

## VALSALVA VOIDING DISTINGUISHES DECREASED URINARY FLOW CAUSED BY ANTERIOR URETHRAL OBSTRUCTION AND PROSTATIC OBSTRUCTION

### Hypothesis / aims of study

Distinguishing decreased urinary flow caused by anterior and posterior urethral obstruction can be difficult, particularly in older patients who have had a urethroplasty and require surveillance for recurrence. We hypothesize that changes in maximum flow rate (Qmax) with Valsalva Voiding (VV) and Non-Valsalva Voiding (NVV) can effectively distinguish decreased flow rates caused by anterior urethral stricture (US) and prostatic obstruction (PO). Patients with PO would not have a change in their urinary flow while those with US would be able to increase their flow by VV.

### Study design, materials and methods

This is a prospective study of a consecutive series of 75 men presenting to a tertiary care urology clinic between 2011 and 2013. Subjects were divided into three groups based on clinical and cystoscopic information: group 1 (US), group 2 (PO), and a control group (group 3) with no obstruction. Maximum flow rate (Qmax) was measured, one VV and one NVV, without intervening treatment or cystoscopy within a two week period at the same institution. Patients with voided volumes less than 150ml on either VV or NVV were excluded. In each patient, the difference in maximum flow rate (Qmax) between VV and NVV was calculated and a student T-test was used to assess statistical significance.

### Results

75 individuals were evaluated. 26 were excluded because their voided volume was less than 150ml (6 in group 1, 11 in group 2 and 9 in group 3). Mean age was 53 years (range 23-83). Group 1 was comprised of 11 male patients with cystoscopically confirmed anterior US, group 2 of 18 patients with clinically diagnosed PO and group 3 by 20 normal unobstructed males. Mean (median) change in Qmax and SD were 6.64 (5) and 9.08 (p=0.073) for group 1, 0.22 (0) and 3.19 (p=0.892) for group 2; and 9.35 (10) and 6.83 (p<0.01) for group 3, respectively (Table and Figure 1).

### Interpretation of results

Change in flow with VV is a non-invasive diagnostic test that distinguishes urethral obstruction from normal flow. It may also distinguish slow flow caused by anterior obstruction such as US from posterior obstruction such as PO. In older patients who have a US or have been treated for it, change in flow with VV is a useful noninvasive test to help determine etiology of decreased flow and the utility of empiric PO medications.

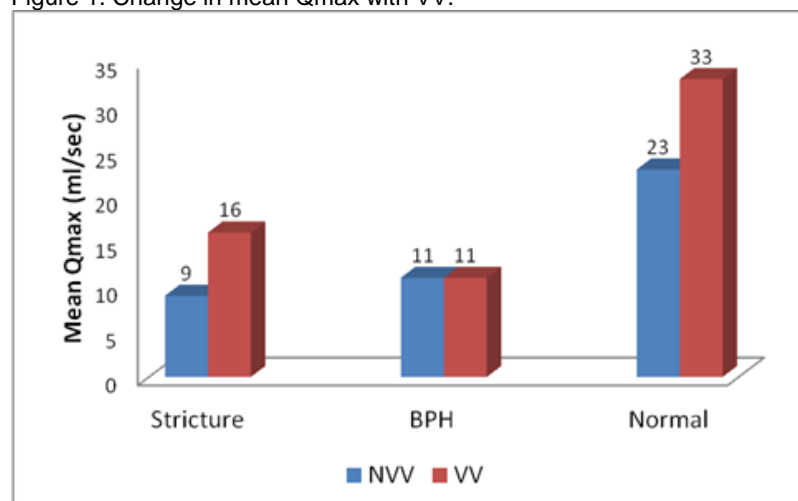
### Concluding message

Patients with prostatic obstruction do not have any increase in Qmax with VV, patients with US have slight increases and normal unobstructed individuals have large increases. Valsalva voiding can be used as a mean to distinguish patients with anterior and posterior urethral obstruction, as well as from normal unobstructed individuals.

Table 1. Mean, median and SD change in Qmax

	# patients	Mean	Median	SD	p-value
Strictures	11	6,64	5	9,08	0,073
BPH	18	0,22	0	3,19	0,892
Normals	20	9,35	10	6,83	0,009

Figure 1. Change in mean Qmax with VV.



Disclosures

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Yes **Informed Consent:** Yes