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EDITORIAL

Dear Colleagues;

We are living in the last days of 2023. After a tiring year, we will be here again with new studies, researches, reviews and case reports. We continue to make a serious contribution to the spread of Integral Theory across the world with our ever-increasing number of readers and download rates. I would like to remind you that the only scientific journal in the world where integral theory-based surgeons can make their voices heard is the Journal of Pelviperineology.

We are taking firm steps forward and doing our best to be indexed in the other reputable citation indexes of the world.

In the appendix of this issue, you will find the oral presentations presented at the 10th International Pelviperineology congress (24-26 November 2023, Lazzoni hotel, İstanbul, Türkiye).

We continue to share scientific and important studies with you. While I wish you a happy, prosperous and healthy 2024, I would like to thank all my colleagues for their support to the Journal of Pelviperineology and look forward to receiving your scientific works on pelvic floor and female genital aesthetic surgery.

Best Regards,

Prof. Dr. Ahmet Akın SİVASLIOĞLU

Editor-in-Chief, Journal of Pelviperineology

ORIGINAL ARTICLE

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Dispersion and alterations of vaginal flora across pregnancy trimesters

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ABSTRACT

Objectives: This study aimed to examine the distribution and variations in vaginal pathogens throughout different trimesters of pregnancy, utilizing both vaginal culture and polymerase chain reaction (PCR) techniques, in order to ascertain the presence and prevalence of microorganisms across the various stages of pregnancy.

Materials and Methods: A total of forty-six healthy pregnant women with no reported discharge complaints were recruited for this study. They were monitored at 6-13 weeks, 20-26 weeks, and 32-38 weeks of gestation until delivery. Vaginal swab samples were collected and subjected to multiplex PCR, microscopic examination, aerobic culture media, and gram staining.

Results: *Candida* species (spp.) emerged as the most frequently isolated microorganisms in vaginal swab samples from each trimester, followed by *Escherichia coli* and *Ureaplasma urealyticum*. The prevalence of *Candida* spp. increased proportionally with advancing trimesters. Notably, the pregnancies of these women showed no complications such as premature labor or premature membrane rupture. *Gardnerella vaginalis* was the predominant microorganism isolated in the first trimester, succeeded by *Atopobium vaginae*, *Bacteroides fragilis*, *Mobiluncus curtisii*, and *Mobiluncus mulieris* in decreasing order. However, the quantity of *Gardnerella vaginalis* did not exhibit a significant increase in the second and third trimesters.

Conclusion: This study suggests *Gardnerella vaginalis* as the most commonly isolated vaginal microorganism during the first trimester, alongside other bacterial species associated with bacterial vaginosis. Importantly, the quantities of these bacteria remained relatively stable in the second and third trimesters. These findings suggest a dynamic shift in vaginal microbiota during pregnancy, including an escalation in *Candida* spp. as pregnancy progresses. Further research is warranted to comprehend the implications of these changes and their potential ramifications for vaginal and feto-maternal health.

Keywords: *Candida;* pregnancy; vaginal flora; vaginal pathogens

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INTRODUCTION

The vaginal flora represents a complex ecosystem comprising a variety of aerobes and anaerobes, with lactobacilli, particularly those producing lactic acid, playing a central role in maintaining a harmonious environment. While lactobacilli are the prevailing species, other bacteria such as *Staphylococci*, *Mobiluncus*, *Bacteroides*, and *Peptostreptococci* also coexist.[1,2] Numerous risk factors can disrupt this natural balance, including systemic diseases, vaginal contraceptives, antibiotic usage, immune-suppressive conditions like diabetes, pregnancy, smoking, a high number of sexual partners, inadequate hygiene, vaginal douching, and menstruation.[1,2] Changes in the vaginal flora due to various factors may cause discharge, which can be infection-related or not. Most common infections of vagina are; bacterial vaginosis (BV) characterized by an overgrowth of *Gardnerella vaginalis* (*G. vaginalis*) or other microbial agents such as *Candida* spp. and *Trichomonas vaginalis* (*T. vaginalis*) respectively.

Previous research has consistently demonstrated that the vaginal microbiota during pregnancy is primarily characterized by a dominant community of *Lactobacilli*.[3] And it is a known fact that untreated BV can even lead to pregnancy complications, postpartum or post abortion infections, pelvic inflammatory disease and even infertility, underscoring the vital importance of accurate diagnosis and timely treatment.[4,5] However, it's worth noting that in routine antenatal care, the culture of anaerobic bacteria in genital discharge samples is not frequently carried out, and treatment typically remains empirical without specifically targeting the underlying cause. Although serological and molecular methods can be employed for identification, a significant number of pregnant women are managed in primary healthcare centers where microbiology laboratory resources might be limited. Consequently, many symptomatic patients end up receiving empirical treatment.

On account of this, we aimed to investigate the presence and dynamics of vaginal pathogens during pregnancy, determine the distribution of colonizing microbial agents, and offer guidance for the appropriate use of antimicrobial agents in primary care settings.

MATERIALS AND METHODS

A total of 138 vaginal swab samples were collected from 46 healthy pregnant women who were under the care of the department of obstetrics and gynecology at a tertiary university hospital. Each woman provided three separate samples, corresponding to each trimester of pregnancy. The study encompassed pregnant women aged between 19 and 40 and was carried out over the course of one year.

Exclusion Criteria

Women with any chronic diseases, active vaginal infection, or vaginal bleeding were excluded from the study. All pregnant participants underwent an investigation to gather data on various factors that could influence their vaginal flora, including examination results, marital status, history of systemic diseases, surgical interventions, method of achieving pregnancy (spontaneous or assisted reproductive techniques), medications used, emergence of conditions during pregnancy, previous culture tests due to discharge complaints, culture test outcomes, and any administered treatments for positive results. Patients with systemic diseases that might impact vaginal flora and cause immune deficiency (such as diabetes, liver disease, kidney disease, heart failure, rheumatic diseases, and dermatological diseases) were also excluded. Additionally, patients referred to high-risk pregnancy clinics and anticipated to receive steroid treatment for fetal lung maturation were initially excluded from our study.

As a result of these criteria, all pregnant women with chronic diseases, vaginal bleeding, or active vaginal infection were ineligible for participation. Initially, 50 patients were invited to take part in the study. However, four patients were unable to continue with the follow-up procedures after the initial samples and were subsequently removed from the study. This led to a final inclusion of 46 patients in the study.

Sample Collection and Examination

Prior to the examination, patients were instructed to empty their bladder and refrain from sexual intercourse, vaginal medications, or hygiene products for a minimum of 24 hours. Patients were positioned in the dorsal lithotomy stance and underwent examination using a sterile, lubricated speculum. Vaginal swabs were meticulously acquired from the posterior fornix or lateral vaginal wall using a sterile cotton-tipped applicator, ensuring no contact with the speculum, vaginal mucosa, or vulva. All samples were promptly placed in a transport medium and transferred to the microbiology laboratory.

One swab from each sample was placed in a tube containing a preservative solution for multiplex polymerase chain reaction (PCR) analysis. One of the other two swabs was directly examined for *T. vaginalis*, and the other was cultured aerobically on nutrient media and stained with Gram stain. From each sample, one swab was placed in a tube with a preservative solution for subsequent multiplex PCR analysis. Of the remaining two swabs, one was directly inspected for the presence of *T. vaginalis*, while the other underwent aerobic culture on nutrient media and was stained using the Gram stain method.

In the process of direct microscopic examination, a droplet of physiological saline was applied to a clean slide. The swab-obtained sample was mixed with this droplet to create a suspension, which was subsequently covered with a clean cover slip. The presence of *T. vaginalis* was assessed using a light microscope at a magnification of 400x.

The second swab was used to inoculate blood, chocolate and MacConkey agars, as well as liquid and solid media for mycoplasma and ureaplasma, and was finally smeared on a clean slide and examined under a microscope after Gram staining. The swab was then used to inoculate the nutrient media in the following order: Solid mycoplasma, liquid mycoplasma, blood, MacConkey, and chocolate agars. The nutrient media were then inoculated using the dilution method with blood, chocolate, and MacConkey agars. The liquid mycoplasma-ureaplasma medium was inoculated by dipping the swab into the liquid medium. During Gram staining, the sample smeared on a clean slide was air-dried, heat-fixed, and stained with Gram stain. The stained preparation was examined at 1000x magnification, and the characteristics of the microorganisms, the number of leukocytes, and the presence of clue cells were recorded.

The swabs used in our study were stored in Earle's salt solution (catalog number L1915) at +4 °C. The samples were transported to the laboratory as soon as possible, and the maximum time from sampling to inoculation was four hours.

Identification of Aerobic and Anaerobic Organisms

The identification of different morphologically diverse microorganisms that grow on blood, chocolate, and MacConkey media for aerobic bacteria is determined by Gram staining and then characterized according to their coccus or rod features. Gram-negative rods that grow on MacConkey media were identified based on their ability to ferment glucose, citrate, and produce indole and mobility in MIO and TSI media. The antibiotic susceptibility of identified rods is also determined.

The identification of yeast was based on their colony morphology and microscopic features. The germ tube formation test was performed to differentiate *Candida* spp., and those that form a germ tube in two hours are identified as *Candida albicans* (*C. albicans*). *Candida* is also tested for chlamydospore formation on cornmeal agar, and different subtypes are identified based on the different colors they produce on chromogenic agar.

For the identification of *Gardnerella vaginalis*, the presence of clue cells in the Gram-stained preparations and the typical morphology of the growing colonies were used for identification. *Ureaplasma urealyticum* (*U. urealyticum*) and *Mycoplasma hominis* (*M. hominis*) were identified by inoculating liquid ureaplasma media and incubating them at 37 °C with 5-10% CO_2. After 24 hours, passages were taken from the reddened media to solid ureaplasma media, and after 2-3 days of incubation at 37 °C with 5-10% CO_2, typical star-shaped colonies on the solid media are identified as ureaplasma. The samples were also inoculated into solid mycoplasma media and incubated for 3 days. Typical colonies with a fried egg appearance were identified as *M. hominis* under the microscopic investigation.

For the identification of anaerobic organisms, the TEEGENE SEEPLEX STI Master ACE Detection Panel 2 kit (SD6512X, South Korea) was used. Multiplex PCR was used to identify *G. vaginalis*, *Atopobium vaginae*, *B. fragilis, Mobiluncus curtisii*, and *Mobiluncus mulieris* in this kit.

DNA Isolation

DNA isolation was performed using the Viral DNA-RNA extraction kit (Viral GENE-SPIN, South Korea) according to the recommended protocol. In the multiple PCR method used in this study, after preparing the PCR master mix, the mixture wass inverted five times and then centrifuged. 17 µL of the PCR master mix was distributed into PCR tubes, and then 3 µL of sample DNA was added to each tube to create a total reaction volume of 20 µL. For the negative control, 3 µL of STI MP negative control wass added instead of nucleic acid, and for the positive control, 3 µL of STI MP positive control was added (Table 1). After centrifuge of the tubes at 12,000 rpm for 1 minute, they were placed in a PCR machine heated to 94 °C. The resulting PCR products were loaded onto a 2% agarose gel with specific markers from the kit and run at 120 volts for 20 minutes, then imaged and analyzed under a ultraviole transilluminator.

Statistical Analysis

Statistical analysis was conducted using standard descriptive statistical methods for continuous quantitative variables (such as age) (mean, standard deviation, median). Categorical variables (frequency of occurrence) were presented with frequencies and percentages of the total. The evaluation of quantitative measurements was performed using the "Student's t-test" or "Wilcoxon Signed-rank test" according to the distribution characteristics of the data. Comparisons of categorical variables were made using the chi-square or Fischer's Exact test depending on the distribution of cases. Cases with a p-value <0.05 were considered statistically significant.

RESULTS

A total of forty-six pregnant women, meeting the inclusion criteria, were monitored as they attended the antenatal clinic during their first trimester. Vaginal swab samples were

collected from each participant in each trimester, and they were followed until delivery. The mean age of the 46 participants was 30.4±8.9 years. Out of the 46 pregnant women, 40 (87.3%) were spontaneous pregnancies, 4 (8.7%) were achieved through in vitro fertilization, and 2 (4.3%) were achieved through in utero insemination.

In the first trimester, out of the vaginal swab samples collected from each participant, *T. vaginalis* was detected in two (4.3%) samples, *M. hominis* in four (8.7%), *U. urealyticum* in five (10.9%), *Escherichia coli* (*E. coli*) in five (10.9%), and *Candida* spp., including *C. albicans*, in 13 (28.3%) samples. *Neisseria gonorrhoeae* (*N. gonorrhoeae*) was not detected in the first trimester vaginal swab samples.

In the second trimester, *T. vaginalis* was detected in four (8.7%) samples, *M.* hominis in eight (17.4%), *U.* urealyticum in seven (15.2%), *E. coli* in five (10.9%), and *Candida* spp., including *C. albicans*, in 17 (37%) samples. No *N. gonorrhoeae* was detected in the second trimester vaginal swab samples.

In the third trimester, out of the vaginal swab samples collected from each participant, *T. vaginalis* was detected in four (8.7%) samples, *M. hominis* in eight (17.4%), *U. urealyticum* in eight (17.4%), *E. coli* in five (10.9%), and *Candida* spp., including *C. albicans*, in 18 (39.2%) samples. No *N. gonorrhoeae* was detected in the third trimester vaginal swab samples. The results of the cultures according to trimesters are shown in Table 2.

Table 1. STI master panel 2 primer features

STI master panel 2	Base length
Control group	981
Gardnerella vaginalis	661
Bacteriodes fragilis	415
Mobiluncus curtisii	320
Atopobium vaginae	240
Mobilincus mulieris	182

STI: sexually transmitted infection

The most frequently isolated microorganisms from the samples were *Candida* spp., followed by *E. coli* and *U. urealyticum*. *N. gonorrhoeae* was not detected in any of the samples from all the three trimesters. There was no statistically significant difference in the incidence of *E. coli* between trimesters (p=1). While there was no difference in the incidence of *Candida* spp., *M. hominis, U. urealyticum*, and *T. vaginalis* among the three trimesters, an increase in the incidence of *Candida* spp. was found to be statistically significant (p=0.01). None of the pregnant women who had *Candida* spp. isolated from their vaginal swab samples during the study period had early delivery or low birth weight.

According to multiplex PCR results, 11 (23.9%) were positive for *G. vaginalis*, three (6.5%) were positive for *B. fragilis*, two (4.3%) were positive for *Mobiluncus curtisii* (*M. curtisii*), 10 (22.1%) were positive for *Atopobium vaginae* (*A. vaginae*), and two (4.3%) were positive for *Mobilunkus mulieris* (*M. mulieris*) in the first trimester. In the second trimester samples, 13 (28.3%) were positive for *G. vaginalis*, four (8.7%) were positive for *B. fragilis,* three (6.5%) were positive for *M. curtisii*, 11 (23.9%) were positive for *A. vaginae*, and two (4.3%) were positive for *M. mulieris*. In the third trimester samples, 13 (28.3%) were positive for *G. vaginalis*, 4 (8.7%) were positive for *B. fragilis*, 3 (6.5%) were positive for *M. curtisii*, 12 (26.1%) were positive for *A. vaginae*, and 2 (4.3%) were positive for *M. mulieris*. Group B streptococcus (GBS) was not detected in any of the samples from all trimesters. There was no statistically significant difference in the PCR results between the second and third trimesters. The results are shown in Table 3.

DISCUSSION

The normal vaginal flora consists of a variety of microorganisms, including lactobacilli, which help restrain the growth of potentially harmful microorganisms. However, pregnancy-related hormonal shifts and immune system modulation can trigger alterations in microorganism composition. This study focused on examining vaginal samples from asymptomatic,

Table 2. Proportion of agents reproducted in culture by trimester of pregnancy

	1. trimester n (%)	2. trimester n (%)	3. trimester n (%)	*p*
T. vaginalis	2 (4.3%)	4 (8.7%)	4 (8.7%)	0.368
M. hominis	4 (8.7%)	8 (17.4%)	8 (17.4%)	0.05
U. urealyticum	5 (10.9%)	7 (15.2%)	8 (17.4%)	0.368
E. coli	5 (10.9%)	5 (10.9%)	5 (10.9%)	1
Candida	13 (28.3%)	17 (37%)	18 (39.2%)	0.01
N. gonorrhoeae	0	0	0	N/A

Friedman test was used; N/A: statistical evaluation was not performed as there was no reproduction

healthy pregnant women across all trimesters, without vaginal infections. Both aerobic and anaerobic cultures were conducted, with PCR being utilized to identify anaerobic organisms.

Throughout the monitoring period, none of the pregnant women showed the presence of GBS or *N. gonorrhoeae*. The most commonly identified cultured organisms were *Candida* spp., followed by *E. coli* and *U. urealyticum*. Notably, only the proliferation of *Candida* spp. exhibited statistical significance. Furthermore, PCR analysis revealed a substantial proportion of pregnant women testing positive for *G. vaginalis* (28.3% in the second and third trimesters). Interestingly, no significant statistical disparity was found in the microorganisms detected by PCR analysis between the second and third trimesters.

The impact of both internal and external factors on vaginal flora during pregnancy has been extensively explored in various studies, employing fundamental culture techniques and advanced methods like PCR, as demonstrated in our own research.[6-8] The mechanisms accountable for potential shifts in flora during pregnancy encompass hormonal fluctuations and immune system suppression. Regardless of the mechanism, the disruption of flora equilibrium holds significance due to the potential risk of vaginal infections, ultimately associated with diverse pregnancy complications.[9,10] Notably, the centers for disease control and prevention in the US has achieved a consensus regarding the evaluation and treatment of vaginal infections in pregnant women.[11]

Among the agents implicated in vaginal infections during pregnancy, *Candida* spp., *G. vaginalis*, *T. vaginalis*, and GBS are the most frequently encountered.[12] In our study, *Candida* spp. proved to be the most common microorganism, isolated from vaginal swab samples taken individually during each trimester from participating pregnant women, followed by *E. coli* and *U. urealyticum*. Strikingly, *N. gonorrhoeae* was not detected in any vaginal swab sample across the three trimesters. We did observe

Table 3. Proportion of anaerobic agents detected in PCR by trimester of pregnancy

	1. trimester n (%)	2. trimester n (%)	3. trimester n (%)	*p*
G. vaginalis	11 (23.9%)	13 (28.3%)	13 (28.3%)	0.607
B. fragilis	3 (6.5%)	4 (8.7%)	4 (8.7%)	N/A
M. curtisii	2 (4.3%)	3 (6.5%)	3 (6.5%)	N/A
A. vaginae	10 (22.1%)	11 (23.9%)	12 (26.1%)	0.607
M. mulleris	2 (4.3%)	2 (4.3%)	2 (4.3%)	N/A
GBS	0	0	0	0

GBS: group B streptococcus, Friedman test was used; N/A: statistical evaluation was not performed as there was no reproduction; PCR: polymerase chain reaction

Table 4. Comparison of culture and PCR results of 100 non-pregnant women without discharge complaints (157) and 46 pregnant women sampled during the 1st, 2nd, and 3rd trimesters of pregnancy of the current study

	Non-pregnant 100 women n (%)	1. trimester n (%)	2. trimester n (%)	3. trimester n (%)
T. vaginalis	0	2 (4.3%)	4 (8.7%)	4 (8.7%)
M. hominis	6 (6%)	4 (8.7%)	8 (17.4%)	8 (17.4%)
U. urealyticum	7 (7%)	5 (10.9%)	7 (15.2%)	8 (17.4%)
E. coli	4 (4%)	5 (10.9%)	5 (10.9%)	5 (10.9%)
Candida spp.	3 (3%)	13 (28.3%)	17 (37%)	18 (39.2%)
N. gonorrhoeae	0	0	0	0
G. vaginalis	68 (68%)	11 (23.9%)	13 (28.3%)	13 (28.3%)
B. fragilis	6 (6%)	3 (6.5%)	4 (8.7%)	4 (8.7%)
M. curtisii	12 (12%)	2 (4.3%)	3 (6.3%)	3 (6.5%)
A. vaginae	25 (25%)	10 (22.1%)	11 (23.9%)	12 (26.1%)
M. mulleris	3 (3%)	2 (4.3%)	2 (4.3%)	2 (4.3%)
Grup B streptoccocus	0	0	0	0

GBS: group B streptococcus; PCR: polymerase chain reaction

a notable rise in *Candida* spp. presence. Remarkably, during the course of our study, no instances of preterm birth or low birth weight were observed in any of the pregnant women who were monitored and exhibited *Candida* spp. in their vaginal swab samples.

Further, we identified *G. vaginalis* as positive in the vaginal swab samples obtained from the first trimester, succeeded by *A. vaginae*, *B. fragilis*, *M. curtisii*, and *M. mulieris* in decreasing frequency. However, no significant increase was noted in the prevalence of these bacteria during the second and third trimesters. Notably, GBS was not isolated in any trimester. In a study conducted by Balaka et al.[13] involving 306 pregnant women, vaginal swab samples were collected from 118 participants in the 29-32nd gestational weeks, 104 participants in the 33-36th gestational weeks, and 84 participants in the 37-40th gestational weeks. The study revealed that *C. albicans* was identified in 33.3% of the cultures from the samples, *E. coli* in 10.9%, *Staphylococcus aureus* (*S. aureus*) in 15.4%, *G. vaginalis* in 13.6%, and *T. vaginalis* in 10.6%. The most striking finding in our study was the increasing frequency of *Candida* spp. as trimesters progress. It has been shown that bacteriocins secreted by bacteria in the normal vaginal flora suppress the growth and germination of yeasts. It has also been determined *in vitro* that certain species of *Lactobacilli* prevent yeast colonization by allowing themselves to bind to the vaginal epithelium instead of yeasts, due to a protein they produce.[14] The increased estrogen hormone levels during pregnancy also increase the adhesion of these types of bacteria to the vaginal epithelium. As in non-pregnant women, vulvovaginal candidiasis (VVC) also causes symptoms such as discharge, itching, burning, and dysuria in pregnant women, and findings such as erythema, edema, and fissures can be detected in the vagina. A pH of less than 4.5 and the absence of odor are typical features of this infection.[14,15] The infection can be detected in 30-40% of women during pregnancy, and it is especially more common in the last trimester. The high estrogen levels during pregnancy cause an increase in the reproduction of *Candida* spp. and an increase in the amount of glycogen in the vaginal epithelium, which serves as a source of nutrition for germination.[16,17] According to the study conducted by Cotch et al.[18], there was no association between *Candida* spp. causing VVC, and early or low birth weight deliveries. None of the pregnant women followed during our study who produced *Candida* spp. in their vaginal swab samples had early or low birth weight deliveries.

Another important finding obtained in our study is that there was no increase in the amount of anaerobes. Although BV is a common infection in pregnant women, only 23.9% of the samples taken from the patients who participated in our study in the first trimester were positive for *G. vaginalis*, 6.5% for *B. fragilis*, 4.3% for *M. curtisii*, 22.1% for *A. vaginae*, and 4.3% for *M. mulieris*. While 28.3% of the second trimester samples were positive for *G. vaginalis*, 8.7% for *B. fragilis*, 6.5% for *M. curtisii*, 23.9% for *A. vaginae*, and 4.3% for *M. mulieris*, 28.3% of the third trimester samples were positive for *G. vaginalis*, 8.7% for *B. fragilis*, 6.5% for *M. curtisii*, 26.1% for *A. vaginae*, and 4.3% for *M. mulieris*, and no significant difference was found between trimesters.

The pathophysiology of BV is complex and not yet fully understood.[14] *G. vaginalis* is one of the bacteria associated with this infection and is listed among the most commonly produced agents in vaginal swab samples taken from pregnant women, with up to 50% of women being asymptomatic. Other bacteria associated with this infection include *Mobiluncus* species, *Bacteroides* species other than *B. fragilis*, and anaerobic Gram-positive cocci such as *Prevotella* and *Peptostreptococcus*.[14] In a study conducted in the first trimester pregnant women, BV was determined at a rate of 17.9%, *C. albicans* at a rate of 15.1%, and *T. vaginalis* at a rate of 3.8%.[19] In our study, *Candida* spp. was the most commonly produced, while BV pathogens were produced in the second place and *T. vaginalis* was produced in even smaller amounts. Balaka et al.[20] detected *C. albicans* in 33.5% of 308 pregnant women in the third trimester, BV in 21.5%, and *T. vaginalis* in 10.6%. Kaźmierczak et al.[21] found *Candida* species in 42% of 450 pregnant women, BV in 19%, and *T. vaginalis* in 4%. Morales et al.[22] detected *Candida* species in 44% of 3.217 women, GBS in 15%, and BV in 11%.

T. vaginalis constitutes one of the most common infections among sexually transmitted diseases.[21] Low socio-economic status and having multiple sexual partners are among the risk factors for this infection. Some studies have found that this infection can occur together with other vaginal infections, and it can be associated with BV in pregnant women at a rate of 22%.[23] *T. vaginalis* was detected in 4.3% of the vaginal swab samples taken from the pregnant women participating in our study in the first trimester and in 8.7% in other trimesters. The pregnant women with positive cultures did not have any symptoms, and no symptoms observed in BV were detected, nor was any association between *T. vaginalis* and BV observed.

GBS is a group of bacteria that are encountered at a rate of 5-40% in the pharynx, vagina, and gastrointestinal system flora.[15,23] The main source of GBS carriage in pregnant women is the intestinal system, and colonization in the vagina and cervix develops from there. GBS infections lead to early rupture of membranes and prematurity by causing desidual infections. Symptomatic GBS infections in early childbirth can cause severe infections in the

baby. Routine screening of GBS in pregnant women has become important to prevent early rupture of membranes, neonatal infections, and maternal morbidity and mortality.

The study of vaginal flora changes during pregnancy was investigated in several studies, and a noteworthy one is by Ross and Needham[24] In this study, vaginal swab samples were taken separately from 131 healthy, asymptomatic pregnant women in each trimester, and the culture results were compared. Twenty different species were identified in the cultures, and as the trimesters progressed, a decrease in Lactobacillus and *Candida* spp. was observed, while an increase in *E. coli* and GBS growth rates was seen. In our study, an increase in *Candida* spp. growth rates was observed, while *E. coli* growth rates remained constant, and no GBS was detected in any sample.

In a study conducted in 2011 at the university's medical faculty[25], 100 sexually active women with vaginal discharge complaints were taken as the study group, and 100 sexually active women without any complaints were taken as the control group. Similarly, aerobic cultures were performed on the samples, and multiplex PCR was done for anaerobic pathogens. In the control group, 7% had *U. urealyticum*, 6% had *M. hominis*, 4% had *E. coli*, 1% had *Klebsiella* spp., 3% had *C. albicans*, and 4% had *Candida* spp. In the control group, PCR showed that 68% were positive for *G. vaginalis*, 25% for *A. vaginae*, 12% for *M. curtisii*, 6% for *B. fragilis*, and 3% for *M. mulieris*. The comparison of these results with our study findings is shown in Table 4, and it can be seen that all other pathogens except *G. vaginalis* had similar percentages in pregnant and non-pregnant cases. The fact that the results obtained in the first trimester, when hormonal effects and immune system suppression are not yet evident, are similar to those obtained in the other trimesters supports our study. However, while *G. vaginalis* was detected in non-pregnant cases at a rate of 68%, it was found to be 23.9%, 28.3%, and 28.3% in the first, second, and third trimesters, respectively. When these values were statistically evaluated, there was a significant difference between non-pregnant cases and rates observed in the first trimester ($p<0.001$), as well as between non-pregnant cases and rates observed in the second or third trimester ($p<0.001$). This difference could be explained by the possibility of different patient populations or the protective effect of pregnancy. However, there is a challenge in terms of study methodology as we would need a large number of cases to take samples from a non-pregnant woman and then follow her throughout pregnancy. Therefore, this comparison needs to be confirmed by larger scale studies.

An important limitation of this study is the absence of antibiogram test results. As a result, the findings lack the comprehensive data required to propose empirical treatments for the identified pathogens. It's essential for future research to encompass antibiogram results in order to furnish more comprehensive insights in this aspect.

CONCLUSION

In conclusion, within the studied population, GBS infection doesn't seem to pose a significant risk during pregnancy in Türkiye. Regarding anaerobic pathogens, *G. vaginalis* emerged as the most prevalent pathogen in the first trimester, succeeded by *A. vaginae, B. fragilis, M. curtisii*, and *M. mulieris* in decreasing order. Throughout all trimesters, *Candida* spp. remained the predominant pathogen, followed by *E. coli* and *U. urealyticum*. There was a notable rise in the occurrence of *Candida* spp. as the trimesters advanced, although this increase wasn't linked with preterm delivery or low birth weight.

ETHICS

Ethics Committee Approval: Cerrahpaşa Medical School Ethical Committee no: 83045809/3959.

Informed Consent: Informed consent was obtained.

Peer-review: Externally peer-reviewed.

Contributions

Surgical and Medical Practices: H.Ç.K., T.A.; Concept: H.Ç.K., T.A.; Design: H.Ç.K., T.A.; Data Collection or Processing: H.Ç.K., O.G., E.P., K.C.K.; Analysis or Interpretation: H.Ç.K., O.G., E.P., K.C.K., T.A.; Literature Search: H.Ç.K., O.G., İ.C.S; Writing: H.Ç.K., O.G., İ.C.S., T.A.

DISCLOSURES

Conflict of Interest: No conflict of interest was declared by the authors.

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Investigation of the role of MAPK pathway genes in POP surgical complications

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ABSTRACT

Objectives: We hypothesized that the expressions of genes (*JUN, FOS, MAPK1, MAPK8, AKT1*) involved in the mitogen-activated protein kinase (MAPK) pathway would change in women with pelvic organ prolapse (POP), and we aimed to elucidate the relationship between this gene and the molecular mechanism of POP.

Materials and Methods: A total of 67 cases, including 36 patients (11 mesh, 25 native tissue) and 31 controls obtained from hysterectomy operations, were analyzed in our study. The relationship between MAPK-related genes and POP was investigated using the qRT-polymerase chain reaction method. In addition, we analyzed the genes *in silico* using Gencodis4 and Genemania web-based tools.

Results: The POP patients and control groups were analyzed, and the expression levels of MAPK8 (p=0.036), and AKT1 (p=0.010) genes were significantly higher in the POP group. Also, we have shown that the decreased expression level of the *MAPK1* gene was essential in complications (p=0.023). *In silico* analysis, we determine the biological processes, molecular functions, and biological pathways.

Conclusion: We have suggested that *MAPK1*, *MAPK8*, and *AKT1* genes are effective molecules for POP and POP-related complications. So, in further studies, these genes and related genes may be examined for the determination of the pathophysiological structure of POP disease.

Keywords: Gene expression; *in silico*; MAPK pathway; pelvic organ prolapse

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INTRODUCTION

Pelvic organ prolapse (POP) is the downward displacement of one or more organs in the pelvis (bladder, uterus, vagina, small intestine, rectum) by losing their anatomical support in their normal positions. Risk factors include age, birth, menopause, obesity, constipation, pelvic floor dysfunction, severe working conditions, socio-economic status, and hysterectomy.[1] POP is associated with urinary incontinence and defecation dysfunction, affects 10-25% of women, and often requires surgery. Surgical treatment aims to restore normal pelvic anatomy, normalize urinary and bowel functions, restore sexual functions, reduce the effects of symptoms, and improve quality of life. 30% of these operations are POP recurrences.[2,3]

POP's etiology is complex and multi-factor. The connective tissue, which is one of the most important structures that provide genitourinary support, consists of proteoglycans and glycoproteins that form a large extent of collagen, elastic fibrils, and viscoelastic matrix.[4] The predominant constituent of the connective tissue within the pelvic base is collagen, wherein Type I and Type III collagen assume primary responsibility for imparting tensile strength to the tissues. Concurrently, collagen variants of Type V and Type VI play a pivotal role in establishing interrelations between the extracellular matrix (ECM) and other essential tissue constituents.[5] Collagen and elastin are two basic protein components of the ECM of the pelvic base connective tissues. Changes in the metabolism of collagen and elastin may also change the tendency of the damaged connective tissues of the pelvic base and result in pelvic base relaxation.[6] It is stated in the previous studies that POP and other collagen-consulted disorders have a common etiology caused by the molecular level of collagen.[4]

ECM components mainly regulate cellular functions through integrin-mediated signal pathways. It is known that the receptors of the integrin family participate in various signal transmission pathways in mitogen-activated protein kinases (MAPKs)- such as extracellular signal-regulated kinase (MEK-ERK) and phosphoinositide 3-kinase (PI3K) (Figure 1).[7]

In this context, the expression levels of MAPK pathway genes in facial tissues taken during the surgical intervention of POP patients have never been investigated in the literature before. There is no previously defined information in the literature about the MAPK pathway genes, the surgical methods used in the treatment of POP, and the differences in the responses to treatment. We have selected the genes with tool of KEGG pathway and string database on MAPK pathway. Our study aimed to investigate the effects of *JUN, FOS, MAPK1, MAPK8*, and *AKT1* genes on collagen and ECM production and indirectly on POP treatment.

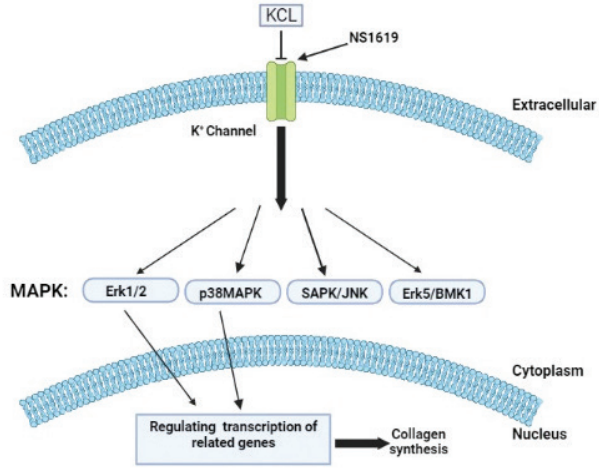

Figure 1. MAPK pathway in collagen synthesis

KCl: potassium chloride; MAPK: mitogen-activated protein kinase; NS1619, 1,3-dihydro-1-[2-hydroxy-5-(trifluoromethyl)phenyl]-5-(trifluoromethyl)-2H-benzimidazole-2-one; SAPK/JNK: stress-activated kinases/c-Jun N-terminal kinases; Erk: extracellular signal-regulated kinas; BMK1: big MAP kinase 1

MATERIALS AND METHODS

Collection of Sample Material

A total of 67 cases, including 36 patients (11 mesh, 25 natural tissue) who were diagnosed with POP and treated surgically, and 31 controls obtained from hysterectomy operations, who applied to the MSKU Faculty of Medicine, Department of Obstetrics and Gynecology Outpatient Clinic were included in our study. Tissues were obtained between June 2021 and October 2021 after the ethics committee decision dated 03.05.2018 and numbered 06/II. Knitting in which case and natural tissue surgery in which case was randomized and applied according to the results of a predetermined computer program. Two 0.5x0.5 cm tissues were taken from the pubocervicovaginal fascia (PSVF) during surgery from patients with POP. As the control group, 2 pieces of 0.5x0.5 cm tissue were taken from PSVF from patients who would undergo hysterectomy for benign reasons without POP.

Tissue samples taken were placed in RNA later (Hibrigen, Türkiye) solution and stored at -80 °C. The cases were evaluated in terms of pelvic pain, erosion, and genital organ prolapse degree [according to pelvic organ prolapse quantification, (POP-Q)] before POP surgery, and the same cases were re-evaluated in terms of complications 6 months after the treatment they were randomized to. Our study was evaluated and approved by the

Ethics Committee of Muğla Sıtkı Koçman University Faculty of Medicine, with decision number 06/II dated 03/05/2018, and an informed consent form was signed by all cases.

RNA Extraction and Quantitative Real-time Polymerase Chain Reaction

Total RNA isolation from tissue was performed with the Total RNA Isolation Kit (Cat. No: MG-RNA-01-250; Hibrigen Biotechnology R&D Industry and Trade Inc., Gebze, Kocaeli, Türkiye). For RNA isolation from each tissue sample, 50 mg was used. *JUN, FOS, MAPK1, MAPK8*, and *AKT1* gene expression levels were evaluated using the SYBR green real-time RT-PCR technique. Table 1 shows the primers used for the *JUN, FOS, MAPK1, MAPK8, AKT1,* and *GAPDH* genes. 2X One-Step SYBR Green RT-qPCR Mix (Cat. No: MG-OSSGM-01; Hibrigen Biotechnology R&D Industry and Trade Inc., Gebze, Kocaeli, Türkiye) kit was used to determine the gene expression levels The relative amount was normalized to the *glyceraldehyde 3-phosphate dehydrogenase* gene (GAPDH) expression tooth relative gene expression was evaluated by the 2-ΔΔCT method with at least three independent experiments.

