

Management of urinary incontinence in women

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SUMMARY. *Control of micturition is a complex physiological and anatomical process which often fails in women. The sequelae of urinary incontinence in women range from inconvenience to social and psychological stigmatization. Surprisingly, many women are tolerant of often quite severe sequelae, despite a range of management techniques that exist to alleviate or cure incontinence. Some of the more successful techniques are well suited to general practice management and can be carried out by the patient under the supervision of her doctor, district nurse, practice nurse or midwife. This paper reviews the physiology of micturition, stress urinary incontinence and incontinence caused by detrusor instability, and the management techniques available to alleviate or cure the problem.*

Keywords: *urinary incontinence; management of disease; interprofessional relations; women's health.*

Normal control of micturition

THE control of micturition involves complex neural control to coordinate the bladder and urethra. The adult human bladder is under sympathetic and parasympathetic control and does not contract except under voluntary control in order to micturate. The bladder can hold 250–300 ml of urine without any increase in resting pressure which remains constant at 10 mmH₂O.¹ The urethra remains closed by the combined effects of its smooth and striated muscle. However, as between one in four and one in two women leaks urine on occasion the normal control of micturition is far from perfect.¹

The bladder is a complicated muscular organ which is divided into the detrusor, trigone and bladder neck.¹ The detrusor is situated posteriorly just above the bladder neck and appears to contract as a single syncytial mass. The detrusor contains a significant amount of acetylcholinesterase which is part of the rationale for the drug treatment discussed below.

Incontinence

Urinary incontinence is a condition in which there is inappropriate leakage of urine. A recent poll conducted for the British Association of Continence Care estimated that up to 10 million people in the United Kingdom suffer from urinary incontinence, which is much commoner among women.² The reported prevalence of incontinence depends on the population selected, the sex and age group studied and the definition of incontinence used. Prevalences of over 50% have been reported among American female nursing students³ and among young female American university students.⁴ One general practice based study found an overall prevalence among women of 41%, with lower rates in nulliparous and in postmenopausal women.⁵ Six per cent of the sample required permanent sanitary protection against leakage. Between 22%⁶ and 35%⁷ of women worry about their incontinence, and fewer than one third of all regularly incontinent patients discuss their problem with either their general practitioner or district nurse.⁸ It has also been found that 45% of women attending a urodynamic clinic had seen their general practitioner

within the first year of their symptoms becoming troublesome, 35% waited for between one and five years and 20% delayed seeking their general practitioner's advice for more than five years after the symptoms became troublesome.⁹

In a urodynamic clinic, patients attend with two main types of incontinence, stress urinary incontinence and incontinence caused by detrusor instability; these affect 90% of the population at some time in their lives.¹⁰ Some authors refer to mixed incontinence, as detrusor instability and stress urinary incontinence often coexist.¹¹

Stress urinary incontinence

Stress urinary incontinence, which used to be called genuine stress incontinence, occurs when bladder pressure exceeds maximum urethral closure pressure in the absence of detrusor muscle activity. No single cause has been identified but it is common in multiparous women as vaginal delivery can result in a decrease of urethral closure function. Stress urinary incontinence occurs on coughing, laughing and jogging and is accompanied by repeated losses of small amounts of urine. This can be replicated in the clinical situation by asking the patient to cough.

There is a lack of any consistent association between vaginal prolapse and stress urinary incontinence. Stress urinary incontinence was present in 57% of postmenopausal women in a general practice study, and postmenopausal changes have been observed at cystoscopy.¹² Oestrogen deficiency has also been noted in the urethral and vaginal cells.¹² Sadly, vaginal surgery to cure prolapse may leave the patient suffering from stress urinary incontinence even when this was absent before the operation. Stress urinary incontinence may be related to the postoperative fibrosis affecting the bladder neck. Women with stress incontinence and/or prolapse have increased denervation of the pelvic floor, and indeed occult pelvic nerve damage in women with stress incontinence has been demonstrated.¹³ There is no evidence to suggest that obesity is an aetiological factor in stress urinary incontinence, although surgeons are reluctant to operate on obese women.

