



Our Clinical Experiences with Pelvic Organ Prolapse Disorders. Uterine Prolapse, Stress Urinary Incontinence, and Cystocele

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Abstract

Introduction: Uterine prolapse, a condition prevalent among women, entails the descent of the uterus into the vaginal canal due to weakened pelvic floor support. Stress urinary incontinence is characterized by the involuntary leakage of urine during physical activities that exert pressure on the bladder. A cystocele, also known as a bladder prolapse or anterior vaginal wall prolapse, is a condition characterized by the protrusion of the bladder into the vagina. This study aims to share our clinical experiences treating diseases such as uterine prolapse, stress urinary incontinence, and cystocele.

Methods: The population of this study comprises participants who have undergone surgery at the center where the study was conducted due to uterine prolapse, cystocele, and stress urinary incontinence. Our study is both quantitative and longitudinal. It is retrospective, with data being classified through a backward-looking analysis. The study encompasses cases diagnosed with uterine prolapse, cystocele, and stress urinary incontinence between August 2017 and December 2019 at a secondary healthcare institution in the Gaziantep-Turkey. Our study's primary outputs are the outcomes of surgical procedures and the values derived from repeated measurements taken before and after the operations.

Results: The youngest participant is 39, while the oldest is 52. The average age of the participants is 47.2. At the end of the operation, six participants remained in the hospital for three days, and four stayed for four days. One participant is of Syrian nationality, while the others are citizens of the Republic of Turkey. No significant differences were observed between the pre- and post-intervention measurements of hemoglobin, hematocrit, platelet count, or fasting blood glucose levels.

Conclusion: In this study, our experiences in treating health issues stemming from pelvic floor dysfunction, as well as uterine prolapse, in patients presenting to a secondary healthcare center in the Gaziantep-Turkey are discussed.

Keywords: Uterine Prolapse; Stress Urinary Incontinence; Vaginal Hysterectomy; Sacrospinous Fixation; Mini-Sling

Introduction

Uterine prolapse (UP), a condition prevalent among women, entails the descent of the uterus into the vaginal canal due to weakened pelvic floor support [1]. This anatomical shift can manifest as varying degrees of prolapse, ranging from mild to severe, contingent upon the extent of tissue and organ displacement [2]. Total UP, also known as complete uterine prolapse, is a rare yet significant medical condition characterized by the complete descent of the uterus through the vaginal canal [3]. Management of total UP involves a multidisciplinary approach, including pelvic floor exercises, pessary placement, hormonal therapy to improve pelvic muscle tone and surgical interventions such as hysterectomy [4].

Stress urinary incontinence (SUI) is a prevalent and distressing condition within the realm of urology, characterized by the involuntary leakage of urine during physical activities that exert pressure on the bladder, such as coughing, sneezing, laughing, or exercising [5]. This condition predominantly affects females, often stemming from weakened pelvic floor muscles and supportive tissues, leading to inadequate urethral closure and subsequent uri-

nary leakage [6]. The etiology of SUI encompasses various factors, including childbirth trauma, hormonal changes, pelvic surgery, and genetic predispositions [7]. Management strategies vary depending on the severity of symptoms and may include surgical interventions [8].

A cystocele, also known as a bladder prolapse or anterior vaginal wall prolapse, is a condition characterized by the protrusion of the bladder into the vagina [9]. This anatomical distortion arises from weakened pelvic floor muscles and supporting tissues, often due to childbirth, aging, or chronic straining [10]. A rectocele, also known as a posterior vaginal wall prolapse, is a condition characterized by the weakening or stretching of the supportive tissues between the rectum and vagina, leading to a protrusion of the rectal wall into the vaginal space [11,12]. This anatomical distortion can result from multiple factors, such as childbirth trauma, chronic constipation, pelvic floor muscle weakness, or hormonal changes. The coexistence of cystocele and rectocele is called cystocele. Depending on the severity of symptoms, management of the disease varies and may include surgical interventions [13].

Vaginal hysterectomy (VAH) is a surgical procedure employed in gynecology for the removal of the uterus through the vagina [14]. This technique offers several advantages, including reduced post-operative pain, shorter hospital stays, and quicker recovery times compared to abdominal hysterectomy [15]. It is often preferred when feasible due to its lower risk of complications such as infection, blood loss, and injury to adjacent organs [15].