Statistical Analysis

The expression results obtained were analyzed using the SPSS.22 program. The Kruskal-Wallis test was used for triple comparisons and Wilcoxon-Mann-Whitney U test for pairwise comparisons. *P*-value <0.05 was considered statistically significant in the analyses. In comparisons using Bonferroni correction, the significance level will be taken as 0.017. The results were expressed as mean ± standard deviation and median (minimum-maximum) and all statistical analyzes were performed using the R program.

Table 1. *JUN, FOS, MAPK1, MAPK8,* and *AKT1* genes primers used for RT-qPCR reaction

Gene	Primers
JUN	**F** 5' GAGCTGGAGCGCCTGATAAT 3' **R** 5' CCCTCCTGCTCATCTGTCAC 3'
FOS	**F** 5' ATACACTCCAAGCGGAGACA 3' **R** 5' GGTGAGCTGCCAGGATGAAC 3'
MAPK1	**F** 5' GATCTTAAATTTGTCAGGACAAGGG 3' **R** 5' CAGAAACCGCCCCTCCAAA 3'
MAPK8	**F** 5' ACGACGCGGCTTGGATTG 3' **R** 5' AAGGCTGCAAGACCGGC 3'
AKT1	**F** 5' ATTTCCCTCTTTGGAGGCTGT 3' **R** 5' ATAGCCACGTCGCTCATGG 3'
GAPDH	**F** 5' GAAGGTGAAGGTCGGAGTC 3' **R** 5' GAAGATGGTGATGGGATTTC 3'

RT-PCR: real-time polymerase chain reaction

In Silico Analysis

Prediction of gene-gene interactions

GeneMANIA (https://genemania.org/) tool was used to investigate the relationship between the *AKT1* and *MAPK8* genes, which gave significant results in the statistical analyzes made as a result of RT-qPCR (Access Date 15.10.2022). Proteins co-expressed and physically interacting with the *AKT1* and *MAPK8* genes were investigated by GeneMANIA.[8]

Gene ontology

Gene ontology search for the 5 genes (*JUN, FOS, MAPK1, MAPK8, AKT1*) selected for the study was performed using the GeneCodis 4 (https://genecodis.genyo.es/) tool (Accessed 15.10.2022). This tool examined the biological processes, molecular functions and pathways that the 5 genes have in common.[9]

RESULTS

qRT-PCR

A total of 67 cases were included in our study, including 11 cases for POP repair using mesh, 25 cases for POP repair using natural tissue, and 31 cases in the control group. Expression levels of *JUN, FOS, MAPK1, MAPK8,* and *AKT1* genes were compared in patients diagnosed with POP and control groups (Table 2).

As a result of the comparison of POP patients and control groups, a statistically significant difference was found in the expression levels of *MAPK8* and *AKT1* genes (p=0.036, p=0.010). The expression levels of *JUN, FOS, MAPK1, MAPK8,* and *AKT1* genes in the MAPK pathway in POP patients and controls are given in Figure 2.

Expression levels of *JUN*, *FOS*, *MAPK1*, *MAPK8*, and *AKT1* genes in the MAPK pathway were compared between patient tissues and control tissues. *JUN* gene expression level did not differ between the two groups and this result was not statistically significant (p=0.407). Although the *FOS* gene expression level was higher in the patient group, this result was not statistically significant (p=0.950). *MAPK1* gene expression level was found to be lower in the patient group. However, this decrease is not considered statistically significant (p=0.023). Expression levels of *MAPK8* and *AKT1* genes were found to be statistically significantly higher in the patient group (p=0.036, p=0.010).

Six months after the surgical intervention, feedback was received from the patients about whether there were any complications. The MAPK1 level was significantly higher in the uncomplicated group (Figure 2f) (p=0.017). In this case, it has been determined that MAPK1 has a protective effect on the development of complications.

Table 2. Comparison of expression levels of *JUN, FOS, MAPK1, MAPK8,* and *AKT1* genes in POP patients and control groups

Gene	n (%)	Median	Mean	Standard deviation	χ^2 *p*-value
JUN	POP patients (n=36)	0.07	1.01	3.270	0.407
	Control groups (n=31)	0.09	1.10	1.896	
FOS	POP patients (n=36)	0.30	5.48	22.675	0.950
	Control groups (n=31)	0.32	1.60	3.152	
MAPK1	POP patients (n=36)	0.59	4.18	10.429	0.223
	Control groups (n=31)	0.75	28.97	149.197	
MAPK8	POP patients (n=36)	1.29	2.12	1.887	**0.036**
	Control groups (n=31)	1.00	1.33	0.878	
AKT1	POP patients (n=32)	5.86	8.32	8.233	**0.010**
	Control groups (n=30)	2.16	4.75	5.912	

POP: pelvic organ prolapse

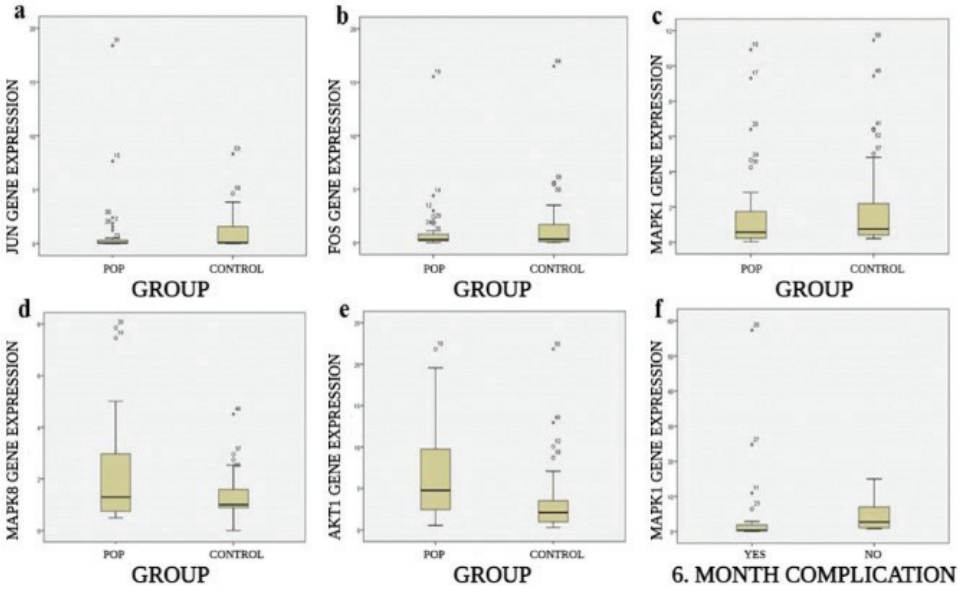

Figure 2. Expression levels of JUN **(a)**, *FOS* **(b)**, *MAPK1* **(c)**, *MAPK8* **(d)** and *AKT1* **(e)** genes involved in the MAPK pathway in POP patients and controls, and expression level of the *MAPK1* gene 6 month complication **(f)**
POP: pelvic organ prolapse; MAPK: mitogen activating protein kinase

Table 3. Complication rates after surgical interventions (mesh, native tissue)

Tissue	Complication		*p*-value
	Yes n (%)	No n (%)	
Mesh	9 (32.1)	2 (25.0)	0.699
Native tissue	19 (67.9)	6 (75.0)	

Responses from patients treated with different surgical interventions (Mesh, Native Tissue) after 6 months were evaluated (Table 3). There was no statistical difference between the probability of complications and mesh and native tissue treatment (p=0.699).

In Silico Analysis

Prediction of gene-gene interactions

The results obtained as a result of *in silico* analysis show that the *AKT1* gene is expressed together with 6 genes (*GRK2, PHLPP2, RPS6KB2, AKT2, PRKDC, FOXO1*). In addition, it was concluded that 18 genes (*PHLPP1, PHLPP2, RGCC, APPL1, FOXO4, RPS6KB2, AKT2, PTEN, THEM4, RICTOR, PRKDC, FOXO1, MAP3K14, NR4A1, TCOF1, PIK3R1, NO3, MTOR*) physically interact with AKT1 (Figure 3a).

In silico analysis for the *MAPK8* gene shows that 6 genes *(MAPK8IP1, REL, MAP3K1, MAP2K4, DUSP8, PAK1*) are

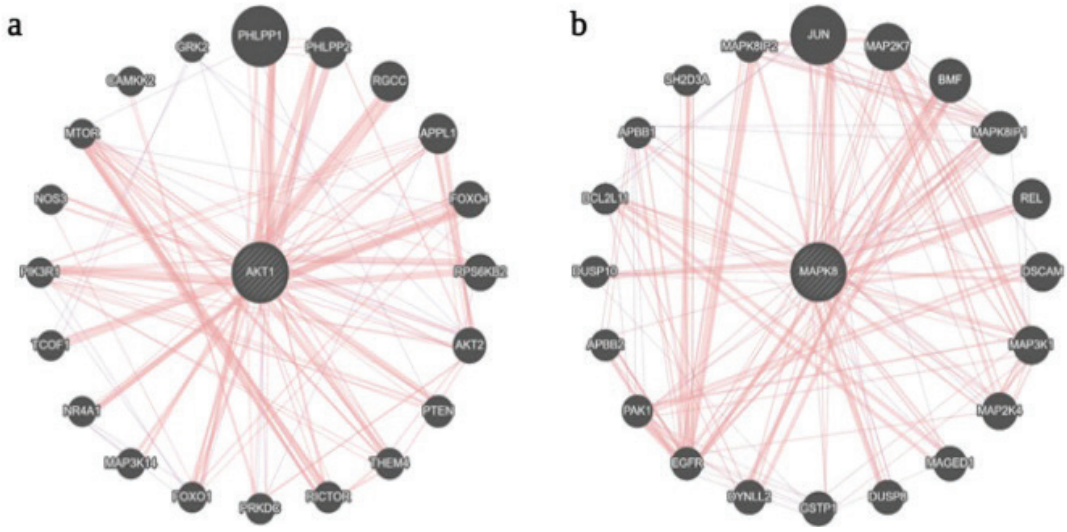

Figure 3. GeneMANIA server **a**) *AKT1* **b**) *MAPK8* gene-gene interactions

co-expressed with MAPK8. In addition, 19 genes (*JUN, MAP2K7, BMF, MAPK8IP1, REL, DSCAM, MAP3K1, MAP2K4, MAGED1, DUSP8, GSTP1, DYNLL2, EGFR, PAK1, APBB2, DUSP10, BCL2L11, APBB1, MAPK8IP2*) are in physical interaction with MAPK8 (Figure 3b).

Gene ontology

When the biological process is examined as a result of the gene ontology study for *JUN, FOS, MAPK1, MAPK8*, and *AKT1* genes, it is seen that these proteins are involved in the cellular response to reactive oxygen species, muscle tension response, and cellular response to cadmium ion.

In molecular function analysis, four of the five proteins studied (JUN, FOS, AKT1, MAPK1) were found to have identical protein binding and three proteins (MAPK1, MAPK8, AKT1) had kinase activity.

JUN, FOS, MAPK1, MAPK8, and AKT1 proteins appear to be involved in RANKL/RANK signaling pathway, prolactin signaling pathway, chromosomal and microsatellite instability in colorectal cancer, osteoclast signaling, toll-like receptor signaling pathway, gastrin signaling pathway, and IL-3 signaling pathway.

DISCUSSION

In our study, we compared the expression levels of *JUN, FOS, MAPK1, MAPK8* and *AKT1* genes in the MAPK pathway in patients with POP and control groups. Expression levels of *MAPK8* and *AKT1* genes were statistically significant between the patient and control groups (p=0.036 and p=0.010, respectively). There was no significant difference between the two groups for *JUN*, *FOS* and *MAPK1* genes (p=0.407, p=0.950 and p=0.223, respectively).

It was observed that MAPK1 expression level was higher in the patients who were evaluated for complications after surgical treatment compared to the group without complications. These results reveal that low MAPK1 level prevents complications that may occur after treatment. At the same time, when the patients treated with two different methods, namely mesh and native tissue, were evaluated in terms of complications, it was seen that there was no difference between these two treatment methods. In addition, as a result of gene-gene interaction analysis, genes in which *AKT1* and *MAPK8* genes are expressed together were determined by *in silico* approaches and GO analysis of these genes was performed.

In POP, the vagina and uterus may protrude.[10] Hysterectomy, which is a surgical method, is usually applied for the treatment of POP. However, the removal of the uterus does not cure the deficiency in the pelvic floor. Hence, uterus sparing surgeries either thanks to mesh or the natural tissue have also been applied in recent years.

The molecular mechanism underlying POP is very complex and has not been fully elucidated at present. Decreased estrogen infiltration, decreased ECM, activation of oxidative stress, genetic predisposition, and decreased neuropeptide and vasoactive intestinal peptide are among the molecular changes that occur in the pelvic floor of individuals diagnosed with POP. The predominant pathogenic mechanism of POP is decreased ECM metabolism.[11] Collagen and elastin in the ECM provide strength and flexibility to the connective tissue. Changes in collagen and elastin metabolism are observed in the pelvic tissues of individuals with POP. As a result of the research, it was concluded that the decrease in the amount of collagen and elastin was due to

the increased amount of MMP and increased metalloproteinase tissue inhibitor.[12] Among the collagens, it was observed that the amount of collagen type I in particular decreased in POP.[13] The ERK pathway, which is involved in regulating ECM components, contains several proteins involved in the MAPK pathway. The MAPK pathway includes 3 subfamilies; ERKs, c-JUN N-terminal kinases/stress-activated protein kinases (JNKs/SAPKs), and p38 and ERK1/2 and ERK5. ERK3/4 and ERK7/8.[14] Micro-sequencing studies have shown that there is an abnormal expression of the MAPK pathway in POP patients.[15]

In 1996, Jackson et al.[16] showed that genitourinary prolapse is associated with a decrease in total collagen content, supporting the findings of another study. Ruiz-Zapata et al.[17] found that the pyridinoline collagen cross-links, which reflect the mature collagen level in the prolapse region, were significantly increased compared to the non-prolapsed group. Vulic et al.[18] reported that matrix metalloproteinase 1 expression was increased and collagen I expression decreased in the uterosacral ligaments of women with POP compared to women without POP. Studies have also shown that inhibition of the MAPK pathway significantly reduces the level of collagen.[19] The mechanism of action of the MAPK pathway on collagen synthesis led us to investigate the effect of this pathway in the POP patient group. According to a study published in 2017; in primary culture of human vaginal fibroblast cells, silenced MAPK and nuclear factor-kB pathways were found to decrease the expression level of collagen I.[20] In addition, Vetuschi et al.[21] showed that protein levels of advanced glycation end products, ERK1/2, Smad-2/3, MMP-3, and collagen III molecules were higher in POP samples compared to the control group. Selected genes in TGF-β, SMAD pathway, another pathway associated with collagen production, were examined by us and meaningful data were obtained.[22]

Based on the results of gene-gene interactions, it is seen that the *GRK2, PHLPP2, RPS6KB2, AKT2* and *PRKDC* genes expressed together with the *AKT1* gene have not been investigated in POP studies before. In previous studies, only the *FOXO1* gene has been associated with POP.[23] This shows that the *GRK2, PHLPP2, RPS6KB2, AKT2* and *PRKDC* genes can be studied in further studies for POP. Also, there are no studies on *MAPK8IP1, REL, MAP3K1, MAP2K4, DUSP8*, *PAK1* genes and POP co-expressed with the *MAPK8* gene. This shows that there are genes that guide us in future studies.

As a result of the gene ontology study, it was determined that *JUN, FOS, MAPK1, MAPK8*, and *AKT1* genes are involved in the cellular response to reactive oxygen species (ROS). Previous studies have shown that oxidative stress markers due to the increase in ROS levels are high in women with POP.[24] It has also been shown that the studied genes are involved in the biological process of muscle tension. It is assumed that POP may occur in the future due to excessive stretching of the levator ani muscle in the pelvic floor, especially in women who have had a vaginal delivery.[25] The estrogen signaling pathway is among the biological pathways in which *JUN, FOS, MAPK1, MAPK8*, and *AKT1* genes are common. Studies show that estrogen and estrogen receptor expression level regulates the connective tissue components collagen and elastin.[26]

CONCLUSION

It was concluded that the expression levels of *MAPK8* and *AKT1* genes from the *JUN, FOS, MAPK1, MAPK8,* and *AKT1* genes we examined in our study were higher in patients with POP. In this context, investigation of molecules regulating these genes and epigenetic regulation analysis can be done for further studies. As a result of Gene-gene interactions analysis, other genes associated with *AKT1* and *MAPK8* may be potential genes to be investigated for the pathogenesis of POP. In addition, the gene ontology analysis sheds light on the biological processes and pathways that *JUN, FOS, MAPK1, MAPK8*, and *AKT1* genes have in common, and the association of different biological processes and pathways with the POP disease. There is a need to study with a larger sample group to better understand the relationship of the MAPK pathway with POP and evaluate different treatment types regarding the occurrence of complications in POP.

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ETHICS

Ethics Committee Approval: This study was performed in line with the principles of the Declaration of Helsinki. Approval was granted by the Ethics Committee of Muğla Sıtkı Koçman University Faculty of Medicine (date: 03.05.2018/no: 06/II).

Informed Consent: The written informed consent forms were obtained from individuals who agreed to participate in the study.

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Contributions

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DISCLOSURES

Conflict of Interest: No conflict of interest was declared by the authors.

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ORIGINAL ARTICLE

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Reclaiming feminine vitality: A comprehensive study on the influence of vaginal hysterectomy on sexual function and quality of life in pelvic organ prolapse, a preliminary study

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ABSTRACT

Objectives: This report examines the impact of surgical treatment for pelvic organ prolapse on sexual function and quality of life in women.

Materials and Methods: The study group consisted of 34 sexually active women. Baseline characteristics and medical and obstetric history of the patients were recorded. All women underwent vaginal examination to determine the degree of prolapse by pelvic organ prolapse (POP) quantification system. Out of 34 women, 16 (47.05%) had stage 3 prolapse, while 18 (52.94%) women presented with stage 4 apical prolapse. Women were seen before surgery and 3 months postoperatively. At both visits, a short form health survey-36 (SF-36) and female sexual function index (FSFI) were completed, and a qualitative face-to-face interview was conducted. Questionnaires total and domain scores and the change in the preoperative and postoperative scores were calculated and analyzed using the Wilcoxon signed-rank test.

Results: The mean age of the study participants was 53.73±8.41 years, with 17.6% of the patients having a history of grandmultiparity, 67.6% having a lower level of education, and 49.9% having a high body mass index. None of the patients underwent incontinence surgery as part of their hysterectomy procedure. Following surgery for POP, a statistically significant improvement was observed in female sexual functions ($p<0.01$). This improvement was evident in the total and individual scores of each domain of the FSFI, resulting in an overall enhancement in sexual function from a mean score of 15.03±6.2 pre-surgery to 27.03±4.43 post-surgery. Moreover, a statistically significant difference in SF-36 sub-dimensions was identified between the two time-dependent measurements taken after POP surgery. Qualitative data analysis revealed that the improvement in sexual function was associated with the treatment of POP symptoms.

Conclusion: Pelvic floor dysfunction is a multi-faceted problem because it has anatomical and functional aspects. This study demonstrates that POP influences women's quality of life and sexual functions and shows significant improvement following reconstructive surgeries for these pelvic floor disorders.

Keywords: Female sexual function; FSFI; pelvic floor surgery; pelvic organ prolapse; SF-36 quality of life scale; vaginal hysterectomy

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INTRODUCTION

Pelvic organ prolapse (POP) is a common and disturbing problem that can have a significant impact on a patient's quality of life (QoL) secondary to symptoms of vaginal bulge, pelvic pressure, urinary and bowel dysfunction, or sexual dysfunction.[1] Sexual function is a significant aspect of adult life, and there is limited knowledge about the connections between female sexuality and persistent health conditions, such as pelvic floor disorders.[2] Handa et al.[2] reported that women who reported pelvic floor dysfunction complaints experienced reduced frequency of orgasms, diminished arousal, and an increased incidence of dyspareunia. Given the intimate anatomical connection and shared pathophysiology, patients with prolapse may also experience concurrent urinary symptoms, and vice versa.[3] POP can affect the QoL and sexuality. For an extended period, the sexual well-being of women with POP was often neglected and hardly articulated for being considered a sensitive or taboo subject.[4]

POP results in physical changes to women's genitalia and can negatively affect women's sense of body image, in turn inducing negative changes in parameters of sexual function, such as loss of libido or reduced genital sensation.[5] These changes are highly variable and can be experienced differently among women.[6] It is of paramount importance to consider the patient's sexual needs when proposing a course of treatment. A thorough evaluation of the potential sexual consequences of the treatment should precede any recommendations. The decision-making process for managing POP should involve shared decision-making between the patient and the clinician, considering various treatment options. As a result of the growing recognition of the significance of sexual function in the treatment of POP, the scientific literature on the impact of POP and its treatment, primarily surgical repair, on sexual function has witnessed a substantial increase in the past two decades.[4]

Literature shows varying results regarding the effect of POP on sexual functions. While certain studies indicate a higher prevalence of sexual dysfunctions in women with urinary incontinence, others highlight that dyspareunia, reduced libido, and vaginal dryness are more frequently observed in patients with POP.[7] Nevertheless, some studies find no significant difference in sexual functioning between women with and without POP. Studies examining the impact of surgery for POP on female sexual functions also yield diverse results. Through reconstructive surgery for POP, our goal is to enhance and restore optimal sexual function.[8] Evaluating the effects of natural tissue repair for POP on sexual function indicates a significant enhancement in sexual function and a reduction in painful sexual intercourse after this type of repair.[9] Generally, there has been limited attention given to the impact of these conditions on women's sexual well-being, as most efforts have been directed towards treating POP and incontinence rather than addressing sexual functions.

Furthermore, many studies have solely focused on dyspareunia without using validated questionnaires, raising concerns about the reliability of their findings. We aimed to investigate the influence of POP on female sexual functions using a validated questionnaire. The main objective of this study was to evaluate different aspects of female sexual function in patients before and after reconstructive surgery for pelvic organ prolapse, utilizing the FSFI questionnaire.

In this study, we discuss the QoL and sexual function of women with POP and the consequences of vaginal hysterectomy (VH) about these issues. The complex multifactorial nature of human sexual function means that relevant data are only truly provided by prospective studies incorporating a preoperative assessment.

MATERIALS AND METHODS

The Kafkas University Medicine Faculty Research and Application Hospital Review Board approved this study (80576354-050-99/341). This cross-sectional prospective study involved 34 women referred for POP between January and June 2023 at Kafkas University Hospital. Preoperative and postoperative questionnaires assessing QoL and sexual function were administered to these 34 patients who presented to our outpatient clinic with complaints of apical prolapse and had planned hysterectomy following comprehensive gynecological examinations. POP surgery was performed only in patients with symptomatic POP ≥ stage 3, according to POP-Q. The decision to undergo surgery is typically based on subjective complaints, including sensations of pelvic bulge and obstructive symptoms for patients who did not prefer or experienced but failed to benefit from conservative treatments, such as the use of a vaginal pessary before.

Participants underwent a standardized assessment, which included a detailed medical history and physical examination. This assessment encompassed demographic information and an evaluation of pelvic floor functionality. The physical examination encompassed the measurement of body mass index and the assessment of POP-Q measurements.

The target population included sexually active adult women seeking outpatient gynecologic care for prolapse symptoms. Exclusions from the study encompassed sexually inactive individuals, pregnant women, those unwilling to provide comprehensive survey responses, and those not in a suitable mental state for healthy responses. Additionally, women with

chronic pain, neurological deficits, or psychiatric conditions were excluded. Follow-up appointments were scheduled for the third month postoperatively to evaluate patients' postoperative controls. This timing was chosen with the expectation that patients would have completed their recovery and overcome their fear of surgical complications. It alleviated concerns about post-surgical disappointment by then, having resumed their preoperative routines. The urogynecological examination was performed using standard POP-Q staging.

Our study complies with the Declaration of Helsinki, the principles of Good Clinic Practice, and does not conflict with the ethical rules of the subject research. All patients who participated in our study, having been thoroughly informed about the study, have provided their informed consent, confirming their willingness to participate.

Outcome Measures: All participating women were seen before and 3 months after surgery. For quantitative assessment, women were asked to complete the female sexual function index (FSFI) and short form health survey-36 (SF-36). The qualitative assessment consisted of a face-to-face interview conducted by a female consultant physician.

At the commencement of the interview, the interviewer elucidated the study's objectives and assured the confidentiality of the data collected by the participants.

FSFI was utilized to assess the sexual function of the patients. FSFI comprises 19 questions and is a questionnaire designed to evaluate sexual function over the last four weeks. It covers six subheadings: Desire, arousal, lubrication, orgasm, satisfaction, and pain. Questions are scored on a Likert-type scale from "always" to "never"; scores range between 0 and 5, with a total score ranging from a minimum of 2 to a maximum of 36. Higher scores indicate enhanced sexual function.

The validity and reliability of the Turkish version of the questionnaire were demonstrated by Ergun Oksuz.[10]

The QoL of all participants was evaluated using the SF-36 questionnaire, which includes the following eight sections: Physical functioning, role limitations resulting from physical problems, role limitations resulting from emotional problems, social functioning, mental health, energy/vitality, bodily pain, and general health. Each section is evaluated individually and scored from 0 to 100. A high score represents a better QoL. The validity and reliability of the Turkish version of the questionnaire were demonstrated by Kocyigit et al.[11]

VH operation: The surgical steps followed a conventional approach. An immobile uterus was considered an exclusion criterion for VH. Prolapse degrees were not taken into account. An increased number of prior abdominal surgeries was not considered a contraindication for VH. While McColl Kuldoplasty was applied to all patients, sacrospinous fixation was added when necessary.

Statistical Analysis

IBM SPSS Statistics 21.0 (IBM Corp. Released 2012. IBM SPSS Statistics for Windows, Version 21.0. Armonk, NY: IBM Corp.) and MS-Excel 2007 software were employed for statistical analysis and calculations. A significance level of $p<0.05$ was considered.

In the study, the normal distribution suitability of the scores for the subdimensions of the FSFI and SF-36 were assessed graphically and through the Shapiro-Wilks test. It was determined that none of the continuous variables followed a normal distribution.

Descriptive statistics for the variables were presented as mean ± standard deviation and median (minimum-maximum) values.

The Wilcoxon signed-rank test was utilized to compare preoperative and postoperative scores for the subdimensions of the FSFI and SF-36.

RESULTS

Basic demographics are reported (Table 1).

Changes in total and individual domains of FSFI and SF-36 questionnaire scores are shown in Table 2 and 3, respectively.

Table 1. Demographic characteristics of patients

	All patients (n=34)
Age (year) mean ± SD	53.73±8.41
BMI, n (%)	
Low	6 (17.64)
Normal	11 (32.35)
High	8 (23.52)
Obese	9 (26.47)
Education status n (%)	
Primary	23 (67.6)
Middle-high school	8 (23.5)
University	3 (8.8)
Parity, n (%)	
Multiparity	28 (82.3)
Grandmultipar	6 (17.6)
Systemic disease, n (%)	
None	22 (64.7)
Exist	12 (35.3)
Habit, n (%)	
None	22 (64.7)
Smoking	12 (35.3)

SD: Standard deviation, BMI: Body mass index

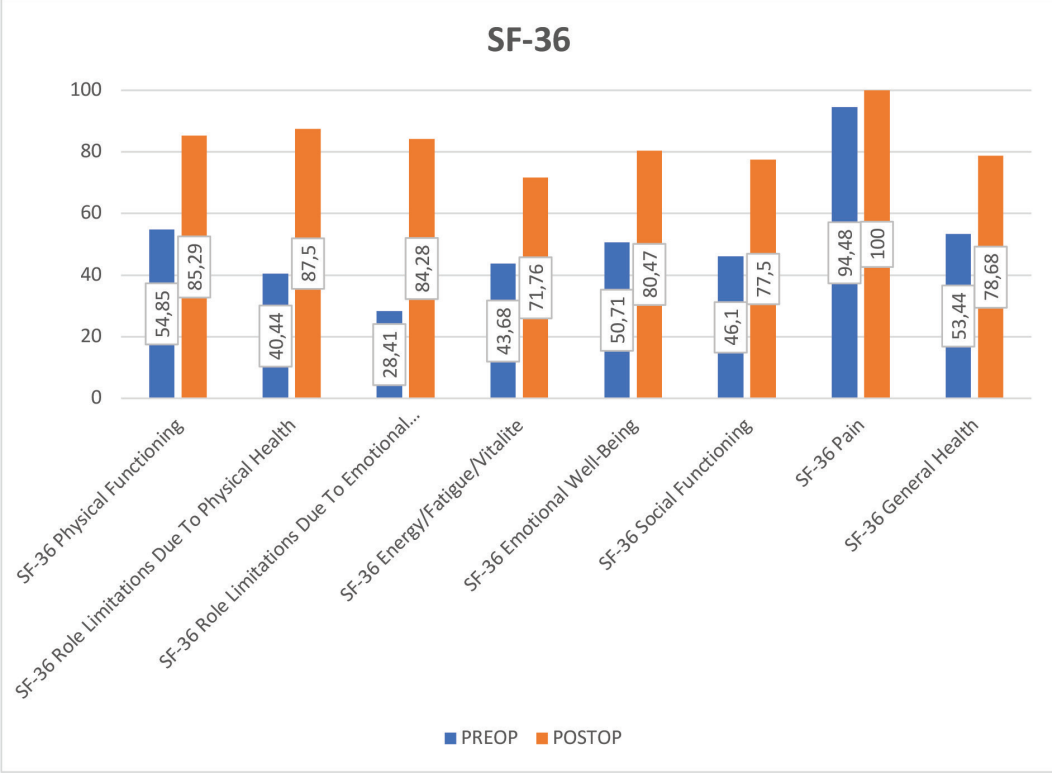

Table 2. Mean FSFI domain scores before and after surgery

	Preop		Postop		
	Mean ± SD	Median (min-max)	Mean ± SD	Median (min-max)	*p**
Parameters					
Sexual desire	1.73±0.53	1.8 (1.2-3.0)	3.87±0.62	3.6 (3.0-4.8)	**<0.001**
Arousal	2.36±1.40	3.0 (0.0-4.2)	4.54±0.68	4.8 (3.6-5.4)	**<0.001**
Lubrication	2.12±1.32	2.4 (0.0-4.0)	4.70±0.88	4.8 (3.0-5.7)	**<0.001**
Orgasm	2.01±1.12	2.0 (0.0-3.6)	4.98±0.48	4.8 (4.4-6.0)	**<0.001**
Satisfaction	3.38±0.80	3.2 (2.0-4.4)	4.82±0.73	4.4 (4.0-6.0)	**<0.001**
Pain, discomfort	3.43±0.95	3.6 (2.0-4.8)	4.12±1.04	4.0 (2.8-6.0)	**<0.001**

*: Wilcoxon signed the rank test, SD: Standard deviation, FSFI: Female sexual function index

The data suggests a statistically significant difference with *p*-value <0.01 in total and individual scores of each domain of FSFI and SF-36 questionnaires before and after.

A statistically significant difference was found between the two time-dependent measurements (preop, post) of FSFI sub-dimensions: Sexual desire, arousal, lubrication, orgasm, satisfaction, and pain discomfort ($p<0.001$). Sexual desire, arousal, lubrication, lubrication, orgasm, satisfaction, and pain discomfort values all increased over time (Table 2).

A statistically significant difference was found between two time-dependent measurements (preop, postop) of SF-36 sub-dimensions physical function, physical role difficulty, emotional role difficulty, energy/vitality/vitality, mental health, social functioning, pain, general health perception ($p<0.001$). There was an increase in the SF-36 quality of life of individuals after surgery compared to the preoperative period (Table 3).

DISCUSSION

POP is defined as a protrusion of the pelvic organs through the vaginal walls and pelvic floor. Although it is a common condition, its prevalence is difficult to establish. The significance of POP can be easily understood by considering that in the United States,

Table 3. Mean SF-36 domain scores before and after surgery

	Preop		Postop		
	Mean ± SD	Median (min-max)	Mean ± SD	Median (min-max)	*p**
SF-36					
Physical function	54.85±19.59	55.0 (10-95)	85.29±11.87	85.0 (55-100)	**<0.001**
Physical role difficulty	40.44±35.89	25.0 (0-100)	87.50±17.68	100.0 (50-100)	**<0.001**
Emotional role difficulty	28.41±31.91	33.3 (0-100)	84.28±18.80	100.0 (33-100)	**<0.001**
Energy/vitality	43.68±14.94	45.0 (10-75)	71.76±14.35	75.0 (40-90)	**<0.001**
Mental health	50.71±20.34	44.0 (20-88)	80.47±9.33	80.0 (60-92)	**<0.001**
Social functioning	46.10±28.32	50.0 (0-100)	77.50±15.07	75.0 (37-100)	**<0.001**
Pain	94.48±12.02	100.0 (42-100)	100.00±0.00	100.0 (100-100)	**<0.001**
General health perception	53.44±15.00	51.0 (30-85)	78.68±13.04	85.0 (35-90)	**<0.001**

SD: Standard deviation, SF-36: Short form health survey-36

approximately 11.8% of women undergo surgical interventions for POP by the age of 80.[12] This statistic highlights the substantial health challenges that POP poses for women and its association with increased susceptibility to sexual dysfunction and life quality.

The frequently cited statistic that approximately 50% of women will experience POP pertains mainly to anatomical changes, not necessarily the severity of prolapse or related symptoms.[4] Anatomical changes resulting from prolapse do not consistently align with the associated symptoms or their severity. Discrepancies in the reported prevalence of POP in the literature can be attributed to variations in research methodologies. Studies present a prevalence of up to 50% when focused on anatomic deterioration and yet much less when focusing on bothering symptoms.[6] Consequently, the reported prevalence of POP can vary widely across different studies, ranging from 3% to 50%.[13] Prevalence also varies with age and the type or degree of POP. The prevalence of high-grade POP in the general population is very low[4] but increases to 14% among symptomatic women[14] over 70% in women undergoing surgical repair.[15]

Various risk factors contribute to pelvic organ prolapse, weakening the endopelvic fascia and collagen.[16] These factors include non-modifiable ones such as race, gender, age, menopause, geriatric health status, and genetics. On the other hand, modifiable factors like occupation, obesity, smoking, infection, relationship issues, depression, and childbirth can potentially be addressed through intervention or prevention.[2,17]

The prevalence of POP tends to be higher among older age groups, with a notable increase in older women seeking medical attention for this condition. A substantial number of individuals diagnosed with POP are aged 50 and above, especially those aged 80 or older.[18] As the population ages, the prevalence of symptomatic POP is anticipated to increase, posing a significant future health challenge.[19] By 2050, it is estimated that approximately 46% of women in the United States will experience symptomatic POP, affecting over 5 million individuals. Research indicates a direct relationship between age and the likelihood of seeking medical care for POP, with the highest consultation rates observed in women aged 70-79.[20]

As a result, from a public health perspective, POP imposes a substantial economic burden on healthcare systems, as approximately 13% of women will require surgical intervention for this condition during their lifetime.

Treatment options for POP include observation, pelvic floor physical therapy, pessary use, and surgery. The choice of surgery technique depends on factors such as the specific compartments involved, the severity of prolapse, the patient's medical and surgical history, comparative durability and risks of procedures, and patient involvement in making the decision.[1]

The primary objective of POP surgery is symptom reduction and enhancement of health-related quality of life (HRQoL).[21] The findings of Cadenbach-Blome et al.[22] align with prior research, indicating that surgical treatment improves HRQoL for women with POP.[23] Several literature studies have highlighted the significant benefits obtained in various subgroups of the QoL scale after POP surgery.[22,24] Our findings are consistent with the literature on postoperative changes in QoL.

The average age in our study aligns with the literature. The composition of our study group, consisting of older and advanced-stage patients, can be attributed to women delaying physician visits and treatment-seeking for their prolapse symptoms, hesitating to discuss anatomical changes that have

occurred in their genital regions, feeling embarrassed, and eventually accepting to live with these conditions over time.

Handa et al.[2] reported that stage III-IV prolapse was significantly associated with infrequent orgasm (p=0.02), but other sexual complaints were not more common with increasing prolapse stage in their study.The American Foundation for Urologic Disease identifies four categories of female sexual dysfunction: Low libido, issues with sexual arousal, difficulty in achieving orgasm, and dyspareunia.[25] Research has indicated that sexual concerns are prevalent in women with pelvic floor disorders, although the findings vary.[26] One study showed that women with urinary symptoms were more inclined to report decreased libido and dyspareunia compared to those without urinary symptoms. In contrast, a recent community-based study found no significant disparities in sexual activity or satisfaction among women experiencing pelvic floor symptoms.[26]

Sexuality is a significant component of both physical and emotional well-being. Anatomic deformities in the genital area due to POP can have a negative impact on a person's body image. A decline in self-confidence in women can negatively impact their sexual lives, as the belief that they are no longer sexually attractive to their partners may lead to a loss of interest in sexuality.

