What should we consider before surgery?
BPH with bladder dysfunction

Inje University Sanggye Paik Hospital
Sung Luck Hee
Diagnostic tests in three categories

Recommendation: *there is evidence to support routine use of this test.*
Optional: *not required during initial assessment but may aid in the decision-making process.*
Not recommendation: *there is no evidence to support the routine use of this test for the average patient.*

<table>
<thead>
<tr>
<th>Assessment</th>
<th>EAU 2004 recommendation</th>
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<tbody>
<tr>
<td>Medical history</td>
<td>recommended</td>
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<tr>
<td>Symptom score</td>
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<tr>
<td>Physical examination including DRE</td>
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<tr>
<td>Prostate specific antigen</td>
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<td>Creatinine measurement</td>
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<td>Urinalysis</td>
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<td>Flow rate</td>
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<td>Post-void residual volume</td>
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<td>Pressure flow studies</td>
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<td>Endoscopy</td>
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<td>Imaging of the upper urinary tract</td>
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<td>Imaging of the prostate</td>
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<td>Voiding charts (diaries)</td>
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<tr>
<td>Excretory urography</td>
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<td>Filling cystometry</td>
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<td>Retrograde urethrogram</td>
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<td>Computed tomography</td>
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<td>(Transrectal) magnetic resonance imaging</td>
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*a For detailed information see text.*
<table>
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<tr>
<th>Guideline</th>
<th>Medical History</th>
<th>DRE</th>
<th>Urinalysis</th>
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<th>Symptom Questionnaire</th>
<th>Uroflowmetry</th>
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</table>

Key: DRE = digital rectal examination; PSA = prostate-specific antigen; CMG = cystoscopy; PVR = postvoid residual urine; PFS = pressure-flow studies; R = recommended; O = optional; NR = not recommended; ND = not discussed; M = mandatory; other abbreviations as in Table I. * Treatment guidelines only.
1. 필수검사 highly recommended test
   (1) 병력 청취 history
   (2) 증상점수표 quantification of symptoms
      1) 국제전립선증상점수 IPSS
      2) 삶의 질 점수 quality of life
   (3) 신체검사와 직장수지검사 physical examination and DRE
   (4) 요검사 urinalysis
2. 권장검사 recommended test
   (1) 신기능 평가 renal function assessment
   (2) 혈청 전립선특이항원 serum PSA
   (3) 요류검사 flow rate recording
   (4) 잔뇨 측정 residual urine
   (5) 배뇨일지 voiding diary
3. 선택검사 optional test
   (1) 압력요류검사 pressure flow study
   (2) 경직장초음파검사 imaging of prostate by TRUS
   (3) 상부요로조영술 imaging of upper urinary tract
   (4) 하부요로내시경검사 endoscopy of lower urinary tract
4. 권장되지 않는 검사 not recommended test
   (1) 요도조영술 retrograde urethrography
   (2) 요도내압 측정 urethral pressure profile
   (3) 배뇨 중 방광요도조영술 voiding cystourethrography
   (4) 외요도괄약근의 근전도검사 EMG of external urinary sphincter
   (5) 방광내압측정술 filling cystometrogram
제5차 전립선비대증 국제자문회의에 따른 전립선비대증 환자에서 권장되는 사항

1. 초기검사는 반드시 전문화된 의료 인력(일반의, 의료기사, 전문간호사)에 의해 제공되어야 한다.
2. 초기검사는 다음을 포함하여야 한다.
   (1) 병력 청취와 직장수지검사를 포함한 신체검사
   (2) 증상검수표
   (3) 혈청 전립선특이항원
3. 선택검사
   (1) 혈청 크레아티닌 - 감상되지 않음
   (2) 요검사 - 균장됨
4. 추가검사가 필요한 적응증
   (1) 방광통증이나 요로감염의 재발이 의심되는 증상이 있는 경우
   (2) 방광이 촉진되는 경우
   (3) 전립선 촉진상 이상소견이 있는 경우
   (4) 배뇨량이 고정된 경우
   (5) 환자가 대기요법이나 약물치료를 거부하는 경우
   (6) 혈뇨
   (7) 전립선특이항원이 4.0ng/mL 이상인 경우
   (8) 약물치료에 실패한 경우
   (9) 요로감염이 치료되지 않거나 재발하는 경우
   (10) 방광결석
   (11) 신기능저하
5. 검사는 해당 국가의 일차진료의 형태에 따라 조절되어야 한다.
6. 검사는 일반의들이 시행할 수 있는 것과 부합하여야 한다.
7. 일반의와 비뇨기과 전문의의 지침은 모두에게 공유될 수 있어야 한다.
8. 이후 지침서 개발에 일반의가 참여하여야 한다.
• Recommended investigations

