

**Psychological co-morbidities and functional neurological disorders in idiopathic urinary retention:
International Consultation on Incontinence Research Society (ICI-RS) 2019**

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Abstract

Aims:

Chronic urinary retention occurring in young women is poorly understood and a cause may not be found in a majority of cases. Different psychological co-morbidities and functional neurological symptom disorders (FNDs) have been reported, however these have been poorly explored.

Methods: At the International Consultation on Incontinence Research Society (ICI-RS) meeting in 2019, a panel of clinicians generated a proposal to explore the relationship between psychological co-morbidities, FNDs and urinary retention in women with chronic idiopathic urinary retention.

Results: Psychological co-morbidities such as depression and anxiety, and FNDs such as leg weakness and loss of consciousness, have been reported in women with idiopathic urinary retention. Individuals react differently to physical and emotional stressors, and experimental models have demonstrated a relationship between the stress response and developing urinary retention. Trauma, particularly sexual trauma, may be a shared risk factor for developing psychological co-morbidities and urinary retention. Children with voiding postponement often suffer from psychological co-morbidities and behavioral disturbances, however there is

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2
3 no evidence to suggest that this progresses to urinary retention in
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5 adulthood. “Psychogenic urinary retention” has been described in the
6
7 urology and psychiatry literature in the past, and anecdotal cases of
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9 successful voiding following psychotherapy have been reported, though the
10
11 true pathophysiology of this entity is uncertain.
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16 **Conclusion:** Psychological and functional disorder co-morbidities are
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18 reported in women with chronic urinary retention. The nature of the
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20 association between urinary retention and functional neurological disorder
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22 co-morbidities needs to be further explored in terms of a disorder of
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24 bladder-brain interaction.
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Introduction

Chronic urinary retention occurring in young women is poorly understood. The urological assessment is useful in clinical phenotyping, to establish whether urinary retention is due to detrusor underactivity and/or bladder outlet obstruction (BOO) (1). There are several causes for chronic urinary retention, however an aetiology may not be found despite an extensive urological and neurological assessment (2) (3). In women with chronic idiopathic urinary retention, outcomes following treatment with sacral neuromodulation are mixed, however women with evidence of a functional BOO, specially with evidence for a primary disorder of external urethral sphincter relaxation by urethral pressure profilometry and/or urethral sphincter EMG (sometimes referred to as Fowler's syndrome), have shown a more favourable response to treatment (4) (5).

A number of studies have suggested the co-occurrence of different psychological and functional disorders in women with chronic idiopathic urinary retention (6) (7) (4) (8) (9) (10). From the available evidence, the commonest are affective disorders such as depression and anxiety, and functional disorders such as fibromyalgia, irritable bowel syndrome and functional neurological symptom disorders (FNDs) such as limb weakness

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3 and non-epileptic attacks (9) (10). Historically, urological and
4
5 psychological management have not been joined-up, and therefore the co-
6
7 existence of urinary retention and psychological/ functional disorder co-
8
9 morbidities has been poorly acknowledged and researched. The aim of
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11 this paper is to highlight gaps in the understanding of these co-morbidities,
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13 and to explore the nature of their relationship with urinary retention.
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22 **Methods**

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24 At the International Consultation on Incontinence Research Society (ICI-
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26 RS) held in Bristol, United Kingdom in 2019, a panel of clinicians
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28 participated in a discussion on psychological co-morbidities and FNDs
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30 reported in women with chronic idiopathic urinary retention. The panellists
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32 reviewed the different co-morbidities reported in the literature, how these
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34 were assessed, risk factors for developing these co-morbidities and
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36 outcomes following treatments. The panel also explored possible causal
37
38 associations between these co-morbidities and developing urinary
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40 retention. From the discussions at the meeting and subsequent e-mail
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42 iterations, the panel proposed priority areas for further research.
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54 **Psychological co-morbidities**

