

CASE REPORT

Efficacy of behavioural training in treating symptoms of urinary urgency and urge urinary incontinence

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Abstract

This case report investigates the efficacy of bladder and behavioural training in the treatment of the symptoms of urinary urgency and urge urinary incontinence (UUI) in a 62-year-old woman who had recently undergone a surgical procedure involving tension-free vaginal tape (TVT). She was referred for physiotherapy 3 months after undergoing the operation, which, while successfully managing her stress urinary incontinence, had resulted in troublesome *de novo* urinary urgency and UUI. The assessment of the subject, her range of problems and treatment plan are described, and the evidence to support the intervention that was undertaken is examined. This study demonstrates that early assessment and behavioural treatment can benefit a patient with symptoms of urinary urgency and UUI.

Keywords: behavioural training, bladder training, urge suppression techniques, urinary urgency, urinary urge incontinence.

Introduction

Urinary urgency is defined by the International Continence Society as 'a sudden compelling desire to pass urine, which is difficult to defer' (Abrams *et al.* 2002), and this problem can result in the involuntary loss of urine, i.e. urge urinary incontinence (UUI) (Haylen *et al.* 2010).

The aim of behavioural training is to improve bladder control by teaching patients to inhibit or interrupt detrusor contractions (Burgio 2004a). In clinical practice, components of bladder and behavioural training are incorporated into behavioural treatment programmes that are tailored to individual needs (Burgio & Goode 2008). Appropriate interventions may include:

- the introduction of scheduled voiding;
- encouraging the patient to delay voiding;
- changing the patient's response to urgency;
- teaching urge suppression strategies; and

- introducing behavioural lifestyle changes (e.g. advice regarding fluid management or weight loss).

The present case report examines the efficacy of bladder and behavioural training in treating the symptoms of urinary urgency and UUI in a woman who had recently undergone a surgical procedure involving tension-free vaginal tape (TVT).

Case report

Patient assessment

A 62-year-old woman was referred for physiotherapy 3 months after undergoing TVT surgery, which, while successfully managing her stress urinary incontinence (SUI), had resulted in troublesome *de novo* urinary urgency and UUI.

On initial assessment, the subject had a quality of life (QoL) score on the International Consultation on Incontinence Modular Questionnaire – Urinary Incontinence (ICIQ-UI) Short Form (Avery *et al.* 2004) of 14 out of 21, and reported that she felt 'unhappy' about her

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symptoms because she had had to start wearing pads again. She frequently cared for her grandchildren, who lived 3 h travelling distance from her home, and the journey to visit them was becoming increasingly problematic because of her urinary urgency and fear of leaking. Furthermore, she was extremely motivated, which has been shown to be an important prerequisite for the successful completion of a bladder training programme (Visco *et al.* 1999; Burgio 2004a; Srikrishna *et al.* 2007).

The subject suffered from diverticular disease, which caused her to pass frequent soft stools, although there was no history of faecal urgency or incontinence. She had no history of heart disease, diabetes or neurological problems, and reported an uneventful obstetric history, having given birth vaginally to three healthy babies, the heaviest being 3.629 kg (8 lb) in weight. Surgically, she had undergone a total abdominal hysterectomy for dysmenorrhoea at the age of 55 years.

Vaginal examination revealed a posterior vaginal wall defect visible at the introitus when coughing and performing the Valsalva manoeuvre. Pre-operatively, her surgeon had documented this as being a grade 2 rectocele using the Pelvic Organ Prolapse Quantification system (Bump *et al.* 1996). On questioning, the subject did not feel that the prolapse was bothersome and did not report any change in its severity following the TVT surgery. Although she was able to perform a grade 3 Modified Oxford Scale (MOS) pelvic floor muscle (PFM) contraction with a 6-s hold, she demonstrated a tendency towards holding her breath and gluteal co-contraction. She was able to perform seven fast PFM squeezes before fatigue. Her vaginal tissues appeared healthy and well hydrated, with no areas of soreness, and she had normal sensation to a light touch over the S3 and S4 dermatomes.

A bladder diary is a non-invasive and cost-effective method of diagnostic assessment. The National Institute for Health and Clinical Excellence (NICE) recommend that a 3-day bladder diary is completed as part of the initial assessment of women with urinary incontinence (NICE 2006). The present subject's diary showed a 24-h frequency of 15, with the majority of voids being less than 200 mL. Her average voided volume was 180 mL, with a maximum voided volume of 300 mL during the night. Her 24-h voided volume was 2745 mL, with a fluid intake of 2480 mL. The high fluid input may be attributed to the hot weather that occurred dur-

ing the course of the bladder diary; however, on questioning, the subject admitted that she had increased her fluid intake dramatically since being told by a friend that she needed to drink 2 L of water as well as her 'normal' fluid intake. In addition to the 2 L of water, she often drank a large glass of wine and up to three mugs of decaffeinated coffee per day. There appears to be little data to support the guidelines quoted in magazines, newspapers and medical textbooks suggesting that consuming eight, 0.227-L (8 fl oz) glasses of fluid per day (1885 mL) will assure adequate hydration (Grandjean *et al.* 2000). The general consensus is that adults should aim to drink sufficient fluid to void 1500 mL per 24-h period (Stephens 2008), and therefore, based on these figures, both of the subject's reported volumes are high. She noted high levels of urgency prior to voiding, accompanied by frequent episodes of UUI.