Various studies have investigated the changes in sexual functions following surgeries for POP with diverse outcomes.[27] A prospective, multi-center cohort study involving patients who underwent traditional vaginal surgery for grade ≥II symptomatic POP demonstrated an improvement in sexual functions as assessed by the pelvic organ prolapse/urinary incontinence sexual questionnaire before and 12 months after POP surgery.[28] Similarly, a prospective randomized trial with 78 patients evaluating sexual function in women before and after VH for uterine prolapse of stage 2 or higher reported improved anatomical and sexual function postoperatively. However, it was noted that VH might negatively impact sexual function if new-onset or worsening dyspareunia or incontinence develops postoperatively.[29]

Long et al.[30] examined the impact of POP surgery on the sexual function of both premenopausal and postmenopausal women using the FSFI. They found that, despite the effective anatomical restoration of POP, surgery was linked to a deterioration in individual and overall FSFI domains in premenopausal women postoperatively, particularly with a significantly higher rate of worsened dyspareunia compared to postmenopausal women.[30] Our study population includes women in the postmenopausal period, and the study results remained independent of changes that may arise from the premenopausal to postmenopausal transition.

In our study, all FSFI domains exhibited significant improvement after surgery, which differs from a study by Hoda and Kim et al.[31], where no significant changes in orgasm function were found in women who underwent anterior or posterior repair for prolapse. Our study's key strengths lie in the utilization of a validated FSFI questionnaire for the assessment of sexual functions both prior to and following surgery, along with the prospective collection of data. Additionally, all surgeries were performed by the same surgeon team, reducing potential bias. Notably, no patients were lost to follow-up throughout the study. Our research sheds light on an especially delicate subject in developing countries, where issues related to sexual functions are often underreported.

CONCLUSION

In conclusion, from a public health point of view, POP has a tremendous economic burden on health systems. The increase in life expectancy and the movement towards improved QoL contribute not only to the increase in the prevalence of POP but also to the increase in the prevalence of women seeking treatment and solutions for their symptoms.

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ETHICS

Ethics Committee Approval: The Kafkas University Medicine Faculty Research and Application Hospital Review Board approved this study (80576354-050-99/341).

Informed Consent: All patients who participated in our study, having been thoroughly informed about the study, have provided their informed consent, confirming their willingness to participate.

Peer-review: Externally peer-reviewed.

Contributions

Surgical and Medical Practices: M.C., A.Y.; Concept: M.C.; Design: M.C., A.Y.; Data Collection or Processing: M.C., A.Y.; Analysis or Interpretation: M.C., A.Y.; Literature Search: M.C.; Writing: M.C.

DISCLOSURES

Conflict of Interest: No conflict of interest was declared by the authors.

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EnPlace®: A truly minimally invasive vaginal pelvic organ prolapse suspension with no deep dissection and no mesh, personal 581 operations experience

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ABSTRACT

Objectives: The aim of this study was to assess the clinical outcomes of safety and efficacy of a minimally invasive, meshless anchoring system-the EnPlace® SSL fixation for apical POP repair in 581 patients.

Materials and Methods: The patients follow-up exams and questionnaires were performed and completed first day after surgery, one and four months after. Anatomical and functional cure rates, post-operative complication rate and severity, as well as urine and bowel symptoms, post-operative pain and dyspareunia levels, were all used as outcome measures.

Results: The mean age of the study population (n=581) was 63.5±10.7 years. Fifty-two (9.9%) patients had a previous hysterectomy and 117 (22.3%) patients had urinary stress incontinence (USI) symptoms. All women had a prolapse in a minimum of two compartments and at least one compartment was at stage III. Preoperative C point pelvic organ prolapse (POP)-quantification showed a mean of 1.44 (-2-12). 99.2% of patients had concomitant anterior and posterior colporrhaphy. 20% of patients had an addition of a midurethral sling due to USI symptoms. POPs, USI and overactive bladder symptoms were all found to be reduced significantly. However, the prevalence of *de novo* dyspareunia among sexually active women was 1.7% (0.7% increase). The patient's satisfaction rates at the 4 months follow-up was 92.1%.

Conclusions: SSL fixation is made simple to execute with the EnPlace® device, which prevents mesh and dissection-related issues by allowing quick and a suspending suture being safely inserted through the SSL. The EnPlace® operation, done weather with or without concomitant colporrhaphy, produced positive objective and subjective results and low recurrence.

Keywords: Anchor; meshless; minimally invasive surgical procedure; pelvic floor disorders; prolapse; sacrospinous fixation

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INTRODUCTION

Pelvic organ prolapse (POP) is the term used to describe the descent of one or more pelvic structures, such as the uterus (including the cervix), the vaginal walls, or the vaginal apex (cuff scar or vaginal vault after hysterectomy). Mild POP would usually be asymptomatic, but if the bulge exceeds the vaginal entrance, it might significantly lower a woman's quality of life. The patients usually feel or palpate the vaginal bulge toward or through the vaginal introitus and suffer decline in body image, as well as impairment with urinary, defecatory, and sexual functions. Both non-surgical and surgical options should be provided to a woman who is troubled by the prolapse.[1] Up to 50% of women will experience POP in their lifetime.[2] Apical prolapse is the primary factor in 20% of instances,[3,4] and exists to some degree with up to 50% of POPs. A large apical POP makes surgery difficult. The current gold standard for apical POP repair is transabdominal sacrocolpopexy, whether open, laparoscopic, or robotic. Although the transabdominal method is very successful, it is more expensive, necessitates laparoscopic or robotic expertise, is not appropriate for all patients, because it requires general anesthesia and may result in certain abdominal and mesh-associated complications. In general, and especially in situations where the abdominal surgical method is less desirable, typically in women who are not candidates for laparoscopic surgery, transvaginal apical correction offers an excellent alternative to the transabdominal approach. Another surgical challenge is that the anatomic recurrence rates in women who have POP surgery are predicted to be between 8 to 27% within 2 to 7 years,[5] where vaginal reconstruction might be considered. The most important outcomes of POP treatment is now thought to be patient satisfaction, health-related quality of life and lower recurrence rate. These aspects prompted the development the minimally invasive surgical device for sacrospinous ligament (SSL) fixation of apical prolapse -the EnPlace® (FEMSelect, Modi'in, Israel), which allows SSL fixation with no need for deep pelvic dissection nor mesh implants. Due to recent FDA guidance recommendations restricting the use of mesh, which may increase the risk of severe adverse events in prolapse repair surgeries involving mesh, the EnPlace® device allows the surgeon to perform a centro-apical support procedure with reduced bleeding, no need for mesh implants, and only using anchors and suturing materials.[6] The aim of this study was to assess the clinical outcomes of safety and efficacy of the EnPlace® SSL fixation for apical POP repair in a large cohort of patients (581).

MATERIALS AND METHODS

The study was performed on a prospective cohort of females who had advanced POP. Informed consent was obtained from all patients. All ethics committee requirements were fulfilled.

Between January 2019 and April 2023, EnPlace® surgeries were performed by an experienced urogynecological surgeon (MN). A total of 581 patients who were diagnosed with advanced POP (according to POP-Q) and suffered from significant symptoms were enrolled in the study. The EnPlace® surgical device, designed for pelvic floor apical suspension has a working channel integrated into finger guide the that allows transvaginal anchor and suture placement into the SSL. This novel product is designed to provide apical central support for the vaginal vault or uterine cervix in patients with a central compartment defect who require suspension, without requiring mesh implants or transvaginal deep dissection. An anchor and a delivery system are the two primary components of the Enplace® device. The anchor element can be guided, inserted, and deployed through the delivery system. The anchor is composed of a nitinol harpoon with a sharp edge point that can be pierce through the vaginal and the SSL. The anchor is inserted and deployed beyond the medial segment of the SSL with the use of an applicator. The anchor includes two surgical stitches at its proximal end, allowing fixation of the uterine cervix or vaginal apex to carry out the intended goal of suspending the pelvic floor apex. The Finger Guide is an accessory to the device that enables precise placement of the introducer against the mid-SSL for better positioning of the Enplace®.

The diameter of the anchor penetration is 2.0 mm. Its wings spread to 4.0 mm once it is launched and passes through the SSL. In order to prevent damage, the working channel's rear stop, which is set at 17 mm, limits the anchor's penetration depth below the ligament. The gadget shaft measures 285 mm in length and 2.5 mm in diameter. The polypropylene suture has a length of 70 cm, and the self-adjusting work channel can accommodate a wide range of surgeon finger sizes. There are two hollow, concentric shafts in the applicator. The anchor wings can only be deployed to the extent allowed by the outer shaft. The inner shaft moves the anchor out of the way when the deployment button is depressed, enabling the wings to extend. The applicator is equipped with a safety latch that protects the button, to avoid undesired deployment.After deploying anchors into the midpoints of the right and left SSL, the distal, free ends of the sutures on both sides of the vagina are used to anchor the apex of the vagina bilaterally by making

a permanent stitch into the tissue of the cervix or vaginal apex. The anterior distal region aspect of the uterine cervix serves as the apical suspensory attachment point for the EnPlace® system in patients with their uteri *in situ*. The remaining uterosacral ligaments at the connection to the vaginal apex serve as the apical suspensory fixation point for the EnPlace® system in hysterectomized patients. A comprehensive description of the tools and surgical technique was released earlier in 2016.[7] Preoperative, site-specific vaginal examination using a Sim's speculum in the lithotomy position was carried out as part of the office pelvic examination while performing a maximal Valsalva maneuver. We staged and measured POP-Q in accordance with the International Continence Society (ICS) standard scoring methodology. Centroapical pelvic prolapse grade of POP-Q Stage II-IV, scheduled POP reconstructive surgery, and agreement to the POP operation with the EnPlace® device were the inclusion criteria for this study. Women who had been diagnosed with reproductive tract anomalies, had undergone pelvic radiation therapy in the past, had a history of pelvic inflammatory illness or pelvic cancer, or who were unable to give their informed consent or complete questionnaires were not enrolled in this study.

Native-tissue vaginal wall prolapse repair and sub midurethral sling were applied to individuals who had concurrent anterior and posterior pelvic floor compartment POP and/or urinary stress incontinence, accordingly.

The patients follow-up exam were performed immediately after surgery, one month and 4 months after. Questionnaires according to the study protocol were completed one and four months after surgery.

Postoperative pain and dyspareunia levels and duration, anatomical and functional cure rates, postoperative complication nature, severity and rates, and urinary and defecatory symptoms were all used as outcome measures.

Preoperative and postoperative detailed patient interviews were documented, focusing on pain, urinary and defecatory symptoms, dyspareunia, satisfaction, and adverse events. Preoperative and postoperative modified POP-Q scores (Ba, Bp, and C) were assessed and determined according to the compartment with the most advanced prolapse.

The absence of central compartment bulging subjective symptoms, together with the absence of objective anatomical prolapse beyond Stage I (1 cm proximal to the hymenal ring), and the necessity for subsequent surgery were considered as successful procedures.

Statistical Analysis

Preoperative and operative numerical data were presented with a combination of the following: Mean, median, range, standard deviation (SD). This included both discrete (parity), and continuous (patient age, POP-Q points, duration of surgery, and blood loss) data. Concomitant nominal categorical data was displayed via counts and percentages (concomitant procedures). Postoperative data included both categorical (ordinal and nominal) and numerical (continuous) data. Postoperative ordinal (patient satisfaction rating) and continuous (POP-Q points) data were represented with all of the following: Mean, median, range, SD, while the nominal data was shown with counts and percentages as well. Paired data was analyzed with paired t-tests for continuous variables, while McNemar's test was used for nominal variables; a two-sided *p*-value of 0.05 was regarded as significant.

Statistical analysis rendered the following paired, nominal data "extremely" significant by the McNemar test: USI and OAB, with both *p*-values <0.0001. The preoperative to postoperative number of patients with the symptom went from 117 to 12 and 152 to 32, respectively. Whereas the difference in the number of patients before and after with dyspareunia, bowel symptoms, and pelvic pain, were rendered not statistically significant.

Paired, continuous data analyzed with the paired t-test all resulted to be "extremely" significant, with the *p*-values for the POP-Q points of Ba, C, and Bp being less than 0.0001.

RESULTS

Between January 2019 and April 2023, 581 women underwent the EnPlace® procedure and were enrolled in the study. Fifty patients were lost to follow-up. Table 1. lists the initial preoperative patient characteristics of those who received an EnPlace® implant. The mean age of the study population at the time of the procedure was 63.5 SD ±10,7 years (range 32-92). Fifty-two (9.9%) patients had a previous hysterectomy and 117 (22.3%) patients had urinary stress incontinence (USI) symptoms. All women had a prolapse in a minimum of two compartments and at least one compartment was at a Stage III. The mean prolapse duration was 2.9 years. Preoperative C point POP-Q showed a mean (range) of 1,44 (-2-12). 99.2% of patients had concomitant anterior and posterior colporrhaphy. No injuries to the bladder, rectum, pudendal nerves, or major pelvic vessels were noted. 20% of patients had an addition of a midurethral sling due to USI symptoms, proven at preoperative site-specific vaginal examinations (Table 1).

The second, and third postoperative follow-up records were satisfactory in terms of subjective and objective success and adverse effects occurrence. Table 2 displays data on the POP-Q points C, Ba, and Bp at the follow-ups. The secondary outcome measures, including urinary, sexual, bowel, and pain

symptoms, and the subjective and objective success rates are shown in Tables 3 and 4. Urinary stress incontinence and bladder overactivity symptoms (namely urgency, frequency, and nocturia), were all found to be reduced significantly. Fecal incontinence, constipation, and pelvic pain rates were reduced as well. However, the prevalence of *de novo* dyspareunia among sexually active women was 1.7%, which is a 0.7% increase. Although bowel symptoms and pelvic pain frequency decreased overall, there were still 13 (2.5%) and 25 (4.8%) *de novo* cases, respectively (Figure 1).

An improvement in the apical defect was evident at the postoperative pelvic examination; the average POP-Q Ba point was -3 cm, Bp point was -3 cm, and C point was -5 cm, four months after the procedure (Figure 2).

There was a significant positive correlation between anatomical success and functional success, because the correlation

Table 1. Preoperative patient characteristics and concomitant procedures

Preoperative patient characteristics	**Mean**	**SD**	**Range**
Age (years)	63.5	±10.7	(32-92)
Parity (n)	3.3	±1.9	(0-17)
Point C (cm)	1.44	±2.52	(-2-12)
Point Ba (cm)	2.84	±1.67	(-3-6)
Point Bp (cm)	0.54	±1.32	(-2-12)
	Time	**Range**	
Prolapse duration (years, months)	2 years, 11 months	39 months, 11 months	
	Number	**Percentage**	**Total***
Previous hysterectomy (n)	52	(9.9%)	527
Prior TVT (n)	24	(4.6%)	526
Prior colporrhaphy (n)	22	(4.2%)	527
Prior POP reconstruction (n)	19	(3.6%)	527
USI (n)	117	(22.3%)	525
Dyspareunia (n)	5	(1.0%)	523
OAB (n)	152	(28.6%)	531
Bowel symptoms (n)	18	(3.4%)	525
Concomitant procedures			
Anterior colporrhaphy (n)	526	(99.2%)	530
Posterior colporrhaphy (n)	526	(99.2%)	530
Midurethral sling (n)	106	(20.0%)	530
	Mean	**SD**	**Range**
Duration of surgery (min)	23.94	±6.26	(15-60)
Blood loss (mL)	24.11	±6.34	(15-45)

*The total refers to the number of patients that had value at all in that category. E.g., 527 patients (out of 581 population) had a recorded value for the question of "previous hysterectomy". Fifty-two out of the 527 patients did indeed have a previous hysterectomy. SD: Standard deviation, TVT: Transmissible venereal tumor, USI: Urinary stress incontinence

Table 2. POP-Q points C, Ba, and Bp data at follow-ups

(Median, SD, range)	**1st follow-up**	**2nd follow-up**	**3rd follow-up**
C (Cm)	median -6, SD ±0.5 range -6-(-4)	median -6, SD ±1.1 range -7-4	median -5, SD ±1.5 range -6-3
Ba (Cm)	median -3, SD ±0.4 range -4-(-2)	median -3, SD ±0.6 range -4-1	median -3, SD ±1.0 range -6-4
Bp (Cm)	median -3, SD ±0.3 range -3-(-2)	median -3, SD ±0.4 range -4-0	median -3, SD ±0.8 range -6-3

SD: Standard deviation, POP-Q: Pelvic organ prolapse-quantification

coefficient is significantly different from zero (rpb=0.482, $p<0.05$). Anatomical successes have higher ratings, thereby functional successes do too.

The overall subjective and objective outcome results of this study are promising (average success rate after 1 Mo - 94.6% and 4 Mo - 92.1%). When asked if the patients' symptoms improved over their presurgical symptoms, the majority of patients expressed

Table 3. Postoperative functional outcomes of patients who underwent EnPlace surgery

Symptom	Number	Percentage	Total
De novo USI	12	(2.3%)	520
De novo OAB	32	(6.2%)	519
De novo dyspareunia	9	(1.7%)	519
De novo bowel symptoms	13	(2.5%)	520
De novo pelvic pain	25	(4.8%)	521

USI: Urinary stress incontinence, OAB: Overactive bladder

Table 4. Postoperative outcomes of patients who underwent EnPlace surgery

	Preoperative data			Postoperative outcomes			Calculations	
Symptom/POP-Q	Before (n)	Total	%	After (n)	Total	%	Δ (%)	Δ (n)
USI	117	525	22.3%	12	520	2.3%	20%	105
OAB	152	531	28.6%	32	519	6.2%	22%	120
Dyspareunia	5	523	1.0%	9	519	1.7%	-1%	-4
Bowel symptoms	18	525	3.4%	13	520	2.5%	1%	5
Pelvic pain	38	526	7.2%	25	521	4.8%	2%	13
Ba	426	525	81.1%	1	523	0.2%	81%	425
C	237	526	45.1%	3	523	0.6%	44%	234
Bp	110	526	20.9%	0	523	0.0%	21%	110

POP-Q: Pelvic organ prolapse-quantification, USI: Urinary stress incontinence, OAB: Overactive bladder

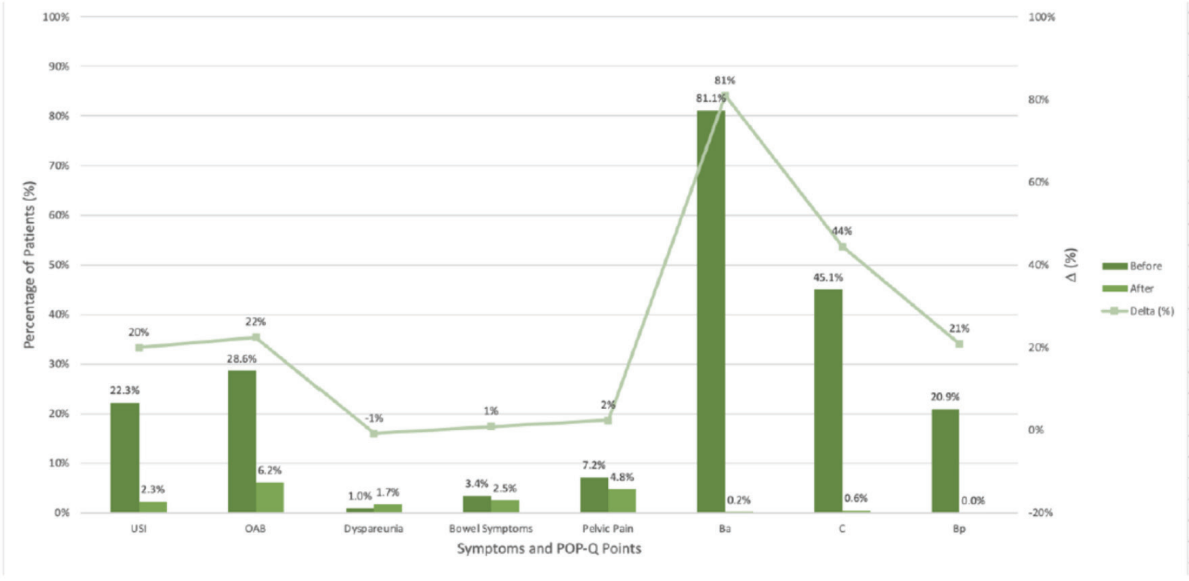

Figure 1. Postoperative functional results

POP-Q: Pelvic organ prolapse-quantification

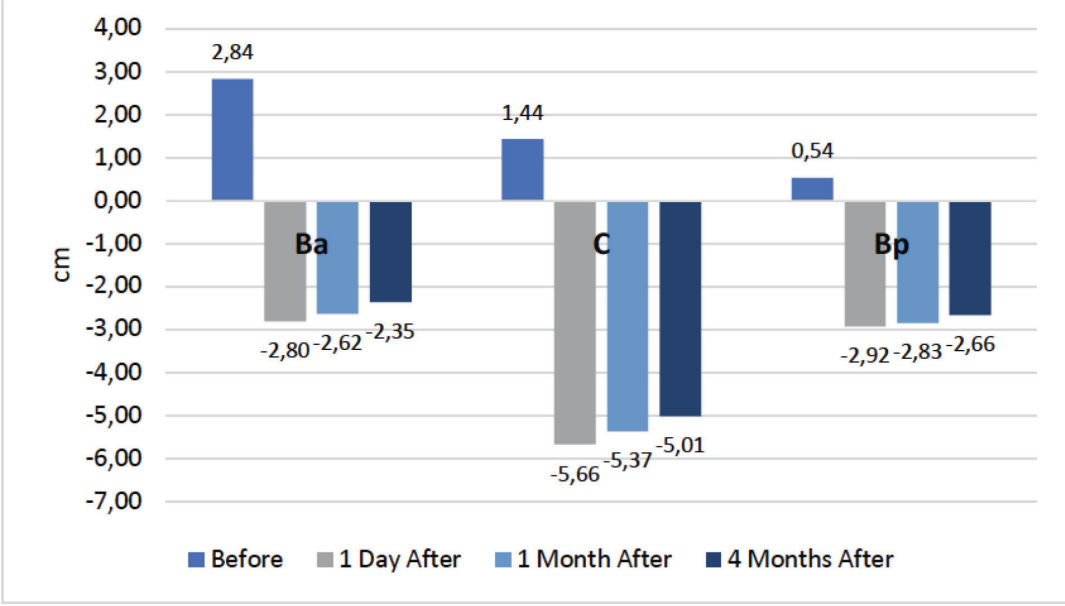

Figure 2. Postoperative anatomical outcomes of patients who underwent EnPlace surgery

Table 5. Patient satisfaction rates

Patient satisfaction	Mean	Range	SD
1 mo follow-up	94.6%	50-100%	±8.9%
4 mo follow-up	92.1%	50-100%	±11.6%

SD: Standard deviation

satisfaction with the surgery (on a scale of 50% = not at all to 100% = very much). Table 5 indicates that the women's quality of life increased.

DISCUSSION

The FDA's recommendation in January 2016 to reclassify surgical mesh for transvaginal repair of POP to the highest risk class of devices (class III) and the FDA's directive to the makers of all remaining surgical mesh products recommended for the transvaginal repair of POP to stop marketing and distributing their products in the United States by April 2019 were revolutionary in the surgical treatment of genital prolapse.[8,9] These facts served as driving forces to explore surgical methods to treat genital prolapse while refusing to use mesh implants. It is evident that each patient should receive personalized care while selecting the best surgical approach for treating POP. Transabdominal sacrocolpopexy, whether laparoscopic or robotic, is currently the gold standard for apical POP repair. Despite the fact that the transabdominal approach is very effective, it is more expensive, needs laparoscopic or robotic competence, is not suitable for all patients because it necessitates general anesthesia, and may lead to specific abdominal and mesh-related problems.[10]

Transvaginal apical correction offers an alternative to the transabdominal approach in circumstances where the abdominal surgical approach is less acceptable, usually in women who are not candidates for laparoscopic surgery. When treating prolapse surgically, the goal should be to fix the vaginal defect if the patient is sexually active and the surgeon prefers a vaginal approach. The vagina is frequently used for apical prolapse repair surgery using the SSL to anchor support of the vaginal apex, as the vagina is often considered the natural orifice for POP reconstruction. Transvaginal SSL fixation has several drawbacks, among them are the need for mesh implants to reinforce the suspension and the extensive dissection required to reach the SSL. The risk of intraoperative hemorrhage and pelvic organ injury is increased by such surgical procedures.The purpose of this study is to describe our post-operative results and the efficacy of apical prolapse repair utilizing a unique pelvic floor ligament fixation system called the EnPlace® system, which is intended to offer a less invasive and minimal dissection approach to the SSL. The results demonstrate the safety, efficacy, and high success rate of this centro-apical POP repair procedure. The anatomical findings, together with the patient satisfaction and quality of life scores, were all positive.

Since there were no intraoperative difficulties, the procedure was determined to be safe and practicable in terms of safety. Additionally, the EnPlace system's efficacy and safety have already been proven in a meticulously methodical cadaver and animal study. The long-term results of this technique with a four-year follow-up were also published in 2021. It is safe, practical, and effective to use the EnPlace method for vaginal SSL fixation

surgery to treat apical POP. Given the difficulties in repairing the apical compartment during POP reconstruction, a device's safety and viability are especially crucial.

The EnPlace® technology allows for the safe and speedy insertion of a suspending suture via the SSL, therefore simplifying and expediting SSL fixation without the need for dissection or a mesh implant. The study's main drawbacks are that it is a one-arm assessment with no control group and a rather little follow-up time. One of the study's strengths is its sizable cohort of 581 patients. An additional benefit of the current study is the assessment of validated QoL questionnaires and self-reported, patient-centered outcomes.

CONCLUSION

The limitations of this study include its single-arm design, short follow-up period, and lack of use of valid questionnaires. But in conclusion, SSL fixation is made simple to execute with the EnPlace® device, which prevents mesh and dissection-related issues by allowing quick and safe insertion of a suspending suture through the SSL. The EnPlace® operation, done weather with or without concomitantcolporrhaphy, produced positive objective and subjective results and low recurrence. The EnPlace® approach may be a useful option for patients who need apical suspension and wish to avoid complications related to mesh augmentation, deep surgical dissection, or more invasive transvaginal or abdominal surgeries for POP repair.

ETHICS

Ethics Committee Approval: As we mentioned on the cover letter, being a retrospective study, based upon an anonymous data base privately owned by the acting surgeon, the hospital ethics committee approval is not required.

Informed Consent: Informed consent was obtained from all patients.

Peer-review: Internally and externally peer-reviewed.

Contributions

Surgical and Medical Practices: R.F-K.; Concept: N.S., R.F-K., M.N.; Design: N.S.; Data Collection or Processing: J.N., S.F.S.; Analysis or Interpretation: J.N., M.N.; Literature Search: N.S.; Writing: N.S.

DISCLOSURES

Conflict of Interest: M. Neuman is a founder and share holder of FEMSelect.

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Important enterocele after laparoscopic sacrocolpopexy

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ABSTRACT

Laparoscopic sacrocolpopexy is regarded among the preferred methods of treatment for pelvic organ prolapse (POP). While vaginal surgery using mesh for POP treatment is getting more and more controversial, there is a sort of ease that surrounds laparoscopic sacrocolpopexy in terms of complications, which can concern not only the usage of mesh, but also the effect this type of correction has on the pelvic structures. An 80 year old woman presented in our clinic with acute urinary retention. The patient had undergone laparoscopic hysterectomy with vaginal sacrocolpopexy in the USA, 10 years previous to this presentation. The clinical exam revealed a massive enterocele with a grade IV rectocele, alongside an apical mesh erosion of 2/2 cm. Conservative treatment was attempted since the patient had multiple morbidities, but without succes. Surgical correction was then decided with sacrospinous fixation using a small polypropilene tape for the enterocele and a posterior bridge for the rectocele. Imediate postoperative result was satisfactory, but a surgical complication appeared, a ureterovaginal fistula which was conservatively treated in the urological department. While in the literature it is suggested that complications following laparoscopic sacrocolpopexy are rare, they can occur and the consequences may be severe. Reintervention may prove to be difficult and surgical complications can be expected. Considering that conservative treatment failed completely in this case and the trend is to refrain from using polypropilene mesh it is important to ask what would be an appropriate treatment for this kind of defects.

Keywords: Pelvic organ prolapse; mesh; erosion; sacrocolpopexy; complication

INTRODUCTION

Laparoscopic sacrocolpopexy is considered by many the mainstay treatment of pelvic organ prolapse. While there is intense debate concerning the use of polypropilene mesh during transvaginal surgery, the rate of mesh erosion after laparoscopic sacrocolpopexy is regarded as less frequent.[1] There is a similar view regarding the reccurence and reoperation rate.[2] Currently, strong evidence is lacking regarding the real frequency of erosion and pelvic organ prolapse reccurence in laparoscopic sacrocolpopexy in comparison with tranvaginal mesh surgery.

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CASE REPORT

An 80 year old woman presented in our clinic with acute urinary retention, which neccesitated catheterization. The patient had multiple morbidities including diabetus mellitus, hypertension and bilateral surgeries for gonarthrosis and coxarthrosis which greatly limited her mobility.

The patient had intense pyuria, which on urine culture proved to be a urinary infection with *Klebsiella* spp. The vaginal exam revealed a massive enterocele and a grade IV rectocele (Figure 1), alongside an apical mesh erosion of 2/2 cm (Figure 2).

After adequate antimicrobial treatment which cured the urinary tract infection, we proceeded with the removal of the eroded mesh (Figure 3) and planned a conservative treatment due to the difficulty given by the limited mobility and morbidities of the patient.

Figure 1. Enterocele and grade IV rectocele

Figure 2. Mesh erosion

Conservative treatment failed after multiple Pessaries of different shapes (cubical, circular) and sizes were tried. Because of the perineal body defect, it could not maintain its position. This left no option but surgical correction.

Three months after the mesh excision, during which the patient administered estrogen transvaginally in order to nourish the vaginal mucosa, we performed the enterocele correction using a polypropilene tape fixed to sacrospinous ligaments and the rectocele correction using a posterior bridge.

The Surgical Procedure

After vesical catheterization and surgical field preparation, the surgery begins with a transverse incision at the level of the posterior vaginal fornix, after hydrodissection performed with a minimal adrenaline dilution. We continue with a digital dissection towards the ischial spines and we identify the sacrospinous ligament bilaterally. The next step is to anchor a non-absorbable, monofilament suture to the both ligaments, using the Viper instrument. At the end of each thread the edges of a polypropilene mesh are inserted (Figure 4). The mesh used is non-absorbable, macroporous, in the form of a rectangular tape. We tailor the size of the tape to each case, in order to use the minimum amount of mesh necessary.

We then move to the posterior compartment. Again, local infiltration of a saline-lidocaine solution eases dissection and diminishes bleeding. We perform an eliptical incision on the posterior vaginal mucosa, which we continue with a submucosal dissection, in order to obtain a mucosal bridge. The dissection is continued laterally until the ischiopubic bone is reached, paying attention not to injure the rectal mucosa lying adjacently (Figure 5).

Dissection is continued upwards, toward the posterior vaginal fornix, and a breach is created between the two dissection planes.

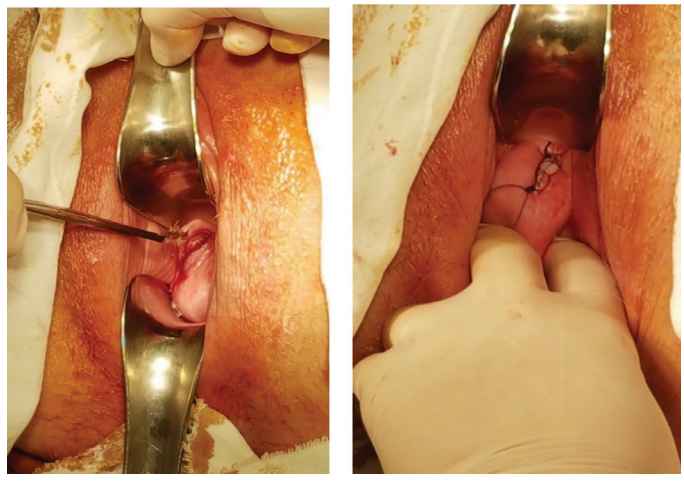

Figure 3. Excision of the eroded mesh

The inferior tip of the mesh tape is grabbed, pulled downwards and fixed to the posterior bridge. An absorbable suture is then passed through the bridge and the pelvic fascia covering the ischiopubic bone, in order to stabilize it. An absorbable thread is also passed through the perineal body in order to reinforce it (Figure 6).

We finalize with knotting the two initial sacrospinous sutures, applying moderate tension, which results in lifting the posterior vaginal fornix and the posterior bridge. The suture surrounding the posterior bridge is tightened and knotted, thus deepening it underneath the vaginal mucosa. The suture within the perineal body is also tightened and knotted (Figure 7). Finally, the vaginal mucosa is sutured in such a manner that the excessive tissue is reduced. We completed the surgery with a puborectalis muscle plicaturation in order to achieve a smaller himenal ring which would further aid the defect correction (Figure 8). This is done so by a bilateral incision at the himenal ring on each side and dissection towards the puborectalis muscle. An U shaped suture is placed bilaterally and tightened with an anteroposterior shortening of the himenal ring-Delorme procedure.[3]

Postoperative result was satisfactory, with a good anatomical result (Figure 9).

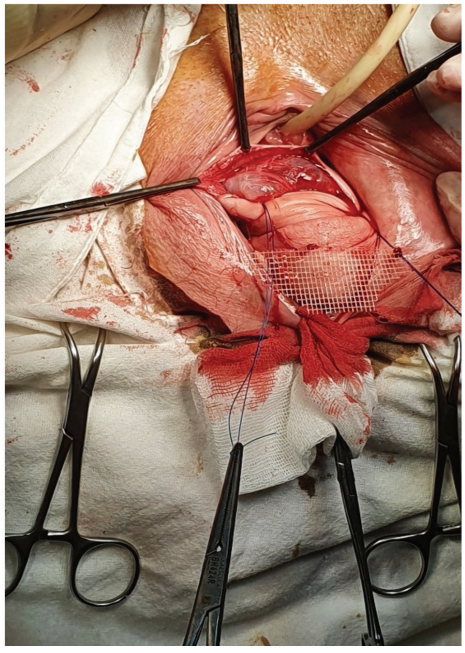

Figure 4. Mesh tape fixed to the sacrospinous attached sutures

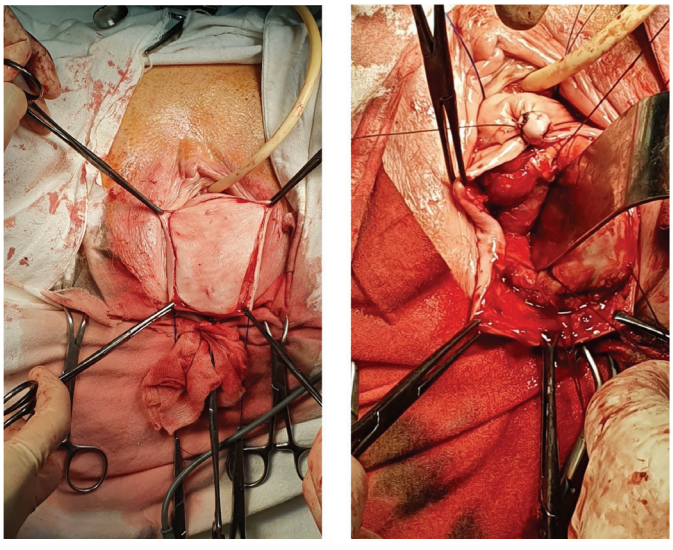

Figure 5. Posterior bridge

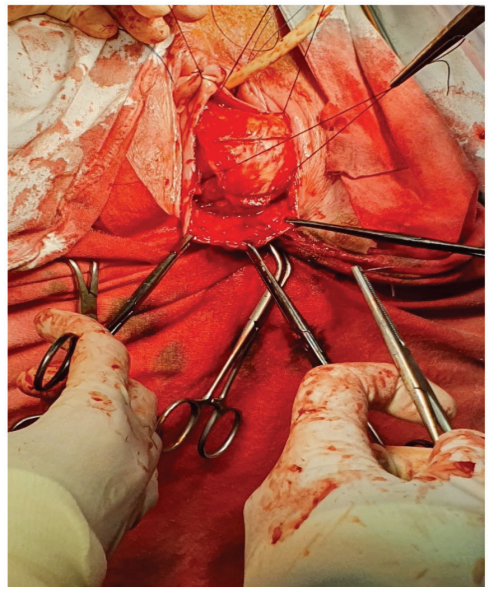

Figure 6. Posterior bridge with its surrounding thread and perineal body thread

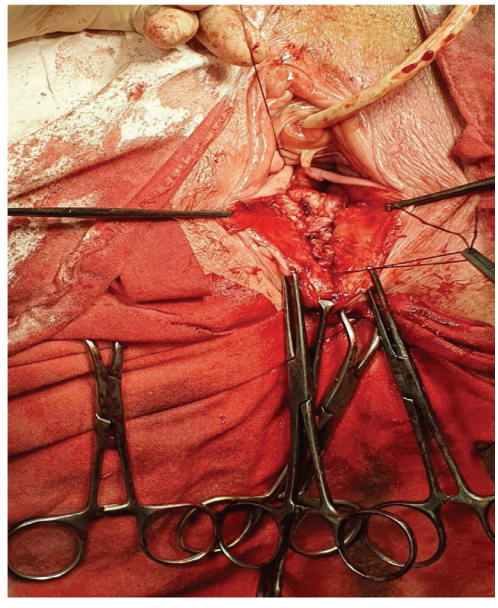

Figure 7. After tying the sacrospinous and bridge sutures

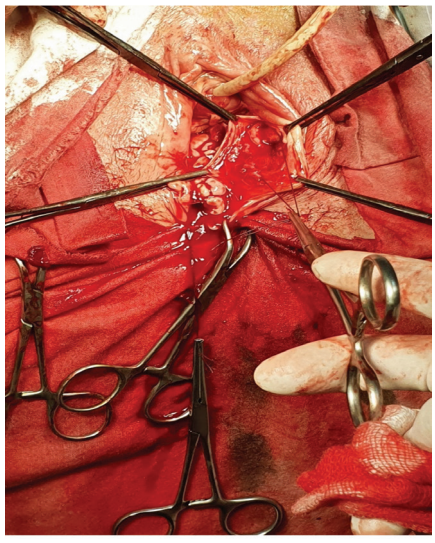

Figure 8. Puborectal plicaturation

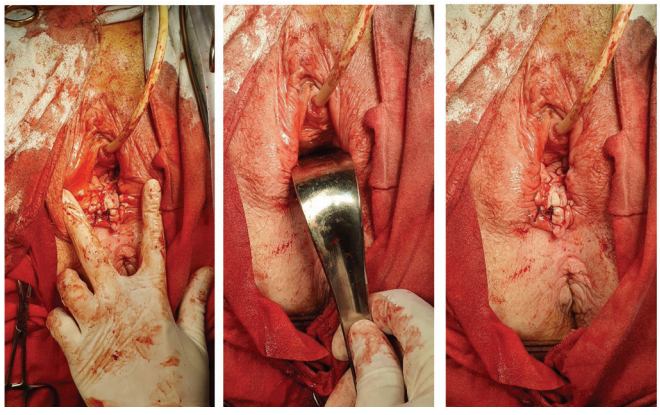

Figure 9. Postoperative result

Although the surgical result was satisfactory, the patient presented at the 6 weeks follow-up with urine exteriorization through the vagina. She was diagnosed with a ureterovaginal fistula, which we assume it accured during the dissection of the enterocele. Fortunately, it was treated conservatively in the urology department with a bilateral Cook catheter. At the moment, we are waiting for the follow-up visit.