Conservative management of stress urinary incontinence

It has been shown that the majority of patients who attend for treatment show improvements with conservative management. Conservative methods centre around physiotherapy,¹⁴ electrical stimulation,^{15,16} cones,^{17,18} and drug treatment.¹⁹

Physiotherapy. The aim of physiotherapy is to teach patients the use of pelvic floor muscles to enable better urinary control, a method first described in 1948.¹⁴ It is recommended that women should perform contractions every 30 minutes, holding the contraction for three seconds before relaxing the levator muscles.²⁰ However, Jolleys reported that a significantly higher proportion of her sample who had done daily postnatal pelvic floor exercises experienced leakage than those who did not. There may have been self selection in this study, in that women with pre-existing incontinence may have been more diligent than those who did not have any problems.⁵ Physiotherapists tend to use pelvic floor exercises with patients in a haphazard manner²¹ and Cardozo, a gynaecologist, feels that such exercises are only of real use in mild stress incontinence.¹¹ However, Lagro-Janssen and colleagues, using a control group, reported persistent improvement in a group of patients with mild, moderate and severe stress urinary incontinence doing pelvic floor exercises.²² Lagro-Janssen's group attach great importance to the use of the correct pelvic

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floor muscles in treatment.²² Compliance with exercises can be poor even in a research situation, with 39% of patients judged to be reasonable, poor or non-compliant in carrying out the therapy.²²

Electrical stimulation. Various inflatable vaginal electrodes have been designed in an attempt to cause pelvic floor contraction by direct stimulation of the muscles or by excitement of the pudendal nerves.¹⁵ These methods are more popular in the rest of Europe than in the UK and successes are variable and probably dependent on the selection of the right patient.¹⁶ The advice of a urologist or sympathetic gynaecologist is of great importance for general practitioner and patient.

Cones. A set of cone-shaped weights, each about 5 cm long and weighing 20.0 g, 32.5 g and 45.0 g, respectively have become available.¹⁷ The patient inserts a cone into her vagina and has to contract her pelvic floor muscles to keep it in place. The patient progresses from the lightest to the heaviest; after using the cones twice daily for a period of 15 minutes, 70% of patients have shown improvement or cure after between one and three months.¹⁸ It takes three times as long to teach women pelvic floor exercises as to teach effective use of weighted vaginal cones.²³ However, Stanton has noted that use of cones has to be continued for life if improvement or cure is to be maintained.²⁴

Drug treatment. Alpha-adrenergic agents are used in the treatment of stress urinary incontinence because the bladder neck and urethra have alpha receptors which, when stimulated, cause contraction. The drugs seem to be effective in patients who can tolerate them but side effects are high and long term treatment is needed to maintain improvement.²⁵

Oestrogen has been used for many years both orally and topically. Improvement has been noted as regards frequency, urgency and urge incontinence but there has been no improvement in stress incontinence following the use of oral oestrogen.²⁶ Vaginal oestrogen cream has been found to improve stress incontinence among menopausal women²⁷ but treatment seems necessary for an indefinite period to maintain improvement. A combination of oestrogen and the alpha-adrenergic agonist phenylpropranolamine has been tried with success in stress urinary incontinence.²⁸

Surgical management of stress urinary incontinence

That there are over 100 different operative procedures for stress urinary incontinence is evidence of the desperation of surgeons in the face of a difficult condition. Many of the operations are modifications of previous procedures and may be grouped together.²⁰

Bladder buttress. In this procedure, vaginal flaps are dissected and the pubo-cervical fascia is re-sited under the bladder base and proximal urethra causing a buttressing effect. The operation is surgically simple and has a low complication rate but has a lower success rate than some other procedures. Surgeons use it as a first-line operation for mild to moderate cystourethrocele.

Colposuspension. This involves tying para-vaginal tissue to ligaments on the pelvic side walls. This operation is effective in elevating cystoceles. It can also be combined with the other procedures such as abdominal hysterectomy, although there is a small risk of haemorrhage and bladder trauma. Because of the postoperative angle of the vagina it is hardly surprising that dyspareunia can occur in one woman in 20 but it can be helped by advice. Detrusor instability can arise after this operation as can voiding dysfunction, hence the need for pre-operative counselling of patients.

Bladder sling. This operation was one of the first to be described in the surgical textbooks and it has been widely used in modified forms ever since. A sling is created from the patient's own rectus fascia or from synthetic substances such as gauze or silastic. The material used for the sling is sutured to the rectus sheath or the pelvic side wall and is sutured underneath to the bladder neck or the proximal urethra. This is a complicated procedure as it involves suprapubic and vaginal surgery. It is popular where the other two operations have failed and relies on the skill of the surgeon in judging the tension of the sling.