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3 The two main classification systems of mental and behavioural disorders
4 are the International Classification of Diseases ICD-11 (11) published by
5 the World Health Organisation which has a chapter on mental and
6 behavioural disorders, and the Diagnostic and Statistical Manual (DSM-5)
7 (12) published by the American Psychiatric Association. Whilst the DSM is
8 the most widely-used diagnostic system in the United States, the ICD is
9 used more widely in Europe and other regions of the world. Mental,
10 psychological and behavioural disorders reported in women with idiopathic
11 urinary retention are collectively known as “psychological co-morbidities”
12 in this paper.
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31 In recent years, a number of screening questionnaires have become
32 available to screen for different psychological co-morbidities. Many of
33 these are self-reported and therefore can be completed by the patient.
34 When assessing psychological co-morbidities in the medical setting, it is
35 common to screen mainly for affective disorders (mood disorders),
36 particularly depression and anxiety. Screening tools will usually have cut-off
37 scores, suggesting a threshold score for ‘caseness’ and also an indication
38 of severity of anxiety or depression. However, other psychological co-
39 morbidities should be screened as well. In the United Kingdom, the
40 Improving Access to Psychological Therapies (IAPT) programme has
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3 transformed treatment of psychological disorders and provides evidence
4 based treatments for people with anxiety and depression, implementing
5 National Institute of Clinical Excellence (NICE) guidelines. The brief
6 screening tools approved by IAPT for case identification are listed in Table
7 1 (13) (14) (15) (16) (17) (18) (19) (20) (21) (22) (23) (24). A broadband
8 questionnaire recommended for children is the Child Behavior Checklist
9 (25). A formal assessment of mental health difficulties includes a semi-
10 structured clinical interview carried out by a qualified mental health
11 professional, accompanied by mental health and physical examination and
12 psychological testing. Structured interview schedules have been
13 developed with the goal of improving diagnostic reliability.
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37 **Functional neurological symptom disorders**

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40 FNDs are characterised by the presence of altered voluntary motor or
41 sensory function which are incompatible with recognized neurological or
42 medical conditions. These include limb weakness, sensory disturbances,
43 nonepileptic attacks and memory impairment, which cannot be explained
44 by a neurological or other medical condition, and can cause a significant
45 degree of distress warranting medical evaluation. FNDs can overlap with
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3 other functional disorders such as fibromyalgia, chronic fatigue syndrome
4 and irritable bowel syndrome. The term “conversion disorder” is retained
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6 under DSM-5, however psychological stressors may not be readily
7
8 identifiable in all cases (26). Individuals with FNDs do not falsify physical
9
10 or psychological signs, and therefore this condition is different from
11
12 factitious disorders or malingering. Functional neurological symptom
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14 disorders have a reported incidence of 4 to 12 per 100000 population per
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16 year and a prevalence of 50 per 100000 population based on a community
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18 registry (27) (28) (29), and more prevalent in females(27).
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29 A diagnosis of FND is made based upon the history and physical
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31 examination identifying specific neurological signs (26). A screening
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33 questionnaire for FNDs has been designed, however has limited sensitivity
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35 and specificity except for diagnosing “blackouts” (30).
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43 **Prevalence of co-morbidities in women with urinary retention**

