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Relationship between pelvic floor complaints and multi-compartment prolapsus

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ABSTRACT

Aims: The aim of this study is to investigate the frequency and characteristics of multi-compartment prolapse in women evaluated with pelvic floor complaints.

Methods: The data of 259 patients who applied to our hospital with pelvic floor complaints between May 2022 and March 2023 were evaluated retrospectively, and after the exclusion criteria were applied, the remaining 69 patients were included. Patients were grouped according to their primary complaints as those presenting with anterior compartment symptoms (ACS), those presenting with middle compartment symptoms (MCS), those presenting with posterior compartment symptoms (PCS), those presenting with proctological symptoms (PS) and those presenting with chronic pelvic pain (CPP).

Results: A total of 69 patients were included in the study. The mean age was 49.8±13.1 years and the median symptom duration was 60 months. When patients are evaluated in terms of main complaint; The primary complaint was ACS in 16 patients, MCS in 4 patients, PCS in 26 patients, PS in 20 patients, and CPP in 3 patients. According to MRI defecography findings, ACS was detected in 1 patients, MCS in 1 patients, PCS in 13 patients and multicompartment prolapse in 54 patients. In patients with a history of vaginal delivery, in patients with a history of previous pelvic surgery and as the number of vaginal delivery increases multi-compartment prolapse rate was significantly increased.

Conclusion: Regardless of the underlying primary complaint, the presence of multicompartment prolapse should be investigated through examination and tests in pelvic floor diseases. History and number of vaginal deliveries, previous pelvic surgery history carry a higher risk for multi-compartment prolapse.

Keywords: Pelvic floor, multi-compartment prolapse, pelvic organ prolapse, MRI defecography, rectocele, rectal prolapse, uterovaginal prolapse, cystocele

INTRODUCTION

Pelvic organ prolapse (POP) can be defined as the abnormal descent of the pelvic organs from their original location in the pelvis. POP is a serious health problem characterized by fecal or urinary incontinence, constipation, pelvic pain, vaginal pressure sensation and sexual dysfunction, affecting the quality of life and psychological state of patients. Although gynecologists commonly focus on uterine prolapse and vaginal problems, urologists focus on urinary symptoms and colorectal surgeons evaluate the issue focusing only on bowel dysfunction and posterior compartment prolapse, pelvic floor diseases are actually a group of diseases that require a multidisciplinary approach, with low treatment success and patient satisfaction when handled as a single-focused event.[1-3] POP is an important health problem affecting 41% of women worldwide.[4]

The pelvic floor consists of three anatomical compartments: anterior or urinary compartment (bladder and urethra), middle or genital compartment (vagina, cervix and uterus), and posterior or anal compartment (rectum and anus).[5]

To diagnose POP, the relationship of certain reference structures from each compartment to the pubococcygeal line (PCL) must be evaluated. PCL is obtained by drawing a line from the lower border of the symphysis pubis to the last coccygeal joint in dynamic Magnetic resonance imaging (MRI). PCL determines the pelvic floor level and POP is measured by drawing a line perpendicular to the PCL. The reference points for each compartment are the bladder base in the anterior compartment; posterior cervix or posterior fornix of the vagina in the middle compartment; and the anorectal junction in the posterior compartment. Severity of the prolapse can be graded using the 'rule of thirds'; Organ prolapse is mild if it is 3 cm or less below the PCL, moderate if it is between 3 and 6 cm, and serious if it is more than 6 cm.[6-8]

The most common anterior compartment syndrome (ACS) is cystocele, which causes complaints such as urinary incontinence, frequent urination, inability to fully void urine, frequent urinary tract infections and hematuria, depending

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on the degree of cystocele. When evaluating patients, the presence of simultaneous stress incontinence and urethral hypermobility should also be taken into consideration.[9]

Middle compartment syndrome pathologies are uterovaginal prolapses, peritoneocele, enterocele and sigmoidocele, and patients may present with complaints such as chronic pelvic pain, feeling of vaginal fullness, sexual dysfunction, constipation due to anorectal outlet obstruction, and feeling of insufficient defecation. The diagnosis of uterovaginal prolapse is usually made by clinical examination. Herniation of the pelvic peritoneal sac with fatty tissue into the rectovaginal space is called peritoneocele, if there is small intestines in the sac, it is called enterocele, and if there is a sigmoid colon, it is called sigmoidocele.[6]

Pathologies that cause posterior compartment syndrome are rectocele, rectal prolapse or rectal invagination, descending perineal syndrome, spastic pelvic floor syndrome (dyssynergistic defecation) and anal incontinence.

