

## CONCORDANCE OF URODYNAMIC DEFINITIONS OF FEMALE BLADDER OUTLET OBSTRUCTION

### Hypothesis / aims of study

Unlike the diagnosis of bladder outlet obstruction (BOO) in men, BOO in women has neither a standard definition nor well-accepted defining diagnostic criteria. The aim of this study is to assess the level of agreement between seven diagnostic criteria for female BOO based on voiding pressure and/or flowrates with radiographic evidence of BOO.

### Study design, materials and methods

We reviewed the video-urodynamics and clinical data of 535 women. We categorised the women as obstructed or unobstructed based on seven previously published urodynamic definition of obstruction (see Table 1). We also assessed if there was radiological evidence of BOO in the presence of a sustained voiding pressure as described by (1). We then assessed the level of agreement between urodynamics and radiographic data using Cohen's kappa coefficient.

### Results and interpretation

Radiological evidence of BOO was observed in 124 (23.2%) of patients. Of these patients, 104, 105, 94, 71, 82, 121 and 106 women were classified as obstructed according to 1 to 7 definitions of BOO respectively. Out of the 411 patients without radiographic evidence of BOO, 115, 35, 43, 8, 42, 156 and 18 patients were classified as obstructed according to 1 to 7 definitions of BOO respectively. The Blaivis-Groutz nomogram is most sensitive but least specific. Conversely, Lemack et al's definition of BOO is the least sensitive but most specific. The highest Cohen's Kappa coefficient of 0.81 ( $p < 0.01$ ), thus best level of agreement, was between the Solomon-Greenwell nomogram (7) and radiographic evidence of BOO (8).

### Concluding message

The various urodynamic definitions of female BOO have wide ranging sensitivity and specificity when compared to radiographic evidence of obstruction. The Solomon-Greenwell nomogram cut off of  $P_{det.Qmax} > 2.2Q_{max} + 5$  demonstrated an excellent level of agreement with radiographic evidence of BOO.

BOO criteria	Definition	Radiological BOO			Cohen's Kappa	
		0	1	Total		
1. Farrar et al	$Q_{max} < 15 \text{ ml/s}$ voided vol $\geq 200 \text{ ml}$	0	1	Total	0.44*	
		0	296	20		316
		1	115	104		219
		Total	411	124		535
2. Massey and Abrams	$Q_{max} < 12 \text{ ml/s}$ , $P_{det.Qmax} > 50 \text{ cmH}_2\text{O}$ or urethral resistance $> 0.2$ with significant PVR	0	1	Total	0.70*	
		0	376	19		395
		1	35	105		140
		Total	411	124		535
3. Chassagne et al	$Q_{max} \leq 15 \text{ ml/s}$ and $P_{det.Qmax} > 20 \text{ cmH}_2\text{O}$	0	1	Total	0.63*	
		0	368	30		398
		1	43	94		137
		Total	411	124		535
4. Lemack et al	$Q_{max} < 11 \text{ ml/s}$ and $P_{det.Qmax} > 21 \text{ cmH}_2\text{O}$	0	1	Total	0.63*	
		0	403	53		456
		1	8	71		79
		Total	411	124		535
5. Defreitas et al	$Q_{max} < 12 \text{ ml/s}$ or $P_{det.Qmax} > 25 \text{ cmH}_2\text{O}$	0	1	Total	0.55*	
		0	369	42		411
		1	42	82		124
		Total	411	124		535
6. Blavais and Groutz	$P_{det.Max} > Q_{maxFreeflow} + 7$	0	1	Total	0.48*	
		0	255	3		258
		1	156	121		277
		Total	411	124		535
7. Solomon-Greenwell BOOI	$P_{det.Qmax} > 2.2Q_{max} + 5$	0	1	Total	0.81*	
		0	381	18		399
		1	30	106		136
		Total	411	124		535

Table 1: BOO definition and the level of agreement. 1= Obstructed, 0= Unobstructed. \*Statistically significant ( $P < 0.05$ )

Disclosures

**Funding:** None **Clinical Trial:** No **Subjects:** HUMAN **Ethics not Req'd:** retrospective review of clinical data **Helsinki:** Yes  
**Informed Consent:** No