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46 A number of functional and affective symptoms are known to co-exist with
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48 LUT disorders such as OAB and Bladder Pain Syndrome (31) (32) (33), as
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50 well as other visceral disorders such as irritable bowel syndrome (34). The
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52 burden of psychological co-morbidities and functional disorders amongst
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3 women with idiopathic urinary retention is difficult to estimate, however
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6 from the evidence available prevalence of affective symptoms appears to
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9 be greater amongst OAB patients compared to urinary retention (9). The
10
11 few studies that have evaluated psychological co-morbidities in women
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13 with idiopathic urinary retention have focused only on affective disorders,
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15 and the use of different screening questionnaires precludes comparison
16
17 between studies (Table 2). These studies suggest the occurrence of
18
19 different co-morbidities, namely depression requiring hospitalisation,
20
21 “hysteria”, depression, risk of somatisation, definitive somatoform disorder
22
23 and unspecified psychiatric disorders (6) (7) (4) (8). The prevalence of
24
25 other behavioural disorders such as phobias and PTSD, which are likely
26
27 to have a relationship with lower urinary tract (LUT) functions, is unknown.
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38 FNDs are under-recognised, partly due to the absence of a sufficiently
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40 robust screening tool, however from the evidence available the prevalence
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42 appears to be greater than in the general population (Table 2) (30) (10).
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44 In a cohort of 62 women with Fowler’s syndrome, 24% had medically
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46 unexplained/“functional” symptoms which included loss of consciousness,
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48 limb weakness, sensory disturbance and memory impairment.
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51 Furthermore, almost a third (31%) had psychological co-morbidities such
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3 as anxiety/depression or obsessive compulsive symptoms (10). Nearly
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5 50% of women suffered from unexplained chronic abdomino-pelvic, back,
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7 leg or widespread pain (10) and use of opiate medications, which may
8
9 interfere with LUT functions and cause urinary retention, was found to be
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11 common (2).
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19 **Vulnerability to developing psychological co-morbidities**

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22 In pelvic disorders with a substantial functional component, such as bladder
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24 pain syndrome, chronic pelvic pain syndrome and overactive bladder
25
26 (OAB), it is hypothesised that an imbalance between resilience and
27
28 vulnerability could lead to a sensitized defence reaction and alarm
29
30 falsification in reaction to multiple cumulative threats. These threats could
31
32 either be physical, such as an infection, or emotional, such as childhood
33
34 adversity or emotional or sexual abuse (35). The balance between
35
36 vulnerability and resilience is explained by a 3-hit concept of genetic
37
38 predisposition, early-life environment and later-life environment (36).
39
40 Therefore, stress in early life can influence brain plasticity with lasting
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42 effects, and epigenetic factors in combination with genetic predisposition
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44 can influence vulnerability or resilience to stress (37). For example,
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46 personality traits might predispose to vulnerability to functional urological
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3 symptoms. “Neuroticism”, a personality trait associated with a bias towards
4 negative emotions, is associated with OAB (38). The importance of
5 vulnerability was underscored by a large population-based study where
6 urinary incontinence was significantly associated with psychological
7 problems with feelings of vulnerability (39). To conclude, there is a
8 difference to how people react to different kinds of physical and emotional
9 stressors.
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Relationship between stress and urinary retention- biological models

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27 Chronic stress response can lead to changes in visceral organs. Studies in
28 mice have shown that mild social stress led to OAB behaviour(40) while
29 prolonged exposure to stress resulted in an increase in intermicturition
30 interval and voided volume, which are indicative of bladder underactivity.
31
32 These functional changes were accompanied by increased collagen
33 deposition and bladder wall remodeling (41). Bladder dysfunction therefore
34 progresses from overactivity to underactivity as the intensity and duration of
35 social stress increases, at least in experimental animal models (42).
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37 Functional changes of voiding dysfunction may persist even after removal
38 of the stressor (43).
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3 In male rats exposed to social stress, corticotropin releasing factor (CRF)
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6 receptor expression was upregulated in the Barrington's nucleus (44). In
7
8 the hypothalamic–pituitary–adrenal (HPA) axis, CRF, a neuropeptide
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10 secreted by the paraventricular nucleus of the hypothalamus, is involved in
11
12 the stress response by stimulating the pituitary release of ACTH which has
13
14 inhibitory effects on the micturition pathway (45). In humans, urinary
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16 retention has been reported to occur following social stressors such as the
17
18 loss of a loved one or a recent divorce (46), and social stress-induced
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20 voiding dysfunction seen in animal models could provide a biological
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22 explanation for this observation.
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33 **Sexual Trauma- shared risk factor for developing psychological co-**
34 **morbidities and chronic urinary retention?**
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38 Victims of rape or sexual abuse are prone to develop post-traumatic stress
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40 disorder (PTSD) and other psychological disorders as anxiety, depression
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42 and psychosis (47) (48) (49). The symptoms can occur immediately or with
43
44 delayed onset. Additionally, occurrence of these disorders is more likely to
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46 be associated with a reduction in quality of life, increase in morbid obesity,
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48 marital instability, high use of medical care and somatic symptoms such as
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50 gastrointestinal symptoms and recurrent headache (50).
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6 Moreover, patients who were sexually abused in childhood may also
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8 present with genitourinary symptoms. Zhao et al. recently reported an
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10 association between bullying and childhood LUT symptoms. This is also
11
12 true for adults who have experienced sexual abuse, where storage
13
14 symptoms such as nocturia, urinary frequency and urgency have been
15
16 reported (51). However the prevalence of voiding difficulties amongst
17
18 victims of sexual abuse has been poorly explored and Williams et al. (52)
19
20 has reported a case of episodic urinary retention in a woman who
21
22 experienced recurrent sexual trauma. Other pelvic symptoms reported by
23
24 individuals who have experienced abuse include pelvic pain (53),
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26 dyspareunia and symptoms of prolapse (54) (55).
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38 **Voiding postponement in childhood –a precursor to developing** 39 40 **urinary retention in adults?** 41