Sacrospinous fixation (SSF) is a surgical procedure commonly employed in managing pelvic organ prolapse and related conditions [16]. It involves the attachment of the vaginal vault or cervix to the sacrospinous ligament, which is located within the pelvis. This technique aims to restore pelvic organ support and alleviate symptoms such as urinary incontinence, vaginal bulging, and pelvic pressure [17].

Operative techniques for female SUI have changed over the last decades, aiming to improve symptoms and quality of life [18]. For a long time, Burch colposuspension was the gold standard for SUI [19]. Nowadays, Burch colposuspension is replaced by minimally invasive procedures using mini-sling (MS), which has been found to significantly improve quality of life [20].

This study aims to share our clinical experiences in treating diseases such as UP, SUI, and cystocele.

Material and Methods

Study population

The population of this study comprises participants who have undergone surgery at the center where the study was conducted due to UP, cystocele, and SUI.

Study design and participants

Our study is both quantitative and longitudinal. It is retrospective, with data being classified through a backward-looking analysis. The study encompasses cases diagnosed with UP, cystocele, and SUI between August 2017 and December 2019 at a secondary healthcare institution in Gaziantep-Turkey. 13 participants underwent surgical procedures, including VAH, SSF, and MS operations. Prior to surgery, physical and anesthesia evaluations were conducted for each participant. During the assessment phase, adherence to eligibility criteria was scrutinized. Three participants who did not meet the criteria were excluded from the study, leaving 10 participants with whom the research continued. The preoperative and postoperative values of the participants were compared.

Exclusion criteria

- Participants who refuse to participate in the study,
- Allergy to one of the analgesics used,
- Contraindications for regional or spinal anesthesia,
- Preoperative use of narcotic pain medication,
- Sensory or motor neuropathy,

- Liver cirrhosis,
- Renal failure with a creatinine level higher than 1.2.

Examined variables

- Age
- Ethnic origin
- Blood type
- Hepatitis markers
- Duration of hospital stay
- Preoperative and postoperative hemoglobin levels
- Preoperative and postoperative hematocrit levels
- Preoperative and postoperative blood glucose levels
- Preoperative and postoperative platelet levels
- Procedure performed.

Surgical procedures

- VAH
- SSF
- Cystocele
- Perineoplasty
- Paravaginal Repair
- MS

Ethics

Ethical permissions were obtained from the institution where the researchers worked. Participants were not forced to participate in the research; the entire process was carried out voluntarily. Informed consent was obtained from the participants, stating that their information would be used in the research, but their identities would remain confidential.

Primary outcomes

Our study's primary outputs are the outcomes of surgical procedures and the values derived from repeated measurements taken before and after the operations.

Statistical analysis

Statistical analysis was performed using SPSS version 26. The suitability of the data for the variables was assessed using the Kolmogorov-Smirnov test for normal distribution. Relationships among categorical variables were investigated using Chi-square tests. The comparison of two repeated dependent means was conducted using the dependent samples t-test. A p-value of less than 0.05 was considered the threshold for statistical significance.

Results

The youngest participant is 39, while the oldest 52 years old. The average age of the participants is 47.2 years. None of the participants were found to have hepatitis. At the end of the operation, six participants remained in the hospital for three days, and four stayed for four days. One participant is of Syrian nationality, while

the others are citizens of the Republic of Turkey. The values obtained from participants of different nationalities are pretty similar.

Table 1 lists the participants' diagnoses and the surgical interventions performed. Three participants underwent VAH + SSF + Perineoplasty + Paravaginal Repair, four participants underwent SSF + Minisling + Perineoplasty + Paravaginal Repair, and two participants received VAH + SSF + Minisling + Perineoplasty + Paravaginal Repair.

Table 1: Diagnosis and Surgical Procedures.