DISCUSSION

We chose this particular surgical technique because we believe it best reproduces the inital anatomical structures which are affected in pelvic organ prolapse. With the two non-absorbable threads anchored to the sacrospinous ligament and the attachment to the polypropylene tape, we tried to reposition the vaginal apex. By pulling the tip of the tape and by connecting it to the posterior bridge we create a new rectovaginal fascia which is as well connected to the new apical fixation. At the end of the surgery, we corrected the defect as anatomically appropriate as possible.

There are multiple problems raised by this case's evolution. Firstly, it highlights the need for proper studies concerning the pelvic organ prolapse surgeries. While sacrocolpopexy is regarded as a safe and effective treatment for POP, most studies do not have a standardized complication follow-up guideline. Most of the attention is given to complications involving the use of mesh. There are specific complications which are not included in the statistics such as urgency, *de novo* dyspareunia or chronic pelvic pain. While we do not deny the good results of this technique, there are still certain aspects that need to be clarified regarding the new situation and symptomatology given by the modification of the vaginal axis from a horizontal to a more vertical position.[4] Particular to this case was the severity of the apical and posterior defect which raises the following question: how much does the new direction of the vaginal axis weight in the severity of the reccurence?

Another aspect is the difficulty to operate on a preoperated defect. It is well known that each reintervention poses more and more challenge because of the important scar tissue formation and because of the loss of normal anatomy.[5,6] While there is no way to eliminate reccurence, we can certainly try to lower its rate by gathering data and by standardizing the current surgical techniques.

Furthermore, one should also take into consideration that important anatomical defects come with a great risk for intraoperative complications. In this case, the great size of the enterocele displaced the ureteral position and led to the ureteral lesion. The patient should be informed of the higher risk which a big defect poses and careful informed consent should be obtained.

Lastly, in the midst of the mesh problem, we should ask ourselves: If total elimination of mesh is intended, what is the best way one would use for the treatment of this kind of anatomical defects? Given that it is a reccurence after laparoscopic sacrocolpopexy it is clear that using the same technique would not be more succesful. Concerning the transvaginal techniques using native tissue, can we rely on this patient's tissue to suport a defect of this size? Given that every reccurence comes with a greater risk of a next reccurence, what would be the wisest approach in this kind of cases?

In conclusion, such difficult cases raises the questions we need in order to go forward. There is a clear need for randomized studies involving the surgical procedures for pelvic organ prolapse, with standardization and comparative studies between the available

techniques. But a key aspect would be the proper selection of the technique, but most importantly according to the surgical experience. Comorbidities of the patient should be taken into consideration before choosing a path of treatment and patients with big anatomical defects should be informed about potential complications which occur more frequently in these cases.

ETHICS

Informed Consent: The patient should be informed of the higher risk which a big defect poses and careful informed consent should be obtained.

Peer-review: Internally peer-reviewed.

Contributions

Surgical and Medical Practices: A.E., T.E.; Concept: D.E.S., A.A., A.E., T.E.; Design: D.E.S., E.G., A.A.; Data Collection or Processing: I.B., E.G.; Analysis or Interpretation: D.E.S., Ş.L.; Literature Search: D.E.S., I.B., Ş.L.; Writing: D.E.S.

DISCLOSURES

Conflict of Interest: No conflict of interest was declared by the authors.

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Going down in the rabbit's hole

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ABSTRACT

Labial adhesions or labial synechiae are adhesions formed between labia. They can be thick or thin flimsy. This condition is seen in young girls before their puberty and sometimes in postmenopausal women. Most common cause is deficiency of estrogen. It can also be associated with infections and inflammations. Signs and symptoms vary between cases. These cases are usually presented to an urologist before gynaecologist. Treatment most of the time is surgical involving both urologist and gynaecologist. This is a case report of 5-year-old young child who presented with complaints of painful urination. She was diagnosed with labial fusion and treated surgically with a multidisciplinary approach.

Keywords: Labia; labial adhesions; estrogen; sexual abuse

INTRODUCTION

Labial adhesions or labial synechiae are adhesions formed between labia. They can be thick or thin flimsy. This condition is seen in young girls before their puberty and also sometimes in postmenopausal women.[1] Most common cause is deficiency of estrogen.[2] It can also be associated with infections and inflammations. Signs and symptoms vary between cases. These cases are usually presented to a urologist before gynaecologist. Treatment most often is surgical involving Multidisciplinary approach.

CASE REPORT

A 5-year-old girl was brought to Narayana Medical College and Hospital by her mother with complaints of painful urination and dribbling of urine. No other past medical or surgical history was present. On examination, abdomen was soft.

On local examination labia majora was fused & vagina could not be visualized (Figure 1).

Ultrasound: Trans perineal USG showed that vagina is ending blindly posterior tolabia, possibly labial adhesion. Other organs were normal.

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Figure 1. Examination under anaesthesia showing labial adhesion

Figure 2. Postoperative picture showing released adhesions

Plan: Examination under anesthesia and labial adhesiolysis.

Intraop: Under general anesthesia, the patient was placed in a lithotomy. Position; Labial adhesions were present.

Adhesions were released from above downwards (Figure 2).

DISCUSSION

Etiology of labial adhesions are: Hypoestrogenism, vulvovaginitis, poor local hygiene, sexual abuse & genital trauma. In our patient as she is prepubertal 5-year-old girl, the cause might be hypoestrogenism. In about 1/3rd of cases this condition is asymptomatic. Symptoms whenever present are usually urological like dribbling of urine, pain during urination etc. Genital examination is missed in young girls leading to such misdiagnosis.

Treatment can be expectant, surgical, or medical. Expectant management in prepubertal asymptomatic girls. Pharmacological treatment is by local application of estrogen cream or betamethasone. Estrogen cream should not be used for more than 6 weeks. Betamethasone is given as 0.05% for 4 to 6 weeks.

Surgical treatment in failed medical management or thick adhesions. In our case as the adhesions were thick and causing urological symptoms also, hence we opted for surgical management.

Main stay of post op care is good local hygiene and by avoiding any local irritants Recurrence rate is around 11 to 14%.

CONCLUSION

Labial adhesion is a common misdiagnosed condition.[3] Clinical examination is the gold standard for diagnosis in this condition. Surgical management is reserved for symptomatic and unresponsive patients to pharmacological methods. Recently, betamethasone 0.05% cream has been reported to be a successful conservative treatment of labial adhesions as primary therapy or in patients that have failed previous therapies.[4] In refractory cases, amniotic membrane, rotational skin graft after surgical incision has been described in literature.[1]

ETHICS

Informed Consent: Informed consent has been taken from patient parents.

Peer-review: Internally and externally peer-reviewed.

Contributions

Surgical and Medical Practices: D.Y., L.S., N.C.; Concept: D.Y., L.S., A.M.; Design: D.Y., L.S.; Data Collection or Processing: D.Y., N.C., S.B., S.S.A., A.M.; Analysis or Interpretation: D.Y., N.C., S.B., S.S.A.; Literature Search: D.Y., A.M.; Writing: D.Y. S.B., S.S.A., A.M.

DISCLOSURES

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The increased intestinal tone in acute appendicitis is an example of a reaction to local inflammation. Hypothesis.

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Citation: Levin M. The increased intestinal tone in acute appendicitis is an example of a reaction to local inflammation. Hypothesis. Pelviperineology 2023;42(3):120-124

ABSTRACT

The purpose of the study is to determine the reaction of different parts of the digestive tract to inflammation in the appendix. It analyzes the medical history of 250 children aged 0.5 to 15 years with suspicion of acute appendicitis (AA). Patients were divided into three groups depending on the method of study. In patients with AA of the first group an increase in the tone of the caecum, ileum and sigmoid was found when using a barium enema. In patients of the second group on anal manometry, basal and reactive pressures were significantly higher in patients operated compared with non-operated children. In patients of the third group, the size of the stomach and its gas bubble with high reliability was less in AA appendicitis compared with unoperated children. Our study shows that local non-specific inflammation in the intestine leads to an increase in the tone of all parts of the digestive tract. This hypothesis allows us to understand the pathological physiology of many diseases. For example, the pain in the epigastric region and vomiting in the early stages of AA occurs because of a sharp reduction in the volume of the stomach. The high doses of Senna cannot be effective, since increased peristalsis is accompanied by an increase in the tone of the anal canal, which prevents defecation. Hypersecretion of hydrochloric acid causes an inflammatory reaction in the esophagus, which can cause pain of different localization, as well as constipation, and diarrhea. Further testing of this hypothesis is needed.

Keywords: Acute appendicitis; anal canal pressure; tone of the digestive system; volume of the stomach; hypothesis; chronic pelvic pain

INTRODUCTION

Shafik's research with co-workers has shown that in healthy volunteers the motor function of various parts of the digestive tract interacts with each other. For example, they found that the decline of the intestinal (jejunal and ileal) pressure upon rectal distension in healthy volunteers was reproducible and absent on distension of the anesthetized rectum.[1] At urge rectal distension, the left colonic pressure showed a significant rise ($p<0.001$), while the right colon revealed no response ($p>0.05$). Rectal distension during rectal or colonic anesthetization effected no colonic pressure response ($p>0.05$).[2] With the same methodological pedantry, lower esophageal sphincter and pyloric sphincter contraction and esophageal and gastric relaxation during rectal distension were found.[3] Interaction of intestinal segments can be both retrograde and antegrade. When food gets introduced

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into the stomach, a coordinated response via stretch receptors, neuropeptides, and the enteric nervous system activates the gastrocolic reflex, which in turn increases the motility in the colon to make room for more food.[4] At the same time distension of the LES was accompanied by a significant rectal pressure increase ($p<0.001$).[5] These and other works by Shafik[1-5] indicate that the digestive system functions as a single organ and the motility of each of the departments are in coordination with others. It is natural to assume that a pathological process in any of the departments will cause a change in function in the entire system.

In the literature, acute appendicitis (AA) is considered only as a local process. However, there is reason to believe that the entire digestive tract, including the stomach, colon, and anal canal, reacts in response to local inflammation in the appendix (AX). And such non-specific reaction is probably present not only with purulent inflammation in other organs but also with inflammation and irritation of the intestinal wall. To determine the reaction of different parts of the digestive tract to inflammation in the AX.

MATERIAL AND METHODS

The present work is a review of three own studies[6-8] devoted to various aspects of the etiology and pathogenesis of AA. It analyzes the medical history of 250 children aged 0.5 to 15 years who applied to the Belarusian Children's Surgery Center with sus study. The first group consisted of 111 patients admitted from January 1984 to August 1985, in whom the clinical symptoms of AA were questionable. A barium enema was performed to clarify the diagnosis.[6] At the time, a barium enema was considered useful for diagnosing AA.[9-12] At the beginning of the study, the liquid level of the barium in the bag was 60 cm from the deck of the X-ray table. Filling of the colon continued until the onset of barium reflux into the ileum. At this moment, the liquid level in the bag was about 30 cm from the table surface. *The second group includes fifty-two patients aged 7-10 years with complaints of pain in the lower right quadrant of the abdomen, in which anal canal pressure was measured. The measurement was performed using an endotracheal tube with a latex cuff, which was connected to a manometer.[7] The obtained data were compared with the results of anal manometry of 20 children of the same age who entered the hospital for scheduled operations (control group).[13]* The third group consisted of 87 patients aged 7-15 years, hospitalized with suspected AA. The radiograph of the abdomen was done in an upright position 10 minutes after taking 50 mL of a warm barium. On the radiographs, we determined the areas of the stomach and its gas bubble, their perimeters, the shape factors (the degree of difference of the measured area with the area of the circle), and the maximum and minimum diameters. The contours from the radiographs were taken with the help of a coordinate graph with subsequent computer statistical analysis.[8]

Statistical analysis was performed by the method of the Student's t-test. The level of significance was set as $p<0.05$.

RESULTS

In 78 (70%) of 111 patients, AA was excluded based on barium enema. The lumen of AX was equally narrow with a length of at least 6 cm. Its contours were parallel and it itself was convoluted (Figure 1). The dome of the cecum had convex contours, and its height corresponded to the age norm, which we established in the previous study.[14]

In 4 out of 78 cases where AA was excluded, appendectomy was performed, but pathology in the AX was not found. In 21

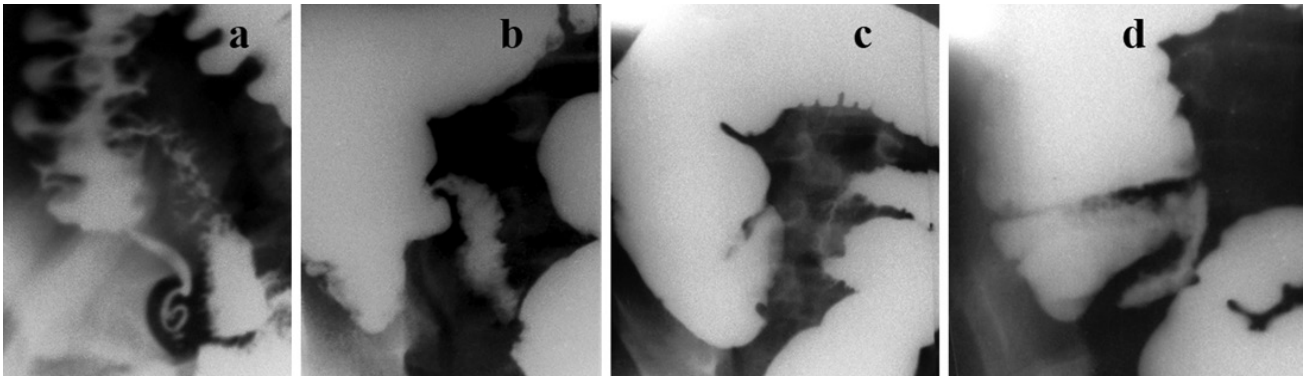

Figure 1. X-ray signs of acute appendicitis, (a). The AX is uniformly and deeply filled with barium. Acute appendicitis is excluded, (b). Concavity of the inner part of the dome of the cecum in the patient with acute appendicitis. The ileum and sigma are removed from the cecum. This is a symptom of the "window". An omentum occupies the distance between cecum and sigma, (c). The inner contour of the cecum is slightly concave and uneven. Spasm of sigma located opposite the cecum, (d). There is a concavity of the inner contour of the cecum in combination with a sharp shortening of the dome. The spasm of the terminal ileum and symptom of the "window" make the diagnosis of AA obvious.
AA: acute appendicitis; AX: appendix

Table 1. Results of the anal canal manometry in children with suspected AA

Anal canal pressure	Subgroup A (1)	Subgroup B (2)	Subgroup C (3)	*p*
Basal pressure	45-60 53.6±1.1	60-80 69.3±1.7	55-90 73.0±3.4	P1-2<0.001 P1-3<0.001 P2-3>0.2
Reactive pressure	45-75 58.5±2.5	70-130 91.0±2.7	70-150 111.3±5.8	P1-2<0.001 P1-3<0.001 P2-3<0.01

AA: acute appendicitis

(19%) patients, based on the data of barium enema a conclusion was made about the presence of AA. In 20 of them, AA was revealed during the surgery. In one patient, the abdominal pain disappeared after the barium enema, which made it possible to abandon the operation. In 12 (11%) patients, the radiographic data were inconclusive, because the AX was not filled with a contrast agent, while the dome of the cecum and the adjacent intestinal sections had standard dimensions and configuration. Eight patients were operated on. In 2 patients a destructive appendicitis was revealed, in 2 a chronic process was detected. At 2 there was uncomplicated appendicitis, and in 2 observations of inflammatory changes in the AX were not found. Lack of contrast in the AX or partial filling of the AX with a contrast agent may be the result of mechanical blockage of its lumen and is therefore it is suspicious on AA. In AA, unlike the norm, an increase in the tone of the intestinal segments in the lower right quadrant was found, which were not always in contact with the AX.[1] The pronounced concavity of the inner contour of the cecum was generally not due to mechanical pressure, since in most cases the inflamed AX was not in contact with the caecum.[2] A significant shortening of the dome of the cecum compared to the norm can only be explained by the contraction of its muscular layer.[3] It appears that a sharp narrowing of the sigmoid colon and terminal ileum located near the cecum is due to muscular contraction. *The second group, in children of the control group, immediately after lowering the endotracheal tube with an inflated balloon from the rectum into the anal canal, the pressure was raised to 80-100 mm Hg. This so-called reflex pressure is caused by the reflex contraction of the external anal sphincter in response to the stretching of the anal canal wall. Within 0.5-1 min, the pressure progressively decreased and was established stably in the range 43.0±0.8 mm Hg. This pressure, called basal pressure, is mediated by a tonic contraction of the internal anal sphincter. After injecting 50 cm³ of air into the rectum through the channel of the measuring device, a slight increase in pressure to 55-60 mm Hg was immediately observed. We called it reactive pressure. After this, the pressure slowly declined by 10-15 mm Hg. below the basal level with a gradual recovery to the basal level for 4-11 seconds. The drop-in pressure below the basal level is due to*

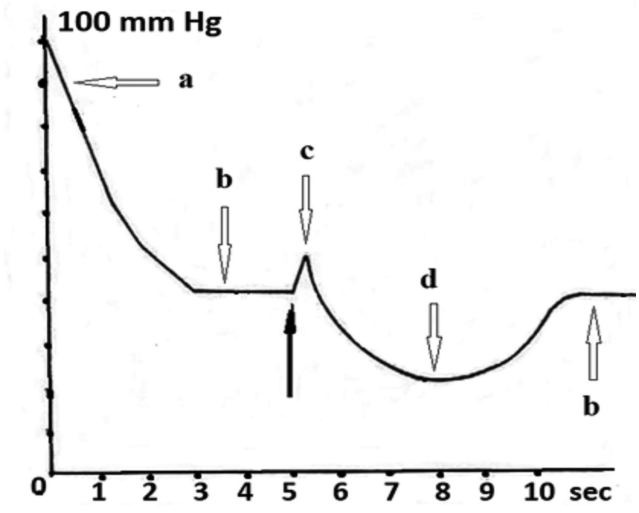

Figure 2. Pressure profile of anal manometry, (a). Reflex pressure, (b). Basal pressure, (c). Reactive pressure, (d). Rectoanal inhibitory reflex. A large solid arrow indicates the moment of air injection into the rectum

the reflex relaxation of the internal anal sphincter, which is always accompanied by contraction of the external anal sphincter and puborectalis muscle (rectoanal inhibitory reflex) (Figure 2).[13,15]

In 19 out of 52 children with complaints of pain in the right iliac region, the diagnosis of AA was excluded (subgroup A). In 15 (45%) of the 33 operated children, a simple AA was found (subgroup B). In 15 (45%) patients, destructive AA was found (subgroup C). In three cases, no pathological changes in the AX are found (Table 1).

Only basal and reactive pressures were significantly higher in patients operated on for, both simple and destructive AA, compared with non-operated children. In patients with destructive appendicitis, the pressure was higher than with a simple one. But statistically significant was the reactive pressure increase.

Third group, in 30 out of 87 children with suspected AA, destructive appendicitis was diagnosed after the operation. In 14 cases, superficial inflammation was detected. In 43 remaining patients, the diagnosis AA was excluded, and they were discharged without surgery. All the parameters, including

the area of the stomach and its gas bubble, their perimeters, and shape factors, as well as the maximum and minimum diameters with high reliability ($p<0.001$) were less with destructive appendicitis compared with unoperated children. Differences between the parameters of patients with destructive and simple AA were not significant ($p>0.5$).

DISCUSSION

The concavity of the inner contour of the cecum and the narrowing of the lumen of the sigmoid colon and ileum cannot be explained by the pressure of the masses, as some researchers have claimed.[10] With intra-operative verification of radiologic symptoms, we found that these signs do not depend on the location of these bowel segments from AX. We believe that these symptoms, as well as the decrease in the height of the cecal dome, is described by us, are due to an increase in the tone of the smooth muscle of these parts in response to the irritation emanating from the inflammatory focus.[6] We found that increased tonus extends to other parts of the digestive tract. Basal and reactive anal pressures were significantly higher ($p<0.001$) in patients with AA compared to non-operated children. In destructive appendicitis, the pressure was higher than with a simple one. However, this difference was significant ($p<0.02$) only for reactive pressure.[7] Since the internal anal sphincter is a thickened continuation of the circular layer of the colon, it can be concluded that its tone reflects the tonic state of all gut.

On the radiographs of the stomach with barium, a highly reliable decrease in the area of the stomach and the gas bubble, their perimeters, shape factors, as well as the maximum and minimum diameters in destructive appendicitis were compared with non-operated children were found. These results indicate an increase in the tone of the stomach in AA. In this way, the appearance of vomiting and pain in the epigastrium in the first hours of the disease can be explained by the contraction of the stomach, because of increasing its tone.

Based on the studies described above, we concluded that the inflammatory process in AX leads to an increase in the tone of the entire digestive tract. Moreover, the closer the intestinal segment is to the inflammation focus, the higher its tone. It is likely that the described phenomenon is not strictly specific to AA. Since the reaction of the intestine, although to a lesser extent, is observed with catarrhal, i.e., not purulent, inflammation, it can be assumed that inflammation in the different parts of the intestine (ulcers of the stomach and duodenum, esophagitis, gastritis, duodenitis, enteritis colitis) can lead to increasing the tone of the entire digestive tract. Our data are consistent with the results of Shafik's with co-worker's study which showed that the motor function of different parts of the digestive tract interacts with each other.[1-3,5]

The described pattern can explain some pathological phenomena and combinations of symptoms from different parts of the digestive tract. For example, several studies have indicated an overlap between gastroesophageal reflux disease (GERD) and functional dyspepsia (FD), and irritable bowel syndrome (IBS). The GERD-IBS overlap ranges from 3-79% in questionnaire-based studies and from 10-74% when GERD has been diagnosed endoscopically.[16] Analysis of the literature and the present study allows us to hypothesize that hypersecretion of hydrochloric acid causes a chronic inflammatory process in the esophagus, resulting in a stable change in the motor function of the small and large intestine through the intestinal intramural nervous system, i.e., GERD, FD, and IBS are a consequence of hypersecretion of hydrochloric acid.

This hypothesis makes it possible to understand why the long-term use of large doses of drugs that stimulate peristalsis is not only ineffective but also dangerous. Senna is an FDA-approved non-prescription medicine. It can cause some side effects including stomach discomfort, cramps, and diarrhea. It is likely safe for most adults when used for up to 1 week or in doses not above 34.4 mg sennosides twice daily. Long-term use can cause the bowels to stop functioning normally and might cause dependence on laxatives. Long-term use can also cause liver damage and other harmful effects The FDA limits the maximum dosage for children from 2 to 6 years-1 tablet (8.6 mg) twice a day (18 mg): For children 6 to under 12 years-2 tablets twice a day (36 mg).[17] The stimulating laxatives, increasing the peristalsis of the rectum to expel feces, simultaneously cause an increase in the tone of the anal canal, which prevents bowel emptying. Therefore, the large doses of Senna do not alleviate bowel movements, but cause harmful effects, up to and including damage to colon function.[18]

CONCLUSION

The present study proves that local abdominal inflammation causes an increase in tone in all parts of the digestive tube. This hypothesis may bring us closer to understanding the pathological physiology of functional diseases of the digestive tract.

ETHICS

Peer-review: Internally and externally peer-reviewed.

DISCLOSURES

Financial Disclosure: The author declared that this study received no financial support.

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2023 Subject Index

1. Laparoscopic Pectopexy and Bilateral Sacrouterine Ligament Plication in Prolapse Surgery

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Aim: Pelvic organ prolapse (POP) is a prevalent health problem that, significantly impairs the quality of life of women by causing psychological or sexual dysfunction (1). Today, it is thought that approximately 11-19% of women are operated because of POP at least once in their lives (2). Laparoscopic pectopexy (LP), which has emerged as an alternative to laparoscopic sacrohysteropexy in uterine prolapse surgery nowadays, has many advantages such as preserving the female anatomy, being much easier to perform in obese patients than sacrocolpopexy, allowing better and symmetrical suspension in cases where the uterus is preserved, and a working area away from surrounding organs (3,4). If sacrouterine ligament (SUL) plication and Douglas obliteration are applied together, it can be preferred as an anatomically stronger method. This method supports the uterus from the posterior, and relatively prevents posterior compartment defects (5). LP can be considered as a priority method, especially in young patients who requires uterine preservation, compared to sacrohystereopexy. It can also be preferred in POP surgery with its low risk of bleeding, low morbidity, and fast recovery times. We will present you one of these LP surgeries, which has been performed as a routine procedure in POP surgery in our clinic for about ten years.

Case: A 35-years-old patient, who applied to our clinic with a complaint of a palpable vaginal mass, had C: +4 Ba: +2 apical prolapse on examination. She did not have any additional diseases. Following general anesthesia, the patient was placed in the lithotomy position. After the laparoscopic entries were completed, first, both SULs were sutured in a helical manner and strengthen, covering at least 2/3 of SUL with non-absorbable 0 PDS suture. Then, the douglas was obliterated with the Moskovitz technique with non-absorbable, 0 polyethylene tereflatate suture. The bladder peritoneum was excluded by blunt and sharp dissection until we reach the bladder base. Bilateral iliopectineal ligaments were exposed by entering the retroperitoneum on both sides. The previously prepared polyvinilidene fluoride mesh was prepared according to the anatomy and dimensions of the uterus and the area to be repaired. The body of the mesh was fixed to the anterior aspect of the vagina to cover the proximal vagina by 4 cm, to strengthen the pubocervical fascia and also fixed to the uterine cervix (with non-absorbable, 0 polyethylene terephthalate sutures). Two specially adjusted arms of the mesh were fixed to both iliopectineal ligaments by suturing them one by one with the same non-absorbable sutures. Finally, the peritoneum was repaired with 2/0 Vicryl suture and peritonization was performed, and the operation was terminated. The total duration of the surgical operation lasted 70 minutes. There were no complications during the operation and postoperative follow-up. At the first examination after the operation, the patient's measurements were found to be C: -4 Ba: -2 according to POP-Q system. On the second postoperative day, the patient was discharged with full recovery. At the 6th month follow-up, a physical examination revealed C:-4 Ba:-2, and the patient did not have any complaints about the operation. According to the patient's preoperative and 6th month FSFI (female sexual function index) scores, sexual desire score was increased 3 points (1.2-4.2), arousal 2.7 (1.2-3.9), lubrication 2.7 (1.5-4.2), orgasm 2.4 (1.2-3.6), satisfaction 3.2. (0.8-4), and pain score was increased by 3.6 (1.2-4.8) points, indicating a significant improvement in all scores.

Discussion: The superiority of the LP operation is that; it is a method which preserves the natural anatomy of the woman as it does not change the anatomical location of the uterus and vaginal axis, when compared to vaginal sacrospinous ligament fixation and promontofixation with sacrocolpopexy surgeries, which are the most commonly used POP surgeries. Although postoperative patient comfort is good, especially since it is laparoscopic and minimally invasive, it should be known that mesh is used in pectopexy operations, and mesh reactions may occur due to this procedure. Long-term patient follow-up of this method is still ongoing, and no mesh complications have yet been observed in our patients regarding to this operation, which is frequently performed in our clinic.

Conclusion(s): LP is a favorable operation which preserves the female anatomy and prevents organ loss. LP can be used safely in POP surgery, considering both the ease of surgical application and postoperative patient satisfaction.

Keywords: Pectopexy, sacrouterine ligament plication, uterine prolapse

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2. Repair of Deep Vulvar Laceration Resulting from Sharp Trauma

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Aim: Non-obstetric vulvar traumas are quite rare compared to obstetric traumas. Their general frequency is around 3.7% (1). During the pre-pubertal period, the underdevelopment of perineal fat tissue makes this population more susceptible to trauma (2). These traumas can have negative effects physically, psychologically and sexually. The most common causes include falling on a foreign object, especially during sports activities, the use of foreign objects during consensual sexual intercourse or sexual assaults, burns, cold waxing, bites from humans and animals and excessively tight clothing (3). Treatment is shaped according to factors such as age, the cause of occurance, medical status, the regions affected by the damage and future sexual life. Cases often require an evaluation surrounding tissues, including vaginal, urethral, anal and bones (1). In treatment, hematomas are generally monitored with a conservative approach, while appropriate surgical approaches are recommended for lacerations. In this case, we described the method of addressing a deep laceration resulting from a cutting object injury, approximately 1 cm inferolateral to the urethra.

Material and Methods: A 37-year-old patient with G:3 P:1 (vaginal birth) was consulted from the emergency department with cutting object injury. There was no comorbidity, previous abdominal surgery. In the medical history advanced alcohol dependence was detected. On examination, a laceration was observed at the left inferolateral aspect of the urethra, with a length of 3 cm and a width of 2 cm, extending to the apex of the pubic symphysis (Figure 1). Surgical approach was planned because of the dimension of the wound. Informed consest was taken from the patient.

Results: The patient was taken to the surgery under spinal anesthesia. First the laceration area was washed with a enormous amount of saline solution. The subcutaneous defect was filled by approximating it with 2/0 vicryl sutures (Figure 2). A penrose drain was placed for the purpose of controlling bleeding. Afterwards skin was sutured with 3/0 rapid vicryl from subcutaneous (3). Tetanus prophylaxis and antibiotherapy were initiated. The patient, planned for discharge on the first postoperative day, was transferred to the psychiatry service due to a seizure resulting from alcohol withdrawal.

Discussion: The approach to on-obstetric vulvar traumas is challenging due to the litareture's tendency to focus on case presentations, the diversity of causes and the involvement of various organs. Although not precisely known due to unreported cases, the frequency of vulvar traumas varies approximately between 3.7% and 0.2% (4). Interestingly the mortality rate in surgically treated patients is lower compared to those managed conservatively. In the study conducted by Gambhir et al. (4), it was observed that rape victims and woman aged 65 and above required less surgical repair. In the same study, it was found that the most significant risk factor for surgical intervention was vaginal injury along with vulvar trauma. Injuries resulting from sexual assault are most commonly observed at the posterior fourchette. However, in all injuries, surrounding tissues such as the bladder, rectum, vagina, urethra and bone should be carefully evaluated (1). In cases of lacerations resulting from sexual assault or intercourse, the inside of the vagina should be investigated for foreign objects. The rich vascular network supplied by the pudendal artery to the vulvar region ensures good blood circulation in the area. This situation not only poses a risk factor for hematoma formation but also serves as an advantage for tissue healing. Hematomas generally heal conservatively, however, in rare cases, surgical intervention or embolization may be preferred. Immunization is a crucial aspect of the treatment following a laceration. Evaluation is necessary for Hepatitis, HIV, sexually transmitted diseases, and potential pregnancy after sexual assault or intercourse. Particularly in contaminated wounds caused by foreign objects, tetanus prophylaxis is of crucial importance. Antibiotic therapy, however, is a subject of debate in the literature.

Conclusion(s): The approach to genital laserations is challenging due to the diverse nature of cases and limited literature information. Therefore, treatment should be individualized, involving a multidisciplinary team including anesthesia, gynecology, forensic medicine, infectious diseases, psychiatry and others.

Keywords: Vulvar laceration, sharp trauma, genital laseration

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Figure 1. Preoperative vulvar apperence

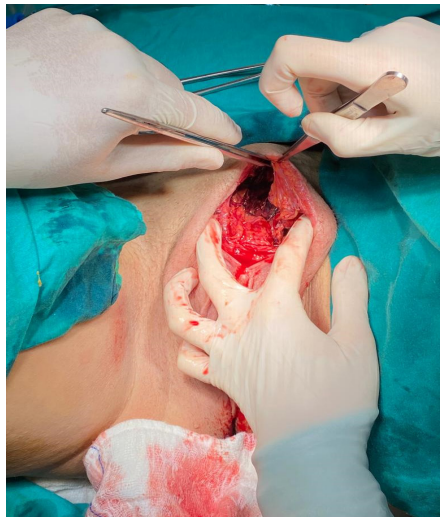

Figure 2. Intraoperative vulvar apperence

Figure 3. Postoperative vulvar apperence

3. Is Platelet Rich Plasma Useful in a Patient with Recurrent Vulvovaginal Candidiasis?

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Aim: Regenerative medicine combines elements of tissue engineering and molecular biology aiming to support the regeneration and repair processes of damaged tissues, cells and organs. The most commonly used preparation in regenerative medicine is platelet rich plasma (PRP) containing numerous growth factors present in platelet granularities. This therapy is increasingly used in various fields of medicine. Recurrent vulvovaginal candidiasis (RVVC) is a chronic, difficult to treat vaginal infection, caused by Candida species, which affects women of all ages and ethnic and social background. In this case, we presented PRP injection therapy in a patient with chronic vulvovaginal candidiasis.

Case: A 34-year-old nulligravid, female patient was admitted to our facility due to recurrent and resistant vulvovaginal candidiasis. She had no history of surgery or underlying diseases but reported smoking one pack of cigarettes a day and occasional alcohol use. Antifungal treatment was initiated for the patient. Her vaginal culture taken 24 months ago had shown growth of *C. albicans*. Despite counseling on hygiene and care, her symptoms persisted 18 months later. A repeat vaginal culture confirmed the presence of *C. albicans*, leading to the initiation of intravenous Caspofungin therapy. However, subsequent control vaginal cultures, performed one month apart, still showed growth, and the patient continued to experience itching and mycotic discharge. After discussing the situation with the patient, it was decided to administer vaginal PRP therapy. Following five sessions of treatment, the patient's symptoms resolved. Subsequent vaginal culture and smear samples were obtained from the vaginal side wall. No growth was observed in the culture, and the vaginal maturation index in the smear was reported as 0/10/90.