In this study, we wanted to evaluate the incidence of multicompartment prolapse, etiological factors and symptom characteristics in female patients with pelvic floor complaints.

METHODS

Ethics

Ethics committee approval was obtained from İstanbul Medipol University Non-interventional Clinical Researches Ethics Committee (Date: 31.08.2023, Decision No: 728). Patient consent was not needed because of the retrospective nature of the study. This study was conducted in line with the ethical principles specified in the Declaration of Helsinki.

Patients and Methods

The data of 259 patients who applied to our hospital with pelvic floor complaints between May 2022 and March 2023 were evaluated retrospectively. Male patients, patients whose primary complaints involve 2 or more compartments, patients without MRI defecography, etiologies not accompanied by pelvic organ prolapse (POP) (radiation proctitis, low anterior resection syndrome, fecal incontinence unrelated to POP, neural tube defects, vaginismus and dyssynergic defecation) were excluded. A total of 69 patients were included in the study.

The patients were evaluated by a coloproctologist and physiotherapist. When necessary, gynecology and urology consultations were requested on a patient basis. A detailed history was taken from the patients. Demographic data including age, parity, body mass index (BMI), previous prolapse and urinary incontinence surgeries were collected. The severity of symptoms and the quality of life were evaluated with the pelvic floor distress inventory (PFDI-20), pelvic floor impact questionnaire (PFIQ-7), and Cleveland Clinic Incontinence score (CCIS).[10] Patients were grouped according to their primary complaints as those presenting with anterior compartment symptoms (ACS), those presenting with middle compartment symptoms (MCS), those presenting with posterior compartment symptoms (PCS), those presenting with proctological symptoms (PS) and those presenting with chronic pelvic pain (CPP). All patients underwent pelvic and rectal examination and MRI/conventional defecography. Prolapse in more than one compartment on MRI defecography was considered as multi-compartment prolapse. Anal physiological examination, endoanal ultrasonography, urodynamics and colonoscopy were performed on patients when necessary. The presence of other accompanying compartment prolapse in each group was recorded according to MRI/conventional defecography evaluation. When necessary, patients were consulted by gynecology and urology departments.

Statistical Analysis

Statistical analyses were performed by IBM SPSS for Windows v.26 (SPSS, Statistical Package for Social Sciences, IBM Inc., Armonk, NY, USA). The distribution of the data was evaluated using histograms. Variables that were normally distributed were reported as mean and standard deviation and means were compared by independent sample t test, while skewed variables were reported as median, and range and means were compared by Mann-Whitney-U test. Chi-square test was used to compare differences between groups. p values <0.05 were defined as statistically significant.

RESULTS

A total of 69 patients with predominantly single compartment complaints were included in the analysis. The mean age was 49.8±13.1 years and the median symptom duration was 60 (1-480) months. The demographic characteristics of our patients are listed in Table 1. The average body mass index (BMI) is 25.5±5.2 and it is within normal limits. 75.4% of our patients had an average of 1.8 vaginal deliveries. 40.6% had a history of previous pelvic surgery such as hysterectomy, sacrocolpopexy, trans obturator tape (TOT).

