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Intrinsic sphincter deficiency and urethral hypermobility: are they independent factors in the causation of stress urinary incontinence?

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AIMS OF STUDY

In according to the Petros and Ulmsten's integral theory the stress urinary incontinence (SUI) is caused by either a combination of intrinsic sphincter deficiency (ISD) and urethral hypermobility. However, it caused by ISD alone is rare whereas urethral hypermobility occurs frequently without SUI.
The **aim of this study** was to correlate the ISD assessed by urodynamic test (UDS) with the urethral hypermobility evaluated by trans labial ultrasound (TLU) inwomen with SUI.

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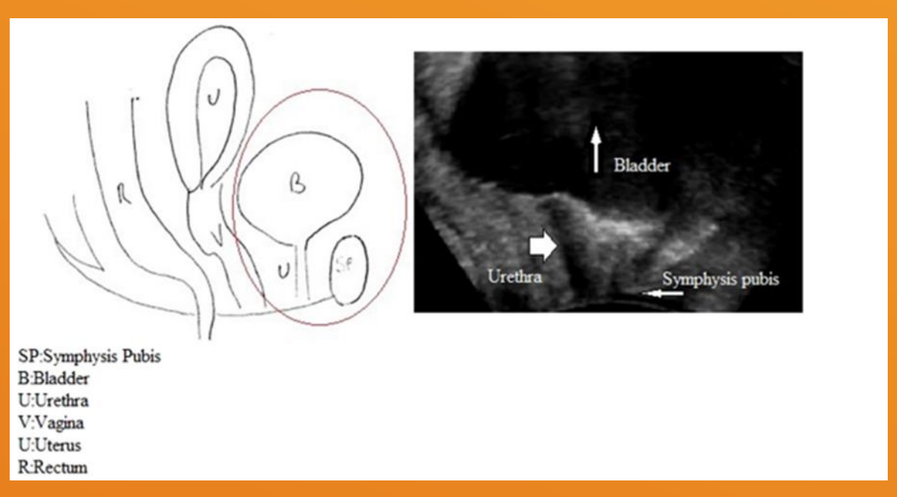
MATERIALS AND METHODS

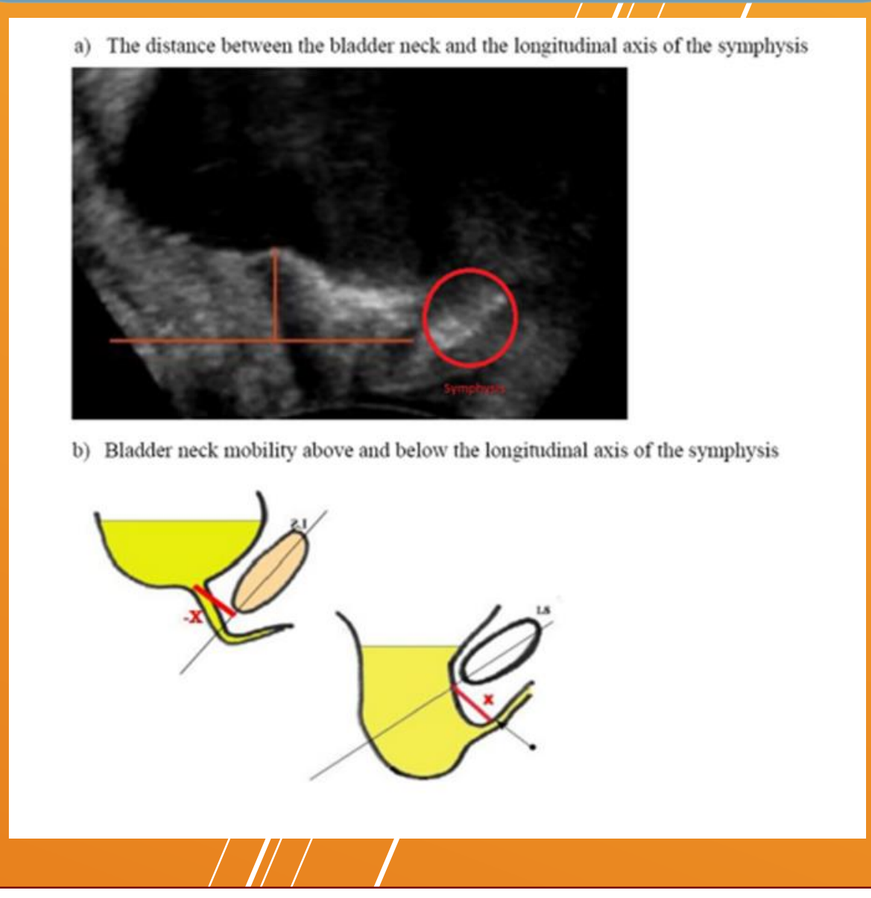
This was a prospective study on women with SUI. They were evaluated by TLU e and UDS. Ultrasound was performed by a 3.5-5 MHz curved array probe with the patient at rest and during a maximum Valsalva manoeuvre in the dorsal lithotomy position.The symphysis pubis, was used as a landmark to evaluate bladder neck position and mobility.To assess bladder neck mobility, we measured the distance between the bladder neck and the longitudinal axis of the symphysis. We recorded distances above and below the longitudinal axis of the symphysis as negative and positive respectively. The UDS was done according to the ICS protocol