NO	Diagnosis	Surgical Procedure
1	TOTAL UP + CYSTORECTOCELE	VAH + SSF + PERINOPLASTY + PARAVAGINAL REPAIR
2	TOTAL UP + CYSTORECTOCELE + SUI	VAH + SSF + PERINOPLASTY + PARAVAGINAL REPAIR
3	TOTAL UP + CYSTORECTOCELE	VAH + SSF + PERINOPLASTY + PARAVAGINAL REPAIR
4	TOTAL UP	VAH + SSF + MINISLING + PERINOPLASTY + MISSING IUD
5	TOTAL UP + CYSTORECTOCELE	SSF + MINISLING + PERINOPLASTY + PARAVAGINAL REPAIR
6	TOTAL UP + CYSTORECTOCELE + SUI	SSF + MINISLING + PERINOPLASTY + PARAVAGINAL REPAIR
7	SUI + CYSTORECTOCELE	SSF + MINISLING + PERINOPLASTY + PARAVAGINAL REPAIR
8	SUI + UP + CYSTORECTOCELE	SSF + MINISLING + PERINOPLASTY + PARAVAGINAL REPAIR
9	SUI + UP + CYSTORECTOCELE	VAH + SSF + MINISLING + PERINOPLASTY + PARAVAGINAL REPAIR
10	TOTAL UP+ CYSTORECTOCELE	VAH + SSF + MINISLING + PERINOPLASTY + PARAVAGINAL REPAIR

The participants' values were compared before and after the surgical intervention. Accordingly, no significant differences were observed between the pre-and post-intervention measurements of hemoglobin, hematocrit, platelet count, or fasting blood glucose levels (Table 2).

Discussion

VAH procedure is indicated for various conditions, such as leiomyoma, abnormal uterine bleeding, pelvic organ prolapse, postpartum atony, and malignancies [14]. The region where our study was conducted is characterized by an older average age and a higher prevalence of vaginal deliveries. Obesity, diabetes prevalence, and smoking rates are also elevated. Women frequently work in agricultural labor positions, and recurrent urinary tract infections are common. These factors collectively contribute to an increased

Table 2: Pre- and post-intervention measurements compared before and after the surgical intervention.

	Group	Mean	Standard Deviation	X ²	p
Hemoglobin	Pre-Op	13,00	0,45	3,6	0,71
	Post-Op	12,05	1,02		
Hematocrit,	Pre-Op	38,87	1,91	13,6	0,62
	Post-Op	35,97	2,26		
Platelet Count	Pre-Op	311,00	64,93	3,5	0,75
	Post-Op	300,30	65,51		
Blood Glucose Levels	Pre-Op	110,00	22,56	24,7	0,84
	Post-Op	112,00	19,19		

frequency of UP and associated complaints due to chronically elevated intra-abdominal pressure.

SSF procedure, which involves suturing and securing the vaginal cuff or uterus to the sacrospinous ligament, is an effective and efficient surgical method in treating female genital prolapse [21]. All participants in our study utilized this approach. Apical support is a crucial component of pelvic floor reconstruction. Sacrospinous ligament fixation is a well-established procedure for providing apical support [22]. Transvaginal surgical treatment primarily involves SSF [23]. The technique, first described by Richter, involves suturing the posterior vaginal wall to the sacrospinous ligament [24]. Compared to sacrocolpopexy, it offers the benefits of lower morbidity, shorter operative time, and faster recovery. It is also more cost-effective [25]. Its long-term outcomes have been analyzed as an essential component of prolapse surgery [25]. Accordingly, it is sustainable both anatomically and functionally [26]. Based on the outcomes of various studies, sacrocolpopexy, and SSF are practical options for restoring apical support [27,28]. Sacrocolpopexy may be preferred in cases where anatomical durability and sexual function are paramount. However, considering factors such as mesh erosion, operative duration, gastrointestinal complications, bleeding, and wound infections, SSF emerges as a superior option [27]. Our clinical experiences indicate that the SSF procedure supports sexual function to the same extent as sacrocolpopexy. Therefore, despite our patient population's relatively low average age, we chose the SSF procedure to leverage its benefits.

