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Review – Benign Prostatic Obstruction

The Evidence-based Role of Urodynamics in Men with Lower Urinary Tract Symptoms Considering Prostate Surgery: An International Expert Consensus

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Abstract

Background and objective: This aim of this international expert consensus project was to clarify the appropriate use of urodynamics (UDS) in men with bothersome lower urinary tract symptoms (LUTS) who are considering prostate surgery in light of high-quality published evidence, particularly high-certainty data from the UPSTREAM study, and expert clinical experience.

Methods: A modified version of the Delphi method was used. Postsurgical patients, catheterised patients, and patients with neurological disease were not included. Eight questions covered UDS in specific contexts; four addressed quality assurance.

Key findings and limitations: Consensus was reached on the need for UDS in any of the following circumstances: if the corrected maximum flow rate is ≥13 ml/s; if bothersome urinary urgency is present; if scores are below stated thresholds for overall symptoms or voiding symptoms; if the postvoid residual volume is considered meaningfully elevated; if there is extensive comorbidity; and if incontinence (any type) is identified. Consensus

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was not reached on the need for UDS in men with scores below the stated threshold for the impact on quality of life. Consensus was achieved for quality assurance in terms of cross-checking UDS pressure traces and derived indices; ensuring the trustworthiness of traces by experienced health care professionals; and review within the individual clinical context. UDS was considered important when benign prostatic obstruction (BPO) is less likely and in cases in which detrusor underactivity or overactivity is more likely. In cases with severe voiding symptoms, UDS was not considered necessary to increase confidence in recommending surgery to treat LUTS.

Conclusions and clinical implications: UDS retains an important role in men with bothersome LUTS considering surgery for presumed BPO. Our consensus recommends specific criteria to guide selective UDS use.

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ADVANCING PRACTICE

What does this study add?

The key value of urodynamics (UDS) is in anticipating treatment outcomes for men considering irreversible treatment (surgery) in situations in which clinical assessment alone proves inconclusive. This international expert consensus proposes specific criteria, grounded in high-quality evidence, to guide the use of UDS in men with bothersome lower urinary tract symptoms and presumed benign prostatic obstruction who are considering prostate surgery. It offers a practical framework for translating the principle of selective UDS testing into routine clinical practice.

Clinical Relevance

The present manuscript summarizes an international expert consensus on the role of urodynamics in men with lower urinary tract symptoms prior to surgery. The authors identified various clinical symptoms or parameters in which the use of urodynamics should be done prior to surgery. Also, recommendations for quality assurance are provided. These recommendations help in selecting patients who should receive urodynamics prior to surgery in order to ensure the optimal outcomes following surgery. Associate Editor: Christian Gratzke, MD.

Patient Summary

For men with troublesome urinary symptoms, urodynamic tests can help doctors in deciding whether prostate surgery is the right option. Not every patient with urinary symptoms needs these tests, so an expert group has developed clear recommendations to show when they are most likely to be helpful.

1. Introduction

The role and value of urodynamics (UDS) is a longstanding and hotly debated topic in urology. Studies attempting to clarify best practice in this area have concluded that routine UDS use (ie, at the population level) is unjustified, but debate continues about how best to utilise UDS selectively. As articulated in a recent editorial [1], there is growing recognition that when clinical assessment signals a potentially less favourable treatment outcome, UDS investigations can serve to either reinforce or challenge diagnostic certainty and therapeutic confidence. The principal value of UDS lies in its capacity to inform prognosis at the individual patient level [1]. Hence, clear and pragmatic guidance on real-world use of UDS in specific clinical scenarios has become a priority.

For male lower urinary tract symptoms (LUTS), the UPSTREAM study [2,3] is the most robust and cited source of evidence on the role of UDS. This UK randomised trial (n = 820) focused on men with presumed bladder outflow obstruction (BOO) who were considering prostate surgery and investigated the hypothesis that symptom outcomes at 18 mo are noninferior following routine inclusion of UDS within the care pathway in comparison to its routine exclusion [4]. The study excluded catheterised patients and those with neurological disease. One arm underwent standard tests only (flow test, bladder diary, symptom score, and urinalysis); the other arm had standard tests plus UDS. Prostate volume was not routinely measured. Following these assessments, each patient received a recommendation on whether or not to proceed with surgery, with the patient making the final decision. The primary endpoint was the symptom score at 18 months, and noninferiority was confirmed. A key secondary endpoint—the proportion of men undergoing surgery in each trial arm—was based on an assumption that there might be fewer operations in the UDS group, because only UDS could identify patients with detrusor underactivity (DU) or other diagnoses leading to a recommendation not to pursue surgery. However, at 18 mo, it was found that UDS did not affect the overall sur-

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gery rate. This remained the case at 5 yr [5]. The authors concluded that UDS is not needed routinely in this patient population, but should be used selectively. Importantly, UPSTREAM also showed that despite apparently careful selection of candidates for surgery via a range of tests, a significant proportion of patients experienced deterioration of their LUTS after surgery, which highlights the risks of failing to individualise the diagnostic and prognostic workup.

There have been two longstanding schools of thought on UDS use in male LUTS: (1) perform UDS in every patient to provide as much diagnostic information as possible before proceeding to surgery, as well as insights to guide patient counselling on potential risks; and (2) apply UDS selectively in the cases for which it most adds predictive insight into the likely success of surgery. While both schools of thought remain valid, the UPSTREAM study findings support selective UDS use for evaluation of LUTS [2]. Secondary analyses for UPSTREAM participants who had undergone surgery identified predictors of postoperative outcomes that were based on standard clinical assessments [6,7]. These prognostic indicators pointed to circumstances in which UDS should be considered. The resulting algorithm was externally validated using a retrospective database of surgery outcomes in a Japanese urology department (n = 227) [6].

Drawing on the UPSTREAM data, together with other high-quality published evidence and collective clinical experience, we set out to establish an international expert consensus on clear and actionable criteria to guide selective UDS use for men with bothersome LUTS who are considering prostate surgery, principally transurethral resection of the prostate (TURP). Additional aims were to highlight areas of ongoing controversy requiring future research and to establish key quality assurance considerations in UDS practice.

