Non-Urological causes for Urinary Retention

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Causes for Urinary retention

**Functional causes**

**Subcortical**
- Multiple system atrophy

**Spinal cord**
- Conus lesion
- Spinal shock and causes for myelopathy

**Spinal roots**
- Posterior lumbar disc prolapse
- Guillain Barre Syndrome
- Inflammatory- arachnoiditis, CMV, herpes, Meningitis-retention syndrome
- Spinal dysraphism
- Tumours

**Nerves**
- Small fibre neuropathies
- Pure autonomic failure
- Pelvic surgeries

**Structural causes**

**Bladder outlet/urethra**
- Benign prostatic enlargement
- Pelvic malignancies, prostate cancer
- Congenital- urethral valves
- Strictures
- Rarer causes- stone, metastasis, urethral diverticulum, faecal impaction
- Urogenital prolapse

**Bladder**
- Bladder injury
Urinary retention: not always a urological lesion

Lesions of the conus medullaris or cauda equina

*Compressive lesions*
- Trauma
- Intervertebral disc prolapse
- Tumour
- Granuloma
- Abscess

*Non-compressive lesions*
- Vascular: infarction, ischaemia (arteriovenous malformation)
- Inflammation: myelitis, meningitis retention syndrome
- Infection: herpes simplex, varicella zoster, cytomegalovirus, Elsberg’s syndrome (viral aseptic meningitis)

*Other neurological conditions*
- Spina bifida
- Multiple system atrophy
- Conditions associated with dysautonomia, for example, pure autonomic failure, autonomic neuropathies

*Miscellaneous causes*
- Medications: for example, opiates, anticholinergics, retigabine
- Fowler’s syndrome: primary disorder of urethral sphincter relaxation in young women
- Radical pelvic surgery
- Chronic intestinal pseudo-obstruction, with additional involvement of the lower urinary tract
- Primary detrusor myogenic failure
- Cause unknown

Smith et al. 2013
Suprapontine
- Stroke
- Parkinson’s Disease
- Tumours
- Trauma
- Dementias

Spinal
- Multiple Sclerosis
- Trauma
- Tumour

Sacral / Infrasacral
- Disc prolapse
- Tumour
- Pelvic nerve injury
- Small fibre neuropathy

- Storage symptoms
- PVR: < 100mL
- Detrusor overactivity

- Storage / voiding symptoms
- PVR: usually elevated
- Detrusor overactivity, detrusor sphincter dyssynergia

- Predominantly voiding symptoms
- PVR: elevated
- Often acontractile detrusor
Reflexes: anal reflex, bulbocavernosus reflex

http://www.jaaos.org/cgi/content-nw/full/16/8/471/JA0030004FIG4
Pelvic Neurophysiology - integrity of the sacral innervation

Anal sphincter EMG
Pelvic Neurophysiology - pudendal sensory evoked potentials (SEP)
Pudendal SEP

SEP: Pudendus [Pudendus] Mean
33.0 mA

Cz-Fz
2μV/D 20ms/D

Normal

SEP: Pudendus [Pudendus] Mean
26.2 mA

Cz-Fz
2μV/D 20ms/D

Abnormal
Neuropathies affecting the small nerve fibres

- Diabetes
- Amyloidosis
- Immune mediated
- Inherited disorders-
  familial dysautonomia
Peripheral neuropathy and autonomic dysfunction
Autonomic dysfunction

Published online 2012 June 21. doi: 10.3389/fendo.2012.00071
Parkinsonism

- Parkinson’s Disease
- Parkinson Plus
- Secondary Parkinsonism
- Multiple system atrophy - MSA
Detrusor overactivity
Open bladder neck
Incomplete bladder emptying
Sphincter insufficiency
EMG: reninnervation
Abnormal electromyographic activity of the urethral sphincter, voiding dysfunction, and polycystic ovaries: A new syndrome?

Clare J Fowler, Timothy J Christmas, Christopher R Chapple, Helen Fitzmaurice Parkhouse, Roger S Kirby, Howard S Jacobs

BMJ 1988: 297: 1436-1438
• Urethral pressure profile
• Urethral sphincter volume
• Urethral sphincter EMG
Fowler’s Syndrome

- Aged 15-30
- No urgency with a volume >1000 mL
- No evidence of urological disease, neurological disease
- Straining- does not assist emptying
- Pain with CISC – particularly removing catheter
- Polycystic ovaries
- Hirsute, with acne and menstrual irregularities
- Urethral pressure profile and EMG abnormal, urethral sphincter volume may be elevated

www.fowlersyndrome.co.uk
Primary disorder of sphincter relaxation
“Pro-continence reflex”
Sacral neuromodulation (SNM) restores voiding in Fowler’s syndrome
Urethral sphincter injections of botulinum toxin

Fig. 1. Mean flow rates for women in complete retention (n=5)

Fig. 2. Mean flow rates for women with obstructed voiding (n=5)

Fig. 3. Static urethral pressure profile (cmH₂O)

Panicker et al. BJUI 2015
### Fowler’s syndrome comorbidity

**Retrospective Chart Review at Uro-Neurology Centre**

<table>
<thead>
<tr>
<th>Comorbidity</th>
<th>Fowlers (n=62)</th>
<th>Population prevalence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anxiety, depression or OCD</td>
<td>30%</td>
<td>6-30% (patients with chronic disease)</td>
</tr>
<tr>
<td>Unexplained chronic pain syndrome</td>
<td>50%</td>
<td>4%</td>
</tr>
<tr>
<td>Functional Neurological Symptoms</td>
<td>24%</td>
<td>? &lt;1%</td>
</tr>
</tbody>
</table>

*Hoeritzauer et al. Neuro-urology and Urodynamics 2015*
Analysis of causes of urinary retention in 61 women

Panicker et al. 2009
Use of Opiates (n=61)

42% of patients taking opiates- no other cause for retention
Conclusions

• Urinary retention occurring in isolation is rarely due to a neurological cause
• Fowler’s Syndrome - to be excluded in young women presenting with urinary retention
• The cause for urinary retention may not be identified even after extensive investigations
• Opiate use is common and may be an important contributing factor for urinary retention