

## OBSTRUCTED OR NOT? EFFECTIVITY OF FEMALE VOIDING: KEEP IT SIMPLE

### Hypothesis / aims of study

The incidence of pure voiding dysfunction in female is low. Female voiding dysfunction is usually mixed with storage dysfunction which is more frequent and usually more bothersome to the patient. Female bladder outflow obstruction and female detrusor underactivity however do exist. Female micturition is however scarcely investigated and or understood and normal values for female pressure flow analysis are subject to debate. The aim of our study is to elaborate on the concept of ineffective (female) micturition and to derive normal values for female micturition, based on urodynamic analysis that is as straightforward (and simple) as possible.

### Study design, materials and methods

Last years urodynamic studies of female micturitions were retrospectively analysed. Of all urodynamic investigations (pressure flow studies) we selected 94 subsequent female patients (49.3 yr sd 16.4) predominantly with symptoms of incontinence and or urgency-frequency syndrome. 50% of these voided more than once therefore we analysed 159 female micturitions. Patients with neurogenic dysfunction or with bladder pain syndrome and patients, voiding exclusively by abdominal straining were excluded. Investigations were performed in accordance with the 'ICS good urodynamic practice' –standard.

### Results

When post void residual was less than <50 ml voiding was defined as 'effective'. 67.7% of all voidings left no post void residual (PVR). 12.6% PVR volumes were between 1 and 50 ml and therefore the remaining 18.9% of all voidings were 'ineffective'.

We compared effective and ineffective voidings:

	PVR ml	Age yr	Capacity ml	Qmax ml/s	URA cmH <sub>2</sub> O	Atheo mm <sup>2</sup>	Wmax W/m <sup>2</sup>
ineffective (n 30)	181	49.3	471	12.9	16.5	9.88	6.36
effective (n 129)	4	49.1	402	22.5	1.2	14.37	18.30
t-test		.972	.051	.000	.012	.002	.000

URA: urethral resistance; Atheo: theoretical (computed urethral) area (lumen);

Wmax: maximum of detrusor contraction power.

	Qmax	Qmax		Total
		<=20 ml/s	>20 ml/s	
PVR 0	43	66	109	
<50	9	11	20	
>50	26	4	30	
Total	78	81	159	

### Interpretation of results

Of the voidings with Qmax less than 20 ml/s 33.3% had ineffective micturition. Ineffective voiding in patients with Qmax < 20ml/s is predominantly due to bladder outflow obstruction depending on the limit that is set and secondary to detrusor underactivity, also depending on the cut off limit of Wmax. With every limit however, a significant proportion of patients voids effective. Half of the voidings had a Qmax of >20 ml/s and all but 4 were effective. None of these micturitions had a PVR > 100 ml.

### Concluding message

When analysis of female micturition is performed it is safe to assume that a micturition with a Qmax of >20 ml/s is effective. When Qmax is <20 ml/s and the PVR is >50 ml, which was the case in (only) 16% of micturitions, pressure flow analysis is necessary. The absence of

significant voiding problems in female patients can simply be demonstrated by (non) invasive flowmeasurement and subsequent PVR measurement in those with Qmax less than 20 ml/s.