

HIGH-FLOW URETHRAL OBSTRUCTION IN MEN AND WOMEN

Hypothesis / aims of study

Conceptually, urethral obstruction is defined by increased resistance to uroflow caused by the urethra. In simplistic terms, it means that the urethra is too narrow. Narrowness is measured by the cross sectional area of the urethra. In the clinical setting neither the cross sectional area of the flow controlling zone of the urethra nor urethral resistance can be readily measured, so we rely on the synchronous detrusor pressure / uroflow study (PFS) to define urethral obstruction. Unlike measurement of the cross sectional area, which measures a physical property of the urethra, the PFS assesses the interaction between the bladder and the urethra; it does not produce a single measurement. In this setting, urethral obstruction is defined by high pressure and low flow. Detrusor underactivity (impaired detrusor contractility) is defined by low pressure and low flow. It has previously been established that some patients with urethral obstruction also have urethral obstruction and benefit from surgery to relieve obstruction.

The aim of the present study is to assess the opposite side of the spectrum – high flow urethral obstruction. The topic is important because most clinicians screen lower urinary tract symptoms (LUTS) patients with uroflow prior to considering urodynamics and, if uroflow is normal, urethral obstruction is thought to be excluded. If patients with normal flow can, indeed, have urethral obstruction, this screening process may be flawed and the diagnosis of obstruction missed, denying them the opportunity of effective treatment.

Study design, materials and methods

161 consecutive patients with a videourodynamic (VUDS) diagnosis of bladder outlet obstruction (BOO) were retrospectively evaluated. Indications for VUDS were refractory LUTS in patients considering invasive treatment regardless of uroflow. The diagnosis of BOO was based on established criteria from the bladder outlet obstruction index (BOOI) in men and the Blaivas–Groutz nomogram (BGN) in women. Patients with equivocal data and with concurrent detrusor underactivity were diagnosed with BOO based on clinical judgment. All contemporaneous uroflowmetry tracings were then individually inspected and analyzed for each patient. Only maximum free flow (Q_{max}) measurements sustained for at least 2 seconds were included and all voided volumes less than 150 mL on uroflowmetry were excluded. Patients with a Q_{max} greater than 12 mL/s on a single uroflowmetry were categorized as demonstrating high-flow urethral obstruction (HFO).

Results

161 patients met the VUDS criteria for BOO (figure 1) and 23 met the criteria for HFO. 3 patients were excluded because the Q_{max} was not sustained for 2 seconds leaving 20/161 (12%) patients with HFO. 17 men and 3 women with a mean age of 64 (range 36–85) comprised this group. All 3 women and 88% of men had unequivocal obstruction according to the criteria cited above. The mean BOOI for men was 50 (range 11–127) and all women had Grade 2 BGN obstructions. The mean Q_{max} for all patients was 17 mL/s (range 12–29). 14 (82%) of the men were found to be obstructed at the level of the bladder neck and/or prostatic urethra and 3 (18%) had anterior urethral strictures.

To date, only 4 patients have undergone surgical treatment; 2 men (TURP) and 2 women (Sling excision). The mean postoperative PGII among the 4 patients was 1.25 and Q_{max} improved from a mean of 14 mL/s to a mean of 29 mL/s.

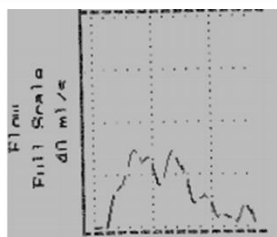
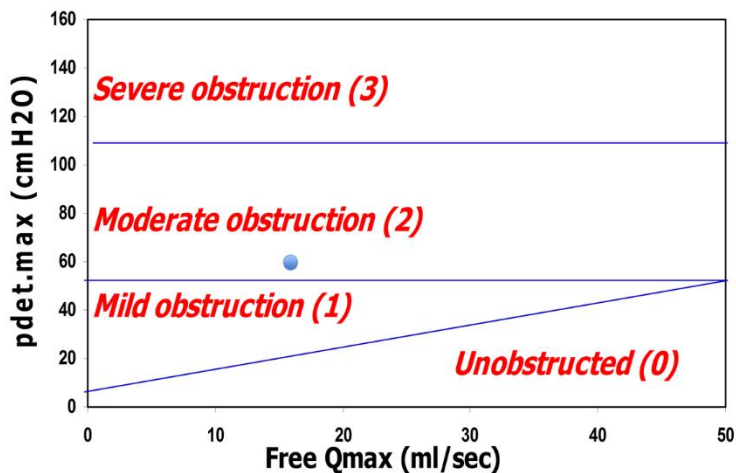
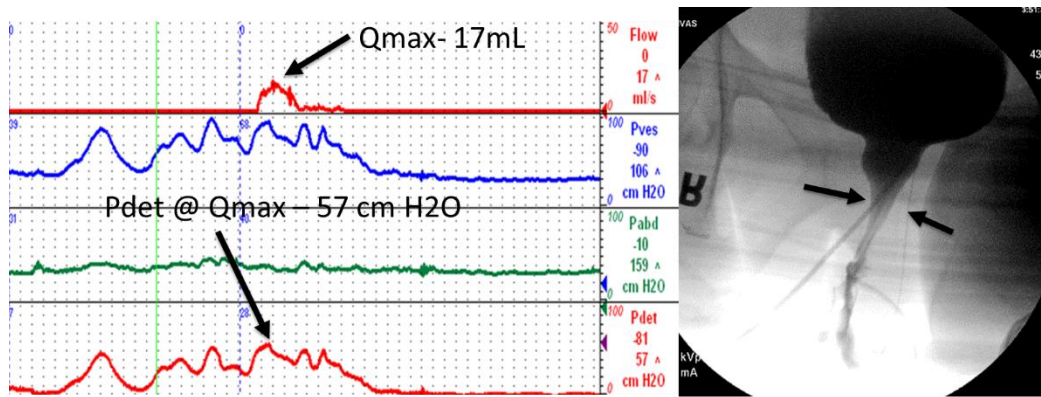
Interpretation of results

Can a patient have urethral obstruction on one day and not another? These data suggest that might be the case. There are different mechanisms by which high flow obstruction might occur. Firstly, the patient may not completely relax during the urodynamic study so that urethral resistance is increased causing a functional obstruction that subsides when (s)he voids in the relaxed environment of a private bathroom. Secondly, in patients with low urethral compliance, the urodynamic catheter made become obstructive. Thirdly, the bladder may contract more or less strongly on different occasions. Finally, the detrusor contraction may be so strong as to overcome increased urethral resistance and allow a normal uroflow.

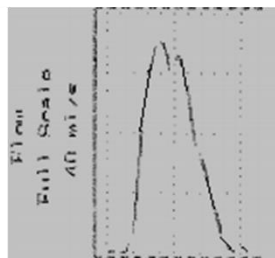
Concluding message

High flow urethral was documented in 12% of consecutive patients with a urodynamic diagnosis of obstruction. Relying on a normal non-invasive Q as an exclusion criteria for performing urodynamics can potentially overlook this group of obstructed patients and deny them the opportunity of effective treatment.

Figure 1: HFO diagnosis in female patient



VOID: 14/187/0



VOID: 35/305/0

Disclosures

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