A list of problems was compiled from the above assessment:

- (1) symptoms of urinary urgency and UUI;
- (2) reduced QoL;
- (3) PFM weakness (MOS grade 3);
- (4) overuse of gluteal muscles and holding of breath during PFM contraction;
- (5) high fluid intake; and
- (6) posterior vaginal wall prolapse.

The main treatment goal was to improve the subject's QoL by reducing her symptoms of UUI. Two objective outcome measures were jointly agreed with her:

- (1) to reduce her ICIQ-UI Short Form score to less than 6; and
- (2) to eliminate the need to wear a pad within 12 weeks of commencing treatment.

Urinary urgency and urge urinary incontinence following tension-free vaginal tape surgery

Research suggests that *de novo* urinary urgency and UUI is a relatively common complication of TVT surgery. Studies of long-term outcomes have reported that between 13.6% and 20.3% of patients develop *de novo* urgency and UUI following TVT procedures (Abouassaly *et al.* 2004; Holgrem *et al.* 2007; Song *et al.* 2009).

In a study by Song *et al.* (2009), participants were re-interviewed 7 years after TVT surgery. These authors reported that the number of women experiencing symptoms of urinary urgency and UUI fell from 20.3% one month

after surgery to 0.7% 7 years later, suggesting that the symptoms may resolve spontaneously over time. In contrast, Holgrem *et al.* (2007) followed up 463 women who had undergone TVT surgery for genuine SUI between 1995 and 2001. The average follow-up time was 5.2 years post-surgery (range=2–8 years). Holgrem *et al.* (2007) reported that 14.5% ($n=67$) of the participants developed *de novo* urgency symptoms post-operatively and that this frequency was similar irrespective of the duration since the TVT procedure.

There is no obvious reason as to why these two studies reached such different conclusions. One explanation could be that the symptoms of urinary urgency are very subjective, and with such long follow-up times, the participants' perceptions of their symptoms may become distorted. However, given the present subject's high level of distress, it seemed appropriate that she should receive early conservative intervention in the form of physiotherapy rather than making her wait to see if the symptoms resolved spontaneously.

Treatment

The treatment plan incorporated a behavioural treatment programme consisting of education regarding the mechanism of incontinence, lifestyle advice (including fluid management), PFM training and urge suppression techniques. The subject was also given general advice and education regarding management of her prolapse. For the purpose of the present case report, only the urge suppression techniques are discussed in detail.

During the initial assessment, the subject was given a basic explanation of the anatomy of the PFMs and pelvic organs, as well as information about the function and physiology of the urinary bladder. Clinical experience suggests that patient education regarding normal and abnormal bladder function is helpful in establishing healthy bladder habits; however, there is limited research to support this (Wyman *et al.* 2009).

Mahoney *et al.* (1977) described 12 integral storage and voiding reflexes, one of which, the perineodetrusor inhibitory reflex (PDIR), can be used by the patient to suppress the feeling of urinary urgency and delay voiding. The PDIR is the means by which detrusor muscle contractility is inhibited in response to voluntary contraction of the PFMs (Mantle 2004). Therefore, it is essential that patients are taught how to identify and contract their PFMs during their initial

physiotherapy consultation. There does not appear to be any consensus on the optimal exercise protocol to treat the urgency and UII symptoms of overactive bladder (Bø & Berghmans 2000). The available literature on PFM exercises (PFMEs) is based primarily on studies of women with SUI (Burgio 2004b), which serves to emphasize the need for high-quality research in this area.

The vaginal examination has been shown to be a valuable tool when teaching PFMEs prior to the commencement of behavioural treatment for the management of UII. A randomized controlled trial (RCT) by Burgio *et al.* (2002) examined the role of biofeedback in a behavioural training programme for women with UII. The authors concluded that comprehensive verbal feedback during the initial vaginal examination, which guided the participants through a series of exercises, was just as effective in reducing episodes of UII as using anorectal pressure biofeedback during the course of the programme ($P=0.23$). The verbal feedback group reported a 69.4% [standard deviation (SD)=32.7%] reduction in episodes of incontinence compared with a 63.1% (SD=42.7%) reduction in the biofeedback group. The large SD in the biofeedback group suggests a greater spread of data relative to the average reduction in continence. This could be interpreted as showing a more negative attitude to the treatment, which may reflect the more invasive nature of this intervention. Interestingly, the control group, who underwent a self-administered behavioural treatment programme using a self-help booklet, also reported a significant reduction in episodes of UII (55.7%; SD=38.8%). However, the participants in this group were significantly less satisfied with their progress ($P=0.001$) when compared to the other two groups. This may reflect the lack of face-to-face contact and support from the therapist, which highlights the importance of effective interaction between the patient and therapist during the treatment process.