2. Methods

2.1. Patient population

This consensus focuses on men with bothersome LUTS who have reached the point of considering surgery for possible BOO, presumed due to benign prostatic obstruction (BPO), and who may therefore require further evaluation. For consistency, we used the term BPO throughout the paper to signify BOO with prostate enlargement as the presumed cause. It was assumed that these patients will already have received conservative and medical therapies [8–10]. Men whose LUTS are not bothersome enough for them to consider surgery were not part of this consensus. Patients with neurological disease, who should be managed via a suitable neurourological pathway, were also excluded, as were catheterised individuals and those who have previously undergone prostate surgery.

2.2. Terms

We use the term *BPO* to denote a BOO Index (BOOI) score $\geq$40 in the presence of an enlarged prostate. The term *DU* is used to denote a Bladder Contractility Index (BCI) score <100. Detrusor overactivity (DO) is considered to be present if detrusor contractions occur during filling cystometry.

2.3. Objectives

Our intention was to collectively consider a range of debatable and potentially contentious clinical scenarios to see if we could reach agreement on situations in which UDS might (or might not) help in predicting an improvement in a patient's bothersome LUTS following surgery for BPO. By "urodynamics", we mean "invasive urodynamics" (the International Continence Society [ICS] term used to differentiate cystometry and a pressure-flow study from noninvasive investigations). Video-UDS and ambulatory UDS are not specifically considered. We did not set out to state a position on aspects of patient assessment in male LUTS that are already well established and/or do not relate to the use of UDS.

2.4. Opinion capture and consensus process

To reach consensus positions, a modified version of the Delphi method was used [11]. The process involved five phases, which took place between December 2023 and April 2025.

1. A panel of 20 experts in functional urology, collectively representing 12 countries across Europe and North America, was convened.
2. Sources of high-quality published evidence were considered and reviewed before the opinion capture process [2,6,7,12–17].
3. A questionnaire comprising 12 questions (congruent with Delphi principles to avoid respondent overload) was developed by a subgroup of the panel (M.J.D., E.F.-A., V.I., D.E., and S.M.) as derived from the findings of UPSTREAM. Eight questions evaluated use of UDS in specific contexts, some of which incorporated thresholds defined from the UPSTREAM secondary analysis [6], and four questions covered quality assurance [13] (Table 1).
4. The questionnaire was circulated to the panel and participants were asked to score their level of agreement from 1 (strongly disagree) to 10 (strongly agree) for each question. Once completed, average scores were calculated for each question, with a threshold of 70% required for consensus. Two further rounds of review and scoring were carried out with further contextual information and explanation.
5. During the consultation process, video conferences were held to discuss the perspectives of panellists and the reasons for their score choices. Combining quantitative scoring and qualitative input allowed iterative refinement and a deeper shared understanding, in line with a rigorous Delphi process [11].
6. A draft manuscript was produced and circulated to all participants for input and alignment. All terminology used in the manuscript is standard ICS terminology, unless stated otherwise.

3. Results

Following the three rounds of review and scoring, consensus ($\geq$70%) was achieved for seven of the eight questions on UDS use, and for all four questions related to quality assurance (Table 2).

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Table 1 – Basis for the questions used for the consensus process

	Contexts for potential use of urodynamics
1	If corrected [a] maximum flow rate is ≥13 ml/s at uroflowmetry
2	If bothersome urinary urgency is observed on the symptom score or bladder diary
3	If total symptom score is below threshold (IPSS <17, ICIQ-MLUTS <19)
4	If voiding symptoms subscore is low (ICIQ-MLUTS voiding subscore ≤8)
5	If impact of symptoms on quality of life is low (IPSS QoL ≤4)
6	If postvoid residual volume is meaningfully elevated, in the opinion of the investigator
7	If there is extensive comorbidity in the opinion of the investigator
8	If incontinence is observed on the symptom score or bladder diary
Quality assurance	
9	Should Bladder Outflow Obstruction Index (BOOI) and Bladder Contractility Index (BCI) calculations be validated by cross-checking the timing of corrected maximum flow within the urodynamic pressure traces and by visual validation of detrusor, vesical and abdominal pressure?
10	Should presence or absence of detrusor overactivity (DO) be validated by evaluating vesical and abdominal pressure during filling cystometry?
11	To ensure reliability of the traces, should urodynamics always be performed by—or the traces reviewed by—a health care professional with expertise in good urodynamic practice before confirmation of the urodynamic diagnosis?
12	Should the urodynamic diagnosis always be considered in its clinical context?

ICIQ-MLUTS = International Consultation on Incontinence Modular Questionnaire-male lower urinary tract symptoms; IPSS = International Prostate Symptom Score; QoL = quality of life.
[a] Corrected: the flow/urodynamic trace has been checked to ensure that the maximum flow rate identified by the flowmeter is plausible and corrected for artefactual values.

Table 2 – Outcomes from the consensus process after two rounds of review and scoring

	Use of urodynamics	Consensus
1	Urodynamics should be done if the corrected maximum flow rate is ≥13 ml/s at uroflowmetry.	Achieved 75%
2	Urodynamics should be done if bothersome urinary urgency is observed on the symptom score or bladder diary.	Achieved 73%
3	Urodynamics should be done if the total symptom score is below a specific threshold (IPSS <17, ICIQ-MLUTS <19).	Achieved 71%
4	Urodynamics should be done if the voiding symptoms subscore is low (ICIQ-MLUTS voiding subscore ≤8).	Achieved 71%
5	Urodynamics should be done if the impact of symptoms on quality of life is low (IPSS QoL ≤4).	Not achieved 52%
6	Urodynamics should be done if the postvoid residual volume is meaningfully elevated in the opinion of the investigator.	Achieved 76%
7	Urodynamics should be done if there is extensive comorbidity in the opinion of the investigator.	Achieved 74%
8	Urodynamics should be done if incontinence is observed on the symptom score or bladder diary.	Achieved 80%
Quality assurance		**Consensus**
9	BOOI and BCI calculations should be validated by cross-checking the timing of the corrected maximum flow within the urodynamic pressure traces and by visual validation of detrusor, vesical, and abdominal pressures.	Achieved 90%
10	Presence or absence of detrusor overactivity (DO) should be validated by evaluating vesical and abdominal pressure during filling cystometry.	Achieved 88%
11	To ensure reliability of the traces, urodynamics should always be performed by—or the traces reviewed by—a health care professional with expertise in good urodynamic practice before confirmation of the urodynamic diagnosis.	Achieved 82%
12	The urodynamic diagnosis should always be considered in its clinical context.	Achieved 71%

BCI = Bladder Contractility Index; BOOI = Bladder Outflow Obstruction Index; ICIQ-MLUTS = International Consultation on Incontinence Modular Questionnaire-male lower urinary tract symptoms; IPSS = International Prostate Symptom Score; QoL = quality of life.