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43 Voiding postponement (VP) is defined as a habitual postponement of
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45 micturition by using holding maneuvers (56). Typical symptoms are low
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47 micturition frequency, feeling of urgency and possibly incontinence from a
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49 full bladder. Concomitantly, children with VP often suffer from psychological
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51 co-morbidities or behavioral disturbances such as Oppositional Defiant
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3 Disorder (ODD). The prevalence of ODD is 2-5% and typical symptoms are
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5 a persistent angry and irritable mood, argumentative, defiant behavior and
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7 vindictiveness.
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14 Voiding postponement can develop as a learned behavior, leading to short-
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16 term positive effects of not needing to void in a specific social situation,
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18 however can persist despite negative consequences such as incontinence.
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20 This habit is often maintained for convenience, because of the fear of
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22 missing out (e.g. in play), due to unhygienic toilets in school, as a
23
24 component of ODD. Some children develop VP without precursors,
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26 however the sequence from OAB, to VP, due to increased activation of
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28 pelvic floor muscles, to dysfunctional voiding and finally to underactive
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30 bladder is possible. Typical signs of VP are abnormal uroflow curves
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32 (plateau, staccato, intermittent), non-relaxed pelvic floor EMG activity,
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34 increased postvoid residual urine, increased maximal voided volumes,
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36 constipation, UTI's, dysfunctional family dynamics, lower quality of life and
37
38 externalization of behavioural disorders. The mainstay of treatment of VP
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40 is timed voiding (7 times/day) with a continuous documentation using
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42 charts and positive reinforcement. Timer watches (or mobile phones) can
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3 be useful adjuncts to serve as reminders to void regularly. In refractory
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5 cases, outpatient training programs have been shown to be efficient.

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8 Voiding postponement affects 13.7% of adolescents (57) and occurs more
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10 likely if bladder control had been delayed or if daytime urinary incontinence,
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12 has been present in childhood. No studies have assessed the natural
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14 history of VP in boys and girls through adolescence to adulthood.
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22 Discussion