The most common cause of cystocele formation is a paravaginal defect or the loss of lateral attachments of the vagina [10]. The most suitable surgical procedure for patients with a paravaginal defect is considered to be paravaginal repair [29,30]. In the surgery performed for cystocele repair, the paravaginal defect is corrected by suturing the anterior vaginal wall back to its original position [30]. By approximating the vaginal wall to the fascia of the obturator internus muscle, the bladder and urethra are restored to their regular anatomical positions. Paravaginal defect repair is performed between the uppermost portion of the anterior vaginal wall and the bladder neck [30,31]. This procedure helps restore blad-

der support by correcting the vagina, effectively resolving bladder prolapse. In the treatment of cystocele, the separation of the endopelvic fascia from the arcus tendinous fascia pelvis has been identified, and paravaginal repair has been suggested [31]. Cystocele constitutes a significant portion of anterior compartment defects and is ideally corrected with paravaginal repair [32]. The standard paravaginal repair procedure involves suturing the ipsilateral arcus tendinous from the lateral edges of the vagina [32]. Due to the angles at which the sutures are placed, the procedure can be challenging to perform laparoscopically [33]. The laparoscopic mesh and stapler method is a relatively new technique that can be utilized in paravaginal repair. Studies examining the outcomes of the laparoscopic technique have shown a very high frequency of uncomplicated recovery [32,33]. In our study, no patients experienced any complications.

Paravaginal defect repair has been performed on all our participants.

SUI is the involuntary, sudden leakage of urine triggered by an increase in intra-abdominal pressure, which adversely affects a patient's quality of life [18]. Straining, coughing, or exercising can precipitate SUI [18]. Patients may describe SUI as "leakage," "dribbling," or a "flood." They frequently present with complaints of frequent urination or dysuria [18]. Treatment is categorized into behavioral, pharmacological, and surgical approaches [34]. The surgical intervention aims to strengthen the bulbourethral ligaments and the periurethral connective tissue of the mid-urethra. Surgical treatments encompass abdominal and vaginal procedures, as well as urethral bulking agents. SUI imposes a significant financial burden on healthcare systems [35]. Traditional treatment approaches are primarily employed for SUI; however, treatment failure is often encountered [35]. At this stage, surgical intervention becomes necessary. In recent years, urethral slings have been routinely used to treat SUI [36] successfully. However, potential side effects include bladder rupture, vascular injury, and pelvic pain [37].

The development of the MS was intended to reduce complications associated with SUI. Additionally, the MS presents potential benefits such as a shorter polypropylene tape, a single vaginal incision, and the use of local anesthesia [38]. In this device, the single-incision sling is naturally anchored to the pelvic side walls. There is no need for trocar passage through the obturator foramen or incisions, which reduces post-operative pain and accelerates recovery [39]. Research has been conducted to evaluate the effectiveness and safety of the mini-sling [40]. These studies have demonstrated its superiority, particularly in terms of shorter surgical duration and a higher incidence of dyspareunia [38-40].

MS has been performed on all our participants.

Conclusion

Pelvic floor dysfunction is a prevalent condition within the community and can lead to severe complications. These complica-

tions include urinary and fecal incontinence, sexual dysfunction, and chronic pain. In the case of uterine prolapse, the uterus is displaced from its normal position. Prominent etiological factors include childbirth, multiple pregnancies, insufficient estrogen levels, and aging. These factors contribute to the relaxation of the pelvic muscles and connective tissues. Consequently, influenced by gravity, the uterus descends into the vaginal canal.

In this study, our experiences in treating health issues stemming from pelvic floor dysfunction, such as cystocele and stress urinary incontinence, as well as uterine prolapse, in patients presenting to a secondary healthcare center in the Gaziantep-Turkey are discussed. The objective is to share our clinical experiences. One of the limitations of our study is the restricted number of participants. Our region has a significant Syrian population. One of the participants in our study is of Syrian origin. Including more Syrian individuals in such studies and comparing their health data with Turkish citizens is crucial for health planning.

Author Contributions

MKO: Protocol/project development, Data collection, Data analysis. Manuscript writing/editing. MKO and ...: Protocol/ project development, manuscript editing. MKO+...: Protocol/project development, Data collection, Data analysis.

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None.

Conflict of Interest

There are no conflicts of interest or disclosures.

Ethical Approval

Our study was conducted in accordance with the principles of the Declaration of Helsinki.

