THE “ACONSTRACTILE” BLADDER - FACT OR FICTION?

Jacob Golomb

Department of Urology
Chaim Sheba Medical Center
Tel Hashomer
NEUROGENIC UNDERACTIVE DETRUSOR

- **Central (complete/incomplete):**
  - Spinal cord injury - trauma, vascular, disc disease, spinal stenosis
  - Spinal cord disease - myelitis, tumor, MS, spina bifida
  - Conus medullaris injury (cauda equina syndrome)
Peripheral- pelvic plexus injury:

- Trauma
- Infection (herpes zoster, Guillain-Barre’ syndrome)
- Pelvic tumor extending to nerves
- Major pelvic ablative surgery (Miles operation, low anterior resection of rectum, radical hysterectomy)

Diabetic cystopathy:

Decreased bladder sensation $\rightarrow$ Increased capacity $\rightarrow$ Impaired contractility
TREATMENT OPTIONS FOR NEUROGENIC UNDERACTIVE DETRUSOR

- Permanent catheter drainage
- Intermittent catheterization
- Sphincterotomy

Treatment of all entities aims at adequate bladder emptying and low-pressure storage
NON-NEUROGENIC UNDERACTIVE DETRUSOR

• DOIC (Detrusor Overactivity with Impaired Contractility)

• Psychogenic urinary retention

• Long-standing bladder outlet obstruction

• Aging

• Idiopathic conditions
“ICS Standard Urodynamic Test: Uroflowmetry and PVR plus transurethral cystometry and pressure-flow study, all performed in the patient’s preferred or most usual position; usually comfortably seated and or standing if physically possible.

The patient(s) may be then reported as having had an ICS standard urodynamic test (ICS-SUT)’.”.

The image contains a graph labeled "Uroflowmetry#1" with two sets of data: Qura (ml/s) and Vura (ml). The graph plots the flow rate against time and volume, showing the progression of urine output.

Below the graph, there is a table summarizing the uroflowmetry results:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max Flow Rate</td>
<td>5.0 ml/s</td>
</tr>
<tr>
<td>Average Flow Rate</td>
<td>3.8 ml/s</td>
</tr>
<tr>
<td>Voided Volume</td>
<td>231 ml</td>
</tr>
<tr>
<td>Delay Time</td>
<td>N.A. s</td>
</tr>
<tr>
<td>Voiding Time</td>
<td>61 s</td>
</tr>
<tr>
<td>Flow Time</td>
<td>81 s</td>
</tr>
<tr>
<td>Time to Max Flow</td>
<td>45 s</td>
</tr>
<tr>
<td>Residual Urine</td>
<td>N.A. ml</td>
</tr>
</tbody>
</table>
Mis-interpretation of urodynamic graphs
- D.A., 66 years old
- 6 months ago AUR
- Following weaning from indwelling catheter he voided only small volumes
- US: trabeculated bladder, prostate 40 gram, PVR 750cc
- Urodynamics:

**Chart:**
- **Urodynamics:**
  - Started SIC + Betanechol
Repeat Urodynamics

Uroflowmetry

Maximum Flow: 9 ml/s
Average Flow: 1 ml/s
Voided Volume: 24 ml
Residual Volume: -- ml

EMG Activity: EMG Coordination: EMG Electrode Type: EMG Electrode Position: Catheter Type:

Maximum Pressure: 294 cmH2O
Pressure @ Max Flow: 34 cmH2O
Opening Pressure: 45 cmH2O

Detrusor Prs. 184 cmH2O
Vesical Prs. 294 cmH2O
Abdominal Prs. 142 cmH2O
Urethral Prs. 8 cmH2O
Closure Prs. 15 cmH2O

Flow Time: 22.0 s
Voiding Time: 149.6 s
Time to Maximum Flow: 3.6 s
Opening Time: -- s
Descending Slope: -3.3

Voiding Pres.: n/a
Urethral Res.: n/a

Position: intermittent
Pattern: intermittent
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
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<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max Flow Rate</td>
<td>22.2 mL</td>
<td>Voiding Time</td>
<td>32 s</td>
</tr>
<tr>
<td>Average Flow Rate</td>
<td>12.2 mL</td>
<td>Flow Time</td>
<td>21 s</td>
</tr>
<tr>
<td>Voided Volume</td>
<td>332 mL</td>
<td>Time to Max Flow</td>
<td>38 s</td>
</tr>
<tr>
<td>Delay Time</td>
<td>N.A. s</td>
<td>Residual Urine</td>
<td>N.A. mL</td>
</tr>
</tbody>
</table>
L.Y., 64 years old
Voiding difficulties for the past 10 years
Was treated with alpha-blockers and betanechol without improvement
On SIC for the past 2 years, no spontaneous voiding
US: trabeculated bladder, prostate 30 grams
Urodynamics:

Advised to continue SIC
W.I., 56 years old
Has voiding difficulties for the past 30 years
In 2007 underwent BNI with symptomatic improvement for several years
US: normal bladder, prostate 40 grams
Cystoscopy: interpreted as normal
Urodynamic:

Was started on SIC
TURP

Post TURP
24/01/2016 - Test Date

Results
- Volume: 58 mL
- Flow Time: 56 s
- Time to Max Flow: 11 s
- Max Flow Rate: 17.1 mls
- Average Flow Rate: 9.2 mls
- Voided Volume: 521 mL

Diagram showing flow rates over time.
• Detrusor underactivity is defined by the International Continence Society (ICS) as “a contraction of reduced strength and/or duration, resulting in prolonged bladder emptying and/or failure to achieve complete bladder emptying within a normal time span”.


• However, the ICS report falls short in specifying parameters for reduced contraction strength, prolonged bladder emptying, or normal time span.

• Suggested working definition: “The underactive bladder is a symptom complex, and is usually characterised by prolonged urination time with or without a sensation of incomplete bladder emptying, usually with hesitancy, reduced sensation on filling, and a slow stream”.


Based on a consensus group meeting at the International Consultation on Incontinence–Research Society and ICS annual meetings in September and October 2014.
IN SUMMARY:

• The urodynamic diagnosis of non-neurogenic detrusor underactivity in men with LUTS needs to be based on strict criteria, which are not defined yet.

• Permanent SIC should be applied in men with LUTS and urinary retention with utmost prudence.

• In non-neurogenic men with urinary retention, the options of TURP versus permanent SIC should be discussed with the patient.