23 ***“Psychogenic urinary retention”- terminology from a bygone era?***

24 *The Urology literature*

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27 Neuro-urology textbooks of more than 3 decades ago defined the umbrella
28
29 term “psychogenic urinary dysfunction” (PUD) to cover not only urinary
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31 retention, but also any difficulty in voiding, paruresis and even overactive
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33 bladder (OAB) based on a diagnosis of exclusion of all urologic,
34
35 gynecologic, and neurologic causes (58) (59). Manifest psychological
36
37 features accompanying the LUT dysfunction were required to meet the
38
39 definition of PUD (59) and PUD was considered to be a psychosomatic
40
41 disorder affecting the lower urinary tract function (59). Nowadays, using
42
43 the term PUD is unhelpful as it represents a heterogeneous group of
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45 patients with functional bladder disorders covering the spectrum from OAB
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3 to bladder emptying problems. Moreover, investigations have become
4
5 better refined to recognize a biological basis for disease. For example,
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7 urethral sphincter electromyography may demonstrate a characteristic
8
9 abnormal pattern of activity in some women with urinary retention, and
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11 functional MRI studies suggest that brain responses to bladder filling are
12
13 abnormal, which correlated with maximum urethral closure pressure (60).
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22 However, few studies have evaluated the changes in psychological co-
23
24 morbidities following urological interventions for urinary retention. Only
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26 affective symptoms have been studied and in a cohort of patients
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28 undergoing SNM, significant improvements in voiding symptoms and
29
30 quality of life for idiopathic urinary retention were not accompanied with
31
32 improvements in depression/anxiety symptoms, in contrast to patient with
33
34 OAB where improvements were seen in patients with successful outcomes
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36 (9). In an Italian registry study, most of the treatment failures belonged to
37
38 a group with psychological disorders such as “hysteria”, depression and
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40 hypochondria, suggesting a worse outcome in this group (7).
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51 *The Psychiatry literature*

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3 In the past, a psychological cause for urinary retention was considered
4 acceptable, and Table 3 traces this history through earlier versions of the
5
6 DSM (61) (62). This older literature documented a variety of predisposing
7
8 and precipitating factors including major stressful life-events (63). A full
9
10 review of the history of how psychological factors were understood to play
11
12 a role in the aetiology of urinary retention is complicated by changes in
13
14 diagnostic criteria and labelling, e.g. 'psychogenic urinary retention',
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16 'hysteria', 'somatisation', conversion disorder, medically unexplained
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18 symptoms.

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20 Reports of "successful treatment" of urinary retention by psychotherapy
21
22 can in fact be found in the historical literature on 'Psychogenic urinary
23
24 retention' (Table 4) (52) (64) (65) (66) (67, 68) (69) (70) (71) (72). In most
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26 cases, a history of conflict or trauma was reported and authors claimed that
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28 psychotherapy was found to be effective in relieving urinary retention, as
29
30 well as improving other areas e.g. family and/or marital relationships.