Figure 1 provides a visual representation of the criteria (alone or in any combination) for which the panel considered UDS to be necessary in this patient population.

3.1. *UDS use: outcome of the consensus process*

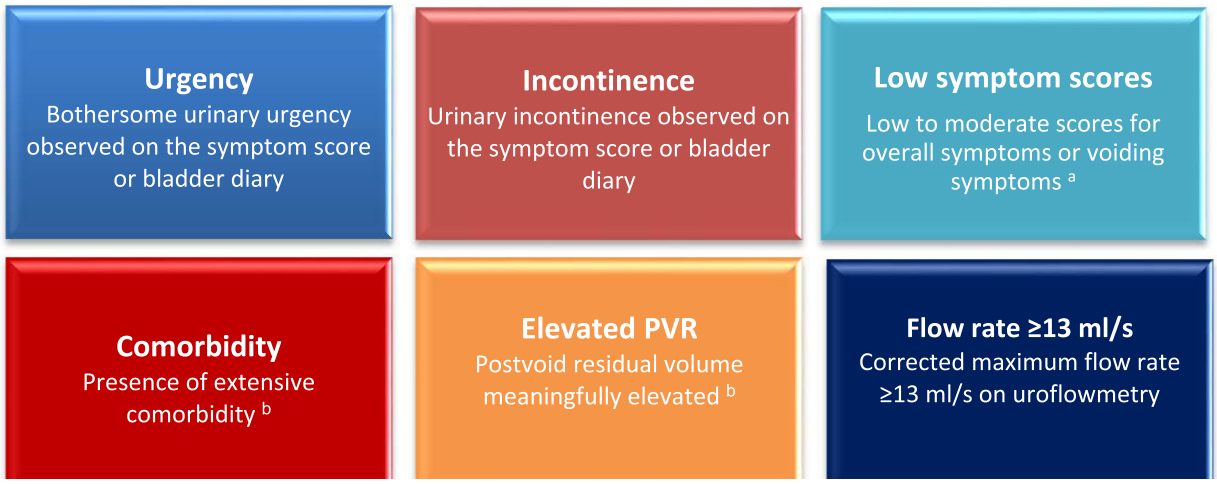
Table 3 provides a detailed summary of the discussion points for each question, together with relevant contextual information [13,18–28].

3.1.1. *Q1. If the corrected maximum flow rate is ≥13 ml/s at uroflowmetry*

Consensus was reached that UDS is needed to calculate BOOI and BCI, and to confirm the presence or absence of DO. Discussion points during the consensus exercise included the following:

- BCI is less important here, as DU is unlikely at these flow rates.

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[a] A low score for impact on quality of life in isolation was not considered a sufficient criterion for urodynamics.
[b] In the opinion of the investigator.

Fig. 1 – Criteria (alone or in combination) indicative of a need for urodynamics in men considering surgery for presumed benign prostatic obstruction. PVR = postvoid residual volume.

- DO can raise the maximum flow rate (Q_{max}) if the patient was resisting an overactive contraction, as suggested by the pattern of flow.

3.1.2. Q2. If bothersome urinary urgency is observed on the symptom score or bladder diary

Consensus was reached that UDS is needed, particularly to confirm the presence or absence of DO. Discussion points included:

- If a man has both BPO and DO, UDS does not show whether they are related, just that they are both present [18].
- Even if the DO was originally caused by BPO, that does not mean that relieving the BPO surgically would reliably resolve the DO. Various factors affect surgical outcomes in DO or DU [19]; one paper proposed a threshold volume of 250 ml below which DO confers a worse postoperative prognosis [20].
- The full clinical picture in overactive bladder syndrome (OAB) should consider the symptom score (storage subscore) and bladder diary.
- If storage LUTS are bothersome, indications for UDS should follow the OAB pathway.

3.1.3. Q3: If the total symptom score is below a threshold (IPSS <17, ICIQ-MLUTS <19); and Q4: If the voiding symptoms subscore is low (ICIQ-MLUTS voiding subscore ≤8)

Initially, consensus was not achieved for these questions in relation to International Prostate Symptom Score (IPSS) and International Consultation on Incontinence Modular Questionnaire-Male LUTS (ICIQ-MLUTS) thresholds. It transpired that many participants had assumed that surgery is not justifiable in men whose overall symptom burden (or voiding symptom burden) is low, which in turn meant no need for UDS. However, this was counter to the project stipulation that surgery was already being considered. Following contextual clarification and a repeat vote, consensus was achieved.

- If a patient fits the UPSTREAM criteria fully, they can be counselled that there is high likelihood of a good symptomatic outcome, but they remain at risk of adverse events.
- In cases in which symptoms are less severe, UDS can guide whether surgery may not be needed, may not achieve the patient's personal goals, or may not warrant the expense. In particular, UDS can identify:
  - o Filling cystometry features that predict the persistence or deterioration of storage LUTS; and
  - o Pressure-flow study parameters (BOOI, BCI) to establish the likelihood that voiding symptoms will improve.
- Interpretation of questions that comprise symptom score tools is often subjective, so the population data thresholds in UPSTREAM should make allowance for individual variation in practice.

3.1.4. Q5: If the impact of symptoms on quality of life is low (IPSS QoL ≤4)

Consensus on this item was not achieved after three rounds of consultation and voting.

- Although the UPSTREAM study did identify a quality of life (QoL) threshold predicting poorer postoperative outcomes, QoL scoring is highly subjective, with wide interindividual variability.
- Hence, applying the population threshold to an individual case risks overweighting a single item response within the complex and multifaceted area of QoL.

