

Correlates of vaginal laxity symptoms in women attending a urogynecology clinic in Saudi Arabia

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Abstract

Objective: To evaluate the prevalence of vaginal laxity (VL) and its correlates in a cohort of women attending a urogynecology clinic in a tertiary referral center in Saudi Arabia.

Methods: In this retrospective study, demographic information, clinical characteristics, and POP-Q system measurements for women attending the King Fahad Medical City Urogynecology Clinic (January 2013 to April 2015) were analyzed. Women with and without VL were compared across these variables.

Results: Out of 376 women attending the clinic for various reasons, 135 (35.9%) reported VL. VL was more common in younger women ($P < 0.001$). Parity, menopausal status, and diabetes were not associated with this symptom. A history of cesarean delivery was protective (aOR 0.39; 95% CI, 0.17–0.90). A bulge symptom and “vaginal wind” were predictors (aOR 3.25; 95% CI, 1.46–7.23 and aOR 15.48; 95% CI, 6.93–34.56, respectively). There was no correlation between VL and POP-Q measurements. VL was not associated with the presence of clinically significant prolapse (stage 2–4), compared with nonsignificant prolapse (stage 0–1) ($P = 0.869$, $P = 0.152$, and $P = 0.783$ for anterior, posterior, and central vaginal compartment, respectively).

Conclusions: In this cohort, VL was common, more prevalent in younger women, and had poorly defined clinical correlates.

KEYWORDS

Pelvic organ prolapse; Sexual dysfunction; Vaginal coitus; Vaginal laxity; Vaginal widening; Vaginal looseness; Vaginal wind

1 | INTRODUCTION

Vaginal laxity (VL) is defined in the International Urogynecological Association/International Continence Society joint report on the terminology for female pelvic organ prolapse in one short sentence under symptoms of sexual dysfunction: vaginal laxity – complaint of excessive vaginal looseness.¹ This nonspecific definition underscores the heterogeneity of presentations among women complaining of this condition, as well as the unestablished correlation with

other symptomatology. Indeed, most of the literature addressing the symptom of VL has focused on treatment modalities, nonsurgical and surgical, rather than on the clinical characteristics and coexisting conditions.^{2–4} The prevalence of VL has not been consistent across studies, ranging from 2% to 48%.^{5–8} It was found to be more common in younger women.^{7,8} In the only study where objective exam findings and imaging results were recorded, the presence of pelvic organ prolapse (POP) was found to be significantly associated with VL.⁸

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VL is a fairly common symptom reported by women attending the King Fahad Medical City (KFMC) urogynecology outpatient department in Riyadh, Saudi Arabia. It is often referred to as “widening” in the vagina while at rest or during activity. Patients or their spouses report that the resulting sensation negatively affects satisfaction during vaginal intercourse, with subsequent impact on marital relationship well-being. The aim of the present study was to assess the prevalence of VL in a cohort of women presenting to the urogynecology clinic of KFMC and to study its association with other symptoms of pelvic floor dysfunction (PFD) and with objective exam findings.

2 | MATERIALS AND METHODS

Records of women presenting to the KFMC urogynecology clinic from January 2013 (when use of the pelvic organ prolapse quantification system [POP-Q] began at KFMC) to April 2015 (date of conclusion of the study design and IRB submission) who had a complete recorded evaluation, including POP-Q documentation,⁹ were included irrespective of the presenting complaint. Women attending this subspecialty clinic typically undergo a verbal interview using standard open-ended and close-ended questions (including on the presence of VL) and are examined by physicians-in-training and senior consultants.

Demographics, comorbidities, urogynecologic symptoms, and objective data including body mass index (BMI), total vaginal length (TVL), genital hiatus (GH), and perineal body (PB) measurements were recorded. POP-Q stage was recorded for the anterior compartment, posterior compartment, and central compartment. The central compartment reflects the position of the cervix or the vaginal apex in case of prior hysterectomy.

