The management of adult urinary incontinence

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Abstract

Urinary incontinence is very common in adults, either as stress, urge or mixed urinary incontinence. A thorough assessment is necessary to identify the underlying urological abnormality and to guide appropriate management. Conservative approaches consist of treating constipation, the use of containment devices, weight loss, bladder training and pelvic floor muscle training. Medical management frequently consists of the use of antimuscarinics and more recently newer agents such as mirabegron. Surgical management is considered if previous therapies fail. Urodynamic assessment and subsequent multidisciplinary team review is commonly undertaken prior to invasive therapy. Surgical options include slings, bulking agents, botulinum toxin A, neuromodulation, artificial urinary sphincter and augmentation cystoplasty. All these options are discussed in this article, including indications, outcomes and side-effects. Areas for future development are also highlighted, with particular emphasis placed on the increasing number of males with urinary incontinence following radical prostate surgery. For all patients, a stepwise approach is recommended, beginning with the least invasive options before moving onto more complex surgery with higher risk of severe complications. Patients with refractory urinary incontinence should be considered for entry into clinical trials where novel therapies are being assessed.

Keywords Antimuscarinics; artificial urinary sphincter; incontinence; male slings; mid-urethral slings

Introduction

Adult urinary incontinence (UI) is a significant health problem in the United Kingdom. Current estimates show a bimodal distribution of prevalence of around 30% in menopausal women and 30–40% in women over 70 years of age. Approximately 50% of women have stress urinary incontinence (SUI) and defined as the involuntary leakage of urine on physical exertion/sneezing/coughing. Ten per cent of women have urge urinary incontinence (UUI), in which leakage is accompanied or preceded by urgency, and a further 40% of women have mixed incontinence. SUI is troublesome in 20% of patients.

Whilst less prevalent in men, UI increases with age and affects up to 32% of men over 80 years of age. Post-prostatectomy urinary incontinence is still common despite improving technologies and minimally invasive approaches (such as robotic-assisted procedures). Following radical prostatectomy SUI is most commonly due to sphincter insufficiency. The absence of a strict definition for post-prostatectomy incontinence makes prevalence calculations difficult, although most centres would use criteria of one or more pads per day. It is believed to affect 20–30% of men after surgery although sustained improvements in the first two years following surgery are generally reported.

Assessment and investigation

Initial evaluation of all patients with UI should take place in a specialist clinic with a continence nurse specialist present. A detailed medical history should be taken, with particular attention to the type and severity of UI, including pad usage and previous treatments. Associated voiding and bowel dysfunction should also be ascertained. UI can then be classified into stress urinary incontinence (SUI), urge urinary incontinence (UUI) or mixed urinary incontinence (MUI). A past medical history of diabetes, neurological disease and previous pelvic cancer surgery or radiotherapy should be established, along with a drug history and smoking status.

Women should be asked in detail about obstetric and gynaecology history, including pregnancies (type of delivery), menopausal status, previous hysterectomy, use of hormone-replacement therapy, oral contraceptives, dyspareunia, vaginal irritation and dryness.

Abdominal, perineal and vaginal (female, including assessment of any pelvic organ prolapse using a Sims speculum in the supine and left lateral positions) or rectal (male) examination is advised in the initial assessment of patients. If symptoms of SUI are present, a cough or Valsalva manoeuvre can be used to elicit the signs of SUI.

Further assessment of symptoms can be obtained by the use of a voiding diary, completed over three to five days to evaluate co-existing storage and voiding dysfunction (European Association of Urology Guidelines, 2015). Validated symptom and quality of life scoring systems should be used to assess the impact of UI on the patient and to monitor the response to treatment, although no one questionnaire has been shown to be superior for this purpose. In clinical practice, the ICIQ-FLUTS and ICIQ-MLUTS are often used.

Urinalysis should be performed in clinic and incontinence should be reassessed after treatment of a symptomatic urinary tract infection. A post-void residual volume should be recorded for patients with voiding symptoms, complicated UI and in those for whom invasive treatment is being considered, although routine upper tract imaging is not required. Pad tests are not routinely used, although they can be helpful in objectively confirming and quantifying incontinence.

The routine use of invasive investigations such as urodynamics is not advocated. If a female patient has symptoms of an uncomplicated and demonstrable pure SUI, preoperative urodynamics before initial treatment are not recommended as they offer no superiority over clinical assessment and has been demonstrated in a large randomized controlled trial.[1] Only 10% of women who deny UUI on history demonstrate bladder overactivity on urodynamics, giving a negative predictive value of 90%. However, urodynamic assessment is recommended in patients with mixed symptoms, in those who have previously failed

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surgery and patients with neurological disease. Video urodynamics allow better evaluation of bladder neck descent and the urethra, compared to plain urodynamics. It is recommended in patients who have previously failed surgery, those with neurological features and children.