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49 Modern day classifications in urology and psychiatry practice however fail
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51 to mention "psychogenic urinary retention" and the reasons for this are
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53 unclear. The true pathophysiology of this entity is uncertain, however the
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3 availability of advanced urological and neurological diagnostic tests in the
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5 modern day (1) have helped to uncover a biological cause for urinary
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7 retention in a substantial number of patients who, in the past, would have
8
9 been labelled to have “idiopathic urinary retention” (1) .
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17 **Could the co-occurrence of FNDs and idiopathic urinary retention**
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19 **suggest a disorder of “bladder-brain interaction”?**
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22 Despite advances in diagnostic testing, the cause for urinary retention is
23
24 found in only 40% of women (2). The search for putative organic
25
26 mechanisms continues, however the high prevalence of functional
27
28 disorders in women with idiopathic urinary retention compared to the
29
30 general population is unlikely to be co-incidental. It is tempting to speculate
31
32 that in some patients urinary retention may reflect a disorder of “bladder-
33
34 brain interaction”. For example, patients with functional motor weakness
35
36 experience an unintentional loss of somatic function manifesting as limb
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38 weakness. Could some cases of chronic idiopathic urinary retention
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40 represent a functional disorder characterized by a loss of visceral organ
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42 (LUT) functions and a central failure to initiate detrusor contractions (73)?
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49 It is noteworthy that amongst patients with functional movement disorders,
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51 particularly functional dystonias, urinary retention is the commonest LUT
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3 dysfunction reported (74). LUT functions are controlled centrally by an
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5 elaborate neuronal network distributed across different cortical regions, and
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7 bladder storage and emptying are learned behaviours (75). The
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9 ventromedial prefrontal cortex (PFC) is a key limbic structure that plays an
10
11 important role in LUT control (76), as is involved in decision making in an
12
13 emotional and social context (77). The same region is also implicated as
14
15 a relay centre between emotional regulation and complex body function
16
17 control. Functional brain imaging studies have demonstrated abnormalities
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19 in this region in patients with functional disorders, suggesting that these
20
21 patients might have an abnormal affective representation of self-relevant
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23 information encoded in this region (78) (79). Whether alterations in
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25 medial PFC activity represent a common biological abnormality for FNDs
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27 and urinary retention requires to be further explored.
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41 It is possible that in some cases, urinary retention may be a manifestation
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43 of a functional disorder. However there are a number of gaps in our
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45 understanding of chronic idiopathic urinary retention in women, and with
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47 the availability of advanced urological and neurological diagnostic tools for
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49 investigating the cause for urinary retention, as well as an enhanced
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51 understanding of behavioural disorders and FNDs, further research is
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3 needed to explore possible causal associations. Multi-centric cross-
4 sectional and longitudinal studies of women with idiopathic urinary
5 retention undergoing a comprehensive assessment of psychological and
6 functional co-morbidities are needed to answer the following inter-related
7 research questions:
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- 19 1. In some cases, can urinary retention be a manifestation of a
20 functional disorder?
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- 23 2. What is the prevalence of different psychological co-morbidities and
24 functional disorders in women with idiopathic urinary retention? Does
25 this differ from other idiopathic LUT disorders such as OAB?
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- 32 3. Amongst women with idiopathic urinary retention, are there
33 differences in patient characteristics between those with FNDs and
34 those without?
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- 41 4. What is the relationship between chronic stress response and
42 developing urinary retention in humans? Can physical or sexual
43 abuse trigger a stress response culminating in urinary retention?
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3 5. Is voiding postponement in the context of oppositional defiance
4 disorder in childhood a risk factor for developing urinary retention in
5 later life?
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12 6. In women with idiopathic urinary retention undergoing sacral
13 neuromodulation-
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18 • Do the outcomes differ in women who have psychological co-
19 morbidities and functional disorders?
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23 • Do psychological co-morbidities and functional disorders
24 improve in women with successful urological outcomes?
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29 7. In women with idiopathic urinary retention who are undergoing
30 behavioural therapies for co-existent psychological co-morbidities or
31 functional disorders, do any of these therapies ameliorate voiding
32 dysfunction?
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44 **Conclusion:** From the available evidence, psychological and functional
45 disorder co-morbidities often co-occur in women with chronic idiopathic
46 urinary retention. The nature of the association between urinary retention
47 and functional neurological disorder co-morbidities needs to be further
48 explored in terms of a disorder of bladder-brain interaction.
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For Peer Review

Table 1. Commonly-used screening tools for psychological / psychiatric morbidity in adults (adapted from The Improving Access to Psychological therapies (IAPT) Manual (13)).

Measures questionnaire	/ Domains covered	Items
PHQ-9 (14)	Depression	9 items
GAD-7 (15)	Anxiety	7 items
Social Phobia Inventory (SPIN) (16)	Social phobia	17 items
Impact of Events Scale-Revised (IES-R) (24)	PTSD	22 items
Agoraphobia-Mobility Inventory (17)	Agoraphobia	Qualitative (places avoided)

Obsessive- Compulsive Inventory (OCI) (18)	OCD	42 items
Panic Disorder Severity Scale (PDSS) (19)	Panic disorder	7 items
Patient Health Questionnaire (Physical symptoms) (PHQ-15) (20)	Physical symptoms (somatic symptoms)	15 items
Francis Irritable Bowel Scale (21)	IBS	5 items
The Chalder Fatigue Scale (22)	Chronic Fatigue Syndrome	11 items
Work & Social Adjustment Scale (WASA) (23)	Impairment in daily functioning	5 items