Discussion: PRP therapy is widely used in urogynecology practices around the world. A PRP is effective in treating women with SUI for as long as 6 months post treatment. Injecting bulking agents to provide mechanical support of urethral, thereby storing normal pelvic anatomy and reducing urethral hypermobility, is not new in treating SUI. A-PRP is not only biocompatible, durable and non-migratory; its reparative ability can repair damaged ligaments and potentially prolong treatment effectiveness. A long-term prophylactic maintenance regimen with antifungals is often necessary. In most clinical practice guidelines, oral fluconazole is recommended as the first-line treatment. Although clinical resistance to antifungal agents remains rare, overexposure to azoles may increase the development of fluconazole-resistant *C. albicans* strains. RVVC is considered a multifactorial disorder, the symptoms of which are governed by the interaction between Candida (species and virulence factors), the *Lactobacilli* population, the microenvironment (estrogen, inflammatory status, and oxidative stress), and the host (genetic factors, immune status, and behavioral factors). A disrupted balance in these factors may increase the susceptibility to RVVC We decided to use PRP therapy in a patient with RVVC. A larger number of patients are needed to determine whether the effect of PRP on the vaginal mucosa is related to parameters such as age, smoking, weight, duration of resistant infection, and number of injections. We have applied to the ethics committee to conduct this prospective cross-sectional study in our clinic. Our aim is to publish the results as soon as possible.

Conclusion(s): RVVC is a highly burdensome, long-lasting medical condition that heavily compromises the activities of women and their quality of life. Women are at risk of RVVC at all ages, but their fertile period entails the highest risk. Clinical practice guidelines consistently recommend the use of oral fluconazole as first choice, but this proves insufficient for resistant *C. albicans* and non-albicans species. PRP therapy is a promising option and we need further studies investigating PRP therapy in patients diagnosed with RVVC.

Keywords: PRP, recurrenct vulvovaginal candidiasis, cosmetic gynecology

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4. Evaluation of Patients Referred to Hospital for Urinary Incontinence in Reproductive Age, Tertiary Center Experiences

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Aim: Urinary incontinence, defined as involuntary urinary leakage, is an important urogynecologic problem that negatively affects the quality of life of women (1,2). The aim of our study was to investigate the factors that may cause urinary incontinence in reproductive age patients with urinary incontinence. Patients were evaluated with urinary incontinence tests after detailed anamnesis and gynecologic examination.

Material and Methods: A total of 132 sexually active patients diagnosed with stress, urge or mixed urinary incontinence who presented to Ankara Etlik City Hospital Urogynecology Outpatient Clinic between May 2023 and September 2023 with complaints of urinary incontinence were included in the study. After demographic data and obstetric history of the patients were recorded, anamnesis, physical and pelvic examination, provocative stress test and urodynamic tests were performed in the basic clinical evaluation. Women with previous pelvic floor surgery were excluded from the study. Data were analyzed by descriptive statistical methods.

Results: The most common presenting complaint of the patients included in the study was urinary incontinence during physical activity reported by 42 patients (33.6%). The mean age of the patients included in the study was 43 years (21-50). Gravida was 3 (0-9) and parity was (0-9). The mean BMI was 29.02±5.46. Thirty-six (27.3%) of the patients were smokers. Sixty-seven (50.8%) of the patients had a daily tea/coffee intake of less than 5 cups. Twenty (15.2%) of the patients had dysuria, 53 (40.2%) had nocturia, 46 (34,8%) had dyspareunia, 55 (41.7%) had a feeling of vaginal enlargement. After the tests, stress test was positive in 68 patients (51.5%) and Q Type Test was positive in 89 patients (67.4%) and 45 of these patients were diagnosed with stress type (34.1%), 14 with urge type (10.6%) and 59 (44.7%) with mixed type incontinence (Table 1).

Discussion: Although 33.6% of the patients had a history of stress-type incontinence, 51.5% had a positive stress test. Although 67.4% of the patients had a positive Q-type test, only 34.1% had stress-type incontinence. It was observed that only anamnesis or stress tests were insufficient to confirm the diagnosis.

Conclusion(s): Detailed anamnesis of patients with incontinence, which is one of the most common complaints of gynecology/urogynecology outpatient clinics, and the combined use of stress tests and Q-type tests can change both the diagnosis and the management of the patient. Such multidisciplinary approaches will also protect patients from unnecessary and repetitive surgical approaches.

Keywords: Urinary incontinence, reproductive age, stress type test, Q type test, incontinence examination

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Table 1. Demographic and Clinical Data of the Patients İncluded in the Study

	N = 132 (%100)
Age	43 (21- 50)
BMI	29,02 ± 5,46
Gravida	3(0-9)
Parite	3 (0-9)
Stress Urinary İncontinence	42 (%33,6)
Smoking	
No	36
Yes	96
Caffeinated Drink Consumption	
None	61
Less than 5 cups	67
More than 5 cups	4
Dysuria	
No	112
Yes	20
Nocturia	
No	79
Yes	53
Dyspareunia	
No	86
Yes	46
Vaginal Enlargement	
No	77
Yes	55
Type of Incontinence	
None	14
Stress	45
Urge	14
Mixed	59

5. Vaginal and Laparoscopic Site-specific Operations. Multicenter Study

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Aim: POP is important medical problem. Big intention WW is to diminish use of synthetic material and good outcome and improvement of QoL. With development of IT by P. Petros we understand importance of precise anatomical restoration and augmentation all pelvic "ligaments" using tapes with preserving vaginal tissues and it's elasticity.

Material and Methods: Procedure begins with transverse incisions of anterior and posterior vaginal wall close to fornixes, mobilization of the rectovaginal and pubocervical fascia, identification SSL, USL. We use 12 mm wide low elastic polypropylene or titanium tapes. Tape pass through SSL "inside-out" manner (95%) or via posterior colpotomy extraperitoneally to anterior longitudinal ligament of sacral promontory with 1 ethibond suture (5%). It's important that we always do bilateral, symmetrical fixation with both arm of the tape. Correction of posterior compartment performed by modified Zimmerman without mesh and with obligatory suspension cervix with both USL by non-absorbable sutures, also in 95% of all cases we identify and repair high transverse defect of RVF. We fix tape to the center of anterior part of cervix, moreover we correct high transverse defect of PCF by fixing it to cervix and to the sling 5 cm laterally on each side thus correcting of all possible defects of PCF. If indicated, lax perineal body, anal spinster repair or MUS resection of cervix also performed when indicated.

Results: Since 2019 we have done 340 procedures in 4 clinics in Moscow region performed by senior surgeons. Indication was: different types of symptomatic POP 2-4 stages (POPQ). Simultaneous operations were: trachelectomy in 8, 8%, LS supracervical hysterectomy in 8, 8%, TVT-O in 23% cases, PB repair (29%) include EAS repair (3%). To estimate outcome we used: QOL questionnaires (PFDI-20, PFIQ-7, FSFI) and factor analysis of the symptoms according diagnostic algorithm, ultrasound examination of pelvic floor. Operation time was 90±25 min. Blood loss never exceed 250 mL. We have 1 bladder injury – repaired during operation without complications. We have 3% of hematoma of paravaginal space treated mostly conservative – without consequences. Mean follow-up were 25±5 month. Vaginal erosion rate was less 1%, but we have 1 erosion in the bladder (0, 29%) with requires endoscopic resection of the tape. In all cases pain was mild (1-4 VAS) localized in perineal body or buttocks treated with NSAID not more 2-4 days. There were statistical improvements of functional results of symptoms before and after the operation: PFDI-20 115, 5/48, 7 (p<0.01), PFIQ-7 68, 7/14, 4 (p<0.01). Sexually active patients (58%) report improvements according FSFI (p<0.01). There was significant improvement of symptoms: bulge 96 to 0%, pelvic pain - 14 to 3%, dyspareunia 29 to 3%, obstructive urination 29 to 0%, frequency 47 to 6%, urgency - 11, 7 to 2%, stress incontinence - 23 to 7% (in 7% cases of *de novo* SUI midurethral sling was performed during first 24 month), obstructive and dyssynergic defecation 17 to 3%, AI 7 to 0%, nocturia 29% to 2%. We noted 20 (6%) asymptomatic cases of cystocele and apical prolapse 2nd degree without reoperation.

Conclusion(s): Mid-term results make possible to consider this approach as effective minimally-invasive method of "functional pelvic surgery". However, long-term multicenter studies are needed. Our data confirm our opinion that in spite of FDA ban of vaginal mesh we believe that synthetic materials in POP surgery provides good functional and anatomic long-term results and its future of pelvic reconstructive surgery.

Keywords: Mesh, ligaments, POP

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6.Long-term Results After Application of Titanium Mesh in Reconstructive Surgery of Anterior and Apical Prolapse

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Aim: Today the main approach to the treatment of POP is based on the application of Mesh. It can significantly reduce the number of recurrences and provide high quality of life. However, there are some complications, such as - vaginal synechiae, erosions, implant wrinkling, implant protrusion, dyspareunia, infection. Most of the problems resulted from chronic inflammation in the implantation area, which is associated with the endoprosthesis material. Initially prosthesis plays the role of a hammock and provide adequate regeneration of the patient's own connective tissue. Nowadays, there is a large number of different Mesh types and methods of it's implantation, but none of these implants are perfect. That's why the world is searching for new materials to correct the genital prolapse. Our objective was to analyze the safety and effectiveness of implants from "titanium silk" in the treatment of POP and to evaluate long-term results after application of titanium mesh.

Material and Methods: A study in the Center of the pelvic surgery of Central Clinical Hospital of the Russian Academy of Sciences included 103 patients with a verified diagnosis of anterior and apical prolapse. All patients were operated on between July 2017 and September 2018. Mean age of the patients was 57.3±7.9 years. In order to correct defects of fascial- ligamentous apparatus, organ-preserving volume of surgical intervention was performed.

It's included the implant application by carrying out a bilateral sacrospinal and anterior transobturator hysterocolpopexy by using "titanium silk" (density 24 g/m^2) - Mesh 11.0x6.0 cm, made of titanium filament GRADE1 0.06 mm with pore size 2x2 mm. The mesh was inserted and secured with suture material (Prolene 2/0). It is worth noting the special advantages of the implant: due to its tensile properties, the material can be easily cut with scissors without unraveling the structure, modeled and returned to its original state without changing its characteristics. Due to this, foreign material uses several times less in comparison with standard techniques, which use polypropylene implants during surgical treatment.

Results: Mean operative time were 34.4±5.3 min. Intraoperative bladder injury 2 (1.9%). To analyze anatomical effectiveness, vaginal examination and ultrasound diagnostic were performed in 6, 12 months after surgery. As a result, relapse in 6 cases (5.8%). Dyspareunia 1 (1.0%). The vaginal sonography shows correct position of mesh and elastic vagina without scarring and deformation of surrounding structures. It is impossible to palpate implant except obturator and SSL points of insertion. Vaginal wall was mobile and elastic in all cases. Important to note: During the follow-up period after surgery, no cases of erosion, vaginal shortening, etc. have been identified. We noted cystocele relapse in 3 (5.8%) cases after 5 year follow-up.

Conclusion(s): Ultra lightweight titanium mesh augmented POP repair showed high effectiveness and minimal complications rate comparable to conventional surgery. Our data suggest that titanium meshes is excellent for anterior and apical compartments, preserves vaginal elasticity and provide good remodeling of tissues, anatomic and functional outcome at short-term and long-term follow-up. Today, the application of titanium mesh has been improved, but the aim of our study was to perform high effectiveness of this operation in long-term follow.

Keywords: Mesh, titanium silk, POP

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7. Evaluation of the Quality of Life of Patients Who Apply to Our Pelvic Floor Rehabilitation Center (PFRC) with the Complaint of Urinary Incontinence During the Menopausal Period, Tertiary Center Experiences

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Aim: According to the definition of the International Continence Society (ICS), urinary incontinence (UI); it is a complaint of involuntary urinary leakage. Hormonal system changes seen in menopause, somatic changes in the vagina and urethra; loss of closing pressure in the urethra and a change in the normal urethrovesical angle causes UI in women. Studies have also found that the frequency of UI increases in menopausal women. UI is not only a symptom, but also a problem that can affect a person's entire social life. During the evaluation, attention should be paid to the extent to which the patient's symptoms affect the quality of life. Pelvic floor inventory short form-20 (PFDI-20) is a scale that examines the effects of lower urinary system, lower gastrointestinal system and pelvic organ prolapse on quality of life. In our study, we aimed to examine the data of patients diagnosed with menopausal incontinence who applied to our hospital's PFRC.

Material and Methods: Eighty-five patients who applied to Ankara Etlik City Hospital Urogynecology policlinic with complaints of urinary incontinence between May 2023 and September 2023 and were diagnosed with stress, urge or mixed type urinary incontinence were included in the study. After the demographic data and obstetric history of the patients were recorded, anamnesis, physical and pelvic examination were performed in the basic clinical evaluation. Pelvic floor inventory short form-20 (PFDI-20) was filled out in all patients included in the study. The data were analyzed with descriptive statistics methods.

Results: The average age of the patients included in the study was 58.09±6.59 years. Most of the patients' complaints were related to mixed incontinence in 24 (28.2%). Gravida mean was 3.84±1.78. The parity average was 3.14±1.32. A history of consuming 5-10 glasses of caffeinated beverages per day was observed in 39 of the patients (45.9%). Seventeen of the patients (20%) had a history of smoking. Twenty-one of the patients (24.7%) complained of a palpable mass in the vagina. The patients were most commonly diagnosed with mixed incontinence and was observed in 41 (48.2%) patients. POP was observed in 46 (54.1%) of the patients. The mean POPDI-6 score

of the patients was 7.70±5.42. The mean KRADI-8 score of the patients was 8.8±6.93. The mean UDI-6 score of the patients was 13.08±5.87. The mean PFDI-6 score of the patients was 29.58±15.87.

Discussion: Aoki et al. In the study conducted by; they stated that bladder functions can be affected by many factors throughout a woman's life, and UI symptoms can change for better or worse, and women living with UI as a chronic condition may feel pessimistic about treatment recommendations.

Conclusion(s): It is important for women's health to detect UI, which increases during the menopausal period, at an early stage, to plan the education and guidance services to be provided correctly, and thus to create healthy life awareness in women. Because of its negative effects on the quality of life, urinary incontinence should be considered as a serious health problem of the woman regardless of her life stage and should be treated with appropriate methods.

Keywords: Menopause, urinary incontinence, pelvic floor inventory short form-20

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8. Approach to Rectovaginal Fistula and Hematometra Developing After Female Genital Mutilation

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Aim: The World Health Organization defines female genital mutilation as all procedures that involve the partial or complete removal of the female external genitalia or any injury to the female genital organs for non-medical reasons. Studies conducted in African countries have shown that more than 200 million girls and wome n in 30 countries have been subjected to female genital mutilation. The practice of female genital mutilation is considered a human rights violation due to its negative impact worldwide. Some studies have shown that scarring caused by female circumcision may also be the cause of fistula formation. In our study, we aimed to convey to you the results of the patient we operated on for rectovaginal fistula and hematometra that dev eloped after female circumcision.

Case: Eighteen years old, G0, Somali patient, with no additional comorbid disease, who underwent female genital mutilation and underwent 6 additional gynecological surgeries due to the resulting fusion. The patient who underwent hematometra evacuation in 2021. A patient who applied to our clinic with the complaint of amenorrhea. Labium minuses were not observed in the pelvic examination. The clitoris was observed covered with skin. The external urethral meatus was observed to be open. It was observed that the vagina e nded at a depth of 2 cm. In the pelvic ultrasonography, the external cervical os was observed to be closed and the internal cervical os was clearly dilated. Hematocolpos was observed in the cervix and hematometra was observed in the endometrium. After the fusion surgery performed in September 2023, the operation was planned for cervical and endometrial evaluation of the patient in November 2023 as the second session. A rectovaginal fistula tract was observed in the patient's distal vagina, 1 cm away from the forcechet. The orifices of the tract were determined with SF. In the general surgery consultation, follow-up was recommended because there was no symptomatic and deep fistula tract. Afterwards, an attempt was made to locate the external cervical os by fo llowing the vesicovaginal line. After it was located, dilatation was achieved under USG guidance and the endometrial cavity was entered. Hematometra evacuation was performed. Cavity control was achieved with hysteroscopy. Vaginal width was observed to be 2 cm due to vaginal stricture due to the surgeries. Catheterization was planned to prevent early postoperative adhesion in the vagina. The patient was planned to be discharged on postoperative 3 days with regular appearance of vulva, vagina and endometrium in control ultrasonography.

Discussion: The study by Matanda et al. aimed to provide evidence on the associations between FGM/C and fistula using nationally representative data. It shows that the likelihood of developing fistula among cut women in Senegal is increased compared to uncut women. Mul tivariate logit modeling using data collected from 10 countries showed that the odds of reporting fistula symptoms were significantly higher for women who had their genitals cut and stitched together than for women who had undergone other types of FGM.

Conclusion(s): It has been observed that surgical variants of female genital mutilation increase fistula formation. Simultaneous multidisciplinary approaches may be required for fistulas that occur after harmful traditional practices such as female genital mutilation. Due to the increase in international migration, it is important for women's health to know the approach to such cases that may apply to clinics in every country.

Keywords: Female male genital mutilationgenital mutilation, rectovaginal fistula, international migration

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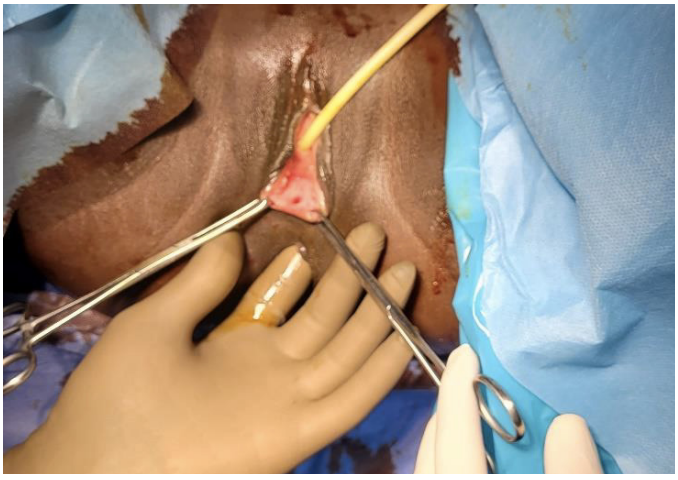

Figure 1. Rectovaginal Fistula tract

Figure 2. Endometrial cavity control ultrasonography

9. Evaluation of the Quality of Life of Patients Who Apply to Our Pelvic Floor Rehabilitation Center (PFRC) with the Complaint of Urinary Incontinence in the Reproductive Period, Tertiary Center Experience

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Aim: According to the definition of the International Continence Association, urinary incontinence (UI) is an objectively demonstrable involuntary leakage of urine that creates a social or hygienic problem. UI is not only a symptom, but also a problem that can affect a person's entire social life. During the evaluation, attention should be paid to the extent to which the patient's symptoms affect the quality of life. Pelvic floor inventory short form-20 (PFDI-20) is a scale that examines the effects of lower urinary system, lower gastrointestinal system and pelvic organ prolapse on quality of life. In our study, we aimed to compare the data between the incontinence diagnoses of patients diagnosed with reproductive incontinence who had recoursed to our hospital's PTRM.

Material and Methods: Seventy-nine patients who had recoursed to Ankara Etlik City Hospital Urogynecology outpatient clinic with complaints of urinary incontinence between May 2023 and September 2023 and were diagnosed with stress, urge or mixed type urinary incontinence were included in the study. After the demographic data and obstetric history of the patients were recorded, anamnesis, physical and pelvic examination were performed in the basic clinical evaluation. Women who had previous pelvic floor surgery were excluded from the study. Pelvic floor inventory short form-20 (PFDI-20) was filled out in all patients included in the study. The data were analyzed with descriptive statistics methods.

Results: No significant difference was observed between the groups in demographic data such as age, gravida, parity, type of birth, and in clinical data, smoking, caffeinated beverage use, complaint of a palpable mass in the vagina, and POP association. Although there were differences between the groups in terms of complaints, the patients' diagnoses were consistent with their complaints. Although there were differences between the groups in terms of KRADI 8/ UDI 6/PFDI 20 questionnaire scores, the scores were higher in patients with mixed incontinence and it was observed that mixed incontinence affected the quality of life more ($p<0.05$).

Discussion: As a result of our study, it was observed that the effects on the quality of life of the patients with urinary incontinence in the reproductive period included in the study differed depending on the type of incontinence. Urinary incontinence should be considered as a serious health problem of women due to its negative effects on the quality of life and should be treated with methods appropriate to the type of incontinence.

Conclusion(s): Although pelvic floor problems affect both quality of life and sexual functions, they are often not expressed by women and can be detected through detailed questioning. As a result of our study, it was observed that the effects on the quality of life of the patients with urinary incontinence in the reproductive period included in the study differed depending on the type of incontinence.

Keywords: Urinary incontinence, PFDI-20, pelvic floor inventory short form-20, quality of life

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Table 1. Demographic and clinical data of patients according to incontinence types

	Stress Incontinence N = 27 (%34,2)	Urge Incontinence N = 11 (%13,9)	Mix Incontinence N = 41 (%51,9)	p
Age	41,70 ± 6,13	40,64 ± 7,29	43,39 ± 6,46	0,19**
Gravida	3(0 – 6)	3(0 – 6)	3(1 – 9)	0,39**
Parity	2(0 – 4)	2(0 – 3)	3(1 – 9)	0,19**
SVD	2(0 – 4)	2(0 – 3)	2(0 – 9)	0,39**
CS	0(0 - 3)	0(0 - 1)	0(0 – 3)	0,76**
Complaint	Stress (26)	Urge (11)	Mix (24)	**0,001*** **
Caffeinated Beverage Consumption				0,85***
None	1	1	1	
0-10 Glasses	23	9	34	
More than 10 glasses	3	1	6	
Cigarette				0,85***
None	21	8	33	
Available	6	3	8	
Helping with the finger				0,06***
None	27	10	41	
Available	-	1	-	
Palpable mass in the vagina				0,67***
None	22	9	30	
Available	5	2	11	
POP				0,16***
None	15	6	14	
Available	12	5	27	
POPDI 6	7,26 ± 5,29	8 ± 5,02	10,49 ± 6,30	0,07*
KRADI 8	6,11 ± 4,97	8 ± 6,30	10,20 ± 5,80	**0,01***
UDI 6	13,81 ± 6,20	11,09 ± 4,90	17,54 ± 5,26	**0,001***
PFDI 20	27,19 ± 13,62	27,09 ± 14,06	38,22 ± 14,29	**0,003***

*ANOVA test **Kruskar Wallis test ***Chi-square test

10. Evaluation of Sexual Functions in Patients with Pelvic Organ Prolapse, Tertiary Center Experiences

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Aim: Pelvic organ prolapse (POP) is defined by the International Urogynecological Association (IUGA) and the International Continence Society (ICS) as the descent of the anterior/posterior vaginal wall, uterus (cervix), or one or more of these structures from the vaginal apex (1). Studies have reported dyspareunia, lack of orgasm, and dissatisfaction with intercourse in patients with POP (2). Therefore, recent researchers have focused on the relationship between sexual dysfunction and pelvic anatomy disorders. In this study, our aim was to assess sexual dysfunction in patients diagnosed with POP and demonstrate the extent to which sexual functions are affected.

Material and Methods: Between May and September 2023, 83 sexually active patients diagnosed with POP at the Urogynecology clinic of Etlik City Hospital were included in the study. After recording demographic data and obstetric histories, the basic clinical assessment included history, physical and pelvic examination, provocative stress test, and urodynamic tests. Women who had undergone pelvic floor surgery previously were excluded from the study. All included patients filled out the short form of the Pelvic Organ Prolapse/Urinary Incontinence Sexual Questionnaire (PISQ-12). This scale was created by Rogers and colleagues in 2001(3), and its adaptation to Turkish were conducted by Cam and colleagues in 2009 (4). This questionnaire, consisting of 12 questions, requires patients to answer emotional, physical, and sexual partner-related questions. A score of <17 was considered as the threshold for poor sexual function based on previous studies. Data were analyzed using descriptive statistical methods.

Results: According to the PISQ-12 score, 44 patients were in Group 1 (<17), and 39 patients were in Group 2 (>17). There was no significant difference between the groups in clinical data such as BMI, episiotomy, smoking, sensation of vaginal descent, sexual aversion, aerovaginal symptoms, and accompanying incontinence type (p>0.05). However, significant differences were observed between the groups in terms of age, gravidity, parity, mode of delivery, sensation of vaginal widening, dyspareunia, and PISQ-12 score (p<0.05).

Discussion: Our study revealed a significantly higher prevalence of sexual dysfunction in patients diagnosed with POP. Athanasiou et al. obtained similar results in a prospective study with 130 patients (2). Lukacz et al. mentioned that women with pelvic floor disorders tended to be less sexually active and had lower satisfaction scores (5). Addis et al. found that certain demographic factors (education, income, job status, ethnicity, smoking) outside of POP adversely affected sexual behavior and overall function (6). The common point in these studies is the high rate of sexual dysfunction in patients with POP; however, further research is needed to determine whether this is solely due to this condition or if additional factors are also influential.

Conclusion(s): According to our study, it was observed that 53% of patients diagnosed with POP included in the study had poor results in sexual function tests. Patients with POP, who were older and had more deliveries, had lower scale values, indicating a worse sexual life. The sensation of vaginal widening was observed to be higher in the group with a higher PISQ-12 score, and perhaps it can be considered that sexual function is tolerated due to this condition. POP is a general health issue closely related to women's physical, psychosocial, and sexual health. It also causes problems in couples' sexual lives. POP should be considered a serious health problem in women and should be treated with appropriate methods.

Keywords: Pelvic organ prolapse, sexual dysfonctions, PISQ-12

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11. Evaluation of Constipation Severity Scales of Women with Pelvic Organ Prolapse Who Apply to Our Pelvic Floor Rehabilitation Center: Tertiary Center Experience

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Aim: Pelvic organ prolapse (POP) is the herniation of pelvic organs towards or beyond the vaginal walls (1). Defecation dysfunction affects 20 percent of women in the general population and 24 to 52 percent of women with POP. Two of the most common symptoms of pelvic organ prolapse are constipation and insufficient defecation (2,3). Constipation Severity Scale (CSS) is a scale to determine individuals' defecation frequency, intensity and difficulties during defecation (4). In our study, we applied CSS to patients with pelvic organ prolapse and aimed to comprehensively evaluate the obtained data.

Material and Methods: One hundred-two patients diagnosed with POP at Ankara Etlik City Hospital Pelvic Floor Center between May 2023 and September 2023 were included in the study. After the demographic data and obstetric history of the patients were recorded, anamnesis, physical and pelvic examination were performed in the basic clinical evaluation. Women who had previously undergone pelvic floor surgery were excluded from the study. Constipation Severity Scale (CSS) form was filled out for all patients included in the study. A high score from the scale indicates that the symptoms are serious. While ranking the CSS scores, the data of the patients divided into 2 groups with a median value of 20 points were examined using descriptive statistics methods.

Results: When grouping was made according to the CCS median value of 20, CCS <20 was evaluated as Group 1 (53 Patients) and CCS Group 2 (49 Patients) (Table 1). Group 1 was evaluated better clinically. No significant difference was observed between the groups in demographic data such as age, gravida, parity, and clinical data such as BMI, Episiotomy, application complaint, finger thrusting, feeling of vaginal expansion, and Tenesmus data ($p>0.05$). A significant difference was observed between the groups in terms of defecation habits and constipation ($p<0.05$).

Discussion: When the CCS subgroups fecal obstruction, intestinal laziness and pain scales of the patients in both groups were examined, it was seen that the median pain and intestinal laziness scores were statistically 0 in patients with CCS<20. With these data, it was seen that patients with low-grade posterior compartment defects did not experience problems with intestinal laziness and pain during defecation. In a study conducted with women who previously attended a pelvic floor clinic, it was observed that while the probability of women with stage I prolapse needing a splint for defecation was 8-15%, this rate was up to 38% in women with stage I prolapse 2 and above (5). In our study, patients with advanced posterior compartment defects had higher CCS scores.

Conclusion(s): It has been understood that the median value of 20 points, found by the scaling we applied to patients with POP, may mean the severity threshold for POP and may contribute to the evaluation of the scale. In addition, the treatment and follow-up processes of women with advanced-stage posterior compartment defects should be organized taking into account that constipation problems may be more serious.

Keywords: Constipation severity scale, pelvic organ prolapse, defecation

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Table 1. Comparison of the groups

	CSS <20 n=53 (51.9%)	CSS >20 n=49 (48.1%)
Obstructive defecation	8 (0-15)	20 (8-33)
Colonic inertia	0 (0-10)	10 (0-21)
Pain	0 (0-6)	2 (0-15)
CSS	9.75±5.65	33.14±10.38

CSS: Constipation Severity Scale

12. Sacrospinous Ligament Fixation in Vaginal Cuff Prolapse Surgery

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Aim: Vaginal cuff prolapse is a health problem that develops especially after hysterectomy operations, if they left untreated, they negatively affect women's life quality in psychosocial and physiological aspects (1). Although there are many surgical methods available in the treatment of vaginal cuff prolapse, vaginal sacrospinous ligament fixation (SSF) still maintains its place in current practice, because it does not cause complications due to the use of mesh and pelvic repair performs with the patient's own natural tissues (2,3). In addition, it is an important advantage of SSF that the patient who has already had an abdominal operation will not have to undergo a new abdominal surgery. It is known that SSF performed without abdominal incision and results in fewer incision site infections, less pain in the postoperative period, and is a preferable surgical procedure especially in elderly patients with poorer tissue healing (3). In this presentation, we will present a SSF operation we performed on a patient with vaginal cuff prolapse and we will show you this technique's all details.

Case: A 68-year-old patient who had a total abdominal hysterectomy 10 years ago applied to our clinic with complaints of a mass and pain in the vaginal area. During the examination, it was observed that she had C: +4, Ba: +2 vaginal cuff prolapse according to the POP-Q system and it was slightly eroded due to friction. After applying an estrogen cream for a week, the patient was prepared for the operation. Under epidural anesthesia, the patient was placed in the dorsolithotomy position and the surgical procedure was started. The vaginal cuff was held with allis clamps from both corners. With parallel incisions at both corners of the cuff, the bilateral vaginal cuff was extended to the intersection of the imaginary sacrouterine ligament and the cardinal ligament complex. The vaginal posterior wall mucosa was isolated through an incision vertical to the vaginal posterior wall in the middle of this incision. The rectovaginal space was entered by moving towards the right side. Rectal pilies were removed and dissected to the right pararectal space. The tissues were carefully dissected and the sacrospinous ligament and coccygeus muscle were exposed. A 0 number prolene suture was passed approximately 2 fingers medial to the ischial spine, covering at least 2/3 of the thickness of the sacrospinous ligament-coccygeus muscle complex. The cervicovaginal opening and posterior vagina were closed with 3/0 vicryl suture. Sacrospinous ligament sutures were tied to cervix and vaginal apex by pulling towards to the sacrospinous ligament coccygeus muscle complex. The operation was continued at about 30 minutes. In the postoperative examination of the patient, C: -5 and Ba: -3 levels were found. The patient had not any intraoperative or postoperative complications and was discharged in full recovery at the 36th postoperative hour.

Discussion: SSF operation is superior to mesh surgery due to its short operation time, absence of abdominal incision, free from mesh complications, low incidence of gastrointestinal complications and low operational costs (3). It has become popular again after the FDA's warning about the use of vaginal mesh. The most important reasons for failure of SSF operations in the literature are; the failure to properly open the sacrospinous ligament, which must be exposed to hang the uterus or vaginal cuff, and the failure of fixing the vaginal cuff tissues to proper location. The results of SSF operations performed with appropriate technique and sufficient surgical experience are satisfactory and successful.

Conclusion(s): Although SSF is an old and classical surgery that uses natural tissue, it will continue to be an up-to-date and preferred surgical procedure with its highly effective and successful results.

Keywords: Sacrospinous ligament fixation, vaginal cuff prolapse, vaginal surgery

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13. Retrospective Analysis of 12 Cases Who Underwent Vulvectomy

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Aim: Vulvar intraepithelial neoplasia (VIN) is a premalign lesion of the vulva and has been seen with increasing frequency in recent years, especially in women in their 40s (1). Vulvar neoplasias are seen in 3-5% of gynecological malignancies (1). Since there is no standard screening test for vulvar neoplasms, any abnormal-looking and pigmented lesions on the vulvar skin should be evaluated carefully (1). The aim of this retrospective study is to evaluate the results of 12 cases who underwent vulvectomy in our clinic.

Material and Methods: A retrospective analysis was conducted by accessing the pathology results, operation notes and epicrisis information of the patients who underwent vulvectomy in Meram Medical Faculty Obstetrics and Gynecology Clinic between 01.01.2001-14.11.2023 from the hospital system. Patients without previously known malignancy were included in the study.

Results: The mean age of the patients was 53. Eleven patients had unifocal lesionsin vulvar examination. One patient had multifocal lesion in vulvar examination. Surgical margins were negative in all patients. One patient (8.3%) required flap rotation after excision. Squamous cell cancer was detected in three patients (25%), superficial basal cell cancer in one patient (8.3%), and VIN 1 on the basis of acanthosis in one patient (8.3%). Three patients (25%) received chemotherapy and radiotherapy in the postoperative period.

Discussion: VIN management is adapted to the lesion and patient characteristics. Patient's age and general health status (2). Presence of occult invasion, whether the lesion is multifocal or unifocal, patient's comorbities and patient monitoring are important. Treatment goals are avoidence of invasive vulvar cancer, avoidence of recurrence, relief of symptoms, preservation of vulvar anatomy and function and improving quality of life (2). Classical treatment of high grade VIN is surgical excision. In case of multifocal lesions, vulvectomy is recommended (2). LEEP may be recommended for small unifocal lesions. Although the limit for surgical margin negativity is controversial, the recommended distance is 5 mm. Since differentiated VIN is associated with SCC of the vulva, it must be treated surgically (3). The most common malignancy of the vulva is SCC. HPV associated SCC occurs at younger ages (median age 63). HPV-unrelated SCC is more common, has a worse prognosis, and is seen in older women (median age 80 years). SCC has histological subtypes like; verrucous, basaloid, keratinising, non-keratinising, sarcomatoid, infiltrative (3). Vulvar basal cell carcinoma is a rare tumor that accounts for 2-4% of all vulvar cancers. Risk factors for vulvar basal cell cancer are not fully known. Chronic infection, trauma, RT are possible risk factors. Vulvar basal cell cancer has a high recurrence rate regardless of size. The treatment is surgical excision (4).

Conclusion(s): VIN lesions can be treated with simple vulvectomy, whereas radical vulvectomy should be performed in malignant lesions. Long-term follow-up of all patients should be done carefully in terms of recurrence.

Keywords: Vulvar intraepithelial neoplasia, vulvectomy, squamous cell cancer

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14. Tuberculous Peritonitis: A Case Report

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Aim: Tuberculosis still presents a serious health issue in developing countries. Pelvic tuberculosis is a type of tuberculosis that specifically affects the reproductive organ sor the pelvic region. In women, tuberculosis of the genital system is often referred to as pelvic tuberculosis. In this case, a patient presented with acute abdominal distention accompanied by widespread ascites in the abdomen. The patient underwent laparoscopy, revealing pathology consistent with tuberculous peritonitis.

Case: A 19-year-old nulligravida woman presented to our emergency department with a one-month history of abdominal swelling, loss of appetite, nausea, weight loss, diarrhea, dysuria, and notably worsening nausea, vomiting, and abdominal pain for the last two days. There was no significant past medical history except for no known contact with a tuberculosis patient in the family history. The patient had no prior abdominal surgeries. On physical examination, the patient appeared generally weak with pale skin. Abdominal distention was present, with negative signs of guarding and rebound. The patient had stable vital signs, but decreased breath sounds were noted on the left side. No rales or rhonchi were detected. Heart

sounds were heard deeply with S1-S2. PT/INR and aPTT were within normal limits.

Imaging Studies: On transvaginal ultrasound, bilateral ovaries showed a polycystic appearance with free fluid in the perihepatic-perisplenic areas and a 65 mm free fluid collection in the Douglas pouch. Thoracic CT showed pleural effusion of up to 6 cm in the left with subsegmental atelectasis in the adjacent area. Abdomen CT revealed extensive free fluid and ascites observed in all quadrants. Pelvic MRI revealed widespread free fluid in the perhepatic-perisplenic region and pelvis. Mild diffuse wall thickening and enhancement in the peritoneum, suggestive of peritonitis.

During follow-up, the patient developed distension and hemodynamic instability, prompting urgent diagnostic laparoscopy. The following procedures were performed: Diagnostic Laparoscopy + Abdominal Fluid Aspiration + Omental Biopsy.

The patient's tumor markers revealed CA125: 51.80 (high), CA15-3: 26.6 (high), AFP: <1, CEA: 0.58, CA19-9: 7.22. The patient's ADA (Pleural Fluid) levels were 61 (high), 34, 29.