3.1.5. Q6. If postvoid residual volume is meaningfully elevated in the opinion of the investigator

Consensus was reached that UDS is needed to calculate BOOI and BCI.

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Table 3 – Contextual information and synthesis of discussion points for each question

Question outcome	Contextual information	Synthesis of discussion points
Q1. If the corrected maximum flow rate is ≥13 ml/s at uroflowmetry Consensus was reached that UDS is needed in this scenario to calculate BOOI and BCI, and to confirm the presence or absence of DO.	In the UPSTREAM study, corrected Q_{max} ≥13 ml/s was associated with a higher chance that surgery will not succeed in improving QoL. The likelihood of obstruction is lower at these flow rates. • If UDS confirms BPO absence, this predicts failure to improve symptoms with surgery. • BPO presence means that bothersome voiding symptoms could improve despite having a moderate to good flow rate.	• BCI is less important than BOOI in this context, as DU is unlikely at these flow rates. • DO might be a factor affecting Q_{max} if the patient was resisting an overactive contraction immediately before performing their free flow rate test. The pattern of flow may give some indication of this.
Q2. If bothersome urinary urgency is observed on the symptom score or bladder diary Consensus was reached on the need for UDS in this scenario, in particular to confirm the presence or absence of DO.	UPSTREAM revealed that men with moderate to severe sLUTS were unlikely to experience sLUTS improvement with surgery and were even at risk of deterioration if they had surgery. The sLUTS parameters measured were: symptom score (ICIQ-MLUTS incontinence subscore), bladder diary (ICIQ bladder diary sensation scale), and DO on filling cystometry.	• If a man has both BPO and DO, UDS does not show whether they are related, just that they are both present. Nonetheless, both are important for counselling the patient [18]. • Even if the DO was originally caused by BPO, that does not mean that surgical BPO relief would reliably resolve the DO. A 2021 review analysed the various factors that may influence BPO surgery outcomes in patients with DO or DU [19] and one paper proposed a threshold volume of 250 ml below which DO presence represents a worse postoperative prognosis [20]. • The full clinical picture regarding storage dysfunction should consider all the observations, including symptom score (storage subscore) and the bladder diary as a reflection of the daily influence of OAB. • Management of OAB is a different care pathway, and indications for UDS would follow the OAB pathway if sLUTS are bothersome.
Q3: If the total symptom score is below threshold (IPSS <17, ICIQ-MLUTS <19) ***Q4: If the voiding symptoms subscore is low (ICIQ-MLUTS voiding subscore ≤8)***	In UPSTREAM, patients with symptom scores below the stated values were at risk of gaining little benefit from surgery. Nonetheless, some units still recommend outlet surgery in such individuals and some patients request it. The aim of the discussion was to develop consensus on whether to perform UDS when assessment identifies values below the symptom thresholds.	• Initially, consensus was not achieved for these questions. It transpired during panel consultations that this was largely because of the assumption by many participants that surgery is not justifiable in men whose overall or voiding symptom burden is low, which in turn means no need for UDS. However, this was counter to the project stipulation that surgery was already being considered. Following contextual clarification and a repeat vote, consensus was achieved. • If a patient fully meets the UPSTREAM criteria, he can be counselled that there is high likelihood of a good symptomatic outcome, but he remains at risk of adverse events. A minority of patients fully meet all the UPSTREAM criteria, but this brings a high level of confidence. Increasing divergence from these parameters increases the likelihood of poor symptom outcomes after surgery. • When symptoms are less severe, UDS can provide guidance on whether surgery may not be needed, may not achieve the patient's personal goals (for discussion as part of counselling), or may not warrant the expense. In particular, UDS can be used to identify: o Filling cystometry features that predict persistence or deterioration of sLUTS; and o Pressure-flow study parameters (BOOI/BCI) to establish the likelihood that voiding symptoms will improve. • Questions in symptom score tools are often interpreted differently by individuals, so the population data thresholds generated by UPSTREAM should be considered in light of the potential for individual variation.
Question outcome	**Contextual information**	**Synthesis of discussion points**
Q5: If the impact of symptoms on quality of life is low (IPSS QoL ≤4) Consensus on this item was not achieved after 3 rounds of consultation and voting.	The UPSTREAM study reported a threshold score for QoL below which there was a lower chance of symptom improvement with surgery.	• Although the UPSTREAM study did identify a threshold score, QoL scoring is highly subjective, with wide interindividual variability. • Applying the population threshold to an individual case risks overweighting a single item response within the complex and multifaceted area of QoL.

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Table 3 (*continued*)

