



Anatomical Vulvar And Perineal Measurements Differ In Post-Menopausal Women With Recurrent Urinary Tract Infection Compared To Women Without Infection

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Background

Urinary tract infections (UTIs) are prevalent and contribute to significant costs in the US health care system. To our knowledge, there are currently no studies to date examining the vulvar and perineal lengths of **postmenopausal** women with and without recurrent urinary tract infections (rUTIs) similarly aged controls.

Objectives

To determine if differences in vulvar and perineal lengths vary between postmenopausal women with and without recurrent urinary tract infections (rUTIs).

Results

Patient and Clinical Variables	Total Cohort (N = 42)	No-rUTI (Control) (N = 23)	Yes-rUTI (Case) (N = 19)	p-value
Age in years, mean (SD)	65.5 (10.8)	64.4 (11.2)	66.7 (10.3)	0.507 ^a
Race/Ethnicity				
-White	29 (69.0%)	14 (60.9%)	15 (78.9%)	0.207
-Other	13 (31.0%)	9 (39.1%)	4 (21.1%)	
BMI (kg/m ²), mean (SD), N=40	24.8 (4.4)	25.7 (4.1)	23.8 (4.7)	0.169 ^a
Age of Menopause in years, mean (SD), N=40	49.1 (4.4)	48.8 (4.9)	49.4 (3.6)	0.664 ^a
Presence Of At Least One Ovary	37 (88.1%)	20 (87.0%)	17 (89.5%)	0.593 ^b
No. of Vaginal Deliveries, median (range)	1.0 (0.0-5.0)	1.0 (0.0-5.0)	2.0 (0.0-5.0)	0.161 ^c
No. of Cesarean Deliveries, median (range)	0.0 (0.0-3.0)	0.0 (0.0-2.0)	0.0 (0.0-3.0)	0.380 ^c
Vaginal Tears During Birth (including 1 st - 4 th degree lacerations and episiotomy)	19 (45.2%)	9 (39.1%)	10 (52.6%)	0.382
Episiotomy	14 (33.3%)	5 (21.7%)	9 (47.4%)	0.079
Current Vaginal Estrogen Use	10 (23.8%)	3 (13.0%)	7 (36.8%)	0.075 ^b
Sexually Active	17 (40.5%)	8 (34.8%)	9 (47.4%)	0.408
Wipes From Front To Back After Urination	31 (73.8%)	16 (69.6%)	15 (78.9%)	0.371 ^b
Wipes From Front To Back After Bowel Movement	37 (88.1%)	19 (82.6%)	18 (94.7%)	0.237 ^b
Currently on Antibiotics	4 (9.5%)	0 (0.0%)	4 (21.1%)	0.035^b
Recent Antibiotic Use (Within Past Month)	17 (40.5%)	6 (26.1%)	11 (57.9%)	0.037
Number of Urinary Tract Infections Over The Past Year, median (range)	1.0 (0.0-15.0)	0.0 (0.0-3.0)	3.0 (0.0-15.0)	0.000^c
Post-void Residual in mL, median (range), N=39	25 (5.0-150.0)	20 (5.0-70.0)	37.5 (5.0-150.0)	0.028^c
Pelvic Organ Prolapse Quantification Stage, median (range)	0.0 (0.0-1.0)	0.0 (0.0-1.0)	0.0 (0.0-1.0)	0.445 ^c
Lichen Sclerosis	1 (2.4%)	1 (4.3%)	0 (0.0%)	0.548 ^b
Prior Urologic/Gynecologic/Urogynecologic Surgery	13 (31.0%)	9 (39.1%)	4 (21.1%)	0.207 ^b
Medical Epidemiological and Social Aspects of Aging (MESA), mean (SD)				
→ Stress Urinary Incontinence (Questions 1-9)	3.8 (4.9)	3.1 (4.4)	4.6 (5.5)	0.332 ^a
→ Urge Urinary Incontinence (Questions 10-15)	2.8 (3.4)	3.3 (3.5)	2.3 (3.4)	0.357 ^a
Total Pelvic Floor Distress Inventory Scores	64.6 (47.8)	72.4 (56.7)	55.1 (33.3)	0.248 ^a
Do you Feel you Have a Urinary Tract Infection Right Now?	6 (14.3%)	2 (8.7%)	4 (21.1%)	0.243 ^b
UTI Symptom Assessment (UTISA) Score, median (Range)				
-Urinary Frequency	0.0 (0.0-3.0)	0.0 (0.0-3.0)	0.0 (0.0-3.0)	0.933 ^c
-Urinary Urgency	1.0 (0.0-3.0)	1.0 (0.0-3.0)	1.0 (0.0-3.0)	0.812 ^c
-Dysuria	0.0 (0.0-3.0)	0.0 (0.0-3.0)	0.0 (0.0-2.0)	0.520 ^c
-Difficulty Emptying	0.0 (0.0-3.0)	0.0 (0.0-3.0)	0.0 (0.0-1.0)	0.131 ^c
-Pressure	0.0 (0.0-3.0)	0.0 (0.0-3.0)	0.0 (0.0-1.0)	0.941 ^c
-Low Back Pain	0.0 (0.0-3.0)	0.0 (0.0-3.0)	0.0 (0.0-1.0)	0.630 ^c
-Blood (hematuria)	0.0 (0.0-1.0)	0.0 (0.0-1.0)	0.0 (0.0-0.0)	0.363 ^c
Vulvar and Perineal Measurements in mm (SD)				
-Mid-urethral to mid-anus	57.8 (10.0)	60.5 (9.0)	54.4 (10.2)	0.045^a
-Mid-urethral to posterior midline hymen	21.3 (5.6)	22.3 (5.7)	20.1 (5.3)	0.205 ^a
-Posterior midline hymen to mid-anus	40.3 (6.9)	42.2 (7.0)	37.9 (6.1)	0.046^a

