ULS group were satisfied with the intervention, and 80% objective cure rate was found. This finding is similar to previous studies which show ULS provides a high success rate in apical defects. But in the present study, no ureter injury occurred; this may be related to the small samples sizes.

The OPTIMAL trial, a very informative randomized controlled trial which grouped patients according to postoperative care (pelvic floor physical therapy vs. normal care) and type of surgery (ULS vs. SSLS), reported their results. The two procedures were compared in terms of 2-year success, and urinary distress inventory score and the study found that the ULS and SSLS procedures were similar in terms of success (59.2% vs. 60.5%,

respectively) according to objective and subjective definitions. These success rates were significantly lower than other studies and our rates. They also reported that pelvic floor physical therapy did not improve urinary distress scores or the success of prolapse treatment. It was also found that ureteral obstructions had developed in 3.7% of ULS and 0% of SSLS procedures, which was explained by the differences in surgical approach (10). Similarly, a study by Jelovsek and colleagues reported that surgical failure rates were similar in ULS and SSLS treated patients and muscle training had no effect on anatomical success at 5 years of follow-up (9).

In our study, we reached the sacrospinous ligaments from the anterior region and applied bilaterally in each patient. In the above study, SSLS technique is usually performed unilaterally (10). There are some opinions that the anteriorly performed sacrospinous ligament fixation provides well support for apical prolapse (19) and so technical selection may be associated with different cure rates.

In our study, the groups were found to be similar in terms of operative characteristics and requirement for additional surgeries. According to the patients satisfaction, very satisfied patients were

significantly higher in ULS group than SSLF group at 36-months. But if all satisfied patients (very satisfied and greatly improved) were compared with the dissatisfied patients, the outcomes were found similarly. In subjective and objective cure rates were detected the similar outcomes in 12-month and 36-month follow-up. This data is consistent with the data in the literature.

Hip pain and dyspareunia were more in the SSLS group, but this was not statistically significant.

The retrospective design of the study and the small number of participants are limitations of the study.

Further prospective randomized studies which include higher sample sizes and with longer follow-up times are required.

Conclusion

It was found that they were not superior to each other according to success rates and patient's satisfaction in the comparison of two commonly used methods vaginally for apical prolapse.

Conflict of Interest: The authors declared no conflict of interest.

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