Conservative management

Initial treatments for UI should be directed at simple measures with least harm. As such most clinicians adopt a conservative approach in the first instance. For patients with mixed symptoms, the most bothersome symptom should be managed first.

Underlying disease/cognitive impairment

Many conditions can exacerbate UI by causing polyuria, nocturia and increased abdominal pressure. They include cardiac failure, chronic kidney disease, diabetes, chronic obstructive pulmonary disease, neurological disease, sleep apnoea and obesity. Optimizing the treatment of such conditions is particularly important in the elderly, who often have multiple comorbidities.

Constipation

Although constipation is associated with lower urinary tract symptoms and UI, there is no evidence to date that treatment of constipation improves the symptoms of UI. However, in combination with assisted and timed voiding and increasing fluid intake, it is likely that both constipation and UI will improve, particularly in the institutionalized elderly.

Containment

Whilst not suitable for all patients, containment devices can be used as a short-term solution for patients awaiting surgical intervention, or as a longer-term option when patients are unsuitable for more invasive therapies. A range of devices are available, including absorbent pads, urinary catheters, external collection devices (e.g. sheath) and penile clamps for men and intravaginal devices for women.

Weight loss

Weight loss is recommended for overweight patients and several randomized controlled trials have shown an improvement in symptoms with weight loss of more than 5% in obese women.[2] Furthermore, there is evidence that weight loss in obese adults with diabetes can reduce the risk of developing UI.[3] The benefits of weight loss in men with UI has also been demonstrated, with an average weight loss of 9% associated with a reduction of 38% in UI prevalence after 1 year of intensive lifestyle intervention.[4] Other lifestyle interventions have been linked with the management of UI, despite a lack of evidence. Caffeine reduction has been shown to reduce urgency, but not UI episodes. Physical exercise alone does not improve UI but might be effective as part of an approach which includes weight loss and pelvic floor muscle training. Modifying fluid intake is not recommended, other than to ensure fluid intake is sufficient to avoid thirst. Smoking cessation is an important general health measure and advice should be given to patients in line with good medical practice, however smoking cessation has not been shown to directly improve symptoms of UI.

Bladder training

Bladder training and pelvic floor muscle training are frequently utilized in conjunction with lifestyle modifications. Bladder training involves either timed voiding (initiated by the patient) or prompted voiding (initiated by the carer) and is effective for improving UI. However, the effects are not sustained after training is stopped and nor is there any benefit in combining anticholinergic medications with bladder training over anticholinergics alone.

Pelvic floor muscle training

Pelvic floor muscle training (PFMT), first described by Kegel, has a role both as a treatment and prophylaxis for the development of UI (for example, in primips). The best effect of PFMT is seen in women with pure SUI, although there is still benefit in women with UUI and MUI, and in treatments with well-supervised and high intensity training (eight or more contractions, three times a day) for a minimum of three months. Tuition and supervision is important due to the fact that up to 50% of women cannot correctly identify their pelvic floor muscles. Good results from PMFT are also seen in the elderly population. Unfortunately, despite a 30–40% subjective cure and 50% objective cure, long-term compliance with treatment is poor and 50% of patients require surgery in the long-term. There is no evidence to support the additional use of vaginal cones, biofeedback or electrical stimulation with PFMT. With regards to prophylaxis in UI following radical prostatectomy, a Cochrane review found no benefit at 12 months follow-up of PFMT for post-prostatectomy urinary incontinence, although post-operative PFMT may help to facilitate an earlier return to continence.[5]

Posterior tibial nerve stimulation

For women with UUI who have failed antimuscarinic therapy, posterior tibial nerve stimulation can be considered as a method to improve, but not cure, UUI. Electrical stimulation of the posterior tibial nerve (PTNS) is via a fine needle inserted just about the medial aspect of the ankle, for 30 minutes per treatment per week over 12 weeks, and this delivers electrical stimulation to the sacral micturition centre via the S2–S4 nerves.

Medical management

After a trial of conservative measures, the next step in the management of UI involves the use of medications, usually in a step-wise manner.

Topical oestrogen

In post-menopausal women with atrophic vaginitis, topical (not systemic) oestrogen has been shown to significantly improve SUI and UUI. Compared to placebo, topical oestrogen resulted in a 50% improvement in SUI episodes. Similarly, for patients with UUI after 1 year of oestrogen therapy, incontinence improved by 50%. Typical dosing regimens consist of a pessary once daily for 2 weeks then twice weekly etc. in a reducing schedule using a preparation such as Vagifem® estradiol 10 mcg. Side effects are generally mild and include vaginal burn and local itching. Contraindications include previous breast or endometrial cancer, previous venous thromboembolism, acute liver disease and undiagnosed genital bleeding.

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