Author Contributions

OU: Protocol/project development, Data collection, Data analysis. Manuscript writing/editing. MKO&OU: Protocol/project development, manuscript editing. OU&MK: Protocol/project development, Data collection, Data analysis.

Bibliography

1. Chen CJ and Thompson H. "Uterine Prolapse". In Treasure Island (FL) (2024).
2. Carroll L., et al. "Pelvic organ prolapse: The lived experience". *PLoS One* 17.11 (2022): e0276788.
3. Thanasa A., et al. "Total uterine prolapse: a rare cause of chronic obstructive uropathy associated with renal dysfunction (a case report)". *The Pan African Medical Journal*. Uganda; 44 (2023): 57.

4. Ko KJ and Lee K-S. "Current surgical management of pelvic organ prolapse: Strategies for the improvement of surgical outcomes". *Investigation Clinical Urology* 60.6 (2019): 413-424.
5. Yang X., et al. "The Anatomical Pathogenesis of Stress Urinary Incontinence in Women". *Medicina (Kaunas)* 59.1 (2022).
6. Mistry MA., et al. "A structured review on the female urethral anatomy and innervation with an emphasis on the role of the urethral longitudinal smooth muscle". *International Urogynecology Journal* 31.1 (2020): 63-71.
7. Harland N., et al. "Stress Urinary Incontinence: An Unsolved Clinical Challenge". *Biomedicines* 11.9 (2023).
8. Falah-Hassani K., et al. "The pathophysiology of stress urinary incontinence: a systematic review and meta-analysis". *International Urogynecology Journal* 32.3 (2021): 501-552.
9. Lamblin G., et al. "Cystocele and functional anatomy of the pelvic floor: review and update of the various theories". *International Urogynecology Journal* 27.9 (2016): 1297-1305.
10. Tinelli A., et al. "Age-related pelvic floor modifications and prolapse risk factors in postmenopausal women". *Menopause* 17.1 (2010): 204-212.
11. Mustain WC. "Functional Disorders: Rectocele". *Clinics in Colon and Rectal Surgery* 30.1 (2017): 63-75.
12. Bharucha AE and Knowles CH. "Rectocele: Incidental or important? Observe or operate? Contemporary diagnosis and management in the multidisciplinary era." *Neurogastroenterology Motility* 34.11 (2022): e14453.
13. Eser A., et al. "Is There a Relationship Between Pelvic Organ Prolapse and Tissue Fibrillin-1 Levels?" *International Neurology Journal* 19.3 (2015): 164-170.
14. Veronikis DK. "Vaginal Hysterectomy: The Present Past". *Molecular Medicine* 112.6 (2015): 439-442.
15. Bekkers I., et al. "Vaginal hysterectomy versus vaginal assisted NOTES hysterectomy (VANH): a protocol for a randomised controlled trial". *BMJ Open* (2022).
16. Goh JTW and Ganyaglo GYK. "Sacrospinous fixation: Review of relevant anatomy and surgical technique". *International Journal of Gynecology and Obstetrics* 162.3 (2023): 842-846.
17. Gupta P. "Transvaginal Sacrospinous Ligament Fixation for Pelvic Organ Prolapse Stage III and Stage IV Uterovaginal and Vault Prolapse". *Iranian Journal of Medical Sciences* 40.1 (2015): 58-62.
18. Călinescu BC., et al. "Surgical Treatments for Women with Stress Urinary Incontinence: A Systematic Review". *Life (Basel, Switzerland)* 13.7 (2023).
19. Marquini GV., et al. "Burch Procedure: A Historical Perspective". *Revista Brasileira de Ginecologia e Obstetrícia* 44.5 (2022): 511-518.
20. Dejene SZ., et al. "Long-Term Outcomes After Midurethral Mesh Sling Surgery for Stress Urinary Incontinence". *Female Pelvic Medicine and Reconstructive Surgery* 28.4 (2022): 188-193.
21. Agrawal M., et al. "Surgical Outcomes and Feasibility of Transvaginal Sacrospinous Ligament Fixation through Anterior Approach for Women with Pelvic Organ Prolapse". *Journal of Midlife Health* 14.4 (2023): 280-284.
22. Favre-Inhofer A., et al. "Sacrospinous ligament fixation: medium and long-term anatomical results, functional and quality of life results". *BMC Womens Health* 21.1 (2021): 66.
23. Ko-Kivok-Yun P., et al. "[Vaginal sacral-spinal fixation or Richter's procedure. Experience of a surgical team with 54 cases]". *Revue Française De Gynécologie Et D'obstétrique* 90.12 (1995): 525-529.
24. Richter K. "[The surgical anatomy of the vaginaefixatio sacrospinalis vaginalis. A contribution to the surgical treatment of vaginal blind pouch prolapse]". *Geburtshilfe Frauenheilkd* 28.4 (1968): 321-327.
25. Maher C., et al. "Surgery for women with apical vaginal prolapse". *Cochrane database System Review* 10.10 (2016): CD012376.
26. Ohno MS., et al. "Abdominal sacral colpopexy versus sacrospinous ligament fixation: a cost-effectiveness analysis". *International Urogynecology Journal* 27.2 (2016): 233-237.
27. Zhang W., et al. "Comparison of the effectiveness of sacrospinous ligament fixation and sacrocolpopexy: a meta-analysis". *International Urogynecology Journal* 33.1 (2022): 3-13.
28. Sze EH., et al. "A retrospective comparison of abdominal sacrocolpopexy with Burch colposuspension versus sacrospinous fixation with transvaginal needle suspension for the management of vaginal vault prolapse and coexisting stress incontinence". *International Urogynecology Journal* 10.6 (1999): 390-393.
29. Arenholt LTS., et al. "Paravaginal defect: anatomy, clinical findings, and imaging". *International Urogynecology Journal* 28.5 (2015): 661-673.
30. Chinthakanan O., et al. "Laparoscopic Paravaginal Defect Repair: Surgical Technique and a Literature Review". *Surgical Technology International* 27 (2015): 173-183.
31. Hu Q., et al. "Long-term outcomes of cable-suspended suture technique versus conventional suture for anterior vaginal wall prolapse: a retrospective cohort study". *BMC Womens Health* 23.1 (2023): 72.