TVL was arbitrarily divided into three groups: 5–7.9 cm, 8–9.9 cm, and greater than or equal to 10 cm. This arbitrary division was undertaken because the median TVL in our cohort was 9 cm, with more than half having a TVL of 8–10 cm. GH was divided into three groups: less than 3 cm, 3–4.9 cm, and greater than or equal to 5.0 cm. PB measurements were divided into three groups: less than 3 cm, 3–4.9 cm, and greater than or equal to 5 cm.

POP-Q stages for all three compartments were divided into two groups, irrespective of symptoms: clinically nonsignificant (stages 0–1) and clinically significant POP (stages 2–4).

Data analysis included summary statistics such as means, percentages, and standard deviations. Differences in the characteristics and outcome measures between women with and without VL were analyzed using parametric or nonparametric *t* tests based on ranks for continuous variables; χ^2 analysis was applied for categorical variables. Univariate analysis was initially performed to find risk factors associated with VL. Since many of these parameters are interdependent, multivariate analysis was conducted to determine if each parameter was independently associated with VL. Differences between the groups are reported as odds ratios, with corresponding confidence intervals and *P* values indicating the significance of the differences for each variable. All data were entered and analyzed using SPSS version 22 (IBM, Armonk, NY, USA). *P*<0.05 was considered statistically significant.

TABLE 1 Distribution of symptoms among 376 patients attending the KFMC outpatient urogynecology department.

Symptom	No. (%)
Stress urinary incontinence	242 (64.4)
Frequency	231 (61.4)
Urgency urinary incontinence	206 (54.8)
Nocturia	81 (21.5)
Straining to urinate	35 (9.3)
Slow stream	43 (11.4)
Sensation of incomplete emptying	82 (21.8)
Post void dribble	75 (19.9)
Recurrent urinary infections	68 (18.1)
Bulge per vagina	171 (45.5)
Vaginal pressure	134 (35.6)
Splinting of vagina	53 (14.1)
Voiding dysfunction	23 (6.1)
Vaginal wind	113 (30.0)
Vaginal laxity	135 (35.9)
Other	1 (0.3)

Institutional Review Board approval from KFMC was secured prior to conducting the study. The study was funded by the Intramural Research Fund of KFMC (grant 17-022).

3 | RESULTS

The records of 376 patients who attended the KFMC urogynecology outpatient department from January 2013 to April 2015 and who had recorded POP-Q staging were analyzed. Data on GH measurement, PB length, and TVL were missing for two, two, and 13 patients, respectively. Mean age was 47.8 ± 11.7 years (range, 23–99) and mean parity was 3 ± 3.96 (range, 0–19).

A total of 106 (28.2%) women had a history of cesarean delivery, out of whom only 15 (4.0%) had undergone exclusive cesarean delivery. Out of 376 patients, 137 (36.4%) had chronic constipation, 46 (12.2%) had chronic cough, and 56 (14.9%) described regular lifting at work or home. One hundred patients (26.6%) were diabetic and 117 (31.1%) were menopausal. Two hundred and sixty women (69.1%) reported current sexual activity.

The symptoms of the study population are presented in Table 1. The most prevalent symptom was stress urinary incontinence (64.4%), followed by frequency (61.4%). VL was reported by 135 women (35.9%).

VL was significantly related to younger age (unadjusted OR 0.95, *P*<0.001; aOR 0.92, *P*<0.001). Menopause increased the likelihood of VL in the univariate analysis but ceased to be a significant risk factor in the multiple regression model (OR 0.64; 95% CI, 0.25–1.64; *P*=0.353).

A history of cesarean delivery was protective in the multivariate analysis (unadjusted OR 0.82; 95% CI, 0.50–1.28, *P*=0.35; aOR 0.39; 95% CI, 0.17–0.90, *P*=0.027).

TABLE 2 Correlation of vaginal laxity with demographics and coexisting symptoms (univariate and multivariate regression analysis).