Question outcome	Contextual information	Synthesis of discussion points
Q6. If postvoid residual volume is meaningfully elevated in the opinion of the investigator Consensus was reached on the need for UDS in this scenario, to calculate BOOI and BCI.	The UPSTREAM study found that baseline PVR was of no predictive value for symptom outcome after surgery to relieve BPO.	• The implication of PVR depends on bladder function (capacity, storage pressure, sensation) and should take these into account rather than just an arbitrary volume threshold. • It was also agreed that the significance of elevated PVR as a finding on its own is not clear. Bladder voiding efficiency is an alternative evaluation that relates voided volume to total bladder capacity [21]. • There is no universally accepted definition of "elevated PVR" (the ICS module on PVR suggests a threshold of >200 ml [22]; the EAU guidelines suggest >300 ml [23]) and there are no robust data to underpin a definitive numerical cutoff. The panel agreed that leaving individual investigators to subjectively decide what "meaningful elevation" means is far from ideal. However, given the dearth of evidence, attempting to define a cutoff was beyond the scope of this project. Further research is needed and the emergence of new information could underpin a potential future expert consensus.
Q7. If there is extensive comorbidity in the opinion of the investigator Consensus was reached on the need for UDS in this scenario.	The UPSTREAM study found that individuals with comorbidities were at higher risk of poor symptomatic outcomes after surgery.	There are two reasons to consider UDS in a patient with extensive comorbidity: • Comorbidity might influence the nature of the lower urinary tract dysfunction; for example, poorly controlled diabetes and other medical conditions might cause DU. • Comorbidity may increase the risks of surgery, so detailed information is needed to inform the risk/benefit evaluation of potentially proceeding with surgery.
Q8: If incontinence is observed on the symptom score or bladder diary Consensus was reached on the need for UDS in this scenario.	The UPSTREAM study measured storage LUTS via the ICIQ-MLUTS incontinence subscale. As discussed in Q2, the storage parameters were not predictive of outcome. However, there was insufficient statistical power to identify whether incontinence specifically was predictive of outcomes.	• Incontinence—the most severe form of storage LUTS—is at risk of deterioration following surgery for voiding symptoms, except where the incontinence is related to chronic urinary retention (sometimes referred to as "overflow incontinence"). • All forms of incontinence warrant UDS investigation, although the most common scenario is urgency incontinence, which can be independently reported by patients using ICIQ-MLUTS. • If undiagnosed neurological disease might be present, the expectation is direct assessment according to the ICS consensus [24], with referral to neurology if suspicion remains. • High-amplitude DO occurring at small bladder volumes on UDS was considered particularly concerning for persistent storage LUTS or incontinence after surgery. Furthermore, DO with DU (formerly known as detrusor hyperactivity with impaired contractility) predicts persistent urinary incontinence after surgery to treat BPO. • If IPSS is the main symptom scale used, specific questioning is required to elicit the presence of incontinence and, if present, define the type (urgency incontinence, postmicturition dribble or stress incontinence) as this is not captured in the IPSS [25].
Quality assurance		
Contextual information • At baseline, UPSTREAM joined with another randomised trial of surgery for BPO (UNBLOCS study [26]) to scrutinise trace quality and interpretation in the participating centres, which covered differing service provider types. This process ensured identification of quality assurance issues early in the study timeline [13], with remedial steps taken to ensure reliable data. • Several issues were identified, with some centres not meeting the ICS GUP requirements [27]. This included uncritical reliance on the automated report produced by the UDS equipment, which is known to have a high risk of serious inaccuracy. The assumption that staff at expert or experienced centres accurately diagnose BPO/DU and even DO was found to be misguided. The need for UDS quality assurance observed was the stimulus for the recently published UK Continence Society certification programme supporting governance-led practice [28]. • With any sensitive equipment, calibration should be checked regularly to ensure recordings truly reflect actual patient performance. All equipment should be maintained in line with manufacturer recommendations. At many centres, equipment calibration and maintenance records were not available, which risks unreliable values being documented during clinical tests. • A multidisciplinary approach can be beneficial: (1) to identify whether there is diagnostic uncertainty for individual patients, as surgical outcomes depend on correct diagnosis; (2) to improve or maintain standards in line with GUP; and (3) to help in spreading the expertise of experienced staff.		

(continued on next page)

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Table 3 (*continued*)

Question outcome	Contextual information	Synthesis of discussion points
Question outcome		**Synthesis of discussion points**
Q9: Should BOOI and BCI calculations be validated by cross-checking the timing of maximum flow within the urodynamic pressure traces and by visual validation of detrusor, vesical, and abdominal pressure? Consensus was reached on the need for validation of BOOI and BCI.		• Confirmation of Q_{max} is needed, as the UDS machine may take the peak of the flow curve line to represent the patient's Q_{max} and may sometimes fail to identify an artefact that can cause a higher peak, for example if the flowmeter is knocked during a study. This could happen at any time between the start and conclusion of the entire test, which would mean the machine derives BOOI and BCI from entirely inappropriate data. • Recording of p_{abd}, and sometimes p_{ves}, may become unreliable during the voiding phase. This would affect p_{det}, which is derived from both measured parameters. Hence, it is important to check measurement quality (eg, cough subtraction) both before and after the void, and whether the p_{abd} recording shifts during voiding. For example, a downward shift in p_{abd} would artefactually elevate p_{det}; this might wrongly move the patient's BOOI into the obstructed category.
Q10: Should the presence or absence of overactivity in detrusor pressure be validated by evaluating vesical and abdominal pressure during filling cystometry? Consensus was reached on the need for validation of DO.		• Examples of misinterpretation were observed during the quality validation [13], for example when a drop in p_{abd} was misreported as DO owing to the apparent rise in detrusor pressure. The presence of DO must only be diagnosed if a phasic rise in p_{ves} occurs.
Q11: To ensure reliability of the traces, should urodynamics always be performed by—or the traces reviewed by—a health care professional with expertise in good urodynamic practice before confirmation of the urodynamic diagnosis?		• The quality assurance consultation revealed that units vary in the nature of professional input to UDS assessments (running the test and generating the report) [13]. • Dialogue between the clinicians requesting and staff delivering UDS assessments can facilitate the process. For example, it can aid clarity in the formulation of both test requests and reports following the test. To work most effectively, such dialogue should take place regularly, and the majority of staff involved should participate. • There is a requirement that practitioners are fully trained and receive ongoing regular support, as needed. The consensus group described wide variation between health care systems and within countries. They identified two prevailing models: o Validation of the test/report via scrutiny by the requesting surgeon or a member of the surgical team. o Validation of the test/report via scrutiny by a functional urologist or multidisciplinary meeting.
Q12: Should the urodynamic diagnosis always be considered in its clinical context? Consensus was reached regarding the importance of ensuring the reliability and trustworthiness of traces before confirmation of the urodynamic diagnosis and consideration in clinical context.		• The consensus group agreed that a model in which nonmedical practitioners or nurses conduct UDS testing and generate reports on their own, without additional validation of traces by an experienced health care professional, is appropriate only in highly specialised centres.

BCI = Bladder Contractility Index; BOOI = Bladder Outflow Obstruction Index; BPO = benign prostatic obstruction; DO = detrusor overactivity; DU = detrusor underactivity; EAU = European Association of Urology; GUP = good UDS practice; ICIQ-MLUTS = International Consultation on Incontinence Modular Questionnaire-male lower urinary tract symptoms; ICS = International Continence Society; IPSS = International Prostate Symptom Score; OAB = overactive bladder; p_{abd} = abdominal pressure; p_{det} = detrusor pressure; p_{ves} = vesical pressure; PVR = postvoid residual volume; Q_{max} = maximum flow rate; QoL = quality of life; sLUTS = storage lower urinary tract symptoms; UDS = urodynamics.