Further investigations for tuberculosis were conducted: Pleural *M. tuberculosis* PCR was not detected, ARB (Gastric Aspirate) was negative on the 3rd day. Pleural Fluid examination revealed high erythrocyte and mononuclear cells, few polymorphonuclear cells. No microorganisms seen. No growth after 5 days of incubation was detected on pleural fluid culture. *M. tuberculosis* PCR (urine) was not detected.

Histopathological diagnosis of chronic inactive superficial gastritis with no *Helicobacter pylori* infection detected by Colonoscopy-Esophago-Gastro-Duodenoscopy Report (22/09/2023).

Biopsy report from omentum during surgery: Necrotizing granulomatous inflammation observed with acid-fast stain, thin-layer technology, and cell block analysis showing abundant histiocytes, rare reactive mesothelial cells.

Pulmonary CT angiography: No typical appearance found, but thromboemboli observed in the main pulmonary artery and segmental branches.

Treatment: The patient, diagnosed with histopathological tuberculosis peritonitis, was started on anti-tuberculosis therapy consisting of INH 300mg 1x1, rifampicin 600 mg 1x1, pyrazinamide 1500 mg 1x1, ethambutol 1250 mg 1x1, all taken in the morning on an empty stomach. The patient's kidney and liver function were monitored.

Discussion: The difficulties in diagnosing tuberculosis peritonitis, diagnostic techniques, and specific findings in this case were discussed. Tuberculosis peritonitis refers to the presence of tuberculosis infection in the peritoneum, the membrane lining the abdominal cavity. Diagnosing tuberculosis peritonitis can be challenging due to its non-specific symptoms and the similarity of these symptoms to other abdominal conditions. Some common symptoms of tuberculosis peritonitis include abdominal pain, swelling, fever, weight loss, and altered bowel habits. These symptoms can often mimic those of other gastrointestinal diseases, making it difficult to diagnose based solely on clinical presentation. Diagnostic techniques used to identify tuberculosis peritonitis involve a combination of medical history, physical examination, and various tests.

Conclusion(s): Pelvic tuberculosis is typically a condition that affects women of reproductive age and its symptoms can vary significantly. Diagnosis of this condition can sometimes be challenging because its symptoms may resemble those of other pelvic diseases or reproductive system cancers. Therefore, situations where pelvic tuberculosis could be mistaken for malignant diseases should be considered.

Keywords: Tuberculous peritonitis, CA 125, acute abdomen, ovarian carcinoma

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15. Laparoscopic Pectopexy for Uterine Prolapse

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Aim: Pelvic organ prolapse (POP), is known as the downward displacement of the uterus, vaginal apex, bladder or cervix. This disorder is quite common among women. It may cause psychosexual, physical and functional problems and affect women's health by disturbing the quality of life (1). Several methods have been used for the treatment of POP. The most preferred methods are, the vaginal surgery approach, which does not require abdominal incision, such as, the vaginal hysterectomy followed by SSF (sacrospinous ligament fixation); or the procedures with anterior longitudinal ligament

fixation can be applied, such as laparoscopic sacrocolpopexy (2). However; in SSF, there are possible complications; such as the deformation of the vaginal axis and failure to restore the natural anatomy. Moreover; in sacrocolpopexy operations sometimes it is difficult to expose the ligament and create a safe space during the operation, and these are the possible reasons for the failure of this method. Therefore; there has been ongoing research to develop new methods. Laparoscopic pectopexy is a surgical method which protects the woman's anatomy, prevents organ failure and it is especially popular among patients who want to keep their fertility (3). Furthermore, this method has many advantages for obese patients; because it allows an easier anatomical approach compared to sacrocolpopexy operation (4). We perform laparoscopic pectopexy surgeries frequently in our clinic. In this paper, we would like to discuss one of these cases.

Case: A 38 years old obese patient with a history of two vaginal births, applied to our clinic with the complaint of uterine prolapse and menorrhagea. The vaginal examination according to POP-Q were C:+5 Ba:+3 and she had a leiomyoma located at the anterior wall of the uterus. Also she wanted to preserve her fertility. The patient was placed in a dorsal lithotomy position. One size-10 incision was made for the camera insertion and three size-5 incisions were made for the laparoscopic trocar insertion. Before the pectopexy operation, myomectomy was performed for patient's menorrhagea complaints. After the myomectomy, the bladder peritoneum was excluded and dissected until reaching the bladder base. Bilateral iliopectineal ligaments were revealed by entering retroperitoneum. Polyvinylidene fluoride mesh was prepared by cutting it according to the size of the uterus and cervix; and the arms of the mesh were accommodated to the iliopectineal ligaments to carry the uterus. The body of the mesh was placed on the anterior vaginal wall; to support the pubocervical ligament. The mesh was fixed to the cervix and anterior vaginal wall with non-absorbable, 0 polyethylene terephthalate sutures. The two arms of the mesh were fixed to each iliopectineal ligament with same non-absorbable sutures. Peritoneum was repaired with 2/0 vicryl sutur and the operation was finalized. The total duration of the surgical operation was 45 minutes. There were no complications during the operation and post-operative period. It was observed that C:-3 and Ba:-2 in the first examination after the surgery. The patient was discharged from the hospital at postoperative 24th hour. The patient's postoperative 3rd month examination and C, Ba point measurements were the same as first postoperative examination. FSFI (female sexual function index) test applied to the patient before and postoperative 3rd month after the surgery. It was observed that there was an increase in all scores; 1.8 points increased in desire (1.8-3.6), 2.4 points in arousal (1.2-3.6), 3.6 points in vaginal lubrication (1.5-5.1), 2.4 points in orgasm (2-4.4), 2.4 points in pleasure (2-4.4), 1.6 points increased in pain scores (2.4->4). The patient was scheduled for another examination at postoperative 12th month.

Discussion: It is quite difficult to prevent the damage of the neighboring organs and vessels in most of POP surgeries. The fact that the laparoscopic pectopexy operation is performed far from hypogastric veins, intestines and ureters; so this is a great advantage. Removing the bowels from operation area is quite easy compared to the sacrocolpopexy operation, especially for the obese patients. Besides these advantages, this method is preferable among patients who have a desire to stay fertile and also it provides quick recovery time, preservation of the vaginal axis and natural woman anatomy.

Conclusion(s): Pectopexy surgery; as an alternative method to sacrocolpopexy and sacrospinous ligament fixation, is a new approach; which is suitable for young women who want to keep her fertility and do not want to have hysterectomy operation. This method will become more and more mentioned in the literature as long-term postoperative data and new studies are published.

Keywords: Pectopexy, laparoscopy, uterine prolapse

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16. A Timeless Method for Uterine Prolapsus, Sacrospinous Ligament Fixation

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Aim: Pelvic organ prolapse (POP) is a significant health issue that has a direct impact on women's quality of life. Many surgical techniques have been explored in the past to treat POP. Vaginal sacrospinous ligament fixation (SSF) is one of the oldest techniques for treating pelvic organ prolapse in women. It was first described by Richter in 1968 and is still being used effectively today (1). Especially after the FDA's warning regarding the use of vaginal meshes, native tissue repairs have acquired popularity and received attention, SSF maintains its place in the current literature as a classical procedure and it is frequently applied (2,3). SSF is recognized as a procedure with numerous benefits, including a lower risk of wound infection, a

short operation time, being a surgery that is free from mesh-related complications and allowing natural tissue repair, less incidence of complications such as organ injury and hemorrhages, and ability to use regional anesthesia (3-5). The success of the SSF operation depends on the ability to fully visualize the ligament and to pass the suture correctly from the right place. Illustrating the SSF process and demonstrating the ligament's exposure is very difficult. We will show you a video of a SSF surgery we did in our clinic in order to show the full process in this presentation.

Case: A 65-years-old patient applied to our clinic with the complaint of having a palpable vaginal mass for approximately 5 years. On examination, there was apical prolapse of C: +3, Ba: +1 according to the POP-Q system. Under epidural anesthesia, the patient was placed in dorsolithotomy position. The anterior and posterior uterine cervix was held with teneculum. A transverse incision extending to both sacrouterine ligaments was done at the level of the cervicovaginal ring. The incision was extended distally in the posterior vaginal mucosa. The rectovaginal space was entered on the right side. The rectal piles were carefully removed and dissection was extended through the right pararectal space. The sacrospinous ligament and coccygeus muscle were isolated. The sacrospinous ligament-coccygeus muscle complex was held with an allis clamp, and a number 0 prolene suture was passed approximately 2 fingers medial to the ischial spine, covering at least 2/3 of the thickness of the ligament. The second prolene suture was passed 1 cm more medial to the same suture. The medial suture was passed through the left cervicovaginal junction to include the sacrouuterine ligament, and the lateral suture was passed through the right cervicovaginal junction. The cervicovaginal opening and posterior vagina were closed with 3/0 vicryl. Sacrospinous ligament sutures were tied to cervix and vaginal apex by pulling towards to the sacrospinous ligament coccygeus muscle complex. The surgical procedure took approximately 35 minutes. There were no complications during and after the operation. Postoperative examination revealed C: -6 and Ba: -2. The patient was discharged in full recovery at the 36th postoperative hour.

Discussion: Nowadays, the SSF method, which has gained popularity, especially with the decrease in the use of vaginal mesh, appears as a successful and preferable technique, especially in patients who are not suitable for abdominal surgery, need to use regional anesthesia or early mobilization (5). Additionally, SSF may be preferred in patients where we may fear incision site infections due to obesity (5). SSF allows for the restoration of the patient's life comfort by a simple vaginal surgery that eliminates the need for an abdominal incision. It is important that this method should be considered among surgical options, especially in patients with comorbidities.

Conclusion(s): Today, SSF is a surgical technique which has high patient satisfaction, provides pelvic reconstruction by using natural tissues, and maintains its status as a classic method in the literature.

Keywords: Sacrospinous ligament fixation, pelvic organ prolapse, vaginal surgery

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17. Anatomical and Functional Results of the Sacrospinous Ligament Fixation

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Aim: Sacrospinous ligament fixation (SLF) technique, described by Richter in 1968 (1). Compared with sacrocolpopexy, SLF has a higher rate of dyspareunia, and recurrence is associated with lower morbidity, and faster postoperative recovery (2). This study was aimed to evaluate the mid-term anatomical and functional results of SLF.

Material and Methods: This study is retrospective and patients who were operated on with SLF between 2017 and 2022 were scanned. Medical and surgical history, urinary, anorectal and sexual symptoms, preoperative physical examination, perioperative and postoperative data were scanned from the hospital records. Patients were called for a follow-up and evaluated in terms of recurrence or secondary urinary incontinence surgery. For anatomical results, patients were evaluated using the POP-Q prolapse staging. Prolapse recurrence; POP-Q >1 was defined as recurrence of anatomical prolapse or reoperation for prolapse. Urinary incontinence was defined as leakage of urine during a cough test. Functional results were evaluated with the pelvic floor impact questionnaire (PFIQ-7) before and after the operation.

Results: The average age of the 25 patients included in the study was 62.8 years, and demographic evaluation was made in Table 1. Postoperative patient evaluations are shown in Table 2. The complication rate was 12%, and two patients who developed recurrence were reoperated. All of the 20% of patients who developed recurrence developed anterior vaginal wall prolapse.

Anatomically, the success rate is 80%. The PFIQ-7 score for functional success was 12.2, while it was 73.04 preoperatively, and all patients had a regression in symptoms (Table 3). Regardless of recurrence, overall, patients' quality of life improved after surgery.

Discussion: A review study noticed a lower rate of recurrent vault prolapse after abdominal sacral colpopexy compared to SLF. However, this review found no differences between these two techniques when considering subjective outcomes such as patient satisfaction and the number of women reporting prolapse symptoms. Today, SLF is still considered an effective and less morbid surgical technique for POP (3). In the literature, recurrence rates is closed to 27% (4). These rates were closer to the rates found in this study (20%). Recent studies have found better anatomical results in the anterior compartment when anterior compartment refection with colposuspension is performed in stage 3 or 4 prolapse. Anterior compartment recurrence rates were 25% and 19%, respectively (5).

Conclusion: In this study and in the literature, the most common site of recurrence was the anterior vaginal wall. Therefore, the anterior vaginal wall was the preferential site of recurrences when treating the posterior wall and vice versa. This study demonstrated SLF's successful anatomical and functional results as an effective surgical method with generally low morbidity. Due to the presence of an anterior compartment defect in cases with recurrence, there is a need for randomized studies evaluating the role of simultaneous cystocele treatment while applying SLF to prevent anterior compartment recurrence.

Keywords: Anatomical results, functional results, pelvic organ prolapsus, sacrospinous fixation

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Table 1. Demographic evaluation

	n=25
Age (years)	62.8
Menopause	21 (84%)
Primiparity	3 (12%)
Multiparity	22 (88%)
Stress incontinence	3 (12%)
Urge incontinence	9 (36%)
Dyspareunia	1 (4%)
Surgical history	23 (92%)
History of abdominal surgery	18 (72%)
History of hysterectomy	6 (24%)
Total hysterectomy	18 (72%)
Anterior compartment surgery	13 (52%)
Posterior compartment surgery	18 (72%)
Postoperative complication (2 urinary retention, 1 urinary tract infection, 1 hematoma)	4 (16%)

Table 2. Postoperative symptoms, complications and recurrence rates

	n=25
Follow-up period (median, years)	3 (1-5)
Urinary incontinence	10 (40%)
Fecal incontinence	1 (4%)
Sexual activity	6 (24%)
Dyspareunia	1 (4%)
Anatomical recurrence	5 (20%)
Anterior vaginal wall prolapse	5 (20%)
Posterior and apical vaginal wall prolapse	0

Table 3. Preoperative and postoperative anatomical and functional evaluation

n=25	Preoperative	Postoperative
POP-Q Stage 0	0	11 (44%)
POP-Q Stage 1	0	9 (36%)
POP-Q Stage 2	5 (20%)	3 (12%)
POP-Q Stage 3	18 (72%)	2 (8%)
POP-Q Stage 4	2 (8%)	0
PFIQ-7 Score	73.04	12.2

18. Is the Vaginal Mass Developed After Perineoplasty A Tumor or A Benign Mass? An Atypical Paraurethral Vaginal Myoma Case Report

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Aim: Leiomyomas are benign, mesenchymal, monoclonal and hormon dependent tumors that originate from the myometrium. However they can be found in extrauterine areas such as lungs, intravascular spaces, retroperitoneal area and vagina. Vaginal leiomyomas are very rare, approximately 300 cases reported (1). Vaginal leiomyomas can be easily misdiagnosed due to their rarity. Clinical presentations are mostly asymptomatic. Patients may sometimes present with symptoms such as vaginal pain, lower abdominal pain, abnormal vaginal bleeding, palpable mass sensation in the perineum, dyspareunia, and dysuria due to mass effect in the lower urinary tract in paraurethral vaginal leiomyomas (2). In this study, a case of vaginal leiomyoma originating from the anterior vaginal wall after previous perinoplasty, growing rapidly and with suspected preoperative malignancy, is presented. This report has been written in accordance with the SCARE criteria guidelines for case reports (3).

Case: A 39-year-old patient with 5 gravida and 5 parity, 3 of whom had a normal vaginal delivery and then perineoplasty due to sexual dysfunction applied to us with the complaint of a palpable mass in her vagina. The patient had no complaints such as dysuria, dyspareunia and difficulty in sexual intercourse, except for a palpable mass. The patient did not have any systemic disease and regular drug use and no history of malignancy in the family. The patient also reported no history of disrupted urination or sexually transmitted disease Although she did not know exactly how long ago she noticed the palpable mass in the perineum in the detailed anamnesis examination of the patient, she stated that it appeared after the perineoplasty operation she had in 2015. The patient had no pathology report from previous surgery.

Clinical findings: On examination, a round, cystic, non-tender mass of approximately 6 cm in diameter was palpated between the urinary meatus and the vaginal orifice. On examination with anterior rotation of the present mass, the vaginal lateral and posterior walls and cervical os appeared natural. It was observed that the position of the urethra shifted forward due to the effect of the mass (Figures 1-3).

Diagnostic assessment: In ultrasonographic evaluation, the uterus was adenomyotic and was suitable for its anatomical location. A well-circumscribed solid mass of 6 cm in diameter, thought to be associated with the anterior vaginal wall, was observed. We thought that the patient's mass could be primarily vaginal fibroids or angiomyolipoma.

Magnetic resonance imaging (MRI) showed the presence of a 6 cm mass that displaced the urethra anteriorly and protruded from the vagina. The mass showed slightly heterogeneous low signal intensity on T2-weighted images (Figure 4).

Therapeutic intervention: The possible diagnosis was considered as paraurethral vaginal myoma or angiomyolipoma because of the location and visual findings. We decided to perform surgical excision vaginally. A Foley catheter was placed in the urethra to protect the urethra during surgery. Under genral anestesia after making a midline incision in the anterior vaginal wall, we found an encapsulated 6 cm soft tumor in the vaginal wall. And there was no evidence of any connection between the tumor and the urethra. The mass was completely excised with proper cleavage. Then the excess vaginal tissue was also excisedand all materials sent for histopathological examination. The vagina was repaired with a double closure procedure. The operation took about 30 minutes.

Postoperative mass examination: A macroscopic examination of the removed tissue showed a gray mass measuring 3.5×3.0×1.5 cm. On the cut section, the mass was solid and gray-white. The tumor was diagnosed as vaginal parauretthral leiomyoma based on histologic features and immunohistochemistry.

Follow-up and recurrence: The patient was discharged without complications on the 3rd postoperative day with good general condition, stable vital signs and spontaneous micturition, and there was no sign of recurrence during the 12-month follow-up period.

Discussion: Leiomyoma is uncommon in the vagina,vulva, ovaries, urethra, and urinary bladder (4). Vaginal leiomyoma occurs rarely; approximately 300 cases have been reported in the literature (1). The tumor usually originates from the anterior vaginal wall and produces symptoms such as dyspareunia, dysuria, and pressure in the genital region. They are usually asymptomatic.

Perineal ultrasonography is an inexpensive diagnostic procedure in the diagnosis of vaginal tumor or benign disease. However, MRI is the latest method in the differential diagnosis of imaging soft tissue diseases. Leiomyomas are typically rounded, well circumscribed, whorl-appearing masses of low T1-signal intensity with homogeneous enhancement after gadolinium administration. T2-weighted images typically show masses with low to intermediate signal intensity, which is typical of smooth muscle tumours located elsewhere in the body. However, leiomyosarcomas are characteristically of high signal intensity on T2-weighted sequences, irregular, and heterogeneous with areas of necrosis or haemorrhage (5). Definitive diagnosis can be made with the result of histological evaluation.

Proximity to the bladder and urethra should be kept in mind and the catheter should be used when dissecting the tumor as in our case. In lateral or posterior vaginal fibroids, the relationship with the rectum should be kept in mind.

In our case, the presence of a mass during perineoplasty was not fully understood, which was the first reason for us to consider a

vaginal mass formed after previous perineal surgery. However, the mass was 6 cm in diameter and it was almost impossible not to notice during the previous surgery. If the mass did not occur during perinoplasty but formed later, this rapid growth suggested a formation with malignant potential. When we searched the literature, we did not find any case of vaginal fibroids diagnosed after perinoplasty. Our aim in publishing this case is to contribute to the recognition of a rare entity, paraurethral vaginal myoma. In addition, the fact that we saw the vaginal myoma after the previous operation in our case makes it highly probable that the myoma was not noticed in the previous operation and was misunderstood. Since it is a rare condition, it could not be diagnosed in the first surgery and may have grown afterwards. While this is not the first case of vaginal paraurethral leiomyoma, it is a condition that can help prevent misdiagnosis.

Conclusion(s): Anterior vaginal paraurethral leiomyoma is a rare neoplasm that should not be ignored in clinical practice. The tumor may actually be leiomyosarcoma and can lead to death due to misdiagnosis or failure to diagnose. Detailed history, current clinical picture, and surgical excision of the mass after ultrasound and/or MRI should be appropriate to rule out malignancy. Before and after the operation, the patient should be informed and long-term follow-up should be performed, although recurrence is not frequent.

Keywords: Vaginal leiomyoma, perineoplasty, mass

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Figure 1. A round, cystic, non-tender mass of approximately 6 cm in diameter was palpated between the urinary meatus and the vaginal orifice

Figure 2, 3. A round, cystic, non-tender mass of approximately 6 cm in diameter was palpated between the urinary meatus and the vaginal orifice

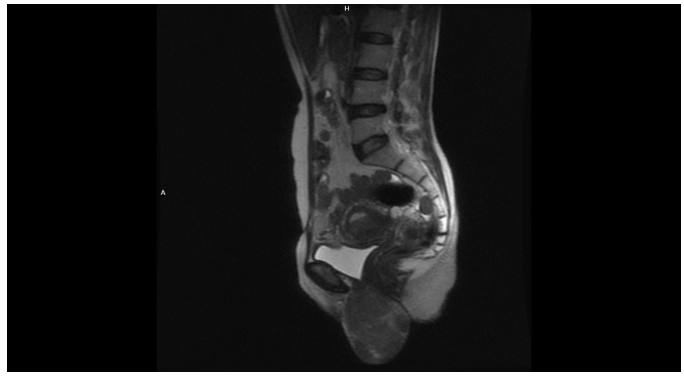

Figure 4. Magnetic resonance imaging showed the presence of a 6 cm mass that displaced the urethra anteriorly and protruded from the vagina

19. A Useless Alternative to Recurrent Cuff Prolapse: Sacrocolpopexy with Prolene Suture

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Aim: In this case report, we aimed to describe the non-mesh antiprolapse surgery to the laparoscopic method that we performed on our patient who had undergone antiprolapse surgery twice before. Pelvic organ prolapse (POP) is defined the herniation of the pelvic organs to or beyond the vaginal walls (1). Prevalence of POP according to epidemiological studies It shows a wide range of distribution such as 3% to 50%. For example; While the prevalence rate determined as a result of the patient's complaint varies between 3% and 10%, this rate reaches 30% to 50% when it is determined by examination findings (1,2). Among the possible risk factors for POP; there are reasons related to genetic predisposition, parity, menopause, advanced age, pelvic surgery history, collagen tissue disorders and increased intra-abdominal pressure (3). There are conservative and surgical treatment options in POP management.

Case: A 52-year-old women, who had three vaginal delivery, was applied the gynecology clinic due to palpable mass 5 years a go (2017). She was diagnosed with stage IV pelvic organ prolapse in her examination. Vaginal hysterectomy and sacrospinous fixation was performed during the surgery. After 2 years (2019), she was applied the gynecology clinic again because of vault prolapse. Laparoscopic lateral suspension using mesh was performed indication of cuff prolapse. She came again 3 years later with recurrence vault prolapse (2022). She was diagnosed with stage IV pelvic organ prolapse again in her examination again. Therefore, we decided to perform surgery third time (Figure 1). On 05.12.2022 the laparoscopy procesure was performed according to the current guidelines (4). Pneumoperitoneum was performed through the umblical point after a Veress insufflation needle. After CO_2 insuflation, an 10 mm optical laparoscope was intraduced through a umblical trocar, another two lateral 5 mm accesorial trocars, and a suprapupic accesorial trocar were also used. Initial inspection of pelvic area revealed non-absorbable (Prolenâ) mesh of lateral suspansion. It made the whole mesh visible by following its trace. The bladder is mobilized off the vault by of sharp and blunt disseciton. To minimize risk of accidental ureteral injury, we opened the retroperitoneum and identified the ureter trace especialy through to bladder. Also rectum mobilized carefully on the rectovaginal fold. Non-absorbable mesh, which had been applied before and became dsyfuncitonal, was removed (Figure 2). After that was performed repairment of midline defect (anterior colporrhaphy) laparoscopically. The wedge of anterior vaginal cuff was excisied triangle shaped. Than was performed posterior colporrhaphy, its also laparoscopically. After these procedures, anterior longutidinal ligament visialized. Dissection was continued lateral side of sacrouterine ligament to vaginal vault. Anterior longutidinal ligament was sutured along the whole length of sacrouterine ligament with 1-0 proline (Figure 3). After the operation, it was observed that vault was pulled quite upwards (Figure 4). It isn't clear to decide an optimal prolapse surgery, especially in cases of recurrrent prolapse. Some authors defend the idea of repair with mesh, some authors defend surgical repair without mesh because of possibe mesh related complications in literature (5). Surgical repair without mesh provide us natural and anatomic prolapse surgery, and prevent possible moplication of related mesh. Based on all these opinions, we performed the sacrocolpopexy operation on the patient with recurrent vault prolapse. We performed sacrocolpopexy operation by taking the proline suture without mesh, and we used patients own sacrouterine ligament as a guide. We didn't use non-absorbable mesh, also we removed mesh which has been applied before. Non-absorbable mesh, which had been applied before and became dsyfuncitonal, was removed. Therefore there is no possible mesh complication risk anymore. Patient didn't have any trouble after the operation and she hadn't ny complication. We discharged the patient home on the day after operation. In order to observe the long-term results, we called the patient for examination at the 1st and 6th months postoperatively.

Discussion: When the antiprolapse surgeries in the literature are examined, the exact type of antiprolapse surgery has still not been defined. Especially surgeries performed with mesh are increasingly criticized. If sufficient numbers can be reached with this surgical technique we apply and long-term results can be shared positively, it will take its place in the literature as a mesh-free alternative.

Keywords: Sacrocolpopexy, prolapse, prolen suture, surgical technique

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Figure 1. Cuff prolapse of the patient before the operation

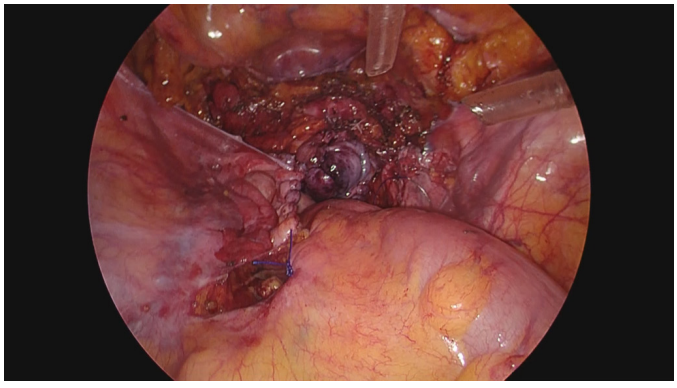

Figure 2. Removed lateral suspension mesh

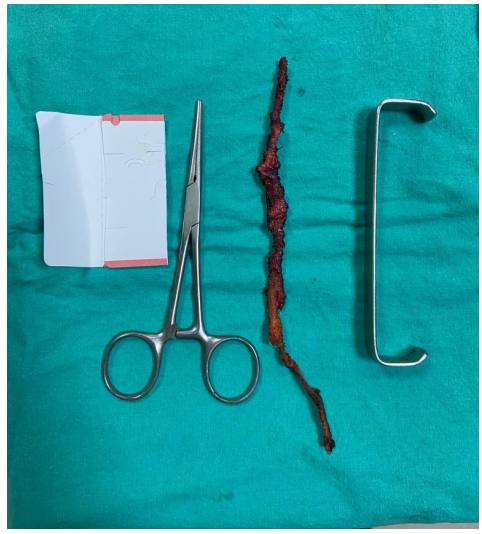

Figure 3. Laparoscopic view of prolene (without mesh) sacrocolpopexy operation

Figure 4. Image of cuff from vagina after operation

20. Urinary Incontinence Risk Factors and Its Impact on Quality of Life Among Women

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Aim: Although urinary incontinence (UI) is a common problem among women during pregnancy and postpartum period, most women cannot share such an important problem with their doctor because of lack of knowledge about treatment options and the feeling of shame. One of the important risk factors for postpartum UI is vaginal birth compared to cesarean birth. It is important to increase the awareness of obstetricians and midwives who have the chance to follow a pregnant from early stages, to specify the situation in the early period and to make provision for this condition.

Material and Methods: A total of 339 women who applied for routine control between 01/01/2022 and 01/05/2023 were included in the study in Izmir University of Economics Medicalpoint Hospital Gynecology and Obstetrics Clinic. The demographic data (age, parity vs.) were recorded. An evaluation form, including validated Turkish version of ICIQ-SF (International Consultation on Incontinence Questionnaire Short Form), IIQ-7 (incontinence impact questionnaire) and UDI-6 (urogenital distress inventory) forms, prepared for this study was asked to patients in order to determine the rate of UI and to investigate the risk factors. Subjects were examined in terms of physical and socio-demographic characteristics as well as chronic illness status, type of birth, surgical history,weight gain during pregnancy, smoking, presence of constipation and urge incontinence, fecal incontinence, obstetric history and urinary incontinence before and during pregnancy or postpartum period, whether she consulted a doctor for her complaints. Risk factors of UI during pregnancy was studied by multiple logistic regression and the effect of incontinence on quality of life of women was evaluated via multiple linear regression analysis. A p-value less than 0.05 was considered statistically significant.

Results: Mean age was 27.0±6.2 and mean parity was 1.9±1.1. Mean weight gain during pregnancy was 12.6±5.7. 45.4% of the cases had no UI but 9.1% of them reported incontinence before pregnancy and 42.8% of the cases reported during pregnancy and 2.7% of them deal with incontinence after delivery. 19.2% had incontinence in first trimester during pregnancy and 35.7% of the cases reported UI at the third trimester. Six weeks after delivery only 13.9% of the cases mentioned incontinence and 6.2% of them reported incontinence 6 months after delivery. Type of birth was 56.7% normal vaginal birth (1.2% via vacuum extraction delivery) and 44.3% was ceserean section. Only 3.5% of the cases were twin pregnancy. 19.8% of the patients smoke cigarette. Eighty-eight out of 339 patients had constipation and strikingly 72.7% of them had constipation before their pregnancy. 41.9% of the patients had stress UI and 19.5% of them had urge incontinence. 0.9% of the cases reported concomitant fecal incontinence. Unfortunately, the sad thing is that only 7.1% of the patients mentioned their incontinence to their doctor. The median of IIQ-7 was 5.4 (0-100) and the average score of UDI-6 was 24.2 (0-100). It has been observed that as incontinence complaints increase, women's quality of life gradually deteriorates.

Discussion: The patients having UI before pregnancy were more likely to have incontinence during pregnancy and also vaginal birth history, urinary tract infection anamnesis were the other risk factors in our study. Urinary incontinence had significant impact on health-related quality of life during pregnancy. It has been shown in studies that women who are uncomfortable with UI express their complaints (1,2). Most women do not seek help because of their belief that UI is a natural process brought on by pregnancy and that it can improve after birth. However, all patients should be informed that UI is not normal at any time in life and its long-term effects that may occur in later life. Health care providers should encourage women. It is important for patients to discuss and inform them about this issue, considering that they may hesitate to seek help before, during and after pregnancy. Zhu et al. mentioned that only 25% of women tell their complaints about UI and call for help in China (3). Wijma et al. (4) reported the incidence of UI increased from 30% at 28-32 weeks of gestation to 35% at 36-38 weeks of gestation, getting higher with advanced gestational age. In our research we reported the incidence of UI increased from 26% in second trimester to 35.7% in the third trimester similarly.

Conclusion(s): Our study provides healthcare professionals with the opportunity to review the possible causes of urinary incontinence and provides women with a supportive approach to UI, especially during pregnancy, thus contributing to improving the quality of life of patients by preventing UI.

Keywords: Urinary incontinence, pregnancy, life quality

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21. An Unusual Large Mullerian Cyst Originating from the Labium Minora

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Aim: Mullerian cysts are a relatively rare but benign condition affecting the female genitourinary and reproductive systems (1). These cysts originate from residual tissue in the Mullerian ducts during fetal development and can manifest in a variety of locations, including the vaginal and unusual vulvar areas (2). The aim of this report is to present a case of an extremely unusual localization of a Mullerian cyst and its management.

Case: A 20-year-old virgin applied to a secondary gynaecology and obstetrics clinic complaining of a palpable mass in the vulva and swelling visible through her clothes. The patient stated that this structure had been present and growing for at least 3 years. On examination, a cystic mass of 8x4x3 cm was found in the vulvar region, originating from the right labia minora (Figure 1). Transvaginal ultrasonography revealed no pathology of the uterus, ovaries or vaginal tract, and subsequent radiological studies confirmed the benign nature of the cyst. Other pathological conditions such as Bartholin's gland cyst, inclusion cysts and Gardner's duct cysts were considered in the differential diagnosis, but the localization and nature of the cyst did not lend itself to any of these diagnoses. An excisional procedure was planned to remove the cyst while preserving the patient's vulvar structures. Before the surgery, the patient was thoroughly informed of the procedure. The surgical area was sterilised and the incision lines were marked to ensure both functionality and aesthetics, with particular care taken to preserve the right crus of the labia minora. After assessment of the vascular network, an incision was made through the dermis and subcutaneous tissue. Limited bleeding control was performed. Subcutaneous sutures were made using 3.0 absorbable sutures. Finally, the skin was sutured with 3.0 resorbable appropriate rapid sutures. The excised material was prepared for pathological examination and, as expected, was confirmed to be a Mullerian cyst. The cystic structure measured 7x4x3 cm and was covered with epithelium, containing serous fluid, smooth walls and a cyst wall of 1 mm thickness. The patient was discharged on post-operative day 2 and after a two-month post-operative recovery period, the patient returned to the outpatient clinic for surgical site evaluation with full recovery. This case serves as an example of successful management of Mullerian cysts and emphasises that Mullerian cysts should also be considered in the differential diagnosis of vulvar cysts. In addition, surgical management of these cysts should preserve both function and aesthetics in affected individuals.

Discussion: To our knowledge, this represents the singular case documented in the literature of a Mullerian cyst situated within the labium minora of such dimensions. A previous study by Campbell et al. in 2019 detailed a sizable vulvar mucinous cyst located in the labium majoras, underscoring the commonality of cysts associated with the Nuck canal and other embryologic cysts in this region. Furthermore, it is notable that Mullerian cysts exhibit a broader potential for formation throughout the vagina (2), in contrast to Gartner's cysts, which consistently develop along the lateral wall, constituting 12% of all vaginal cysts (3).

Conclusion(s): This instance emphasizes the effective handling of Mullerian cysts and underscores the significance of including them in the list of potential diagnoses for vulvar cysts. Additionally, when opting for surgical interventions to address these cysts, it is crucial to prioritize the preservation of both functionality and aesthetic aspects in individuals affected by them.

Keywords: Mullerian cyst, labia minora, vulvar mass

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Figure 1. A cystic mass originating from the right labia minora

22. Giant Ovarian Benign Mucinous Cystadenoma

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Aim: The aim of this case report is to present the dramatic postoperative recovery of a 59-year-old woman with a giant abdominal mass who underwent surgical treatment.

Case: A 59-year-old patient who presented to the emergency department with a general condition disorder was admitted to the chest diseases service with a prediagnosis of pulmonary embolism. The patient's general condition deteriorated and haemoglobin levels rapidly decreased during the follow-up in the ward. Contrast-enhanced abdominal CT scan was planned after it was noticed that the abdomen was distended on physical examination. According to the CT result, a large cystic lesion with a septa of approximately 30 cm with a lobulated contour and a septa of approximately 30 cm extending inferiorly to the pelvis and superiorly to the epigastric region and a haematoma with a diameter of approximately 5 cm in the rectus muscle were observed (Figure 1). The patient's general condition deteriorated, she was intubated due to metabolic acidosis and her haemoglobin level, which was 12.9 at the time of admission, decreased to 7.1 within 6 hours and emergency laparotomy was planned by gynecology and obstetrics and general surgery. Peroperatively, it was observed that the mass was of right ovarian origin and right salpingoopherectomy was performed (Figure 2). The haematoma in the rectus muscle cuff was drained and bleeding control was achieved. The general condition of the patient who was transferred from the intensive care unit improved dramatically and she was discharged in one week. The pathology result was mucinous cystadenoma and the treatment was completed.

Discussion: Ovarian tumours are the most common cause of death among female genital cancers. It rarely causes specific symptoms in the early period. Nowadays, giant ovarian tumours are rarely encountered due to the widespread use of health services and the development of imaging methods. Large ovarian tumours cause pain, palpable mass in the abdomen, fullness and compression symptoms in the patient. Early diagnosis and treatment of these masses both improves the symptoms and allows histopathological examination of the mass (1). The CA125 value is quite high in malignant ovarian tumours, whereas it is usually within normal limits in benign giant adnexal masses. However, in cases with elevated values, there is a belief that the elevation is due to peritoneal stretching and irritation (2,3).

Conclusion(s): Laparoscopic surgery is generally accepted as the gold standard treatment method for small ovarian tumours due to its minimally invasive method and short hospital stay. In large ovarian tumours, open surgery is the more preferred method because of the lack of space in the abdomen, rupture of cysts and the risk of spread of malignant cells to the abdomen. In conclusion, abdominal ultrasonography, CT, MR and CA-125 values play a critical role in the diagnosis of giant adnexal masses. Cystic lesions judged to be benign are most probably mucinous or serous cystadenomas. There is a low probability of malignancy in these lesions. C orrect diagnosis and appropriate case management in giant adnexal masses are of great oncological importance (4).