Table 1. Demographic characteristics of the patients, pelvic floor complaints and MRI findings

Age (years, mean±SD)	49.8±13.1
BMI (kg/m^2, mean±SD)	25.5±5.2
Smoking status (+) (n, %)	26 (37.7%)
Comorbidity (+) (n, %)	30 (43.5%)
Menopausal status	**n (%)**
Premenopausal	31 (44.9%)
Postmenopausal	38 (55.1%)
History of vaginal delivery (+)	52 (75.4%)
Number of vaginal deliveries (mean±SD)	1.8±1.3
History of pelvic surgery (+)	28 (40.6%)
Symptom duration (months, median)	60 (1-480)
Complaints	**n (%)**
Anterior compartment	16 (23.2%)
Middle compartment	4 (5.8%)
Posterior compartment	26 (37.7%)
Proctological	20 (29%)
Chronic pelvic pain	3 (4.3%)
MRI defecography findings	**n (%)**
Anterior compartment prolapse	1 (1.4%)
Middle compartment prolapse	1 (1.4%)
Posterior compartment prolapse	13 (18.9%)
Multicompartment prolapse	54 (78.3%)

MRI: Magnetic resonance imaging, SD: Standart deviation, BMI: Body mass index

When patients are evaluated in terms of main complaint; The primary complaint was ACS (23.2%) in 16 patients, MCS (5.8%) in 4 patients, PCS (37.7%) in 26 patients, PS (29%) in 20 patients, and CPP (4.3%) in 3 patients. According to MRI defecography findings, ACS was detected in 1 patients (1.4%), MCS in 1 patients (1.4%), PCS in 13 patients (18.9%), and multicompartment prolapse in 54 (78.3%) patients. (Table 1).

Multi-compartment prolapse was detected most common in patients presenting with MCS complaints (n=4/4, 100%), followed by PCS (n=21/26, 80.8%), ACS (n=12/16, 75%), PS (n=15/20, 75%) and CPP (n=2/3, 66.7%) patients.

According to MRI defracography, single anterior compartment prolapse was detected in 1 patient and multi-compartment prolapse was detected in 22 patients (p=0.011). Middle compartment prolapse was detected as single compartment in 1 patient and as multi compartment in 3 patients (p=0.634). Posterior compartment prolapse was detected as single-compartment in 13 patients and as multi-compartment in 29 patients (p=0.570).

In patients with a history of vaginal delivery (83.3% vs 46.7%, p=0.007), in patients with a history of previous pelvic surgery (48.1% vs 13.3%, p=0.014) and as the number of vaginal delivery (1.9±1.3 vs 1±1.2, p=0.014) increases multi-compartment prolapse rate was significantly increased. In addition, the symptom duration was found to be 76.9±74.5 months in women with multi-compartment prolapse and 134.7±149 months in the group with single-compartment prolapse (p=0.049) (Table 2).

Table 2. Characteristics of single-compartment prolapse and multicompartment prolapse patients

	Multi-compartment prolapse status		
	No (n=15, 21.7%)	Yes (n=54, 78.3%)	p
Age (years, mean±SD)	48.6±16.3	50.2±12.3	0.672
BMI (kg/m^2, mean±SD)	23.5±2.6	26.1±5.8	0.481
Smoking status (+) (n, %)	6 (40%)	20 (37%)	0.531
Comorbidity (+)	31 (57.4%)	23 (42.6%)	0.502
Menopausal status	**n (%)**	**n (%)**	
Premenopausal	6 (40%)	25 (46.3%)	0.477
Postmenopausal	9 (60%)	29 (53.7%)	
History of vaginal delivery (+)	7 (46.7%)	45 (83.3%)	0.007
History of pelvic surgery (+)	2 (13.3%)	26 (48.1%)	0.014
Number of vaginal deliveries (mean±SD)	1±1.2	1.9±1.3	0.012
Symptom duration (months, median)	134.7±149	76.9±74.5	0.049
Complaints	**n (%)**	**n (%)**	
Anterior compartment	4 (25%)	12 (75%)	
Middle compartment	0	4 (100%)	
Posterior compartment	5 (19.2%)	21 (80.8%)	
Proctological	5 (25%)	15 (75%)	
Chronic pelvic pain	1 (33.3%)	2 (66.7%)	
MRI defecography findings	**n (%)**	**n (%)**	
Anterior compartment prolapse	1 (6.7%)	22 (40.7%)	0.011
Middle compartment prolapse	1 (6.7%)	3 (5.6%)	0.634
Posterior compartment prolapse	13 (86.6%)	29 (53.7%)	0.0570