Stamey procedure. Stamey, an American urologist, has described a procedure where a piece of nylon is placed suprapubically on either side of the bladder neck.²⁰ The pieces are then tied together so that it produces an elevation of the bladder neck which is monitored cystoscopically during the operation. The procedure is simple but carries with it the risks of postoperative trauma and pain to the bladder. The percentage of patients remaining continent following the Stamey procedure has ranged from 75% to 91% in follow-up surveys.²⁹

Surgery in stress urinary incontinence has a definite role. The first operation is the most important as it represents the surgeon's best chance to get it right. Subsequent operations are more complicated and, while stress incontinence may be cured, there is always the risk of voiding dysfunctions, pain or detrusor instability.

Detrusor instability

Ten per cent of the adult population would appear to have some degree of impairment of voluntary control of the bladder.¹¹ Such people probably suffer from an unstable bladder of which detrusor instability is the commonest cause.³⁰ The investigation of detrusor instability involves a midstream specimen of urine to exclude infection, cystometry and cystoscopy. It is important to distinguish detrusor instability from stress urinary incontinence as the basis of management for detrusor instability is medical and behavioural while in stress urinary incontinence surgery has a role. Commonly used tests to assess detrusor function and pressures are voiding and filling cystometry. In the normal bladder, detrusor pressure will not vary during the bladder's filling phase. The unstable bladder, however, contracts spontaneously during the filling phase, leading to rises and falls in detrusor pressure. Characteristically the patient has an urgent desire to void urine which is accompanied by loss of urine before she reaches the toilet. Detrusor instability increases with age and is the commonest cause of urinary incontinence in elderly women.³¹

There is a strong association between both neurotic personality traits and anxiety and both detrusor instability and stress urinary incontinence.³² However, it is difficult to determine which is cause and which is effect. Previous bladder surgery is an important contributory factor in detrusor instability.

The commonest symptoms of detrusor instability are diurnal and nocturnal frequency, urgency and urge incontinence. Stress and urge incontinence coexist in 20% of patients.³³ Leaking of urine at orgasm is also associated with detrusor instability. However, the symptoms are inconsistent and patients may have symptoms during particular parts of the day or symptoms associated with mental stress or work.³¹

Conservative management of detrusor instability

Drugs. Treatment of detrusor instability is with anticholinergic or musculotrophic agents, such as oxybutynin.³⁴ The side effects of oxybutynin are dose related, 3 mg twice a day causing fewer problems than the usual dose of 5 mg twice a day.³⁵ Fifty four per cent of patients showed improvement with tricyclic antidepressants in combination with flavoxate, although side effects

were common.³⁶ Calcium channel blockers have also been tried, an improvement being shown with treatment with terodiline 37.5 mg daily.³⁷ While this drug has now been withdrawn, other calcium channel blockers are being developed for use in incontinence. Some doctors try oestrogen creams on an empirical basis for menopausal patients.¹¹

Behavioural techniques. Bladder drill is the favourite behavioural therapy.³⁸ This involves the retraining of the bladder and trying to separate micturition from the anticipation of urgency and incontinence. Patients are encouraged to go to the toilet at set times, at increasing intervals. This allows the bladder to expand and helps patients understand the underlying need to control their micturition. The best results are obtained during treatment, patients tending to relapse once the support and enthusiasm of the medical and nursing team is removed.

Biofeedback,³⁹ hypnotherapy⁴⁰ and acupuncture⁴¹ have all been tried, with a high relapse rate once treatment was discontinued.

Surgical management of detrusor instability

Cystoscopy and urethral dilation. This procedure has been reported to improve the detrusor instability in one patient in four when used in conjunction with bladder drill. However, there may have been a placebo effect with either the cystoscopy or the bladder drill.⁴² Prolonged hydrostatic bladder distension at pressures of around 100 mmHg for two hours has been tried with good effect.⁴³ This produces ischaemic nerve damage and presumably reduces the responsiveness of the bladder to rogue nerve stimulation.

Clam augmentation ileocystoplasty. This is the most dramatic treatment for detrusor instability.⁴⁴ The bladder is divided coronally so that it looks like a clam. All cystoplasties produce mucus which can be kept less viscous by high fluid intake. The reduction in bladder pressure may mean that patients have difficulty voiding and need to use hand pressure on the abdomen or even catheterize themselves. The fact that some surgeons are willing to perform such an operation on patients with detrusor instability, and some patients agree to it, is an indication of the severe problems caused by this condition.

Sanitary protection

Much of the management of urinary incontinence in women, both stress urinary incontinence and incontinence caused by detrusor instability, revolves around simple techniques that can be performed by the patient with the help of a sympathetic doctor, district nurse or continence adviser. