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Title: URETHRAL FUNCTION IN MIXED INCONTINENCE: CAN IT BE ASSESSED?

Aims of Study:

Over 40% of women with urinary incontinence are diagnosed urodynamically as having detrusor instability and co-existent urethral sphincter incompetence (genuine stress incontinence). Some authorities feel that the urethra can be assessed during the provocative phase even if detrusor instability has been found during the filling phase as long as the urethra is not assessed during a detrusor contraction. Other authorities feel that genuine stress incontinence can only be assessed in a woman with mixed incontinence once the detrusor instability has been controlled with anticholinergic therapy. The aim of this study is to assess whether detrusor instability diagnosed during the filling phase alters urethral function such that useful assessment of the urethra cannot be carried out while the detrusor instability is not controlled.

Methods:

Women were recruited from the urodynamic clinic. All had urinary symptoms and underwent videocystourethrography (Aquarius XLT, Laborie Medical, Canada). At the end of the test the women underwent urethral pressure profilometry using microtip pressure transducer catheters (Millar, 4F) in the supine position. The transducers were kept in a lateral orientation during the test and withdrawn at 3 mm / sec for the resting pressure profile and at 1.5 mm / sec for the stress profile. The resting profile was repeated until it was reproducible. This was carried out with the bladder empty and the bladder filled to maximum cystometric capacity. The bladder transducer was monitored throughout the urethral pressure profilometry to ensure that a detrusor contraction did not occur during the urethral pressure profile test. The maximum urethral closure pressure (MUCP), maximum urethral pressure (MUP), functional urethral length (FUL) and pressure transmission ratio (PTR) for each quartile of the stress profile. The Wilcoxon matched-pairs signed-ranks test was used to determine significant changes between the filled and empty bladder tests (SPSS inc, Chicago, USA). Women with detrusor instability diagnosed during urodynamics were analysed separately from those women who were found to have genuine stress incontinence.

Results:

Twenty nine women were recruited. 16 had detrusor instability as well as urethral sphincter incompetence and 13 women had genuine stress incontinence during cystometry.

Urethral pressure profile measurement	Empty bladder Mean (sd)	"Full" bladder Mean (sd)	Significance Wilcoxon ranks test
MUCP (cmH₂O)	48 (29)	49 (20)	NS
MUP (cmH₂O)	54 (31)	67 (27)	NS
FUL (mm)	28 (10)	28 (7)	NS
PTR			
1st Quartile	87 (41)	100 (61)	NS
2nd Quartile	82 (33)	76 (40)	NS
3rd Quartile	92 (70)	81 (40)	NS

4th Quartile	73 (32)	82 (41)	NS
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Table 1: Urethral pressure profile measurements on women with genuine stress incontinence

Only the women with mixed incontinence showed a significant decreases in functional urethral length and pressure transmission ratio with bladder filling.

Urethral pressure profile measurement	Empty bladder Mean (sd)	“Full” bladder Mean (sd)	Significance Wilcoxon ranks test
MUCP (cmH₂O)	48 (25)	51 (33)	NS
MUP (cmH₂O)	55 (26)	59 (35)	NS
FUL (mm)	32 (8)	29 (8)	<0.05
PTR			
1st Quartile	126 (75)	91 (13)	NS
2nd Quartile	113 (45)	82 (23)	<0.05
3rd Quartile	119 (42)	88 (18)	<0.05
4th Quartile	57 (38)	62 (44)	NS

Table 2: Urethral pressure profile measurements in women with mixed incontinence

Conclusion:

Detrusor instability even when demonstrated during the filling phase alters the urethral function with bladder filling as demonstrated with urethral pressure profilometry. This study suggests that urethral function may not assessed in women with mixed incontinence without suppressing the detrusor instability first.