Ultrasound was performed by a 3.5-5 MHz curved array probe with the patient at rest and during a maximum Valsalva manoeuvre in the dorsal lithotomy position. respectively

The VLPP ≤60 cm H2O was used as cut off for the diagnosis of ISD.We divided the patients into three groups
1) VLPP≤60 cm H2O
2) 60<VLPP≤90 cm H2O
3) VLPP>90 cm H2O.



SP:Symphysis Pubis
B:Bladder
U:Urethra
V:Vagina
U:Uterus
R:Rectum



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RESULTS

From December 2015 to March 2021, a total of 87 consecutive patients with SUI underwent UDS and trans labial ultrasound during preoperative evaluation. There was no baseline difference between groups in terms of clinical characteristics except for storage symptoms and urgency incontinence. The VLPP was compared to ultrasound data. There was no correlation between indices of hypermobility such as bladder neck descent on Valsalva and VLPP (VLPP ≤ 60, p=0.06; 60<VLPP ≤ 90, p=0.7; VLPP > 90, p=0.7). Funneling of the bladder neck on Valsalva manoeuvre was associated with a lower VLPP (VLPP<60) (p =0.026).

Characteristics	VLPP ≤ 60 N=70	60>VLPP ≤ 90 N=10	VLPP > 90 N=7	P value
Age (mean±SD) years	53±12.3	52±10.3	53±15.6	0.09
Body mass index, kg/m2	22.6±1.7	23.8±1.2	25.1±1.9	0.07
Parity median (range)	3 (1–5)	4 (1–5)	3 (1–5)	0.09
Menopause, n (%)	70 (100)	10 (100)	7 (100)	0.9
Smoking, n (%)	25 (35)	9 (90)	2 (28.5)	0.04
Concomitant surgery for POP, n (%)	0	0	0	
Previous anti incontinence surgery, n (%)	0	0	0	
Voiding symptoms, n (%)	0	0	0	
Storage symptoms, n (%)	27 (38)	7 (70)	3 (43)	0.02
Urgency urinary incontinence, n (%)	49 (70)	8 (80)	6 (85)	0.03
Urethrocele at rest	−6.2±14.2	−6.1±13.1	−6.5±15.2	0.9
Urethrocele during maximum Valsalva manoeuvre	−7.1±2.9	−7.3±1.9	−7.5±1.7	0.9
Bladder neck funneling	70 (100)	2 (20)	1 (14)	0.0001
VLPP	55.9±34.2	75.2±21.5	93.2±2.3	0.0001

VLPP: Valsalva Leak point pressure

Table 1 The characteristics of the population by dividing them into VLPP

CONCLUDING MESSAGE

The lack of correlation between urodynamic parameters and ultrasound-assessed hypermobility could be explained by the pathophysiology of stress incontinence. **Stress incontinence is caused by ISD which can be associated with urethral hypermobility, but not necessarily**

The bladder neck funneling is an important element to consider in the pre-operative assessment.