

THE INFLUENCE OF URODYNAMIC CATHETER ON IDIOPATHIC DETRUSOR-SPHINCTER DYSSYNERGIA (DYSFUNCTIONAL VOIDING) DIAGNOSIS IN WOMEN

Hypothesis / aims of study

Dysfunctional voiding (or idiopathic detrusor sphincter dyssynergia, or sphincter overactivity voiding dysfunction) is a condition in which there is a lack of coordination between the sphincter and detrusor during emptying in a patient without overt uropathy or neuropathy^{1,2}.

The aim of this study was to define whether the existence of even a small urodynamic catheter intraurethrally, creates a false positive picture of dysfunctional voiding in women.

Study design, materials and methods

The study group was composed of female patients referred to the laboratory of urodynamics with complaints suggestive of urine storage or voiding problems. The study was done using a multichannel urodynamic equipment (Lifetech, Houston, USA). A 6 Fr, double lumen, transurethral urodynamic catheter was used in every subject, and no videourodynamic studies were performed.

Surface electrodes were placed to perineum near the labia majora trying to avoid as possible the approximation with the adductor muscles of the thigh.

Any involuntary detrusor contraction was considered to be a sign of unstable bladder. The voiding was classified as dysfunctional if an increased electromyographic activity during voiding was detected.

Exclusion criteria: Neurological disease diagnosis based on patient's history, clinical or radiological tests, documented genitourinary infection or instrumentation during the last month, severe genital atrophic changes, pelvic floor prolapse >2nd degree, and traumatic catheterization.

Inclusion criteria: Increased electromyographic activity during voluntary voiding, no signs of significant electrical activity before and after voiding, and the muscle electrical activity to cover more than one fifth of the total voiding curve.

Statistical analysis was performed using the Student's t-test for continuous data, and the Fischer's exact test for categorical data. $P < 0.005$ was considered to be statistically significant. Data were summarized as mean +/- standard deviation, or percentage according to variables

Results

From a total of 63 consecutive female patients, presented in urodynamics laboratory, only 33 were eligible to be enrolled to the study. Mean age was 51 +/- 13 (19 to 76 years). Details of patients' descriptive statistics and demographics are shown in table 1.

There was no statistical difference between dysfunctional voiding without/with catheter and bladder instability, interrupted pattern of urination with catheter.

Statistical significant association was found between dysfunctional voiding without catheter and interrupted pattern of urination without catheter [$P=0.015$, Odds ratio = 12 (95% CI 1,5-142)]

Interpretation of results

Our main result was that no statistical significant difference was observed between voiding function and presence of a urodynamic catheter (Table 2)

In our study, due to our small sample, we didn't take into account a specific pattern of electromyographic activity during voiding, even though we observed a tendency for various patterns³. Because according to the recent ICS terminology, dysfunctional voiding " is characterised by an intermittent and/or fluctuating flow rate due to involuntary intermittent contractions of the peri-urethral striated muscle during voiding in neurologically normal individuals", we tried to investigate whether there was a change of urinary flow pattern or not.

The results have shown that the catheter can influence the voiding curve pattern towards an interrupted pattern.

Concluding message

The present study demonstrated that even though the results favour an influence of catheter existence in urethra in developing dysfunctional voiding this has no statistical basis and therefore sphincter overactivity during voiding, in the presence of a catheter, can be safely interpreted as dysfunction, having in mind that there is a small probability to be an artefact. Nevertheless the voiding pattern can be influenced by the catheter existence in patients with dysfunctional voiding.

	Dysfunctional voiding with catheter	Dysfunctional voiding without catheter	Total	Statistics
Age (years)	N=26 51+/- 14	N=7 50+/- 10	N=33 51+/- 13	t-test N.S.*
Q max with catheter (ml/s)	N=26 19+/-8	N=7 15+/-5,5	N=33 18,2+/- 8	t-test N.S.*
Q max without catheter (ml/s)	N=26 18,5+/-9	N=7 18+/-4	N=33 18,50+/-8,5	t-test N.S.*
Detrusor Instability	N=10 30%	N=23 70%	N=33 100%	Fischer's exact test N.S.*
Interrupted voiding with catheter	N=16 48%	N=17 52%	N=33 100%	Fischer's exact test N.S.*
Interrupted voiding without catheter	N=8 24%	N=25 76%	N=33 100%	Fischer's exact test P=0.015

Table 1. Descriptive Statistics of patients' urodynamic characteristics. N denotes the sample number in each category, data are presented as mean+/- standard deviation, or percentage according to variables, * N.S.= Without statistical significance

	Voiding dysfunction	Non-voiding dysfunction	
With Catheter	15	11	26
Without Catheter	2	5	7
	17	16	Total: 33

Table 2. Crosstabulation of voiding function vs catheter presence. Fisher's Exact Test P= 0.225 (N.S.), Relative Risk= 2,02 (95 % CI = 0,6 to 6,8)

References

- 1)Dysfunctional voiding in women. J Urol 165; 143-148, 2001
- 2) Dysfunctional voiding in women: which muscles are responsible? Br J Urol. 1998 Dec;82(6):814-9.
- 3) Flow evaluation and simultaneous external sphincter electromyography in clinical urodynamics. J Urol 125; 542, 1981