	Unadjusted OR (95% CI)	P value	Adjusted OR (95% CI)	P value
Age	0.95 (0.93–0.97)	<0.001	0.92 (0.88–0.96)	<0.001
Stress urinary incontinence	1.62 (1.03–2.53)	0.036	1.53 (0.65–3.60)	0.334
Frequency	1.20 (0.78–1.84)	0.408	0.85 (0.34–2.13)	0.731
Urgency incontinence	1.16 (0.76–1.78)	0.481	1.61 (0.72–3.58)	0.242
Nocturia	1.19 (0.71–1.97)	0.509	0.48 (0.19–1.18)	0.109
Straining to urinate	0.96 (0.46–1.99)	0.912	1.74 (0.34–8.97)	0.509
Slow urinary stream	0.45 (0.21–0.97)	0.042	0.27 (0.06–1.28)	0.100
Incomplete emptying	0.53 (0.30–0.92)	0.023	0.63 (0.24–1.65)	0.349
Post void dribble	0.98 (0.58–1.67)	0.948	1.42 (0.58–3.47)	0.442
Recurrent urinary tract infection	1.00 (0.58–1.73)	0.993	0.60 (0.24–1.48)	0.264
Bulge	1.90 (1.24–2.90)	0.003	3.25 (1.46–7.23)	0.004
Pressure	1.80 (1.17–2.78)	0.008	2.00 (0.91–4.43)	0.086
Manual reduction	1.79 (0.99–3.21)	0.052	0.75 (0.25–2.25)	0.610
Voiding dysfunction	0.64 (0.25–1.66)	0.359	0.25 (0.04–1.48)	0.128
Vaginal wind	12.49 (7.42–21.03)	<0.001	15.48 (6.93–34.56)	<0.001
Chronic cough	0.61 (0.31–1.23)	0.169	0.43 (0.14–1.34)	0.144
Constipation	1.04 (0.67–1.61)	0.852	1.00 (0.50–2.02)	0.997
Fecal incontinence	1.56 (0.47–5.20)	0.471	1.04 (0.12–8.63)	0.971
Lifting	0.78 (0.42–1.43)	0.417	0.48 (0.16–1.47)	0.201
Parity	0.92 (0.87–0.98)	0.007	0.95 (0.84–1.07)	0.369
Spontaneous vaginal delivery	1.24 (0.72–2.12)	0.436	1.03 (0.51–2.08)	0.934
Cesarean Delivery	0.82 (0.50–1.28)	0.352	0.39 (0.17–0.90)	0.027
Forceps	0.92 (0.36–2.33)	0.857	1.92 (0.35–10.50)	0.452
Sexually Active	2.23 (1.38–3.62)	0.001	1.94 (0.77–4.88)	0.160
Dyspareunia	1.23 (0.72–2.11)	0.446	0.38 (0.14–1.01)	0.051
Menopause	2.58 (1.56–4.27)	<0.001	0.64 (0.25–1.64)	0.353
Diabetes	1.12 (0.69–1.79)	0.653	2.00 (0.89–4.51)	0.094

When patients were divided into three BMI categories (18.5–24.9, 25–29.9, and ≥ 30) there was no statistically significant difference in the prevalence of VL across the three groups ($P=0.456$).

VL was significantly associated with a bulge symptom (unadjusted OR 1.90; 95% CI, 1.24–2.90, $P=0.003$; aOR 3.25, 95% CI, 1.46–7.23, $P=0.004$) and vaginal wind (unadjusted OR 12.49, 95% CI, 7.42–21.03, $P<0.001$; aOR 15.48; 95% CI, 6.93–34.56, $P<0.001$) (Table 2).

There was no difference in the prevalence of VL between women with clinically nonsignificant and clinically significant POP

(Table 3). VL was not significantly correlated with TVL, PB, and GH measurements (Table 4).

4 | DISCUSSION

In this retrospective cohort, the prevalence of VL—reflecting patients' answers to standardized queries—was 35.9%. Bulge sensation and vaginal wind were the only symptoms of pelvic floor dysfunction that were

TABLE 3 Correlation of vaginal laxity with POP-Q prolapse stage.