The present subject was reviewed 2 weeks after the initial assessment. She reported an immediate improvement in her symptoms of urinary urgency and UII, which she believed to be a result of a reduction in her fluid intake and a better awareness of her bladder function. She was performing her PFMEs daily and felt that she was able to hold the contraction for longer. This was confirmed by vaginal examination, which showed an increase in PFM endurance to 8 s, repeated eight times before fatigue, and a

better-quality contraction with less breath-holding and gluteal activity. During this session, the subject received instruction in a number of urge suppression techniques.

Urge suppression techniques are intended to teach patients to adopt a new response to urinary urgency (Burgio 2004a). It has been demonstrated that rushing to the toilet increases intra-abdominal pressure, which enhances the sensation of fullness, exacerbates urgency and triggers detrusor contraction (Burgio 2004b; Burgio & Goode 2008). In addition, visual cues and the conditioned response of being near to the toilet, can also trigger detrusor contraction, increasing the likelihood of incontinence (Burgio 2004b; Wyman *et al.* 2009).

The present subject was taught to stop, take relaxed breaths, contract her pelvic floor to trigger the PDIR and wait for the sensation of urgency to pass before calmly walking to the bathroom (Burgio 2004a; Burgio & Goode 2008; Wyman *et al.* 2009). Other techniques to aid deferment were explained, including perineal pressure (e.g. sitting on a rolled towel or the arm of a chair), and attempting to distract the mind by watching television or reading (Mantle 2004).

Burgio (2004b) also reviewed a number of RCTs that tested these urge suppression techniques in the treatment of urinary urgency and UI. She reported a mean reduction of incontinence ranging from 60% to 80%. The studies reviewed by the above author (Burgio *et al.* 1998; Burgio *et al.* 2002) only examined the effect of behavioural treatment on the elderly population, and therefore, the results may have been influenced by other factors such as cognitive impairment and mobility problems. Further research needs to be done to examine the efficacy of these techniques on other age groups.

Clinical experience suggests that learning this new response to urgency takes patience and determination. The present subject was encouraged to begin using these techniques in the 'safe' environment of her home in order to build up her confidence before she attempted to defer voiding in other, more challenging environments. She found that sitting on a rolled towel in the car made suppressing the feeling of urgency easier, and at her next appointment, reported that she had been able to drive to her daughter's house without stopping to use the toilet or experiencing fear of leaking. She had stopped wearing a pad for the majority of the time, only choosing to wear one when away from home for long periods.

It was evident that the subject was making excellent progress using the individualized behavioural treatment programme. However, there is a lack of robust evidence to support the use of behavioural treatment as an individual treatment modality for urinary urgency and UI. Nevertheless, there are a number of RCTs that compare the effectiveness of various behavioural treatments with drug therapy. One such study (Burgio *et al.* 2008) aimed to determine whether combining antimuscarinic drug therapy with supervised behavioural training, compared with drug therapy alone, resulted in fewer episodes of incontinence and whether these improvements were sustained after discontinuing drug therapy. The authors concluded that the most effective treatment for UI ($P < 0.001$) was a combination of drug therapy and behavioural training, with a higher proportion of participants (69% versus 58%; 95% confidence interval = -0.3 to 22.1) achieving a 70% greater reduction in incontinence at 10 weeks when compared to drug therapy alone. The present subject had tried drug therapy, but had found that the side effects were intolerable and chose conservative management to control her symptoms rather than trying a different type of medication.

Outcome

At the final review appointment, 8 weeks later, the subject reported that she felt 'totally in control' of her urgency symptoms and was 'delighted' with the outcome. She had stopped wearing a pad, and although she very occasionally leaked urine if she rushed to the toilet with a full bladder, this did not have a negative impact on her QoL. Her ICIQ-UI Short Form score had reduced to 4, and she reported a 24-h frequency of between 7 and 9, passing at least 250 mL each time, with a fluid intake of approximately 2 L. Ideally, the subject would have completed a further 3-day bladder diary to confirm this; however, she was unwilling to do so given that she was so much better symptomatically. During this final appointment, she was encouraged to continue with the PFMEs and behavioural training techniques in order to maintain the level of improvement that had already been achieved.

Conclusion

The present case report demonstrates how early assessment and behavioural treatment can benefit a patient with symptoms of urinary

urgency and UUI. The realistic treatment goal was jointly decided with appropriate and agreed outcome measures, enabling the subject to self-evaluate her improvement. The positive interaction between patient and therapist resulted in good compliance and motivation throughout the treatment process, which is an important prerequisite for success (Visco *et al.* 1999; Burgio 2004a; Srikrishna *et al.* 2007). Although the NICE (2006) guidelines recommend at least a 6-week trial of bladder training prior to commencing drug therapy, clinical experience suggests that drugs are often prescribed as a first-line treatment, with a patient only being referred for physiotherapy much later, often following invasive tests. Therefore, there is a need for high-quality research to determine the efficacy of behavioural treatment as an individual treatment modality for urinary urgency and UUI, which may encourage early referral to a specialist continence physiotherapist.

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