1. Medical history;
   *Medical history should be taken to identify other causes than BPE/BPO for LUTS*

2. Symptom scores (IPSS);
   *Symptom severity is an important part of the initial assessment being helpful in allocating treatment and predicting and monitoring the response to therapy*
   *Poor correlation between IPSS and objective parameters such as flow rate, prostate volume and post-void residual volume*

3. Voiding chart

4. Physical examination; Digital rectal examination (DRE) and focused neurological examination
   *Evaluating the size of prostate, presence of prostate cancer, prostatitis, other pelvic pathologies*

5. Prostate specific antigen (PSA)

6. Urinalysis

7. Flow rates

8. Post-void residual urine;
   *Large PVR volume (>200ml) may indicate bladder dysfunction and predict a less favorable response to treatment*
• Optional tests

1. Pressure-flow studies (pQs);
   Although pQs are the only means in diagnosing obstruction accurately, the debate continues as to their role in the predicting treatment outcomes
   - ICS nomogram
   - Abrams-griffiths nomogram
   - LinPURR nomogram
   - Schafer contractility nomogram
   - Urethral resistance nomogram

1). If the voided volume is <150ml or Qmax >15ml/s prior surgical intervention particularly in the elderly to document the presence of BPO
2). Younger men (e.g. <50 years)
3). Elderly men (>80 years)
4). PVR >300ml
5). Suspicion of neurogenic bladder dysfunction
6). After radical pelvic surgery
7). Previous unsuccessful invasive treatment
2. Endoscopy;

   Cause, size, and severity of obstruction, patency of the bladder neck, prostate occlusion of the urethra, and estimated prostate size
   1). Prior surgical or minimal invasive therapy
   2). Particularly if treatment depends on prostate shape (e.g. middle lobe) or size
   3). History of hematuria
   4). Urethral stricture
   5). Bladder cancer
   6). Prior lower urinary tract surgery

3. Imaging of the urinary tract
   1). Upper urinary tract
   2). Prostate

     Prior minimal invasive therapy
     For the selection of surgical therapy (TUIP, TURP, open prostatectomy)
     Prior medical therapy with 5alpha-reductase inhibitors
• Guidelines presented herein apply only to men (e.g. >50 years) without significant risk of non-BPO causes of LUTS
• Men with LUTS not falling into this category
  1. Concomitant neurologic diseases
  2. Young age
  3. Prior lower urinary tract disease or surgery
EAU Guidelines on Neurogenic Lower urinary tract dysfunction

1. Patient history;
   1) Acquired or congenital neurologic conditions
   2) Neurologic symptoms (somatic and sensory), including their onset, evolution, and any treatment
   3) Spasticity or autonomic dysreflexia (lesion above thoracic sixth vertebra)
   4) Mental status and comprehension
   5) Prior surgery
   6) Medications
   7) Mobility and hand function
   8) Socioeconomic situation

2. Physical examination;
   All sensation and reflexes in the urogenital area must be tested
   (anal sphincter, pelvic floor functions)
3. Bladder diary
4. Uroflowmetry
5. Postvoid residual urine

Pathologic findings

1) Low urine flow rate
2) Low voided volumes
3) Intermittent flow
4) Hesitancy
5) Large post-void residual
6. Urodynamic studies;
   Filling cystometry:
     Pathologic findings
     1) Detrusor overactivity
     2) Low bladder compliance
     3) Detrusor/sphincter dyssynergia
     4) Abnormal bladder sensation and other sensation (autonomic dysreflexia)
     5) Incontinence