Methods

Vulvar measurements obtained between January 2019 and April 2019

- CASES (Yes-rUTI)
- CONTROLS (No-rUTI)

Three measurements by two examiners (**Fig 1.1**)

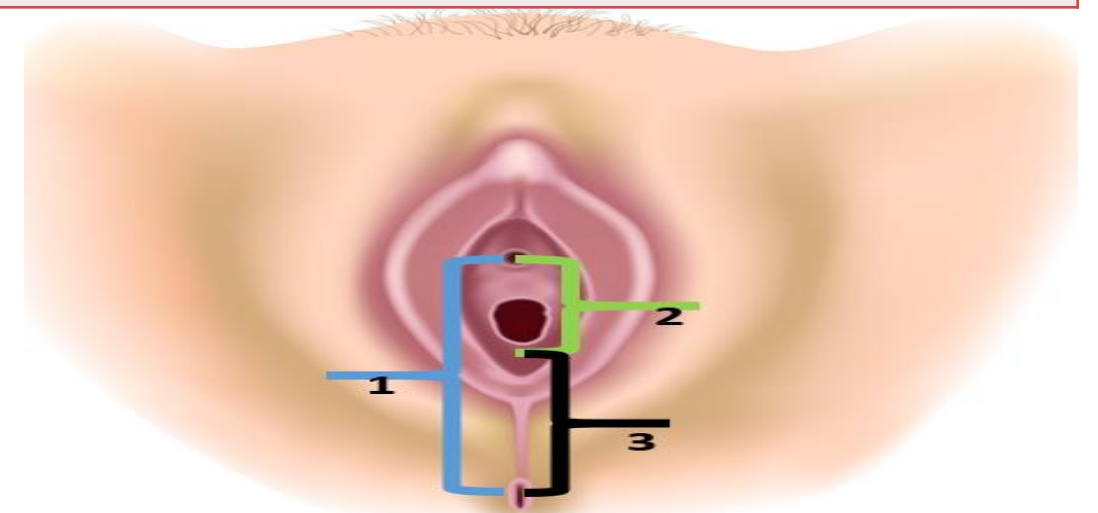
- Mid-urethra to mid-anal opening
- Mid-urethra to posterior midline hymen
- Posterior midline hymen to mid-anal opening

Electronic medical records:

- Clinical/demographic data

Validated questionnaires:

- Pelvic Floor Disorder Inventory Short Form-20 (PFDI-SF 20)
 - Medical, Epidemiological and Social Aspects of Aging (MESA)
 - UTI Symptom Assessment (UTISA)
- Data analyzed using SPSS version 25 (Chicago, IL), where significance occurred at p<0.05



Conclusion

Significant pelvic anatomical differences exist between postmenopausal women with and without rUTIs. With this knowledge, anatomically targeted interventions can be developed to treat and/or prevent rUTIs in women