Keywords: Adnexal masses, mucinous cystadenoma, laparotomy

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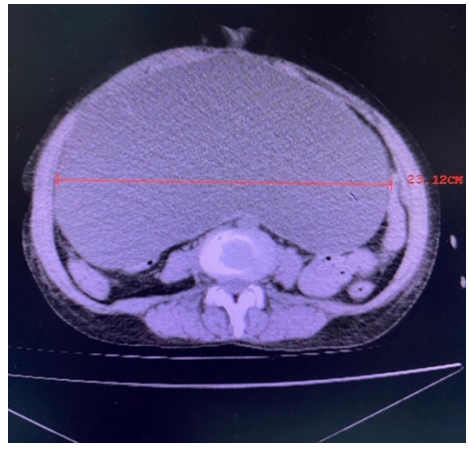

Figure 1. CT findings of the mass

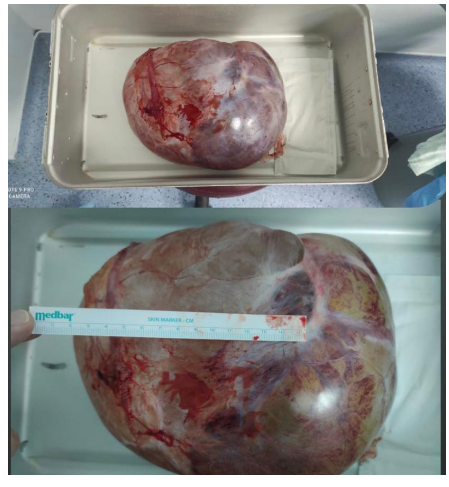

Figure 2. Macroscopic image of the mass

23. Case Report: Application of Self-Retaining Support (SRS) Implant in Pelvic Organ Prolapse Surgery

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Aim: This case report aims to present the surgical treatment of a patient with cystocele and apical prolapse utilizing a self-retaining support (SRS) implant.

Material and Methods: The surgical intervention initiates with an anterior colpotomy, followed by lateral dissection on both sides extending to the ischial spine. The Self-Retaining Support (SRS) implant, composed of an ultra-light, titanized polypropylene surgical mesh stretched and held in place by a flexible U-shaped frame, is then utilized. The device's arms are positioned between the bladder and the vaginal mucosa, adhering to the anatomy of the anterior transverse fascial plane (ATFP). The frame of the implant is symmetrically placed without tension, with the mesh stretched under the bladder and the connecting bridge positioned beneath the pubic symphysis. Depending on whether the patient underwent concurrent hysterectomy, either the cervix or the apex of the vaginal dome is subsequently sutured to the free (proximal) edge of the mesh.

Case: A 53-year-old G3P3 patient, presenting with a palpable mass in the vagina, was diagnosed with apical prolapse (POP Q stage 2). The patient underwent surgery following the described method, which lasted 17 minutes. In addition to the primary procedure, rectocele repair was performed. Post-surgery, a vaginal tampon was inserted to fully occupy the vagina. The patient remained under overnight observation in the clinic. Vaginal tampons and the urinary catheter were removed the next day. After spontaneous urination, the patient was discharged, receiving antibiotics and anti-inflammatory treatment. At the 10-day follow-up, regression of prolapse was observed, and there were no additional complaints during urination.

Discussion: In the past decade, symptomatic pelvic organ prolapse (POP) patients were commonly treated with vaginal mesh, raising concerns about its safety (1). Consequently, there has been a shift towards natural tissue repairs (NTRs), although complications related to mesh fixation and specific techniques persisted. Recognizing the role of fixation techniques, the self-retaining support (SRS) implant was introduced, designed to circumvent soft tissue anchorage issues while retaining mesh benefits (2).

Conclusion(s): Utilizing the SRS implant for POP repair demonstrates efficacy in treating advanced anterior and apical prolapse. Multidisciplinary and multicenter studies are crucial for further validation and strengthening of these findings.

Keywords: Self-retaining support implant, vaginal mesh, pelvic organ prolapse

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24. Comparison of Two Techniques of Lateral Suspension Surgery: Tertiary Center Data

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Aim: Pelvic organ prolapse (POP), involving the herniation of pelvic organs beyond the vaginal walls, is a prevalent condition (1). Despite advancements in surgical techniques, the superior approach remains unclear. This study aims to contribute our clinical experience with one of the widely used techniques, lateral suspension (LS).

Material and Methods: We conducted a retrospective search of data from January 2022 to October 2023, identifying 63 patients who underwent surgery using the lateral suspension technique. Our analysis included the examination of demographic characteristics such as age, BMI, and pregnancy history, as well as considerations of systemic diseases, operation background, symptoms, and additional operations related to lateral suspension. Patient data were recorded from the electronic archive. Postoperative laboratory values, duration of hospital stay, and 1-month follow-up examination details were evaluated. Statistical analysis was performed using SPSS ver. 23.0, with values presented as mean ± SD unless otherwise specified. The Mann-Whitney U test and Student's t-test were employed, with statistical significance set at a *p*-value less than 0.05.

Results: Patients who underwent Lateral Suspension Surgery were retrospectively examined between January 2022 and October 2023. A total of 63 patients were included in the analysis, with 69.8% (n=44) undergoing the procedure with polypropylene mesh, while the remaining 30.1% (n=19) opted for Mersilene Tape suture. The mean age ranged from 26 to 74 years, with an average of 51.7, and the mean BMI ranged from 19 to 43.3 kg/m², averaging at 27.8. No significant differences were observed between the two groups concerning BMI, pregnancy history, medical background, or symptoms of incontinence (Table 1). Additionally, factors such as the duration of surgery, postoperative hemoglobin levels, time of discharge, and the presence of recurrence showed no notable distinctions among the groups (Table 2).

Discussion: Our study affirms that there is no significant difference between the two methods, lateral suspension with mesh or with Mersilene, concerning the duration of surgery and postoperative hospitalization time. At the one-month follow-up, recurrence ratios were found to be similar. Although laparoscopic sacrocolpopexy (SCP) is considered the gold standard for apical prolapse treatment, laparoscopic lateral suspension presents with significantly fewer complications than SCP. Risks associated with SCP, such as life-threatening vascular injuries, spondylodiscitis, hypogastric nerve impairment (resulting in bladder or bowel dysfunction), or sacral roots damage, are not observed with lateral suspension. In a randomized trial, lateral suspension demonstrated superiority in terms of prolapse and urinary incontinence (2). There are multiple techniques and materials for performing lateral suspension. To our knowledge, there is no study comparing the use of mesh and Mersilene in lateral suspension. In a prospective cohort study, the safety and effectiveness of Laparoscopic LS with macroporous polypropylene mesh were approved after a mean follow-up of 3 years (3). In the same study, the mesh exposure or extrusion rate was zero, in contrast to the first series by Dubuisson et al. (5), where the mesh erosion rate was approximately 6% (4). A review in 2021 reported a 3.1% mesh erosion rate. In our literature search, we found a case series with a technique known as the Mulayim technique using Mersilene suture (6). Despite having different port insertion sites from our technique, they reported successful outcomes.

Conclusion(s): Both Mersilene Tape suture and polypropylene mesh prove to be viable options for lateral suspension operations in patients with prolapse. However, further studies are warranted to enhance our understanding and provide additional insights into the comparative effectiveness and potential nuances of these techniques.

Keywords: Pelvic organ prolapse, lateral suspension, hysteropexy, apical prolapse

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25. The Effect of Urinary Incontinence on Female Sexual Functions: Tertiary Center Experience

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Aim: Urinary incontinence (UI) is a very common health problem that affects women's quality of life. Studies have reported a prevalance ranging between 11.4-73% (1). This condition, which impacts various aspects of sexual intercourse, adversely affects a woman's quality of life and her relationships with her partner and family structure. Pelvic organ prolapse/UI sexual function assessment short form-12 (PISQ-12) is a validated scale developed to specifically evaluate sexual functions in patients with UI and pelvic organ prolapse (2). In our study we aim to investigate the effects of UI on sexual functions in women using the PISQ-12 scale.

Material and Methods: One hundred twenty-three sexually active patients diagnosed with stress, urge and mixed type UI, who applied to Ankara Etlik City Hospital Urogynecology outpatient clinic with UI between May-September 2023, were included in the study. Demographic and obstetric data of patients were recorded and pelvic examination, complete urine analyses, urine culture, stress test and urodynamic tests were performed. Women who had pelvic organ prolapse and a history of pelvic floor surgery were excluded from the study. The PISQ-12 short form was filled out by the patients. The cut-off value of poor sexual function was accepted as <17. Sexual function evaluation was made in 3 subscales. Descriptive statistical methods were employed for data analyses.

Results: The average age of 123 patients participating in the study was 48.2 years and the average BMI was 30.04 kg/m². Average parity was found to be 2.8 and UI duration was 5.4 years. 36.5% of UI patients were diagnosed with stress, 17.2% with urge and 46.3% with mixed type UI. 37.4% of the cases were in the postmenopausal period and 62.6% were in the premenopausal period. No significant difference was observed between the groups in demographic data such as age, gravida, parity, mode of birth and in clinical data such as BMI, episiotomy, smoking, feeling of sagging in the vagina, feeling of enlargement in the vagina and aerovagen data. The total mean score of the patients on the PISQ-12 scale was 27.1 and the highest score belonged to the physical behaviors subscale. It was observed that 46% of the cases leaked urine during sexual intercourse. Although the PISQ-12 score in the postmenopausal patient group was lower than that in the premenopausal patient group, it was not statistically significant. When the relationship between UI type and sexual dysfunction was examined, no difference was observed beetween the 3 types of UI.

Discussion: Sexual dysfunctions are defined as disorders of the human sexual response resulting from disruption in one of the physiological processes such as desire, arousal and orgasm phase (3). UI has an important role in the etiology of sexual dysfunctions. Approximately half of sexually active women with UI experience sexual dysfunction and 25% of these women leak urine during sexual intercourse. In a study examining the effects of UI on sexual functions, it was shown that stress urinary incontinence is the condition that affects sexual life most (4). In our study, the group with the lowest score on the sexual function value scale was found to be urge type UI group. But there was no statistically significant difference between the types of UI. Another study similarly demonstrated that the effects of incontinence types on sexual function are comparable (5). In our study, it was shown that the deterioration in sexual functions increases with advancing age and menopause. However, statistically, no significant difference was detected in PISQ-12 scores between premenopausal and postmenopausal patient groups with UI.

Conclusion(s): Our study revealed that 26.8% of patients with UI had PISQ-12 scores below 17. Due to its negative effects on sexual life, UI should be considered as a serious health problem of women regardless of the period of life and should be treated with appropriate methods.

Keywords: Urinary incontinence, sexual disfunctions, urge, stress, PISQ-12

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Table 1. Socio-demographic and clinical characteristics of groups

	Polypropelene mesh n=44	Mersilene tape n=19	*p*
Age, years	48.6±13.4	58.8±10.8	**0.012**
BMI, kg/m²	28.4±4.9	26.4±5.7	0.190
Gravida	3 (2-11)	3 (1-6)	0.340
Parity	3 (1-7)	3 (1-4)	0.608
Systemic disease, n (%) Yes No	 21 (47.7) 23 (52.3)	 12 (63.2) 7 (36.8)	0.287
History of abdominal surgery, n (%) Yes No	 20 (45.5) 24 (54.5)	 6 (31.6) 13 (68.4)	0.406
History of hysterectomy, n (%) No Abdominal Vaginal	 33 (75.5) 3 (6.8) 8 (18.2)	 16 (84.2) 1 (5.3) 2 (10.5)	0.710
Incontinence, n (%)	16 (36.4)	11 (57.9)	0.166

Values are given as mean ± SD unless otherwise specified. Mann-Whitney U test was performed. *Student'st-test was performed. *P*<0.05 was significant.

Table 2. Perioperative outcomes of surgery groups

	Polypropelene mesh n=44	Mersilene tape n=19	*p*
Preoperative hemoglobin	11.2±1.0	11.9±1.0	0.251
Postoperative hemoglobin	10.4±1.17	10.6±1.3	0.674
Time of surgery, min	69.7±11.5	65.4±12.9	0.255
Hospitalization, hours	32.3±3.8	30.4±4.1	0.106*
Postoperative 1st month recurrence, n (%)	7 (1.9)	4 (21.1)	0.721

Values are given as mean ± SD unless otherwise specified. Mann-Whitney U test was performed. *Student's t-test was performed. *P*<0.05 was significant.

26. Predictive Value of the 2nd Trimester Maternal Estrol Level for Late Term, Postterm Pregnancy

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Aim: The duration of pregnancy is an important factor affecting perinatal outcomes. Although the focus is on preterm birth, postterm pregnancy is also associated with increased neonatal mortality and morbidity. The etiology of postterm pregnancies has not been clearly revealed, but maternal or fetal genetic effects, defects in fetal production of hormones and low estriol levels may be effective. In our study, the predictive value of second trimester maternal estriol level in the development of late term and postterm pregnancy was investigated.

Material and Methods: In our study, pregnant women who were delivered with the diagnosis of late term and postterm in Etlik Zübeyde Hanım Gynecology and Obstetrics Training and Research Hospital were evaluated retrospectively and the study group was formed. Gestational age was calculated according to the last menstrual date and early week pregnancy ultrasound measurements. The study was carried out on 285 pregnant women who met the inclusion criteria and had triple screening test performed in our hospital between June 2022 and January 2018. The second trimester maternal estriol levels of the patients were obtained from the triple screening test. The data was completed by transferring to IBM SPSS Statistics 23 program. $P<0.05$ was accepted as significance.

Results: While there was no statistically significant difference for AFP, AFP MOM, HCG, HCG MOM, UE3 ($p>0.05$), there was a statistically significant difference for UE3 MOM ($p<0.05$). Accordingly, the mean UE3 MOM in the control group is higher than in the study group. For the UE3 MOM value, 1.015 is set as the cut-off point.

Discussion: It has seen in studies that significant relationship between low first trimester lipid levels and postterm pregnancy, increased triglyceride levels in early pregnancy are associated with preterm birth, changes in estrogen and progesterone levels were effective in myometrial gap junction formation in term rats, continuous intravenous administration of androstenedione for 48 hours resulted in a significant, sustained increase in maternal plasma estrogen concentration. Estrogen stimulates myometrial contractility.

Conclusion(s): One of the conditions that cause postterm pregnancy is the disorders in hormone metabolism with low estriol levels. In our study, second trimester serum estriol levels were analyzed and it was observed that the UE3 MOM value was lower in the study group pregnants. Second trimester maternal UE3 level can be evaluated as a criterion to predict postterm and late term pregnancies. The study should be supported by more multicenter, more sampled patient groups and prospective studies because there are many factors affecting the occurrence of postterm pregnancy and the relationship can be revealed more clearly.

Keywords: Postterm pregnancy/lateterm pregnancy/triple screening test

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27. Truly Minimal Invasive Procedure for Suspension of Advanced POP Cases with EnPlace Device

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Aim: Apical prolapse is a common pathology that impairs the quality of life the women, affecting more than 25% of the female population (1,2). The common surgical options for POP reconstruction include vaginal and abdominal approaches, with or without hysterectomy, laparoscopic or robotic, that are related to known surgical complications, recovery periods and psychological effects of uterine removal (3-7). EnPlace is a newly developed technique to treat pelvic organ prolapse, fixating the uterine cervix to the sacrospinous ligament bilaterally, for apical support. The aim is to evaluate the effectiveness and safety of advanced POP repair using the EnPlace device.

Materials and Methods: The patients gathered for this study were recruited from a 581 EnPlace patients group operated by a single surgeon (MN). The total number of patients enrolled into this study was 114, including patients diagnosed with the advanced POP who

were recruited out of a 581 EnPlace patients' group. The sum of the patients with advanced POP (C point equal more than +3, according to the POP-Q ICS). Informed consent was obtained from all patients, the study met all the local ethical committee requirements. A prospective study was performed, in which the EnPlace device was used, for reconstruction of advanced pelvic floor apical prolapse. All surgeries were performed according to previously reported surgical technique. The effectiveness of the EnPlace operations was determined by the POP-Q measurements at 10 months follow-up. The primary safety outcome was intraoperative and early post-operative complications and adverse effects after six months. All statistical analyses were performed using an average calculation. The satisfaction level of the patient was obtained one-month post-surgery and four months post-surgery in a percentile scale (0-100).

Results: One hundred fourteen women were enrolled in the study, average age was 61.9, average parity was 3.3. All patients had co-surgeries at the time of the EnPlace, the details are presented based on the type of surgery. Five patients underwent previous hysterectomy, and 18 patients had USI (urinary stress incontinence). During the operation there were no injuries to the surrounding blood vessels, nerves, rectum, and urinary bladder. During the first six months post-operative period there were 18 cases (15.8%) of recurrent apical prolapse, and two cases of cervical elongation (1.75%). For intra-operative details see table No. 1.

For patients having EnPlace and colporrhaphy: The average surgery time was 21.6 minutes, average blood loss 22.1 cc. The average duration of pain was 1.5 days, average pain level upon VAS 2.1 (on a scale of 0-10), average satisfaction level at one month post-surgery 92%, satisfaction level at four months post-surgery is 87% (in percentile scale 0-100). See table No. 2.

For patients who had EnPlace, colporrhaphy and TVT: Average surgery time was 32.2 minutes, average blood loss 32.2 cc. The average duration of pain was 2.5 days, average pain level according with VAS 2.5 (on a scale of 0-10), average satisfaction level one-month post-surgery 96%, satisfaction level four months post-surgery is 90% (on percentile scale 0-100). See table No. 3.

Discussion: Most of the patients in this group had comorbidities (60.5%, 69 in number), 9 out of the 114 patients had previous pelvic organ prolapse reconstruction surgery prior to the EnPlace. No severe adverse effects were recorded in this group of 114 patients. Most of the patients were highly satisfied with the result of the surgery and had no need for further treatment. The blood loss in this group of patients was minimal, and the recovery time after the surgery was relatively short and had an average of 2 days. The time of the surgery was significantly shorter compared to the alternative surgeries available.

Conclusion(s): Based on the information listed above the conclusion is that EnPlace provides a good solution compared to the available treatments these days. It is unique in avoiding the risks of the deep pelvic dissection and the complications associated to mesh implants. As shown with the advanced POP patient group, the satisfaction levels are high, pain levels are low, and the rehabilitation is relatively short and easy. EnPlace can be performed in small hospitals as well, as there is no need for blood bank services in the vicinity of the O.R.

Keywords: Advanced pelvic organ prolapse (POP), apical prolapse, EnPlace, minimal invasive, meshless

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28. EnPlace®: Minimally Invasive Vaginal POP Suspension - Operations on Young Patients (≤45 Years)

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Aim: The article aims to investigate the significance, safety, and efficacy of EnPlace®, a uterine-preserving technique offering permanent pelvic organ prolapse repair, here in younger patients. Apical prolapse can also occur in young patients because of the typical culprits: obstetrical traumas, genetics, family history and more (1-5). In comparison to elder prolapse patients, the younger patient might choose a prolapse repair method that can best suit their lifestyles and plans. Before the EnPlace® meshless & dissection-

less era, surgeons had to choose either a vaginal or abdominal approach, open operation or laparoscopic/robotic, operation with or without reinforcement mesh implants. These operations included deep pelvic dissections and were related to known adverse events and psychological impact of uterine removal (6-10).

Material and Methods: A group of 39 patients that fulfilled the age criterion of ≤45 years was selected and analyzed from a population of 581 EnPlace® patients. Informed consent was obtained from all patients, the study met all the local ethical committee requirements. Patients were screened for advanced apical POP and enrolled in the study if no contraindications (such as pregnancy or pelvic active infective or neoplastic disease) were present. The enrolment included pre-surgical consultation, surgery, and three post-surgical follow-up events: one day, one month, and four months after operation. All surgeries were performed by one urogynecological surgeon, MN, according to the previously reported method (11,12). Initial, concomitant, and post-operative data collected (such as demographics, POP-Q, pain, concurrent symptoms, etc.) were analyzed via descriptive statistical methods and statistical tests (paired t-test and McNemar's test). These were also implemented on the group of 39 patients.

Results: The anatomical success (an objective measure) in the young patient group was 94.5%, which was defined by C, Ba, or Bp POP-Q points remaining more than 1 cm proximal to the hymenal ring (POP-Q <-1 cm) at the follow-up. The average positions of the POP-Q points are displayed pre- and four months post-surgically in Figure 1. The functional success (a subjective measure) was gathered from patient questionnaires, where patients had to rate their current satisfaction at the present follow-up on a percentage scale of 50-100% with 5% increments. A score of ≥75% was considered as a success – this resulted in an 86.5% functional success based on the third post-operative follow-up. The patient history taken at the pre-surgical consultation also included concurrent symptoms with the prolapse – these all saw a decline in the young patient group, where EnPlace® and a+p colporrhaphy (± TVT) occurred. The same can be said when examining the 26 patients where only EnPlace® and a+p colporrhaphy procedures took place. Although the symptoms of Dyspareunia, USI, OAB, and Bowel Symptoms all decreased, USI was the symptom that was reduced in a statistically significant manner (p<0.001) (Figure 2). Regarding the surgical data, the average surgical duration of 27.4 minutes (range: 20-40 min) and average blood loss of 26.5 cL (range: 15-40 cL) were also described. Patients on average reported a score of 2/10 on the VAS, and while the duration of pain lasted 2 days on average, 46.2% described the pain lasting only 1 day, making it the most frequent duration. No complications were observed while the patients were operated (Figures 1, 2).

Discussion: The core features of EnPlace® are that it is a minimally invasive, vaginal approach to pelvic organ prolapse fixation without deep dissection, and a relatively quick surgical intervention with reduced long-term complications. Furthermore, aspects such as minimal bleeding, pain, and recovery time can be derived when considering these features and the Results. Specifically for the younger patients ≤45 years of age, it should be appended that the preservation of the uterus satisfies the reproductive and psychological aspects of pelvic organ prolapse repair, while the lack of invasiveness significantly reduces aesthetic issues (such as scars), delayed complications, and recovery. As explored earlier, the younger patient may still prefer to have the option of becoming pregnant again, which other techniques may render impossible. So, maintained sexual functions would also be of importance. Finally, the psychological aspect of womanhood and/or sexuality may be deeply associated with the maintenance of the womb in some patients – the idea which mustn't be neglected either (6,7). As a summary of the above, strengths of the EnPlace® system can be noted for the young POP patient; the nature of EnPlace® preserves the opportunity for reproduction, fast recovery, maintenance of the womb, and/or minimal external alterations. The short duration is greatly beneficial to the patient considering time under anesthesia, as is the small volume of bleedings. It is also worth to mention that no patients in this group were observed to have any complications during the procedure. It can be argued that a weakness of EnPlace® may be its possible failure in an increased abdominal pressure scenario – such as a pregnancy. Still, repeating an EnPlace® procedure twice is more favorable than completing a hysterectomy once, and losing the option to conceive.

Conclusion(s): The younger, reproductively fit patient may consider a minimally invasive, uterine-preserving apical prolapse repair that requires no deep dissection. The short recovery and minimal pain duration and intensity are also compatible with an active or busy lifestyle, which might be the case in the setting of a younger patient.

Keywords: EnPlace, young patients, pelvic organ prolapse, apical prolapse, minimally invasive, pelvic organ prolapse reconstruction, pelvic organ prolapse, meshless

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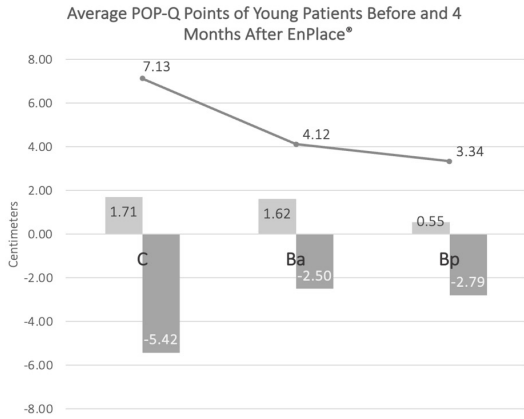

Figure 1. Average POP-Q points of young patients before and 4 months after EnPlace®

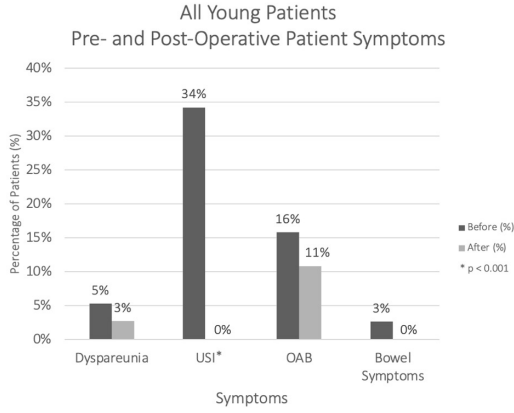

Figure 2. Pre- and post-operative concurrent symptom proportions in percentages

Table 1. Intra-operative details

Surgery time – EnPlace with colporrhaphy	Bleeding – EnPlace with Colporrhaphy	Surgery time – EnPlace + Colporrhaphy + TVT	Bleeding – EnPlace + Colporrhaphy + TVT
21.6 (min)	22.1 (cc)	32.2 (Min)	32.2 (cc)

Table 2. Post-operative details for EnPlace with colporrhaphies

Duration of pain after surgery	VAS	Satisfaction first month post-surgery	Satisfaction 4th month post-surgery
1.5 (days)	2.1 (0-10)	92%	87%

Table 3. Post-operative details for EnPlace with colporrhaphies and TVT

Duration of pain after surgery	VAS	Satisfaction first month post-surgery	Satisfaction 4th months post-surgery
2.5 (days)	2.5 (0-10)	96%	90%

29. Pelvic Actinomycosis in IUD Wearers- Two Case Reports

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Aim: Actinomycosis may easily be misdiagnosed as a malignant tumor of the ovary or other suppurative infection. Therefore, it is particularly important to understand this disease and explore specific preoperative, intraoperative, and postoperative diagnostic methods. Here, we report 2 cases of pelvic actinomycosis admitted to our hospital since May 2023 (Figure 1).

Case 1: A 41-year-old woman, G4P3A1, last menstrual period (LMP) two months ago. She had a history of two cesarean sections, cerclage during pregnancy, and was using a single antihypertensive medication. Three years ago, she presented with complaints of chronic pelvic pain and irregular menstrual bleeding. Endometrial sampling was performed, and she was fitted with a LNG-IUD (Mirena). Two years later, her symptoms worsened, and she was initially diagnosed with a tuboovarian abscess (TOA) at a tertiary center, where antibiotic therapy was initiated. During the gynecological examination, abdominal tenderness was noted without guarding or rebound. Chronic cervicitis was observed during speculum examination, and a feeling of fullness in the right adnexa was noted during vaginal and rectal examination. A mobile mass filling the rectovaginal cavity was detected. Transvaginal ultrasound (TVUS) revealed uterine AVF, IUD echogenicity in the cavity, bilateral hydrosalpinx, a normal left ovary, and a 55x62 mm cyst with thin septations in the right ovary. Pelvic Doppler ultrasound showed no vascularization around the cyst or within the internal septa. Tumor markers were within the normal range. Pelvic MRI with intravenous contrast revealed a complicated cystic appearance with 51x60 mm septations in the right ovary, with no contrast enhancement in the septa (Figure 2). Endometrial sampling was performed after removing the Mirena. The pathology result indicated “findings compatible with Actinomyces endometritis”. Despite four weeks of oral penicillin treatment, the patient’s pelvic pain persisted, and a decision was made to proceed with laparoscopy. Right ovarian cystectomy, bilateral salpingectomy, rectouterine adhesiolysis, and ureterolysis were performed. The patient’s vital signs and laboratory findings remained stable, and she was discharged on the second postoperative day. She was prescribed amoxicillin for an additional six months. During a follow-up examination in the fourth postoperative month, the patient reported complete resolution of her symptoms. The control endometrial sampling result indicated “endometrium showing early secretion symptoms, chronic endoservicitis”.

Case 2: A 64-year-old woman, G5P3A2, who had been in menopause for approximately 20 years, presented with complaints of foul-smelling vaginal discharge and postmenopausal bleeding. She had a history of propylthiouracil (PTU) and oral antidiabetic (OAD) use due to known hyperthyroidism and diabetes mellitus (DM). She had no history of previous surgery. The patient had an intrauterine device (IUD) for 25 years, and a 68x70 mm cystic formation in the left ovary had been observed on a urinary system ultrasound three months ago due to her DM. During the gynecological examination, foul-smelling vaginal discharge, tenderness upon touch, fullness in the right adnexal area, and a cystic formation containing 51x62 mm thin septations were observed on transvaginal ultrasound (TV-US). A Pap smear was taken, the IUD was removed, and endometrial sampling was performed due to elevated CA 19-9 levels. Both pathology results were consistent with Actinomyces infection, and penicillin treatment was initiated. Due to the patient’s lack of compliance with antibiotic therapy, her age, and socio-economic status, a total abdominal hysterectomy and bilateral salpingo-oophorectomy were performed. The patient received oral penicillin treatment for six months postoperatively and was discharged.

Discussion: The infection that presents at the pelvic level corresponds to a 10 to 15% of all reported cases. It has been reported as an incidence of 1 to 16% of all of the pelvic infections. Actinomyces is a rare cause of chronic infection; its manifestations have a wide spectrum that includes: asymptomatic infection, chronic pelvic pain, adnexal mass, tubo-ovarian complex, tumor-like carcinoma, and pelvic adhesion syndrome. The preoperative diagnosis is hard to achieve due to the finding of the microorganism by culture or immunofluorescence studies of vaginal secretion without being pathologic or any association to abdominal pain or sepsis. Although the chance of making a precise diagnosis is very attractive because it could change the therapeutic options, these facts we must consider: It is a non-malignant process; it is a microorganism very sensible to B-lactams antibiotics; the radical surgery in some cases can be complicated with dissection of the intestinal and urinary tracts. Once the diagnosis has been confirmed, the patients should be on long-term therapy with B-lactams antibiotics. In our cases, both of patients have diagnosed with pathological findings. In the second case, the tumor marker CA 19-9 was higher. Actinomyces infection is often associated with T-Copper IUDs, but in the first case, the patient had an LNG-IUD. The adnexal lesion was initially diagnosed through transvaginal ultrasound (TV-US), and then the Actinomyces infection was incidentally diagnosed.

Conclusion(s): Pelvic actinomycosis should always be considered in patients with a pelvic mass and peritoneal infiltration, especially in the presence of intrauterine device use, despite the fact that abundant ascites, pleural effusion, and lymphadenopathy almost never accompany pelvic actinomycosis. Endometrial/endocervical biopsy may yield a diagnosis without an invasive procedure and should be performed.

Keywords: Chronic pelvic pain, pelvic inflammatory diseases, intrauterine device

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CASE I		CASE II
41 years	Age	64 years
2.5 years	Duration of IUD use	25 years
LNG-IUD (Mirena)	IUD	T-Copper IUD
Moderate	Abdominal Pain	Moderate
No	Weight Loss	No
Mild	Abnormal vaginal discharge	Severe
Mild	Abnormal vaginal bleeding	Postmenopausal Spotting
None	Pyrexia	None
None	Ascites	None
Moderate	Free Fluid Douglas Poche	None
14.1	Hb (g/dL)	11.9
51x60 mm	Size of pelvic mass	51x62 mm
TV-US, MRI	Investigations	TV-US, MRI
7.19	Ca125 levels (kU/L) cut off: 0-35	26.7
5.94	Ca 19-9 levels (kU/L) cut off: 0-27	55.2
Negative	Pap smear	Actinomyces infection
Findings compatible with Actinomyces endometritis	Endometrial Sampling	Findings compatible with Actinomyces endometritis
3 weeks	B-lactams before surgery	7 days
L/S Right ovarian cystectomy, bilateral salpingectomy, rectouterine adhesiolysis and ureterolysis	Operative Procedure	Total Abdominal hysterectomy and bilateral salpingo-ooferectomy
No	Complications	No

Figure 1. Parameters of 2 cases

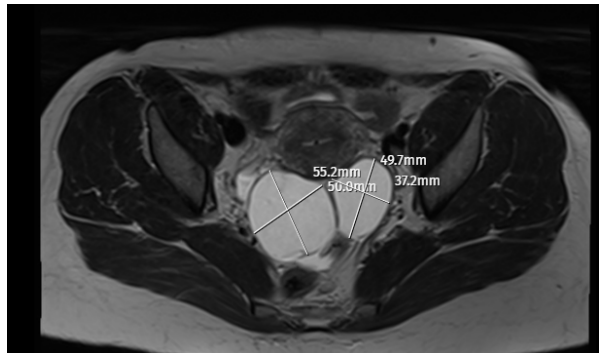

Figure 2. MRI axial view of Case 1

30. Urinary Incontinence in Pregnancy: Tertiary Center Experiences

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Aim: The aim of the study was to evaluate the clinical and demographic characteristics of women with urinary incontinence during pregnancy.

Material and Methods: A total of 206 pregnant women who were delivered between May 2023 and September 2023 in Ankara Etlik City Hospital Obstetrics and Gynecology Clinic were included in the study. After demographic and clinical characteristics were recorded, the presence of urinary incontinence during pregnancy was evaluated by applying International Consultation on Incontinence Questionnaire-Short Form (ICIQ-SF) and Urogenital Dysstress Inventory (UDI-6) questionnaires.

Results: Urinary incontinence was observed in 90 (42.9%) of 206 pregnant women included in the study. Of these 90 pregnant women, 5 (5.5%) had urinary incontinence in the first trimester, 11 (12.2%) in the second trimester and 74 (82.3%) in the last trimester. The mean age of pregnant women with and without urinary incontinence was 27 (n=90) and 28 (n=116) years, respectively, mean gavida was 2 in both groups, vaginal delivery rate was 60% and 58%, mean caffeinated beverage consumption was less than 5 cups in both groups, mean body mass index was similar in both groups ($p>0.05$). There was a significant difference in mean parity, smoking rate, ICIQ-SF and UDI-6 scores between pregnant women with and without urinary incontinence ($p<0.05$). Mean ICIQ-SF and UDI-6 scores were 8.8 and 8 in the first trimester, 6.27 and 6.45 in the second trimester, and 6.93 and 7.09 in the last trimester.

Discussion: Urinary incontinence is a common complaint in pregnancy. In our study, this rate was found to be 42.9%. In the meta-analysis conducted by Kaya et al., the prevalence of urinary incontinence in pregnancy varied between 12.9% and 62.8% in

the compiled studies, and the prevalence of urinary incontinence in pregnant women in Türkiye was found to be 35% according to the pooled results of the studies (1). In our study, the prevalence of urinary incontinence in the first trimester was found to be 5.5%. Okunola et al. and Jean-Michel et al. did not observe UI in any pregnant women in the first trimester (2,3). In our study, the prevalence of urinary incontinence in the third trimester was 82.3%. In a meta-analysis study conducted in Türkiye, the prevalence of urinary incontinence in the third trimester was found to be 32% (1). In other studies in the literature, the prevalence of urinary incontinence in the third trimester varies between 30% and 80% (2,3). In our study, the number of parities was found to be significantly different between the group with and without urinary incontinence. Wang et al. found that women who had not given birth were more likely to experience urinary incontinence during pregnancy when compared with women with a history of vaginal delivery, while a history of cesarean section had neither a protective nor an aggravating effect (4). Coffee consumption was associated with an increased risk of urinary incontinence. Results from previous studies were conflicting, mainly due to methodologic limitations (1). However, there is a view that caffeine may cause pre-contraction of the bladder and contribute to the occurrence of urinary incontinence (5).

Conclusion(s): Incontinence was observed in 42.9% of the pregnant women included in the study. Incontinence complaints increased with increasing parity and smoking increased the risk of urinary incontinence. In conclusion, it is important to question urinary incontinence, which is a complaint that is often not reported in outpatient clinic visits due to the effect of socio-economic factors in pregnancy. The results of our study are valuable in terms of predicting cases who may complain of urinary incontinence during pregnancy according to clinical and demographic risk factors. Thus, women with identified risk factors can be appropriately informed and managed during antenatal care.

Keywords: Urinary incontinence, pregnancy, ICIQ-SF, UDI-6

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31. Cystoscopy Assisted Laparoscopic Ureteroneocystostomy for Total Ureter Injury After Laparoscopic Hysterectomy, Case Video Presentation

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Aim: Ureteral injuries, whether noticeable or not, are a significant cause of morbidity and mortality. Essentially, injury prevention is ideal; the primary approach is careful surgical dissection and knowledge of the position of the urinary tract structures within the surgical field. If an injury occurs despite every effort, obtaining the relevant clinician's opinion, intraoperative diagnosis and treatment may be preferred to minimize postoperative sequelae and optimize patient outcomes.