Compartment prolapse	Stage group	No vaginal laxity No. (% of compartment stage group)	Vaginal laxity No. (% of compartment stage group)	OR (95% CI)	P value
Anterior prolapse	0,1	82 (64.1)	46 (35.9)	0.96 (0.62–1.50)	0.869
	2,3,4	161 (64.9)	87 (35.1)		
Posterior prolapse	0,1	91 (69.5)	40 (30.5)	1.39 (0.89–2.19)	0.152
	2,3,4	152 (62.0)	93 (38.0)		
Central prolapse	0,1	184 (65.0)	99 (35.0)	1.07 (0.66–1.74)	0.783
	2,3,4	59 (63.4)	34 (36.6)		

significantly correlated with VL. Advanced age and a history of cesarean delivery were protective. There was no correlation with prolapse stage. There was also no correlation with measurements of PB, GH, and TVL.

The main limitation of our study, aside from its retrospective nature, is that it did not capture the “bother score” of VL and its impact on quality of life in sexual and nonsexual domains. The extent of the contribution of male-driven sexual dissatisfaction was also not recorded, nor was the presence of a male partner during interview. The absence of documentation of education level and socioeconomic status are additional limitations in view of their established roles in sexuality.

In a questionnaire-based evaluation of 1194 women attending gynecology and urogynecology clinics in the UK, the prevalence of sex-related symptoms was 37% but only 2% complained of VL.⁵ In contrast, an online survey targeting parous women aged 25–55 years revealed that 48% of respondents were at least “somewhat” concerned by laxity of the vaginal introitus.⁶ The wide prevalence range in the literature (2% to 48%) could be partially explained by the diversity of populations studied in terms of age, culture, clinical setting, and referral bias. In our opinion, this inconsistency reflects more importantly whether the symptom was voluntarily stated or solicited, whether it was alluded to by the male partner, and its real impact on quality of sexual life. Indeed, 31% of surveyed physician members of the IUGA believe that laxity is a male-partner-driven condition.¹⁰ Nevertheless, there is evidence of underreporting of VL, as 80% of women with VL stated that they had not discussed the topic with their gynecologist,⁶ and 83% of IUGA-surveyed physicians believed that VL is underreported by their patients.¹⁰

In our study, age was inversely related to the presence of VL. Each year increase in age seems to protect against VL by 11% when compared with the reference age of 23. This finding is consistent with the results of McLennan et al.⁷ who reported that VL, captured by a survey of community women, was more common in the younger age group: 8% in women aged 18–44 years compared with 2.9% in women aged over 44 years. It is also consistent with the results of Dietz et al.⁸ who found a higher incidence of VL among younger women presenting to a

tertiary urogynecology unit. There is no indication whether the greater occurrence in younger women is limited to VL or whether this is also valid for other symptoms of sexual dysfunction. In a large population-based study of women living in the USA, sexual dissatisfaction was found to peak in middle-age but was lower in women older than 65.¹¹

VL is not a condition peculiar to parous women. It was reported by 4.8% of 1484 nulliparous women who completed the validated Australian Pelvic Floor Questionnaire before 15 weeks of pregnancy.¹² Interestingly, pre-existing VL did not worsen postnatally; however, new cases of VL were significantly more common following vaginal delivery compared with cesarean delivery.¹³ In this study, the actual impact of VL on sexual life was not investigated.

Our data analysis did not differentiate between women who had exclusively undergone cesarean delivery and those with a history of both vaginal and cesarean delivery. Nevertheless, it is noteworthy that, in the multivariate analysis, a history of cesarean delivery did confer some protection ($P=0.027$), while parity was not found to be significantly different between women with and without VL. Despite a commonly held public assumption that vaginal delivery compared with cesarean delivery may negatively impact sexual function secondary to laxity, the mode of delivery was not found by most researchers to affect sexuality in the early postpartum period.^{14,15} In a rather unique study aimed to test the validity of the “loose vagina” concept following vaginal delivery, a novel device sized to approximate the human penis was used to compare intravaginal pressures between primiparous women who had a vaginal or cesarean delivery, at more than 1 year postpartum.¹⁶ While pressures in the vaginal delivery group were significantly lower, there was no difference in the sexual satisfaction scores using validated questionnaires between the two groups. However, the laxity symptom was not investigated.¹⁶

In our study, lifting was not a risk factor for VL. This is arguably consistent with the results of Almeida et al.¹⁷ who found that the incidence of a “loose” or “wide” vagina was not significantly different when comparing athlete and nonathlete women (13.8% vs 19.2%).