32. Duraisamy KY, *et al.* "A Prospective Study of Minimally Invasive Paravaginal Repair of Cystocele and Associated Pelvic Floor Defects: Our Experience". *Journal of Obstetrics and Gynecology of India* 6.1 (2019): 82-88.
33. Washington JL and Somers KO. "Laparoscopic paravaginal repair: a new technique using mesh and staples". *JLS* 7.4 (2003): 31-33.
34. McDonnell B and Birder LA. "Recent advances in pharmacological management of urinary incontinence". *F1000Research* 6 (2017): 2148.
35. Patel T, *et al.* "Single Incision Mini-Sling Versus Mid-Urethral Sling (Transobturator/Retropubic) in Females With Stress Urinary Incontinence: A Systematic Review and Meta-Analysis". *Cureus* 15.4 (2023): e37773.
36. Ruffolo AF, *et al.* "Single-incision mini-sling and trans-obturator sling for stress urinary incontinence: A 5-year comparison". *European Journal of Obstetrics and Gynecology and Reproductive Biology* 270 (2022): 90-94.
37. Liang C-C., *et al.* "Comparison of adjustable and nonadjustable single-incision mini-slings in the treatment of female stress urinary incontinence: An initial experience with 30 cases". *Taiwan Journal of Obstetrics and Gynecology* 61.5 (2022): 806-811.
38. Jiao B, *et al.* "A systematic review and meta-analysis of single-incision mini-slings (MiniArc) versus transobturator mid-urethral slings in surgical management of female stress urinary incontinence". *Medicine (Baltimore)* 97.14 (2018): e0283.
39. Lee JK-S., *et al.* "Randomized trial of a single incision versus an outside-in transobturator midurethral sling in women with stress urinary incontinence: 12 month results". *American Journal of Obstetrics and Gynecology* 213.1 (2015): 35.e1-35.e9.
40. Pascom ALG., *et al.* "Randomized controlled trial comparing single-incision mini-sling and transobturator midurethral sling for the treatment of stress urinary incontinence: 3-year follow-up results". *Neurourology and Urodynamics* 37.7 (2018): 2184-2190.