Benign Prostatic Obstruction – Grey Zone

Is Urodynamics Necessary when Assessing a Patient with Male Lower Urinary Tract Symptoms?

Marcus J. Drake *

Bristol Urological Institute, University of Bristol, Southmead Hospital, Bristol, UK

1. Background

Urodynamics can be used to assess storage and voiding function in individual patients to better understand the mechanisms underlying lower urinary tract symptoms (LUTS). Storage function is assessed by measuring pressure during bladder filling, and may identify detrusor overactivity or increased filling sensation. Voiding function is assessed by measuring both pressure and flow. For many years, urologists have been undecided on whether urodynamics brings essential information, or whether a sufficient assessment can be achieved by clinical evaluation alone. Attempts to find noninvasive alternatives have not yet revealed an adequate approach [1]; the role of invasive urodynamics thus remains a key question in the care pathway for male LUTS.

2. Diagnostic assessment of voiding function

Voiding abnormality is probably the principal question for urodynamics to address in male LUTS. Urodynamic testing identifies the generation of pressure, which is what distinguishes bladder outlet obstruction (BOO) from detrusor underactivity (DUA). BOO is identified as high pressure that achieves only a slow flow rate [2], which is quantified with the BOO index. DUA signifies low pressure generation as the explanation for the low rate of urine flow. DUA is characterised by a wandering and poorly sustained low-amplitude detrusor contraction, with a low bladder contractility index (BCI). Fundamentally, the importance of measuring the BOO index and BCI, and hence ascertaining whether a patient has BOO or DUA, is in deciding whether to recommend BOO-relieving surgery, such as transurethral resection of the prostate (TURP). DUA is present in 9–48% of men undergoing urodynamic evaluation for non-neurogenic LUTS [3], and thus is potentially contributory for a large number of such patients.

3. Clinical and therapeutic implications

Surgery to relieve BOO should be performed in circumstances in which an improvement in voiding LUTS can be expected. If BOO is genuinely present, successful surgery should improve voiding. By contrast, BOO surgery in a man who has DUA may well fail to improve his LUTS [4,5]. However, because there is no confirmed effective therapy available for DUA, surgeons quite often attempt intellectual arguments to justify offering BOO-relieving surgery even when no BOO is present. In reality, these arguments are conjecture. However, the implication if BOO surgery is undertaken is absolutely manifest to the patient, who faces the perioperative period in the short term and any adverse effects in the long term.

BOO is probably more likely than DUA in most age groups among men potentially affected by benign prostatic enlargement, but the relative prevalence is not clear epidemiologically [6]. There is a reasonable chance that basic clinical assessment that does not include urodynamic evaluation can give a reasonable indication of whether a man has BOO. BOO is a well-recognised possibility in men as their prostatic enlargement progressively intrudes into the urethra. Unfortunately, there is no clinical point discernible from a basic history or examination to be certain whether or not DUA is also present alongside BOO in a man, or whether DUA is the sole cause of an individual’s voiding LUTS. Either BOO and/or DUA can be present in healthy individuals. The
European Association of Urology guidelines suggest that comparatively young men or older men need to be considered for urodynamic testing [7] because of a suspected higher prevalence of DUA in these age groups. The guidance states that when considering surgery in men with bothersome, predominantly voiding LUTS, pressure flow studies should be performed in men aged <50 yr, and may be performed in men aged >80 yr. The slightly different recommendations reflect the paucity of evidence on which to base conclusions [8,9]. In men who are physically unfit or who suffer from a medical condition, DUA should probably be considered more seriously, although BOO may ultimately be present.

4. A patient perspective

Given the implications of having surgery, many patients are very definite in their desire to ensure that the best information is available to help their doctor decide what to recommend. Urodynamics is a comparatively straightforward test that can genuinely discern whether a patient has BOO, DUA, or perhaps even both. This represents a logical step when making a potentially life-changing recommendation for surgery to a patient. Omitting urodynamic testing and instead relying on an instinctive hunch that BOO is present is probably not best practice. The UPSTREAM trial (http://clinicaltrials.gov/ct2/show/NCT02193451) is a UK-based study of 820 men randomised to an assessment pathway in which the decision is based solely on clinical observations, or a pathway that includes urodynamic testing [10,11]. When the study results are reported in late 2018, this will be a landmark step towards an appreciation of the many considerations that contribute to decision-making for male LUTS therapy.

Some doctors seem to think that patients “do not want urodynamics”. These doctors seem to be seriously blind to the fact that patients probably do not want TURP either, unless they can be confident of seeing improvement. Innately, surgeons perhaps may look favourably on surgical solutions for a patient’s symptoms, but morally there needs to be a clear expectation that surgery would have a realistic chance of improving that problem. Patients themselves certainly have an expectation that doctors will only recommend surgery if they genuinely believe that there is a realistic chance of improvement. The UPSTREAM study suggests that many individuals are willing to accept the short-term nuisance of urodynamic testing given that it will give their doctor information to help make a sensible recommendation for a future intervention that would certainly affect the rest of their life (ie, TURP or other options [12]). These men reckon that short-term discomfort from urodynamic testing might prevent lifelong issues resulting from the irreversible consequences of surgery.

5. Quality of testing

A fundamental expectation for urodynamic evaluation is that the test has to be performed well and interpreted appropriately [13]. It is crucial that centres undertaking urodynamics for male LUTS understand properly how to calculate the BOO index and BCI, and ensure that the pressure recordings are accurate and that any artefact affecting the maximum flow rate is identified and corrected [14]. Unfortunately, urodynamic machines can report an erroneous BOO index and BCI, as the software used in these machines is not yet sufficiently advanced to discriminate between real patient pressures and artefacts inadvertently introduced during the testing process. What this means is that simple acceptance of an automatic analysis of urodynamic curves by the urodynamic machine software should be avoided, as it might result in incorrect values and lead to inappropriate conclusions and treatments. All centres need to ensure that their traces are scrutinised to check that the conclusions are plausible and thus ensure that the results reported are a genuine reflection of the patient’s urinary function.

6. Assessing storage LUTS

Men with LUTS often present with urgency, increased daytime urination frequency, or nocturia, that is, storage LUTS. This is actually the main presentation driver for the majority of patients. Good care for patients mandates that the main bothersome symptoms should be the focus of assessment and therapy. However, urologists seeing a man with storage LUTS also need to enquire about the presence of voiding LUTS as well. If they are present, the doctor may end up diverting the therapeutic pathway to focus on the voiding LUTS, even if it was storage LUTS that caused the patient to seek help. Somehow, the presenting complaint gets subordinated to the additional “less bothersome” symptoms. This can result in problems later on in the clinical course, and it is imperative that the medical profession retains a focus on the presenting symptoms for each individual patient. Urodynamics is probably less crucial in individuals with pure storage LUTS. These patients fundamentally require assessment with clinical evaluation (medical history and physical examination), urinalysis, completion of a bladder diary, and symptoms score [7].

7. Conclusions

Urodynamic testing brings a key aspect to patient evaluation that cannot be derived via any other means. It is the only way to be sure whether a man has BOO or DUA or both. Clinicians can have a good idea of the likelihood of diagnosis without it, but certainty only comes with pressure measurement alongside flow-rate testing. The patient has to live with the consequences for life, so genuine consideration by all health care professionals should be expected. The lack of evidence in male LUTS as to the contribution of urodynamic testing should be effectively addressed when results from the UPSTREAM study are reported.

Conflicts of interest: The author has been a speaker, on advisory boards, and involved in research activity for Allergan, Astellas, and Ferring; and has been a speaker for Hikma and Pfizer.
References