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- Interpreting postvoid residual volume (PVR) should take factors such as bladder capacity, storage pressure, and sensation into account.
- The significance of elevated PVR alone is not clear. Bladder voiding efficiency is an alternative evaluation that relates voided volume to total bladder capacity [21].
- There is no universally accepted definition of "elevated PVR" (the ICS suggests >200 ml [22]; the European Association of Urology guidelines suggest >300 ml [23]). Given the dearth of evidence, an attempt to define a cut-off was beyond the scope of this project (Table 3).

3.1.6. *Q7. If there is extensive comorbidity in the opinion of the investigator*

There was consensus that UDS is needed in this scenario for two reasons:

- Comorbidity might influence the nature of the lower urinary tract dysfunction; and
- Comorbidity may increase the risks of surgery; detailed information guides the risk/benefit evaluation.

3.1.7. *Q8: If incontinence is observed on the symptom score or bladder diary*

The panel reached consensus that UDS is needed in this scenario.

- Incontinence can worsen following surgery for voiding symptoms, except in cases in which it is related to chronic urinary retention ("overflow incontinence").
- All forms of incontinence warrant urodynamic investigation. Urgency incontinence can be independently reported by patients using the ICIQ-MLUTS.
- If undiagnosed neurological disease is suspected, an ICS consensus report [24] guides direct assessment.
- High-amplitude DO occurring at small bladder volumes predicts persistent storage LUTS or incontinence after surgery. DO with DU (formerly known as detrusor hyperactivity with impaired contractility) is particularly concerning.
- If IPSS is the main symptom scale used, specific questioning is required to elicit the presence and type of incontinence [25].

3.2. *Quality assurance: outcome of the consensus process*

3.2.1. *Q9: Validation of BOOI and BCI calculation*

Consensus was achieved on the need for validation of BOOI and BCI.

- A UDS machine may take the peak of the flow curve line to represent the patient's Q_{max}, and may fail to identify an artefact that generates a higher peak (eg, if the flowmeter was knocked). This could happen at any time, resulting in BOOI and BCI readings derived from entirely inappropriate data. Hence, key parameters must be validated before use.
- Recording of abdominal pressure, and sometimes vesical pressure, may become unreliable during the voiding phase. Hence, the quality of the recording (eg, cough subtraction) must be checked before and after the void.

3.2.2. *Q10: Validating the presence or absence of overactivity in detrusor pressure*

Consensus was reached on the need for validation of DO.

- Examples of misinterpretation were observed during the quality validation [13], for example when a drop in abdominal pressure was misreported as DO because of the apparent rise in detrusor pressure.

3.2.3. *Q11: Ensuring the reliability of traces before confirmation of the urodynamic diagnosis; and Q12: Considering the urodynamic diagnosis in the clinical context*

Consensus was reached regarding the importance of ensuring the reliability and trustworthiness of traces before confirmation of a urodynamic diagnosis and consideration in the patient's clinical context.

- Professional input to UDS assessments (running the test and generating the report) varies between units [13].
- Dialogue between the clinicians requesting and staff delivering UDS assessments can facilitate the process. Practitioners should be fully trained and receive ongoing regular support.
- The consensus group identified two prevailing models:
  - Validation of the test/report via scrutiny by the requesting surgeon or member of the surgical team.
  - Validation of the test/report via scrutiny by a functional urologist or multidisciplinary meeting.
- It was agreed that a model in which nonmedical practitioners or nurses conduct UDS testing and generate reports without additional validation is appropriate only in highly specialised centres.

4. Discussion

In appropriately selected patients, UDS continues to have an important role in the investigation of male LUTS, as recently indicated by Chapple et al [1]. A new single-centre database analysis [29] suggests that ~60% of patients with BPO considering surgery are eligible for UDS on the basis of the UPSTREAM parameters [6]. Our panel concurred that establishing specific actionable criteria to guide the optimal and judicious use of UDS could provide much-needed clarity to service providers. This consensus focused on men with bothersome LUTS considering surgery to relieve presumed BPO, and excluded men who are catheterised, those with previous prostate surgery, and patients with a neurological disease. The consensus was based on robust evidence [2,6,7,12–17], particularly the high-certainty evidence from the UPSTREAM study, and the extensive clinical experience of our international panel of 20 experts in functional urology.

Standard measures of clinical evaluation (symptom scores and a bladder diary, uroflowmetry, and PVR assessment) can be used to anticipate postoperative outcomes without routine use of UDS. It was also agreed that in cases in which voiding symptoms are severe and detrimental to QoL, with a clear-cut reduction in Q_{max}, UDS is not needed to confirm that surgery has a good chance of improving symptoms. However, in reality, many men attend because

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they are bothered by storage symptoms or nocturia [30], or are worried about the possibility of cancer [14]. Alternatively, some aspect of their presentation or medical history may complicate the assessment. For example, patients may not complete the bladder diary, or the flow rate assessment may have been undertaken with an insufficient volume in the bladder. Finally, some symptoms are not covered in the IPSS, notably postmicturition dribble and incontinence [25]. Thus, the clinician must maintain a clear focus on the patient's most bothersome symptom(s) and the reliability of the information available to minimise the risk of symptom persistence or deterioration following surgery.

Consensus was achieved on all but one question. UDS is appropriate when the corrected Q_{max} $\geq$13 ml/s, given the higher chance that BPO may not be present in that individual. Likewise, UDS use was supported for patients with extensive comorbidity in case DU is the mechanism behind voiding LUTS. There was also agreement on the use of UDS in cases with meaningfully elevated PVR (in the opinion of the investigator) owing to the possibility of DU. For these indications, it was considered that calculation of BOOI and BCI offers directly relevant information.

In addition, consensus was achieved on the use of UDS in cases with storage symptoms, specifically urinary urgency and urinary incontinence. For both of these conditions, filling cystometry may identify DO. Nonetheless, these patients need careful scrutiny of all assessments. For example, postmicturition dribble is a common symptom that may be confused with incontinence. In addition, UDS identification of DO should be interpreted alongside clinical assessments, notably a bladder diary.