Case: A 46-year-old female patient applied to our clinic due to urinary incontinence. In the patient's medical history, it was learned that she had a laparoscopic hysterectomy 6 months ago and smelly vaginal discharge started 10 days after the operation. On examination, the patient was found to have persistent incontinence at the vaginal cuff level. In the CT examination, the right ureter could be followed up to the bladder entrance, and no fistula or incision was considered. However, cystoscopy was planned because ureteral incision was considered based on the patient's examination and history. During the cystoscopy procedure, it was observed that the right ureter was blunt and completely closed after the second centimetres. Thereupon, laparoscopy was planned in the same session. During laparoscopic ureteroneocystostomy, identification of the urethral epithelium was achieved, and anastomosis was performed with the help of cystoscopy instead of the classical trans-vesical method. During cystoscopy, the pressurized fluid applied into the bladder was poured from the defect area into the abdomen, allowing the fluid flow to bring the bladder epithelium closer to the surgical field. Thus, with the guidance of JJ stent, ureteroneocystostomy could be performed without making an additional incision on the bladder.

Discussion: The majority of urinary damage associated with pelvic surgery in women is bladder-related, with an incidence of 0.3-4%. Up to 2.4% of patients may require concurrent urological intervention after hysterectomy-related urinary tract injury. The ureter is at risk of injury during any gynaecological surgery. The incidence of iatrogenic ureteral injury during major gynecologic surgery is estimated to be about 0.5-1.5%. The most common cause of ureteral injury is electrosurgery (33%), followed by mechanical damage and devascularization.

Conclusion(s): Physiological and pathological processes such as postoperative edema, inflammation, hematoma, infection, abscess formation, ischemia-necrosis can also cause or aggravate urinary tract injury. It is important to keep thermal injuries in mind because there is no standard time for them to show clinical signs. And multidisciplinary management contributes to levels ranging from sequela-free return to vital patient comfort.

Keywords: Cystoscopy, electrosurgical injury, "JJ" stent, ureteroneocystostomy, ureter injury after laparoscopic hysterectomy

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32. Assessment of Knowledge Level About HPV Infection Who Apply to Our Clinic

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Aim: While cervical cancer is one of the most common gynecological cancers, its incidence has decreased with the Pap smear (which fully complies with the World Health Organization screening test criteria and is considered the ancestor of screening tests) and with the screening of HPV which causes most of this cancer and is also included in our national cancer screening program. The ability to diagnose cervical cancer at an early stage where it is possible to prevent and treat it has added a different dimension to management. While it is possible to reduce the incidence of cancer by simple screening and vaccination of the sexually transmitted HPV virus, which is a cancer treatment and has a very high incidence. We know that HPV infection and preinvasive lesions, which cause cervical cancer, can be sexually transmitted even with a single sexual intercourse, and have a very high incidence in the community, can be detected at a treatable level with a simple screening test. We think that women do not adopt screening sufficiently and are not aware that HPV can be prevented by vaccination. In our study, we aimed to evaluate the level of knowledge about HPV among the patients who applied to the gynecology and gynecologic oncology outpatient clinics of our clinic.

Material and Methods: Between June-July 2023, between the ages of 18 and 90 who applied to Mersin University Faculty of Medicine Hospital, Department of Obstetrics and Gynecology, Gynecology and Gynecologic Oncology Outpatient Clinics were included in the study. Those with a history of cervical cancer and other gynecologic malignancies were excluded. A total of 201 people were included in the study. A data collection form consisting of 2 sections and 16 questions was created to evaluate the socio-demographic information, HPV infection, HPV vaccine and cervical cancer knowledge level and awareness of the individuals was evaluated. We performed this "Did you know that HPV is a sexually transmitted virus?", "If you knew that HPV was a sexually transmitted virus, would you have this test?", "Did you know that cervical cancer is caused by a sexually transmitted virus?" and "Do you have information about the vaccine that protects against HPV infection?" questions in section two.

Results: The mean age of the people included in our study was 43.4±14.9 years. One hundred-one people were university graduates and 20 people were illiterate. 91 employees, 26 students and 84 housewives were included in the study. There were 21 people with no sexual experience and 50 people with multible partners. The minimum age at sexual intercourse was 12 years and the mean age at first sexual intercourse was 20.9±5.1 years. There were 94 patients who did not use any contraception method and the most preferred method was barrier method (n=48). Seventy patients had never had a smear test and the mean age at first smear test was 36.3±10.5 years. Among the patients who had HPV test, 89 were HPV negative. Cytology was not performed in 74 of these patients. Seventeen patients had high-risk HPV types and 25 patients were type other positive. Among the patients who had smear tests, 46 patients had cytology results of at least ASCUS to HSIL. We found that the relationship between these parameters and HPV awareness was statistically significant. The age at which the first smear was taken was significantly lower due to the knowledge that HPV is an infectious disease. As the age of first sexual experience and the age of first smear were decreased in the young population with multipartners; awareness of HPV screening test was increasing among individuals. Awareness of individuals which that HPV was the cause of cervical cancer had a significantly and had at first smear test at lower age were conscious about vaccination. Working people and students were have more information than housewives.

Discussion: When compared with TUIK (Turkish Statistical Institute) data, the demographic sample was regionally representative of the society. HPV incidence and distribution of subgroups according to average age were consistent with the literature. Educational status, working life, young population, every part of it was hidden more in line with the literature. The young population was sexually active at an early age and awareness about screening and vaccination was high. The sexually active young population did not hesitate to state that they had multiple partners and to get tested even though they were aware of sexual transmission. Working people and students were have more information than housewives.

Conclusion(s): To increase the level of knowledge about HPV and HPV vaccine in our society, more emphasis should be placed on education and awareness activities on this subject. Considering our growing young population, the importance of education is understood.

Keywords: HPV vaccine, HPV knowledge level, cervical cancer, PAP-smear test, sexual transmission

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33. Evaluation of Pelvic Floor Dysfunction in Female Healthcare Professionals in A Tertiary Center

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Aim: Urinary incontinence (UI) is defined as the complaint of involuntary loss of urine according to the International Continence Society (ICS). Occupational status and environment may also have substantial influences on workers, particularly for women in the health, service, agricultural, and technical industries, which involve significant physical labor. Women working in the medical field may be at risk for pelvic floor dysfunction due to high physical activity levels leading to increased abdominal pressure; however, the actual situation remains unknown. In our study, we aimed to examine the data of female health workers for pelvic floor dysfunction in our hospital.

Material and Methods: A group consisting of specialist doctors, assistant doctors, nurses and medical secretaries working at Ankara Etlik City Hospital Gynecology and Obstetrics Hospital were included in the study. Pelvic floor inventory short form-20 (PFDI-20) is a scale that examines the effects of lower urinary system, lower gastrointestinal system and pelvic organ prolapse on quality of life. After the demographic data and obstetric stories of the patients were recorded, Pelvic floor inventory short form-20 (PFDI-20) was filled in by the healthcare professionals included in the study. The data were analyzed with descriptive statistics methods.

Results: Of the 139 patients included in the study, 18 (12.9%) were specialist doctors, 26 (18.7%) were assistant doctors, 60 (43.1%) were nurses and 35 (25.1%) were medical doctors. She was a secretary. The average age of the employees is 32.81±10.10. The average BMI of the employees was 24±4.23. Gravida mean was 0.85±1.27. The parity average was 0.63±0.88. Seventeen (12.2%) of the employees had a vaginal birth and 41 (29.4%) had a cesarean birth. Eighty-five of the employees (61.1%) had a history of drinking 5-10 glasses of caffeine per day. Twenty-eight (20.1%) of the employees had a history of smoking. Twenty-one of the patients (24.7%) complained of a palpable mass in the vagina. The patients were most frequently diagnosed with mixed incontinence and was seen in 41 (48.2%) patients. POP was observed in 46 (54.1%) of the patients. The average POPDI-6 score of the patients was 2.22±2.79. The average KRADI-8 score of the patients was 2.48±3.33. The average UDI-6 score of the patients was 2.07±2.88. The average PFDI-20 score of the patients was 7.28±6.78.

Discussion: The studies on the prevalence of incontinence in healthcare workers are quite limited. In Sri Lankan research prevalence of incontinence in hospital employees is 5.65%, and it has been observed that incontinence in healthcare professionals is less than the rate seen in the community. In addition, this study stated that there was a statistically significant relationship between job type and knowledge level of pelvic floor strengthening exercises. In our study, quality of life index measurements were observed at normal values. We think this is due to the younger age of the employees who participated in our study.

Conclusion(s): It may be beneficial to increase the knowledge level of healthcare professionals about pelvic floor health, who play an important role in providing healthcare services.

Keywords: Urinary incontinence, healthcare worker, pelvic floor inventory short form-20

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34. Evaluation of the Pelvic Floor Health Awareness in Cases Of Urinary Incontinence

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Aim: Evaluation of the pelvic floor health awareness in cases with urinary incontinence.

Material and Methods: One hundred fifty-eight patients who applied to the gynecology outpatient clinic with complaints of urinary incontinence and the pelvic floor rehabilitation center between May 2023 and September 2023 were evaluated retrospectively. The "Pelvic Floor Health Knowledge Quiz" questions, routinely applied at our pelvic floor health rehabilitation center, were divided into 3 groups: Function/Dysfunction (8 Questions), Risk and Etiology (13 Questions), Diagnosis and Treatment (8 Questions), and were evaluated statistically, and $p<0.005$ was considered statistically significant .

Results: The mean age of the cases was 50.1±10.7 (24-78) and the mean of parity was 2.9±1.4 (0-9); the mean of body mass index of cases was found to be 30±5.3 kg/m^2 (16.5-48.4). The mean PFHKQ score was 7.6±8.2 (min 0-max 28). Diagnosis and Treatment subscale has the highest correct answer rate (31.25%; Function/Dysfunction 25%; Risk and Etiology 23.8%). The mean function/dysfunction evaluation group score was higher in the patient group with previous pelvic floor surgery than in those without a surgical history ($p<0.001$, 1.95 vs 2.27). The question "Surgical approach to pelvic organs (bladder, prostate, uterus) may weaken the pelvic floor" was the question answered correctly by the participants at the lowest rate (16.5%). The question "In addition to clinical examination, the patient's complaint is also important in pelvic floor problems" was answered correctly by 65 of 158 participants, making it the question with the highest correct answer rate (41.1%).

Discussion: Pelvic floor health problems affect lots of women worldwide. Approaches to prevent pelvic floor diseases is much more easier and cost-effective than treatment methods. Mamuk and friends conducted a study about pelvic floor health knowledge level among nursing students in 2022 (1). They found that diagnosis and treatment subscale was the highest correct answered section; whereas risk and etiology subscale had the lowest correct answer rate, among nursing students. Our study shows that women with urinary incontinence has more awareness about treatment strategies, rather than risk factors and etiologies. Patients who received medical advice and health education has improved awareness and higher quality of life. These patients also actively participate in rehabilitation process and have reduced incidence of pelvic floor dysfunction (2). World Health Organization encourages primary prevention of diseases and health promotion (3). This study shows the low level of knowledge about risk factors and etiology. This situation supports that primary prevention strategies for pelvic floor health problems should be improved and generalized. Patients and health care professionals should be educated about preventing methods.

Conclusion(s): It was determined that awareness of pelvic floor health was low in urinary incontinence cases. The low level of awareness esspecially for the issues regarding risk and etiology, indicates the need to raise awareness in the society for primary prevention.

Keywords: Pelvic organ prolapse, urinary incontinance, pelvic floor health knowledge quiz, public education

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35. Le Fort Colpocleisis: A Case Report

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Aim: Pelvic organ prolapse is a condition in which one or more of the pelvic organs protrude into or out of the vagina due to weakening of the pelvic floor. It is a common clinical problem that has significant effects on the patient's quality of life secondary to the symptoms it creates. Approximately 13% of women undergo surgery for pelvic organ prolapse during their lifetime. As life expectancy increases in general, it is estimated that pelvic organ prolapse will increase significantly in the next 20-40 years. In cuff prolapse surgery, which can be observed after hysterectomy, there are obliterative treatment methods as well as reconstructive methods. Colpocleisis, an obliterative method; it is the process of closing the vagina using the vaginal walls. There are two types: LeFort colpocleisis and complete colpocleisis (colpectomy). In this case, we aimed to show the surgical techniques and anatomical results of Lefort colpocleisis with a video presentation in this case report.

Case: A 67-year-old woman applied to our outpatient clinic with the complaint of sagging after total abdominal hysterectomy. Vault prolapse was diagnosed in the patient with C:+3 and treatment with LeFort colpocleisis was planned for the sexually inactive patient. Surgical technique applied to the patient; demonstrated with a video presentation. In addition to symptomatic and anatomical improvement in the patient after surgery, approximately 4 centimeters of vaginal length was obtained with the applied technique.

Conclusion(s): Colpoclesis should be considered as one of the surgical treatment options in the treatment of pelvic organ prolapse in sexually inactive elderly patients and in recurrent cases of cuff prolapse after hysterectomy.

Keywords: LeFort colpocleisis, pelvic organ prolapse, cuff prolapse

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36. Vaginal Hysterectomy with Uterosacral Ligament Suspension: A Case Report

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Aim: Hysterectomy is the surgical removal of the uterus. It is one of the most commonly performed gynecological operations in our country. Today, many urogynecologists prefer vaginal hysterectomy as a hysterectomy option in cases of apical compartment defect and uterine prolapse. Due to apical recurrences developing after surgery, it is now accepted that apical support is necessary for a permanent repair during vaginal hysterectomy. One of the most commonly used procedures for this apical support is uterosacral ligament plication. Based on this case, we aimed to show the surgical techniques and anatomical results of vaginal hysterectomy with uterosacral ligament suspension with a video presentation in this case report.

Case: A treatment decision was made to perform a vaginal hysterectomy on a 51-year-old patient who applied to the outpatient clinic with complaints of a palpable mass, frequency and pelvic pain. After vaginal hysterectomy, apical support was provided by hanging the created vaginal cuff on the uterosacral ligaments. Details of the surgical technique we applied are shown in the video presentation. Postoperative anatomical and symptomatic recovery was achieved in our patient. The patient's preoperative complaints of palpable mass, frequent urination and pelvic pain resolved. At the same time, anatomical restoration was achieved in the patient with anterior and apical compartment defects with preoperative Aa: +1 Ba: +4 C: +5, and both anatomical and symptomatic success was achieved.

Conclusion(s): The suturing of the newly created vaginal cuff during vaginal hysterectomy to the uterosacral ligaments is a very simple, easily applicable, highly effective surgical technique with low morbidity and low risk of vaginal vault prolapse. This technique should be included in the armamentarium of all surgeons dealing with urogynecology due to the positive effect it provides in LUTS as well as anatomical healing.

Keywords: Apical suspension, pelvic organ prolapse, uterosacral ligaments, vaginal hysterectomy

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37. Prevalence of Urinary Incontinence Among Women Living in Rural Area and Its Effects on Quality of Life

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Aim: This study aims to determine the prevalence of urinary incontinence in a rural area of west side of Türkiye, on women aged over 18 years and to evaluate the effects of urinary incontinence on their quality of life.

Material and Methods: This cross-sectional study was conducted with 581 volunteer women, aged over 18 years and living in the rural areas of Manisa Demirci district, between 01.08.2022 and 01.08.2023. Volunteers were asked to fill International Consultation on Incontinence Questionnaire (ICIQ-SF), Incontinence Quality of Life Questionnaire (I-QOL) and questions including socio-demographic characteristics, created by researchers. The data were analyzed by SPSS 27.0 statistical program. Normal distribution of the data was examined by Shapiro-Wilks, histogram and q-q graph tests, and Mann-Whitney U test and Kruskal-Wallis test were performed for comparisons between groups. Statistical significance was accepted as $p<0.05$.

Results: Among the study population prevalence of urinary incontinence was 28.4%. 33.4% of women were between 30-40 years of age, 31.5% are overweight and obese, 49.9% had less than primary school education, 16.2% had chronical diseases, 11.0% were in menopause. 18.2% had stress dominant urinary incontinence, 21.3% had urgency dominant urinary incontinence, 4% received urinary incontinence treatment, 24.1% did not have a pregnancy and 30.3% did not give a birth. It was determined that the mean ICIQ-SF score of volunteer women was 1.95±3.78 and 8.6% of them experienced disturbing urinary incontinence and the mean I-QOL score of study population was 102.25±13.86. According to the I-QOL scale, women experiencing urinary incontinence had decreased quality of life in terms of limitation of behavior, psychosocial impact and social isolation ($p<0.001$). Women with urinary incontinence had higher ICIQ-SF scores and lower I-QOL scores ($p<0.05$, $p<0.05$). The incidence of urinary incontinence was found to be higher in women with; advanced age, menopause, increased body mass index, presence of concomitant chronical disease, increased number of births, low education level ($p<0.05$).

Discussion: The prevalence of urinary incontinence varies regionally, but more or less it impairs the quality of life. Urinary incontinence negatively affects the quality of life with increasing age as our data shows (1). Similar to studies in the literature, our data show that prevalence of urinary incontinence increases with advanced age, low education level, increasing body mass index, presence of concomitant chronical disease and increasing number of deliveries (1-5). In our study, while the ICIQ-SF scores of women with urinary incontinence were higher, their I-QOL scores were found to be significantly lower. The most negatively affected quality of life area was social isolation, followed by limitation of behavior (5).

Conclusion(s): Urinary incontinence is common among women living in rural area of west side of Türkiye and this reduces their quality of life. Various socio-demographic and medical factors affect the frequency of urinary incontinence. To reduce this common problem, correctable factors such as; BMI, education and excessive fertility should be changed.

Keywords: Urinary incontinence, quality of life, women, rural area

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38. Natural Orifice Translumenal Endoscopic Surgery

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Aim: The goal of this study is to summarize the results of patients v-NOTEs bilateral salpingo-oophorectomy (BSO) operation after vaginal hysterectomy performed in our hospital.

Material and Methods: Eleven patients who underwent v-NOTEs BSO operation after vaginal hysterectomy operation for different indications in our hospital between November 2022 and August 2023 were included in this study. Exlusion criteria were endometrıosis, previous abdominal surgery and inflammatory pelvic disease history. Patients were performed by the same surgical method and same expert gynecologist. Demographic information of the patients, surgical complications, operation time and hospital stay were recorded.

Results: Mean ages for the group 59.7+11.23. Mean BMI was found to be 33.27+7.2 kg/m². The mean operation time was calculated as 32.1 minutes (17-51 min). The mean postoperative hospital stay after v-NOTEs is 1.13 day to 2.2 days. Only one patients were converted to conventional laparascopy due to pelvic lympadenectomy.There were no spesific and unspesific complications introperative and postoperative.

Discussion: Hysterectomy is the most common surgical procedure in the domain of gynecology and there are several surgical approaches to hysterectomy: abdominal hysterectomy (AH), vaginal hysterectomy (VH), laparoscopic hysterectomy (LH) with multi-port or single-port, robotic- assisted hysterectomy and vNOTEs hysterectomy (1). Recent evidence shows v-NOTEs tecnique to be an effective and safe technique with potential benefits like shorter surgery time, a higher percentage of surgery in a day-care setting and less postoperative complications compared with laprascopyc hysterectomy (2). Regardless of the cases of conversion and concomitant pelvic floor reconstruction, the learning curve of the v-NOTEs technique has been reported to be greatly improved after 10 procedures (3). The experience in our surgical center with the first 11 v-NOTEs BSO showed an accumulation of initial experience in the first 5 cases with stable operating time and a gradual reduction of mean operating time in the subsequent 6 surgeries. Additionally, v-NOTEs is a useful surgical technique in the early detection of urethral damage after vaginal hysterectomy. This surgical route is a good candidate for outpatient management.

Conclusion(s): According to our results, the v-NOTEs BSO surgical method after vaginal hysterectomy is an effective surgical method to adapt the learning tendency of v-NOTEs.

Keywords: Outpatient surgery, surgical outcomes, transvaginal natural orifice transluminal endoscopic surgery (v-NOTEs)

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39. Excessive Blood Supply to the Uterus? Is It Less Bleeding? Coexistence of Placenta Previa and Pre-Eclampsia

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Aim: Gestational hypertension-preeclampsia (GH-PE) is a common pregnancy complication with an incidence of 6-8%. In 1958, Bienarz reported that “there is no eclampsia in cases of placenta previa (PP), whereas low implantation of the placenta is encountered only exceptionally in severe toxaemia in late pregnancy”. This claim has directed peoples attention to the relationship between eclampsia and PP. Although the exact cause of GH-PE is unclear, in cases of PP there is too much blood flow to the placenta. Whether PP has a preventive effect on the occurence or progression of GH-PE is therefore worth investigating. There are conflicting findings regarding the relationship between PE and PP. In our study we aimed to tell you about the case we followed in our clinic which was coexisting PE and PP together and the results of the patient.

Case: Twenty-six-year-old, G1P0 patient who achieved pregnancy via ovulation induction with CC. First and second trimester screening tests are within normal limits. When it was observed that the placenta was still covering the cervical os at 24 weeks and that it came from the posterior wall and continued to the anterior wall of the uterus, a diagnosis of placenta previa totalis was made. Perinatology control was requested for invasion anomaly, but no invasion anomaly was considered. During the entire pregnancy follow-up, the patient’s TA values were documented as highest at 100/60 mmHg, no preteinuria was detected in any urine tests, and AST/ALT values were within normal limits. At 34 weeks of gestation, a 2-week delay was observed in biometric measurements, umblical artery flows and amnion fluid index were normal. TA follow-up was recommended and the follow-up tests were within normal limits. At 35 weeks and 3 days of pregnancy the patient was admitted to the emergency room with shortness of breath and severe back pain. In the routine blood samples taken in the ER, Hb: 15 Plts: 204.000 INR:0,99 and no proteinuria was detected in the spot urine sample. But when the patients TA value was measured as 180/110 mmHg, it was evaluated as severe preeclampsia. Nifedipine 10 mg was given orally in two doses, 20 minutes apart. Magnesium sulfate loading was done and maintenance was started. In the patient’s control routines Plts: 102.000 AST/ALT: 800/659, and a emergency cesarean section call was made. AST/ALT was observed 966/515 at the sixth hour of surgery and then it started to trend down. On postoperative day 1, the patient had a generalized tonic-clonic seizure. PRES syndrome was suspected in the patient who developed headache, dizziness and blurred vision after the seizure, Cranial MRI and Diffusion MRI

were performed, and a suspicious infarct area was observed in the occipital lobe. After 10 days of follow-up, the patients TA values remained stable and biochemical values improved, and the patient was discharged under close follow-up and appropriate medication.

Discussion: The meta-analysis of nine individual studies showed that there is a significant negative association between placenta previa and pre-eclampsia. The conclusion of the meta-analysis is that placenta previa is associated with a decline in incidence of pre-eclampsia. Therefore either this case is a rare case or the relationship between placenta previa and preeclampsia needs to be reviewed more systematically and more detailed studies are needed as this meta-analysis reported some limitations.

Conclusion(s): As a result there is no general consensus due to independent factors (BMI, Age, Comorbidities) affecting many studies, results have been obtained that PP may be especially associated with IUGR. Multidisciplinary and multicenter studies are needed to confirm the coexistence or cause and effect relationship between a pathology that tends to increase uterine blood flow, such as PP; and a pathology that tends to decrease uterine blood flow, such as GH-PE.

Keywords: Gestational hypertension, preeclampsia, placenta previa, pres syndrome, gestational hypertension-preeclampsia

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40. Postoperative Third Year Results of Iliococccygeal Fixation for Anterior Compartment Defects

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Aim: The repair of anterior vaginal compartment prolapse poses a significant challenge with a high risk of recurrence. Iliococcygeal fixation (ICF) has been identified as a secure and practical technique, suturing vaginal tissues to the iliococcygeal muscle fascia, to address apical prolapse. Building on this approach, we introduced an alternative method termed “trapezoidal repair”, anchoring the prolapsed anterior segment to the iliococcygeal muscle strands, aiming to restore the rhomboid/trapezoid shape of the pubocervical fascia beneath the bladder. This study presents the postoperative second-year results of trapezoid repair for anterior compartment defects.

Material and Methods: All surgical procedures were performed by a single surgeon, following the previously defined ICF technique. Patient characteristics, clinical data, and surgical details were obtained from patient files. Postoperative evaluations included POP-Q scoring.

Results: Patients were included in the postoperative third-year analysis. POP-Q results demonstrated sustained anatomical success (Table 1). No long-term complications were observed.

Discussion: The anterior vaginal compartment is commonly affected by prolapse, and repairs in this region are associated with a high risk of recurrence. Iliococcygeal fixation (ICF) has emerged as a secure and practical technique, demonstrating efficacy in treating apical prolapse by suturing vaginal tissues to the iliococcygeal muscle fascia. In our study, we introduced an alternative approach. This technique aims to restore the rhomboid/trapezoid shape of the pubocervical fascia beneath the bladder. The postoperative third-year results of our patient cohort indicate sustained anatomical success, as evidenced by POP-Q scoring. However, it is imperative to acknowledge the limited sample size in this study, and further investigations with larger cohorts are warranted to validate the long-term efficacy, durability, and generalizability of the trapezoidal repair technique.

Conclusion(s): This study presents the surgical and postoperative outcomes of the initial 13 cases in which ICF, performed by the same surgeon, addressed native tissue repair of anterior compartment defects. The second-year results indicate that ICF is a safe and effective method for surgically treating anterior compartment defects. Further investigations are warranted to assess the long-term outcomes and durability of this technique.

Keywords: Cystocele, iliococcygeal fixation, anterior vaginal repair

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41. Total and Partial Colpocleisis for Pelvic Organ Prolapse: Experience and Outcomes in A Clinic Setting

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Aim: Pelvic organ prolapse (POP) is a prevalent condition that negatively impacts patients' quality of life, particularly as the population ages. Treatment options for POP depend on its severity, patient health, and comorbidities, with current management strategies including observation, pessary use, and surgery. Surgical interventions for prolapse generally involve reconstructive or obliterative procedures. Colpocleisis, an obliterative procedure performed vaginally, is specifically utilized in treating POP in elderly women who may not tolerate extensive surgery or no longer desire to preserve coital function. The purpose of this study is to share our clinic's experience with total and partial colpocleisis cases.

Material and Methods: The study included patients who underwent total or partial colpocleisis for POP at the Gynecology Clinic of Ankara Bilkent City Hospital from 2019 to 2023. Patient records were examined to collect demographic characteristics, medical history, systemic diseases, surgical methods, and complications.

Results: The analysis encompassed 32 patients, with 14 undergoing LeFort colpocleisis, 2 undergoing colpocleisis with hysterectomy, and 16 undergoing post-hysterectomy vaginal vault colpocleisis. The mean age of the patients was 71.47±7.73 (ranging from 56 to 88), and 6 patients had stage 3 POP (18.8%), while 26 patients had stage 4 POP (81.3%). None of the patients received concurrent incontinence surgery. The follow-up period ranged from 6 months to 4 years. No perioperative complications occurred. Anatomical success, defined as POP-Q stage ≤1 and no prolapse beyond the hymen, was achieved in 28 patients (87.5%). Four patients experienced prolapse recurrence. The median postoperative hospital stay was 2 days (ranging from 3 to 17 days). Two major complications were observed: one patient died postoperatively due to cardiac comorbidities in the intensive care unit, and another patient was diagnosed with vaginal cancer during follow-up. There was no statistically significant difference in postoperative complications and hospital stay duration between colpocleisis with and without hysterectomy.

Discussion: The findings of our study affirm that colpocleisis is a valuable and well-tolerated surgical option for elderly patients with advanced pelvic organ prolapse (POP), particularly those who are sexually inactive or have significant medical comorbidities. Our experience with total and partial colpocleisis procedures demonstrated favorable outcomes, including low complication rates, minimal recurrence, and high patient satisfaction.

Conclusion(s): Colpocleisis can be considered a safe and effective surgical technique in sexually inactive elderly patients or those with medical comorbidities who have stage 3 or 4 pelvic organ prolapse. It demonstrates positive outcomes by alleviating vaginal and urinary symptoms, exhibiting low complication and recurrence rates, and garnering high patient satisfaction and long-term acceptance of sexual function loss.

Keywords: Colpocleisis, POP, vaginal surgery

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42. The Role of Intrapartum Transperineal Ultrasonography to Predict the Results of Labor Outcome

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Aim: In our study, we aimed to investigate the contribution of serial intrapartum transperineal ultrasonography measurements in predicting labor outcomes during labor follow-up.

Material and Methods: This is a single-center prospective cohort study involving 300 women with singleton pregnancies at term and cephalic presentation who underwent labor induction. Angle of progression (AOP) and head-perineal distance (HPD) were measured by repeated intrapartum transperineal ultrasonography, and then

cervical dilatation and head level were evaluated by classical vaginal examination. Women were classified into two groups based on whether they had a vaginal delivery or underwent cesarean section due to non-progressive labor. Ultrasonographic assessments and vaginal examination were performed every 4 hours and 2 hours during the latent and active phases of labor, respectively. Maternal and fetal characteristics were evaluated to assess the performance of serial intrapartum sonography in predicting women with cesarean delivery due to failure to progress. SPSS 23 program was used to analyze the data in predicting the results of labor outcomes.

Results: The median gestational week of the pregnant women included in the study was 39.3, the median age was 25.67 and the mean delivery time was 630.32 minutes. In the process characteristic curve analysis performed to predict the mode of delivery, when AOP value is <110.5 degrees (p=0.001), and HPD value is >38.5 millimeters (p=0.001), it was found to be significantly associated with predicting cesarean delivery, with 84% sensitivity, 73% specificity, and 87% sensitivity, 60% specificity, respectively.

Discussion: In recent years, there has been an increased interest in using ultrasound to predict the type of delivery methods. Measurements of the AOP, descent angle, and progress distance have been proposed in the literature, primarily based on the symphysis pubis. Furthermore, recent studies have utilized the HPD for fetal head level detection. It has been demonstrated that these parameters exhibit lower interobserver and intraobserver variations compared to digital vaginal examinations (1,2). In a study conducted in 2003 by Sherer and Abulafia, a high rate of agreement (85.6%) between ultrasound determination and transvaginal digital assessment of fetal head engagement was demonstrated (3). Our study showed that AOP and HPD measurements evaluated by transperineal sonography during the intrapartum period can predict cesarean delivery with repeated measurements during labor.

Conclusion(s): AOP and HPD measurements consistent with vaginal examination may help predict the outcome of labor.

Keywords: Transperineal ultrasonography, intrapartum, Angle of progression, head-perineal distance

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Table 1. POP-Q results after the anterior compartment repairment

	Preoperative (N=26)		Postoperative 12th month (N=26)		Postoperative 24th month (N=26)		Postoperative 36th month (N=26)	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Aa	1.15	0.83	-1.98	0.73	-1.90	0.76	-1.85	0.75
Ba	2.38	1.42	-1.65	0.80	-1.60	0.76	-1.54	0.72
Gh	4.62	0.64	4.48	0.73	4.54	0.77	4.60	0.80
Pb	2.94	0.79	3.06	0.91	3.08	0.90	3.15	0.89
TVL	8.77	0.95	8.69	0.97	8.58	0.86	8.54	0.76
Ap	-1.27	1.19	-2.23	0.65	-2.13	0.67	-2.06	0.62
Bp	-1.31	1.19	-2.19	0.63	-2.10	0.68	-2.04	0.62

43. Vaginal Assisted Laparoscopic Sacrocolpocervicopexy (VALSCH) in the Surgical Treatment of Pelvic Organ Prolapse

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Aim: Pelvic organ prolapse (POP) is defined as the descent or protrusion of one or more pelvic organs through the vaginal canal, representing a common gynecological health issue in the community. Surgical approaches for treatment may include vaginal, abdominal, or laparoscopic methods. Sacral colpopexy has long been considered the gold standard procedure for the treatment of apical vaginal prolapse (1,2). Laparoscopic sacrohysteropexy operations, performed as a minimally invasive surgery, may offer a more effective and successful alternative to the abdominal approach, with a faster recovery process (3). In this case video, we aimed to share our experience with the "Vaginally Assisted Laparoscopic Sacrohysteropexy (VALSCH)" technique, demonstrating that the laparoscopic abdominal approach, when assisted vaginally, can be a more effective, easier, and safer technique.

Case: A 33-year-old patient with a history of two normal vaginal deliveries and no systemic diseases or previous surgeries presented to the urogynecology clinic with a complaint of a palpable mass in the vagina for the past five months. Upon pelvic examination revealing a third-degree descent of the uterus and an old perineal tear, the decision was made to perform the "Vaginally Assisted Laparoscopic Sacrohysteropexy (VALSCH)" operation. The Operation: Under general anesthesia, entry into the abdomen was achieved through one 10 mm trocar at the umbilicus and two 5 mm trocars laterally. Peritoneal dissection was carried out from the level of the promontory, exposing the ligamentum longitudinale anterior. The cervix was grasped with a single-toothed forceps, and a central 2 cm incision was made on both the anterior and posterior surfaces of the cervix. These incisions were then connected laterally to form a tunnel. A Y-shaped mesh was prepared and passed through the tunnel, suturing it anteriorly and posteriorly. Under laparoscopic observation, the mesh was advanced into the parauterine space using a Heaney clamp. The tension of the uterus was adjusted, and the mesh was sutured to the ligamentum longitudinale anterior. After suturing the opened peritoneum and ensuring hemostasis, the laparoscopic procedure was completed. Perineoplasty was then performed to conclude the procedure.

Discussion: The implementation of the VALSCH technique in our case showcased a potentially advantageous approach to the surgical management of POP. By combining the benefits of laparoscopic surgery with vaginal assistance, we aimed to enhance the effectiveness, ease, and safety of the procedure. The findings of this case contribute to the evolving landscape of surgical options for POP, emphasizing the importance of tailored approaches to individual patient needs. Further research and larger-scale studies are warranted to validate the efficacy and long-term outcomes of the VALSCH technique in comparison to traditional approaches. Nevertheless, our initial experience suggests that VALSCH holds promise as a valuable option in the armamentarium of surgical interventions for pelvic organ prolapse.

Conclusion(s): The VALSCH operation proves to be a safe and effective treatment for pelvic organ prolapse, offering the advantages of laparoscopic surgery while being less invasive than open surgery.

Keywords: Vaginally assisted laparoscopic sacrocolpopexy, POP, prolapse surgery

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44. The Effect of Hematologıcal Inflammatory Parameters in Predicting Endometrial Neoplasias in Patients with Postmenopausal and Perimenoposal Abnormal Uterine Bleeding

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Aim: Aim of this study was to evaluate the relationship between complete blood count parameters (neutrophil to lymphocyte ratio (NLR), platelet to lymphocyte ratio (PLR), MPV, RDW) as a predictor of pathology results and endometrial hyperplasia with atypia or endometrial adenocarcinoma in patients which presenting with postmenopausal and perimenopausal abnormal uterine bleeding and undergoing endometrial sampling.

Material and Methods: In this study, all patients who underwent endometrial biopsy due to postmenopausal and perimenopausal abnormal uterine bleeding which met the inclusion criteria in the minör intervention outpatient clinic of Ankara City Hospital Gynecology and Obstetrics Clinic, between 01.09.2019 and 31.01.2022 were retrospectively collected. Patients whose pathology results were reported as endometrial hyperplasia with atypia and endometrial cancer formed the study group. A control group was formed from patients whose pathology results were reported as benign. Demographic and clinical characteristics of all patients; age, height, weight, BMI (body mass index), parity, menopause time, presence of chronic disease and hemogram results were evaluated.

Results: NLR was found to be significantly higher in patients with endometrial neoplasia compared to the control group. NLR cut-off value was determined 2.91 to discriminate endometrial neoplasia among other endometrial pathologies with a sensitivity of 36.5% and a specificity of 95.7%. PLR and MPV were not identified as independent risk factors for endometrial neoplasia. There was no statistically significant difference in RDW value between the two groups.

Discussion: Lymphocyte Ratio among patients diagnosed with endometrial neoplasia when compared to the control group. The identified NLR cut-off value of 2.91 demonstrated a notable discriminatory capacity for distinguishing endometrial neoplasia from other endometrial pathologies, exhibiting a sensitivity of 36.5% and a specificity of 95.7%. However, PLR and MPV did not emerge as independent risk factors for endometrial neoplasia in our analysis. Additionally, no statistically significant difference in RDW values was observed between the two groups. These findings highlight the potential utility of NLR as a biomarker in the diagnostic context of endometrial neoplasia, suggesting its role in contributing to a more nuanced and precise discrimination among various endometrial pathologies.

Conclusion(s): NLR can be used as an effective and simple method for predicting endometrial neoplasia in patients with abnormal uterine bleeding in contrast with PLR, MPV and RDW.

Keywords: Endometrial neoplasia, NLR, PLR, MPV

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