

DOES SIZE MATTER? THE EFFECT OF CATHETER SIZE DURING URODYNAMIC STUDIES.

Aims of Study

The effect of pressure catheter size has clinical implications for the reliability and reproducibility of laboratory and ambulatory urodynamics. Previously published work has shown that there is no significant obstructive effect of an 8F catheter in men [1]. The aim of this study was to compare the reproducibility of detrusor opening pressure (P_{det,open}) and pressure at maximum flow (P_{det,Qmax}) during ambulatory and laboratory urodynamics in women, using pressure measuring catheters of differing calibres.

Methods

A cohort of women were identified who had undergone both laboratory and ambulatory urodynamics in a tertiary referral hospital for troublesome urinary symptoms. All had normal cystourethrography including uroflowmetry, cystometry and pressure/flow voiding studies. Women who had detrusor overactivity or urodynamic stress incontinence on laboratory testing were excluded, as were those who failed to complete their ambulatory testing adequately or who failed to demonstrate a measurable pressure/flow curve by not connecting the monitoring equipment to the flow metre. All studies were performed in accordance with ICS Guidelines for Good Urodynamic Practice [2], using a Laborie Aquarius 120 urodynamic system or a Rikadenki Multipen Recorder, and 4.5F external fluid-filled pressure transducers. Ambulatory urodynamics were performed by one of two investigators, using a single, solid-state 7F Galtec microtransducer with two pressure transducers inserted into the bladder and a separate transducer inserted into the rectum. The pressures were recorded on a solid-state ambulatory system (MPR2, Gaeltec). Urodynamic parameters were compared and analysed using the Wilcoxon Signed Ranks test (SPSS, V10).

Results

In total 58 women were recruited to our study, 37 (63.7%) of whom recorded at least two pressure/flow curves (designated Amb 1 and Amb 2). Mean age was 48.8 years (range 16 – 78 years). Laboratory data were available in 34 cases (designated lab). Zero was scored if the line was voided out. **[Table 1]**

Statistical analysis revealed that there was no significant difference between P_{det,open} during ambulatory studies voids 1 and 2, and between P_{det,open} during ambulatory studies and laboratory studies. **[Table 2a]** Further, statistical analysis revealed that there was no significant difference between P_{det,Qmax} during ambulatory studies voids 1 and 2, and between P_{det,Qmax} during ambulatory studies and laboratory studies **[Table 2b]**. However, there was a significant difference between volumes voided during the ambulatory test. **[Table 2c]**

Table 1 Demographic and urodynamic data

	No.	Min.	Max.	Mean	Std. deviation
Age	57	16	78	48.88	14.57
Lab P _{det,open}	33	00	133	24.24	22.62
Lab P _{det,Qmax}	31	00	126	29.45	22.04
Lab Q _{max}	34	00	37	19.21	10.5
Amb 1 P _{det,open}	58	00	101	26	18.23
Amb 1 P _{det,Qmax}	58	00	76	27.68	16.05
Amb 1 Q _{max}	58	3.8	51	22.48	12.86
Amb 1 Vol voided	58	34	510	243.72	137.34
Amb 2 P _{det,open}	37	4	61	25.92	13.93
Amb 2 P _{det,Qmax}	37	2	70	25.78	13.48
Amb 2 Q _{max}	37	3.6	51	27.69	13.93
Amb 2 Vol voided	37	30	510	278.32	135.54

Table 2: Wilcoxon Signed Ranks Test Comparison of Urodynamic Parameters

	Z	Asymp Sig (2 tailed)
a) Comparison of P det,open based on positive ranks		
Amb 2 vs Amb 1: P det,open	-.436	0.663
Lab vs Amb 1: P det,open	-.57	0.569
Lab vs Amb 2: P det,open	-1.482	0.138
b) Comparison of P det,Qmax based on positive ranks		
Amb 2 vs Amb 1: P det,Qmax	-.998	0.318
Lab vs Amb 1 P: det,Qmax	-.504	0.614
Lab vs Amb 2 P: det,Qmax	-.501	0.616
c) Comparison of voided volume based on negative ranks		
Amb 2 vs Amb 1: Volume voided	-2.003	0.045**

Conclusions

To the best of our knowledge, this is the first study comparing opening pressure and pressure at maximum flow in women undergoing laboratory and ambulatory urodynamics. It is reassuring that, despite significantly different voided volumes during ambulatory urodynamics and a difference in catheter size, there is no significant difference in opening pressure or pressure at maximum flow. This suggests that a wider bore catheter is not associated with a difference in clinical accuracy with regard to opening pressure and voiding pressure.

References

- 1.] *The obstructive effect of a urethral catheter.* Journal of Urology 1996; 155(3): 901-3
- 2.] *Report on good urodynamic practice.* Neurourol Urodyn 2002; 21 (3): 261-74