Table 2. Psychological co-morbidities and functional disorders reported in women with chronic idiopathic urinary retention

Study, number of patients	Co-morbidities reported
de Ridder et al. 2007 (4) n=62	Somatization n=22 Depression n=15
Everaert et al. 2000 (6) n=38	“hysteria” n=22 Depression n=6
Hoeritzauer et al. 2016 (10) n=62	<p>Psychological disorders</p> <p>Anxiety/depression n=18</p> <p>Obsessive compulsive symptoms n=3</p> <p>Functional Disorders</p> <p>-Functional neurological symptoms: loss of consciousness (n=7), limb weakness (n=6), sensory disturbances (n=6), memory impairment (n=3)</p>

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	-Unexplained chronic pain syndromes (n=31)
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For Peer Review

Table 3. “Urinary Retention” appearing in the Diagnostic and Statistical Manual (DSM)

	Somatization disorders	Conversion Disorders
DSM-III-R (61)	Symptom Groups include group of ‘Conversion or pseudoneurologic symptoms’. UR is specifically mentioned as an example of ‘conversion or pseudoneurologic symptoms’	(or hysterical neurosis, conversion type). UR not specifically mentioned.
DSM-IV-TR (62)	UR is specifically mentioned as an example of a ‘pseudoneurological symptom’ .	UR is specifically mentioned as an example of a symptom of conversion disorder

UR: urinary retention

Table 4. Historical cases of urinary retention treated with therapies targeting presumed psychological mechanisms

Reference	Summary	Treatment/ outcome
Williams and Johnson (52)	Case report (female); UR caused by 'emotional conflicts' after emotional and sexual abuse	Psychotherapy-enabled expression of anger Outcome: successful
Chapman (64)	Case study (female); childhood trauma. Patient unassertive and exploited by family	Psychotherapy-subsequent enhanced confidence and assertiveness Outcome: successful
Larson et al.(65)	Case study in series of 37 women with UR and other symptoms. Diagnosis: schizo-affective disorder.	Psychotherapy-enabled expression of hatred and rage towards therapist or other male

		<p>physicians</p> <p>Outcome:</p> <p>successful. UR</p> <p>improved although</p> <p>some other</p> <p>symptoms remained</p>
Wahl and Golden (66)	UR (5 female, 1 male); Multiple “repressed, genital sexual conflicts”	<p>Psychotherapy and psychoeducation</p> <p>Outcome: successful</p>
Cooper (67)	Case report (female)	<p>Reassurance, psychoeducation and carbachol injection followed by injections of sterile water</p> <p>Outcome: successful.</p> <p>UR improved at 4 months follow-up</p>
Barnard et al. (68)	Case report (female)	<p>Treatment: electrical stimulus to legs and programme ‘of verbal</p>

		<p>and non-verbal reinforcement' suggestive of assertiveness training</p> <p>Outcome: successful. UR cured; less dependent and anxious; more assertive</p>
Barrett (69)	9/12 patients with UR sent for psychiatric evaluation	<p>Bladder training, intermittent self-catheterisation and, when indicated, additional 'psychiatric support'.</p> <p>Outcome: 10 patients voiding normally at discharge</p>

<p>1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41</p> <p>Montague and Jones (70)</p>	<p>6 patients</p>	<p>Management and treatment included biofeedback, behaviour therapy, individual psychotherapy, group therapy, couples therapy, biofeedback-monitored relaxation training, introduction of 'imagery' during periods of deep relaxation.</p> <p>Outcome: successful</p>
<p>42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60</p> <p>Bird (71)</p>	<p>2 cases (females)</p>	<p>Analytical psychotherapy -enabled to express 'unacceptable aggressive rage'</p> <p>Outcome: successful</p>

Wheeler et al. (72)	12 women with UR with psychological history	Type of psychotherapy not reported. Outcomes: not reported
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UR: urinary retention

For Peer Review