Practical urodynamics – What PA’s need to know

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Urodynamics – essential elements

- **Urethral catheter**
  - Fill rate
  - Catheter size
  - Intravesical pressure measurements

- **Rectal catheter or vaginal catheter**
  - Intraabdominal pressure measurements

- **EMG monitoring**
  - Patch versus needle
Pressures determined during urodynamics

\[ P_{vesical} = P_{detrusor} + P_{abdominal} \]

Only \( P_{ves} \) and \( P_{abd} \) measured, \( P_{det} \) calculated.
Urodynamics – what is learned

- **Capacity** – total capacity, first sensation
- **Compliance** – change in vol/change in pres.
- **Contractility**
  - Unstable during filling
  - BOO versus hypocontractile during voiding
- **Completeness** – ie. PVR
- **Communication** – synergy vs. dyssynergia
Urodynamics – what is normal

• First sensation – less than 100 cc
• Compliance ($\Delta v/\Delta p$) - less than 10-15 cm water
• Capacity – 300 –500 cc
• No unstable contractions during filling
  – But what about ambulatory CMG?
• Voiding
  – Pressure flow: Abrams Griffith, AG Number, Schafer method (linear passive urethral resistance – LPURR)
Which incontinent women need UDS?
(my opinion – level 1 evidence lacking)

• Mixed incontinence
• Large PVR
• H/O previous repairs
• Neurological history
• Failure to demonstrate incontinence
• Cystocele (grade 2 or larger)
• Considering surgical intervention (?)
Which men with LUTS need UDS?  
(my opinion – level 1 evidence lacking)

- History of neurological impairment
- Patients with LUTS and normal flow (>12)
- Younger men with severe LUTS
- Little endoscopic evidence of prostatic occlusion
- Symptoms are primarily irritative
- LUTS don’t improve following surgery
53 year old with incontinence
53 year old female with urgency and frequency
Diagnosis: Idiopathic detrusor overactivity
62 year old female s/p BNS with incontinence
Diagnosis: ISD
30 year old female leaks with cough
Diagnosis: Stress induced overactivity
44 y.o. female with MS
Diagnosis: Neurogenic Detrusor Overactivity
32 year old female with T5 SCI, incontinence
Diagnosis: NDO with DSD
No leak

68 year old with vaginal bulge
Diagnosis: BOO secondary to prolapse
24 year old neurologically intact female with LUTS
Diagnosis: dysfunctional voiding, dyssnergia
73 year old male with long history of LUTS
Diagnosis: Detrusor areflexia
72 year old male with nocturia
Diagnosis: Bladder outlet obstruction
52 year old female needs to stand to void following SUI procedure
Diagnosis: BOO secondary to obstructing sling
53 year old with severe urge UI following bone anchored sling
Diagnosis: Obstruction following sling; dec. capacity, DO

Unstable contraction
Voluntary sphincteric activity attempting to inhibit void
54 year old male with SCI, long term indwelling catheter
Large increase in detrusor pressure with filling

Diagnosis: Poorly compliant bladder
54 year old female with history of XRT for cervical cancer
Diagnosis: Poor compliance with NDO
43 year old nurse with incontinence, what’s your recommendation?
Is this a contraindication to MUS?
Conclusions

• Urodynamics, though not critically evaluated in multiple areas, often helpful at evaluating complex voiding dysfunction

• Clearest roles: Neurogenic bladder, LUTS refractory to meds, mixed incontinence