SD: Standart deviation, BMI: Body mass index

DISCUSSION

When evaluating pelvic floor complaints, not only the patient's admission complaints at the outpatient clinic, but also the bladder complaints, sexual dysfunction, feeling of pressure in the pelvic floor, and bowel symptoms should be questioned in detail. In the anamnesis of the patient who applied with the complaint of pelvic floor disorder, accompanying comorbidities and risk factors such as diabetes, neuromuscular status, obesity, smoking and alcohol consumption, psychiatric status of the patient, menopause status, number of deliveries, previous surgeries and perineal lacerations including the anal sphincter should be evaluated before the surgical intervention.

In order to make a comprehensive systematic and standardized evaluation, evaluation can be made with the pelvic floor distress inventory (PFDI-20), pelvic floor impact questionnaire (PFIQ-7) and Cleveland Clinic Incontinence score (CCIS).[10] We evaluated the complaints of patients in our outpatient clinic using these scoring systems.

In our study, when we compared patients with and without multi-compartment prolapse, BMI was higher in the multicompartment group, but this was not statistically significant. Apart from this, age, comorbid diseases such as smoking, diabetes, coronary artery disease, hypertension and menopausal status were found to be similar between the two groups. The rate of vaginal delivery history and the number of deliveries were higher in the multi-compartment prolapse group, and this was found to be statistically significant. The rate of multicompartment prolapse was detected approximately 4 times more frequently in women with a history of previous pelvic surgery, and it was also statistically significant. Additionally, in our study, we found shorter duration of symptoms in women with multi-compartment prolapse. This can be interpreted as patients consulting a doctor earlier.

40% of women with vaginal prolapse have stress urinary incontinence (urinary incontinence with activity) and 37% have overactive bladder.[11] Additionally, postoperative stress urinary incontinence may occur in approximately 25% of women who undergo abdominal sacrocolpopexy surgery due to vaginal prolapse. This condition occurs as a result of opening the urethra and bladder neck after correction of anterior and apical vaginal prolapse. It may be possible to identify patients for whom prolapse repair and simultaneous prophylactic anti-incontinence surgery may be recommended.[12]

There are a limited number of studies in the literature reporting the results and morbidity rates of patients who underwent combined rectal and vaginal prolapse surgery. In a 2018 study using NSQIP data, 206 female patients who underwent rectopexy with sacrocolpopexy were compared with 3394 cases who underwent rectopexy alone from 2005 to 2014.[3] Overall morbidity did not differ significantly between groups (14.8% rectopexy alone versus 13.6% combined surgery, p=0.65). In a later NSQIP study on vaginal and rectal prolapse surgeries, 123 cases of simultaneous laparoscopic sacrocolpopexy and rectopexy performed between 2013 and 2016 were examined.[13] There was no statistically significant difference in complication rates between colpopexy,

rectopexy and simultaneous procedures (6.2, 7.6 and 8.9; p=0.058). Studies have shown that there is no difference in the complication rate between combined surgical procedures and single compartment surgery, and there is no reason for the surgeon to hesitate in this regard.

The degree of prolapse is determined by MRI/conventional defecography, and this examination is used to distinguish whether the prolapse is multicompartmental or accompanied by sigmoidocele, enterocele, or peritoneocele.

In our study, when 69 patients with single compartment complaints were evaluated with MRI defracography, it was determined that 54 patients had multiple compartment prolapse. In all three compartment complaints, the rate of detection of multicompartment prolapse is higher than the probability of detecting single compartment prolapse according to MRI defracography. Especially the association of anterior compartment prolapse with multicompartment prolapse is statistically significant. In addition prolapse was detected in all 3 compartments in all 4 women who presented with middle compartment complaints, but we did not perform a statistical analysis because the number was small.

CONCLUSION

As a result of our study, radiological prolapse was detected in patients without symptoms in the relevant compartment. As a result, when determining the diagnosis and treatment of a patient with a pelvic floor complaint, regardless of the underlying complaint, the patient should be investigated for multi-compartment prolapse through examination and tests. This may guide us in choosing the appropriate surgical procedure. Additionally, women who give birth vaginally and have a history of pelvic surgery should be examined more carefully for multi-compartment prolapse. We think that larger studies with longer follow-up periods are needed regarding the indication of treatment in these patients.

