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Title: **URETHRAL PRESSURE PROFILE REVISITED: THE RIGHT PARAMETER FOR URETHRAL SPHINCTER FUNCTION**

Aims of Study:

Urethral pressure profilometry (UPP) has been widely used to evaluate cases with urinary incontinence. Its clinical value, however, has been questionable and the subject of considerable debate. We attempted to determine the significance of different parameters of UPP in relation to urethral sphincter function.

Method:

The findings of UPP of 3 groups of patients were reviewed. Group 1 -thirteen men who had undergone retropubic prostatectomy for benign prostatic hyperplasia and are continent of urine (mean age 69 years), group 2-six men with postprostatectomy incontinence, 4 after transurethral resection and 2 after retropubic prostatectomy (mean age 71 years), and group 3- eight patients who had undergone perineal bulboprostatic anastomotic urethroplasty for posterior urethral strictures complicating pelvic feacture urethral disruption (mean age 31 years).

Results:

The findings of UPP at rest in the 3 groups are shown in table. Hold maneuver significantly ($p < 0.025$) increased maximum urethral pressure (MUP), maximum urethral closure pressure (MUCP), as well as functional profile length (FPL) in group 1 (89, 82 cm H₂O and 3.3cm, respectively) and in group 2 (52, 47 cm H₂O and 1.9 cm, respectively).

Findings of UPP in 3 groups at rest

Mean \pm SD (range)

	Group 1	Group 2	Group 3	p Value
MUP(cm H ₂ O)	59 \pm 11.2 (30-70) 54 \pm 10.8 (25-65)	32 \pm 9.2 (15-42) 27 \pm 9.4 (13-40)	48 \pm 12.9 (30-69) 39 \pm 11.3 (28-58)	1,2*-1,3*-2,3*
MUCP(cm H ₂ O)	2.7 \pm 0.7 (1.5-3.8)	1.3 \pm 0.5 (0.4-1.9)	2.4 \pm 0.5 (1.5-3)	1,2*-1,3*-2,3*
FPL (cm)				1,2*-2,3*

*Significant deference between 2 groups.

In group 1, mean MUP of 59 cm. H₂O is a function of both smooth and skeletal muscle components of the distal urethral mechanism. In group 3, mean MUP of 48 cm H₂O is contributed to by the smooth muscles of the bladder neck and supramontanal urethra which constitute together the proximal urethral mechanism and is represented by the prostatic plateau of UPP(1). As the smooth musculature of posterior urethra form one continuous layer that extends uninterrupted along the prostatic and membranous urethras, we expect that urethral pressures

contributed by smooth muscles of proximal and distal urethral mechanisms are nearly the same with a mean of 48 cm H₂O. This being the case, and if we allow for the difference in age between the 2 groups, one may conclude that the skeletal sphincter in patients of group 1 shares in MUP at rest by a mean pressure of 11 cm water (59 minus 48). In group 2, mean MOP is 32 cm H₂O. In these patients the skeletal sphincter is intact (as shown by increased MUP, MUCP and FPL on hold maneuver) and shares by a mean pressure of 11cm water (see above) Thus the supposedly injured smooth muscles are contributing by a mean pressure of 21 cm water (32 minus 11) which may be considered a low pressure not sufficient to maintain continence.

Conclusions:

As continence at rest is mainly dependent on sphincteric function of the urethral smooth musculature(2), urodynamic parameters that measure this function rather than the function of skeletal muscles are necessary to evaluate continence and incontinence in clinical practice. The preliminary conclusion based on the data of this study is that the prostatic plateau of UPP, which represents the activity of smooth urethral musculature, fulfills this criterion. Thus, the height of prostatic plateau, rather than MUP or MUCP may be used as the right parameter for assessment of urethral sphincter function in males.

References:

(1) J. Urol., 109: 273, 1973.

(2) Urol. Min. N. Amer., 6: 39, 1979.