   Pressure-flow studies:
     Pathologic findings
     1) Detrusor underactivity or acontractility
     2) DSD
     3) Incompetent urethral closure mechanism
     4) Non-relaxing urethral sphincter obstruction
     5) Increased post-void residual
<table>
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<tr>
<th>Guidelines for urodynamics and uroneurophysiology tests</th>
<th>GR</th>
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<tbody>
<tr>
<td>Urodynamic investigation is necessary to document the (dys-)function of the LUT [10].</td>
<td>A</td>
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<tr>
<td>The recording of a bladder diary is advisable.</td>
<td>B</td>
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<tr>
<td>Noninvasive testing is mandatory before invasive urodynamics are planned.</td>
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<tr>
<td>Video-urodynamics are currently the preferred method for invasive urodynamics in patients with NLUTD. If this method is not</td>
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<td>available, then a filling cystometry continuing into a pressure-flow study should be performed.</td>
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<tr>
<td>For standard urodynamic testing, a physiologic filling rate (see Table 1; eg, not faster than 20 ml/min) and body-warm</td>
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<td>fluid must be used.</td>
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<td>Specific uroneurophysiologic tests and provocative manoeuvres (eg, fast-filling cystometry with cooled saline [the ice-water test], coughing, tapping, and anal stretch) are elective procedures [10,12].</td>
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</table>

GR = grade of recommendation; LUT = lower urinary tract.
Is the short-term outcome of TUR-P of the prostate affected by preoperative degree of BOO, status of detrusor contractility or detrusor overactivity?

Yoshinori Tanaka et al. *International J of Urology* 2006

92 patients (>50 age), Pressure-flow study and filling cystometry

BOO:60%, DUA:40%, DO:48%

3mos after surgery

IPSS, QoL index, Qmax, post-void residual

Excellent or good:76%, poor or worse:13%

The efficacy was higher as the preoperative degree of BOO worsened. In the contrast, neither DO nor DUA influenced the outcome of TUR-P. No significant difference in the success rates between patients with strong/normal and weak/very weak detrusor contraction. DUA may not be a contraindication for TUR-P.

Urodynamic pressure-flow studies can predict the clinical outcome after TUR-P

Paulo Rodrigues et al. *J of Urology* 2001

253 patients, IPSS & QoL index, Urodynamic study before and after operation

42% were not obstructed

The entire obstructed group demonstrated marked improvement compared to the non-obstructed group. UDS provide great predictive value of clinical improvement after prostatic relief but they also properly predict the poor clinical results in non-obstructed patients.
162 patients, cystometry & pressure-flow study

- pure BOO: 55% (n=89)
- BOO+OB: 45% (n=73) --- phasic detrusor instability: 36%
- uninhibited overactive bladder: 64%

BOO+OB patients were at risk for TUR-P urgency incontinence.

The rate of OB was significantly higher in patients with severe obstruction than in patients with minor obstruction.

Patients with BOO and OB can exhibit normal cystometry without neurogenic bladder dysfunction after TUR-P. Surgical relief of BOO obviously results in a recovery of normal detrusor behaviour in some of these patients.

CNS disease or dysfunction causes OB with major remaining postoperative symptoms.
Analysis of the factors causing bladder irritation after TUR-P

Tae Im Kim et al. Korean J Urology 2010

160 patients,
preoperative IPSS, TRUS (shape of prostate), postoperative IPSS: 12 mos after TUR-P
Non-irritative group (irritative symptom score on the IPSS of 7 or less): n=93
Irritative group (irritative symptom score on the IPSS of 8 or greater): n=67

Retrourethral enlarged prostate was more frequently observed upon TRUS in the irritative group.
Symptoms of urinary frequency, incontinence, and urgency were significantly greater in the irritative group.
Although there was no significant difference in the preoperative QoL between the two groups, postoperative QoL was significantly worse in the irritative group.
What should we consider before surgery?
BPH with bladder dysfunction

전립선비대증으로 인한 방광출구폐색에 동반된 과민성방광은 특징적인 하부요로 증상 가운
데 하나이며, 유병률이 높은 질환이다. 따라서 전립선비대증의 올바른 치료를 위해서는
하부요로 증상을 유발하는 각각의 요인들을 정확하게 감별하는 것이 중요하다.

1. 전립선비대증 국제자문회의에 따라 수술을 필요로 하는 경우에는 필수검사는 반드시 시행
하여야 한다.
2. 방광기능이상 즉 배뇨근 불안정 및 방광수축력 저하 시 수술의 결과에 영향을 초래함으로
환자의 증상 정도를 파악하여 선택검사를 실시한다.
3. 숭 후 향후 발생할 수 있는 문제점에 대하여 사전에 주지 시킨다.
이력서
이름: 성락희
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