ETHICAL DECLARATIONS

Ethics Committee Approval

The study was carried out with the permission of İstanbul Medipol University Non-interventional Clinical Researches Ethics Committee (Date: 31.08.2023, Decision No: 728).

Informed Consent

Because the study was designed retrospectively, no written informed consent form was obtained from patients.

Referee Evaluation Process

Externally peer-reviewed.

Conflict of Interest Statement

The authors have no conflicts of interest to declare.

Financial Disclosure

The authors declared that this study has received no financial support.

Author Contributions

All of the authors declare that they have all participated in the design, execution, and analysis of the paper, and that they have approved the final version.

Data Availability

Data used in this study are included in the manuscript.

REFERENCES

1. Altman D, Zetterstrom J, Schultz I, et al. Pelvic organ prolapse and urinary incontinence in women with surgically managed rectal prolapse: a population-based case-control study. *Dis Colon Rectum*. 2006;49(1):28-35.
2. Reimers C, Siafarikas F, Stær-Jensen J, Småstuen MC, Bø K, Ellström Engh M. Risk factors for anatomic pelvic organ prolapse at 6 weeks postpartum: a prospective observational study. *Int Urogynecol J*. 2019;30(3):477-482.
3. Geltzeiler CB, Birnbaum EH, Silviera ML, et al. Combined rectopexy and sacrocolpopexy is safe for correction of pelvic organ prolapse. *Int J Colorectal Dis*. 2018;33(10):1453-1459.
4. Chen CCG, Avondstondt AM, Khatry SK, et al. Prevalence of symptomatic urinary incontinence and pelvic organ prolapse among women in rural Nepal. *Int Urogynecol J*. 2020;31(9):1851-1858.
5. Weber AM, Abrams P, Brubaker L, et al. The standardization of terminology for researchers in female pelvic floor disorders. *Int Urogynecol J Pelvic Floor Dysfunct*. 2001;12(3):178-186.
6. Colaiacomo MC, Masselli G, Polettini E, et al. Dynamic MR imaging of the pelvic floor: a pictorial review. *Radiographics*. 2009;29(3):e35.
7. Bertschinger KM, Hetzer FH, Roos JE, Treiber K, Marincek B, Hilfiker PR. Dynamic MR imaging of the pelvic floor performed with patient sitting in an open-magnet unit versus with patient supine in a closed-magnet unit. *Radiol*. 2002;223(2):501-508.
8. Roos JE, Weishaupt D, Wildermuth S, Willmann JK, Marincek B, Hilfiker PR. Experience of 4 years with open MR defecography: pictorial review of anorectal anatomy and disease. *Radiograph*. 2002;22(4):817-832.
9. Blaivas JG, Appell RA, Fantl JA, et al. Standards of efficacy for evaluation of treatment outcomes in urinary incontinence: recommendations of the Urodynamic Society. *Neurourol Urodyn*. 1997;16(3):145-147.
10. Barber MD, Walters MD, Bump RC. Short forms of two condition specific quality-of-life questionnaires for women with pelvic floor disorders (PFDI-20 and PFIQ-7). *Am J Obstet Gynecol*. 2005;193(1):103-113.
11. Lawrence JM, Lukacz ES, Nager CW, Hsu JW, Luber KM. Prevalence and co-occurrence of pelvic floor disorders in community-dwelling women. *Obstet Gynecol*. 2008;111(3):678-685.
12. Brubaker L, Cundiff GW, Fine P, et al. Abdominal sacrocolpopexy with Burch colposuspension to reduce urinary stress incontinence. *N Engl J Med*. 2006;354(15):1557-1566.
13. Weinberg D, Qeadan F, McKee R, Rogers RG, Komesu YM. Safety of laparoscopic sacrocolpopexy with concurrent rectopexy: peri-operative morbidity in a nationwide cohort. *Int Urogynecol J*. 2019;30(3):385-392.