In our cohort, vaginal wind (the audible passage of odorless gas from the vagina) was the only coexisting symptom with significant association with VL ($P<0.001$). The theory of VL trapping air, thus leading to vaginal wind is plausible. In a study aimed at evaluating this symptom, vaginal wind was found to share many of the VL characteristics uncovered in our study, most importantly its higher prevalence in younger women and the lack of association with POP.¹⁸

While bulge, usually a symptom of POP, was associated with VL in our study, the presence of clinically significant POP was not a significant predisposing factor. This contrasts with the findings of Dietz et al.⁸ who concluded in a large retrospective study that VL is associated with objective prolapse on POP-Q examination and imaging. The ethnic and cultural differences between the two populations studied could explain, at least in part, the discordant findings. This is especially plausible considering that, while both studies evaluated women at a tertiary urogynecology unit, our prevalence of 35.9% is much higher than the 24% reported by the other group.

We found no correlation between vaginal measurements, including GH, and the symptom of VL. This is also in contrast to the findings of Dietz et al.⁸ where VL was correlated with larger GH. It is noteworthy

TABLE 4 Correlation of vaginal laxity with genital hiatus, total vaginal length, and perineal body measurements.

	No vaginal laxity No. (%)	Vaginal laxity No. (%)	P value
Genital hiatus, cm			
<3.0	28 (11.4)	13 (10.1)	0.470
3.0–4.9	143 (58.4)	69 (53.5)	
≥5.0	74 (30.2)	47 (36.4)	
Total vaginal length, cm			
5–7.9	42 (17.7)	15 (11.9)	0.298
8–9.9	124 (52.3)	67 (53.2)	
≥10.0	71 (30.0)	44 (34.9)	
Perineal body, cm			
<3.0	39 (15.9)	15 (11.6)	0.437
3.0–4.9	162 (66.1)	93 (72.1)	
≥5.0	44 (18.0)	21 (16.3)	

that in one study including 505 heterosexual women older than 40 years, TVL and GH were not found to affect sexual activity and were not different in women with sexual dysfunction, although the symptom of VL was not evaluated.¹⁹ In addition, taking cue from surgical interventions for POP, a decrease in vaginal caliber has not been found to improve sexual function.²⁰ Consequently, it is tempting to assume that VL reflects a “dynamic” rather than a “static” state, namely that VL correlates with weak pelvic floor muscle tone. Unfortunately, we did not capture pelvic floor muscle strength on record neither subjectively nor objectively.

A compelling question is whether VL symptoms are exclusively related to coitus. It is possible that a bothersome sensation of “loose vagina” can be present outside the domain of sexual activity, and in the absence of objectively demonstrated prolapse. We intend to explore this subject in the future. It is compulsory to note that VL, as explored in this study and in the literature, represents a symptom that, while not objectively “verified,” should not be dismissed. Nevertheless, it is important to differentiate this term from “anatomic vaginal fascial laxity” as described and quantitatively assessed during posterior compartment surgical repairs.^{1,21}

Our study is among the first to evaluate the association, or lack of, between VL and coexisting PFD symptoms along with the standardized objective measurements related to the pelvic floor. This could allow better insight into VL, and probably challenge some theories about its pathophysiology. Future research will further contribute to better characterization of this symptom.

In conclusion, VL was a fairly common symptom in women presenting to the KFMC urogynecology outpatient department. Similar to other investigators' findings, VL was found to be more common in younger women. The symptom of VL did not correlate with TVL, GH, and PB measurements. The presence of clinically significant POP did not affect the likelihood of VL.

AUTHOR CONTRIBUTIONS

ST, GMA and AD contributed to project development, data collection and analysis, and manuscript revision. AAB contributed to project development, data collection and analysis, manuscript editing, and revision. TB contributed to data analysis and interpretation, manuscript writing, editing, revision, and submission.

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CONFLICTS OF INTEREST

The authors have no conflicts of interest.

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