Consensus was also achieved on recommending UDS in men with a low to moderate overall symptom score (IPSS <17, ICIQ-MLUTS <19) or low to moderate voiding symptoms (ICIQ voiding subscore $\leq$8). Reaching consensus on these points was not a straightforward process, because—despite the project stipulation that patients were already considering surgery—many panellists instinctively ruled out surgery for individuals with low symptom scores and hence initially voted against UDS for these criteria. Following contextual clarification and repeat voting, consensus was readily achieved, which underlines the crucial importance of context. According to the UPSTREAM study, the levels stated were the thresholds below which poor symptomatic outcomes were more likely after surgery, but these findings were calculated on an overall population basis. For individual patients in clinic, scores may be idiosyncratic. Hence, health care professionals need to ensure that they fully identify the true impact of LUTS on the patient, and in particular voiding LUTS.

The only question for which consensus was not achieved was whether UDS should be recommended for patients with a low to moderate impact on QoL (IPSS QoL $\leq$4). The subjective nature of QoL scoring makes this an uncertain criterion when taken in isolation. In cases in which the QoL impact is moderate or low, a conservative or observational approach should be considered and discussed. UDS may be offered if a patient is strongly inclined towards surgery after ensuring that he is fully informed about the postoperative symptomatic prospects. Patient values and preferences should be considered in all cases [14,15].

Quality assurance is a priority in diagnostic evaluation, and the group was unanimous regarding the importance of equipment calibration and maintenance according to manufacturer protocols. In addition, health care professionals need appropriate training and support to ensure that tests are undertaken properly and that the resulting reports are robust. Multidisciplinary workflows have clear advantages in the majority of units. Any individual making a recommendation regarding surgery must either satisfy themselves about the quality of the information they are using or must be given proper validated information on which to base their recommendation.

The dialogue also highlighted several remaining uncertainties. A key controversy relates to men with moderate to severe storage symptoms, which could occur in the presence of voiding symptoms, nonbothersome voiding symptoms, or the absence of voiding symptoms. A bladder diary, symptom scores, and UDS each offer insights that overlap, but with important distinctions. It was observed that many patients who seek surgery, or consent to it, do so because of storage symptoms, including urgency, greater frequency, or nocturia. There was agreement that such a scenario is a key reason for UDS, given that the symptoms that are less likely to improve after surgery are those apparently driving the demand for surgery. With regard to men in whom BPO coexists with DO, it is likely that for some, DO may be primary (potentially a feature of the ageing bladder), incidental (DO and BPO both present but unrelated), or secondary (the BPO causing the DO). Resolution of DO after relief of BPO is uncertain, so a future consensus statement on this specific point could be valuable.

PVR presence remains a major source of uncertainty, with no effective approach for evaluating the mechanism or predicting outcomes. Analysis of UPSTREAM data in an effort to predict treatment outcomes or stratify patients into phenotypes for which the main PVR driver is either BPO or DU failed to resolve this issue (unpublished data). These issues are explored, with practical suggestions, in the ICS module on PVR [22].

Potential future research topics include whether there are subcategories of DO; the likelihood of progression of lower urinary tract dysfunction in untreated BPO; and whether presentation phenotypes can be used to categorise PVR according to the underlying cause (BPO and/or DU). Finally, now that a range of minimally invasive surgical treatments (MISTs) is continuing to emerge for the management of BPO, investigator opinions on how to assess patients before recommending treatment may evolve still further. Conceivably, it may be even more important to confirm BPO and exclude DU when a MIST, rather than TURP, is being considered as the management approach.

4.1. *Limitations*

The field still lacks robust data from prospective studies. Data from the UPSTREAM study are currently the only level 1 evidence in this area, and were thus the dominant source of evidence. For men in the UPSTREAM trial who underwent surgery, TURP was the main interventional treatment, although a significant minority underwent a UroLift procedure. Several MISTs are under development, each of which

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has its own benefit and risk profile. Conclusions from the current consensus are intended to be generally applicable, but difference in benefit or risk of a MIST relative to TURP may alter the weighting of the considerations in the assessment pathway, even if the general principles remain. A study evaluating UDS within a pathway based on any MIST would be informative for re-evaluating the consensus position.

Our 12-item questionnaire focused on key clinical uncertainties highlighted by UPSTREAM, but may not cover all the relevant issues. Notably, the UPSTREAM eligibility criteria excluded a significant number of patients, including those with relevant neurological disease. Certain key terms (specifically ''PVR elevation'' and ''extensive comorbidity'') could not be quantitatively or objectively defined within this project owing to a lack of supporting evidence. The Delphi methodology allows for situational interpretation and may not fully guard against bias during the process.

5. Conclusions

This international expert consensus proposes specific criteria that are based on current high-quality published evidence and extensive clinical experience to guide practical use of UDS in men with presumed BPO who are considering prostate surgery. Consensus was reached that when surgery for BPO is being considered, UDS is needed in any of the following circumstances: if the corrected maximum flow rate is $\geq$13 ml/s; if bothersome urinary urgency is present; if scores are below stated thresholds for overall symptoms or voiding symptoms; if PVR is meaningfully elevated; if there is extensive comorbidity; and if urinary incontinence of any type is identified. Consensus was not reached on UDS use in men with symptoms below the stated threshold for QoL impact. Consensus was achieved on prioritisation of quality assurance, notably cross-checking UDS pressure traces and derived indices. It is hoped that these recommendations will help to shape best practice in an area that has long been contentious.

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Study concept and design: Drake, Finazzi-Agro, Iacovelli, Malde, Elterman.
Acquisition of data: All authors.
Analysis and interpretation of data: Drake, Finazzi-Agro, Iacovelli.
Drafting of the manuscript: Drake, Finazzi-Agro.
Critical revision of the manuscript for important intellectual content: All authors.
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References

[1] Chapple CR, Wagg A, Harding C, et al. From clinical trials to routine practice: are urodynamics still useful? Eur Urol 2025;88:537–9.
[2] Drake MJ, Lewis AL, Young GJ, et al. Diagnostic assessment of lower urinary tract symptoms in men considering prostate surgery: a noninferiority randomised controlled trial of urodynamics in 26 hospitals. Eur Urol 2020;78:701–10.
[3] Lewis AL, Young GJ, Selman LE, et al. Urodynamics tests for the diagnosis and management of bladder outlet obstruction in men: the UPSTREAM non-inferiority RCT. Health Technol Assess 2020;24:1–122.
[4] Young GJ, Lewis AL, Lane JA, et al. Statistical analysis plan for the Urodynamics for Prostate Surgery Trial; Randomised Evaluation of Assessment Methods (UPSTREAM). Trials 2017;18:455.
[5] Clout M, Lewis AL, Cochrane M, et al. Five-year follow-up of the Urodynamics for Prostate Surgery Trial; Randomised Evaluation of Assessment Methods—a noninferiority randomised controlled trial of urodynamics. Eur Urol Focus 2025;11:618–24. https://doi.org/10.1016/j.euf.2025.02.004.
[6] Ito H, Sakamaki K, Young GJ, et al. Predicting prostate surgery outcomes from standard clinical assessments of lower urinary tract symptoms to derive prognostic symptom and flowmetry criteria. Eur Urol Focus 2024;10:197–204.
[7] Young GJ, Metcalfe C, Lane JA, et al. Prostate surgery for men with lower urinary tract symptoms: do we need urodynamics to find the right candidates? Exploratory findings from the UPSTREAM trial. Eur Urol Focus 2022;8:1331–9.
[8] Gratzke C, Bachmann A, Descazeaud A, et al. EAU guidelines on the assessment of non-neurogenic male lower urinary tract symptoms including benign prostatic obstruction. Eur Urol 2015;67:1099–109.
[9] Oelke M, Bachmann A, Descazeaud A, et al. EAU guidelines on the treatment and follow-up of non-neurogenic male lower urinary tract symptoms including benign prostatic obstruction. Eur Urol 2013;64:118–40.
[10] Drake MJ, Worthington J, Frost J, et al. Treatment of lower urinary tract symptoms in men in primary care using a conservative intervention: cluster randomised controlled trial. BMJ 2023;383:e075219.
[11] Nasa P, Jain R, Juneja D. Delphi methodology in healthcare research: how to decide its appropriateness. World J Methodol 2021;11:116–29.
[12] Clement KD, Burden H, Warren K, et al. Invasive urodynamic studies for the management of lower urinary tract symptoms (LUTS) in men with voiding dysfunction. Cochrane Database Syst Rev 2015;2015:CD011179.
[13] Aiello M, Jelski J, Lewis A, et al. Quality control of uroflowmetry and urodynamic data from two large multicenter studies of male lower urinary tract symptoms. Neurourol Urodyn 2020;39:1170–7.
[14] Malde S, Umbach R, Wheeler JR, et al. A systematic review of patients' values, preferences, and expectations for the diagnosis and treatment of male lower urinary tract symptoms. Eur Urol 2021;79:796–809.
[15] Selman LE, Clement C, Ochieng CA, et al. Treatment decision-making among men with lower urinary tract symptoms: a qualitative study of men's experiences with recommendations for patient-centred practice. Neurourol Urodyn 2021;40:201–10.
[16] Selman LE, Ochieng CA, Lewis AL, et al. Recommendations for conducting invasive urodynamics for men with lower urinary tract symptoms: qualitative interview findings from a large randomized controlled trial (UPSTREAM). Neurourol Urodyn 2019;38:320–9.

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[17] Tarcan T, Selai C, Herve F, et al. Should we routinely assess psychological morbidities in idiopathic lower urinary tract dysfunction: ICI-RS 2019? Neurourol Urodyn 2020;39(Suppl 3): S70–9.
[18] Oelke M, Baard J, Wijkstra H, et al. Age and bladder outlet obstruction are independently associated with detrusor overactivity in patients with benign prostatic hyperplasia. Eur Urol 2008;54:419–26.
[19] Creta M, Collà Ruvolo C, Longo N, et al. Detrusor overactivity and underactivity: implication for lower urinary tract symptoms related to benign prostate hyperplasia diagnosis and treatment. Minerva Urol Nephrol 2021;73:59–71.
[20] Antunes AA, Iscaife A, Reis ST, et al. Can we predict which patients will experience resolution of detrusor overactivity after transurethral resection of the prostate? J Urol 2015;193:2028–32.
[21] Abrams P. Bladder outlet obstruction index, bladder contractility index and bladder voiding efficiency: three simple indices to define bladder voiding function. BJU Int 1999;84:14–5.
[22] Asimakopoulos AD, de Nunzio C, Kocjancic E, et al. Measurement of post-void residual urine. Neurourol Urodyn 2016;35:55–7.
[23] Cornu JN, Gacci M, Hashim H, et al. EAU Guidelines on non-neurogenic male lower urinary tract symptoms (LUTS). Arnhem, The Netherlands: European Association of Urology; 2025.
[24] Roy HA, Nettleton J, Blain C, et al. Assessment of patients with lower urinary tract symptoms where an undiagnosed neurological disease is suspected: a report from an International Continence Society consensus working group. Neurourol Urodyn 2020;39:2535–43.
[25] Ito H, Young GJ, Lewis AL, et al. Grading severity and bother using the International Prostate Symptom Score and International Consultation on Incontinence Questionnaire Male Lower Urinary Tract Symptoms Score in men seeking lower urinary tract symptoms therapy. J Urol 2020;204:1003–11.
[26] Hashim H, Worthington J, Abrams P, et al. Thulium laser transurethral vaporesection of the prostate versus transurethral resection of the prostate for men with lower urinary tract symptoms or urinary retention (UNBLOCS): a randomised controlled trial. Lancet 2020;396:50–61.
[27] Rosier P, Schaefer W, Lose G, et al. International Continence Society Good Urodynamic Practices and Terms 2016: urodynamics, uroflowmetry, cystometry, and pressure-flow study. Neurourol Urodyn 2017;36:1243–60.
[28] Abrams P, Eustice S, Gammie A, et al. United Kingdom Continence Society: certification and recertification in urodynamics. Neurourol Urodyn 2025;44:819–28. https://doi.org/10.1002/nau.70020.
[29] Rosato E, Mancini MC, Cerrelli G, et al. In how many patients urodynamics should be omitted? Data from a single-centre database on the basis of the UPSTREAM trial. Continence 2025;14:101903.
[30] Weiss JP, Blaivas JG, Blanker MH, et al. The New England Research Institutes, Inc. (NERI) nocturia advisory conference 2012: focus on outcomes of therapy. BJU Int 2013;111:700–16.

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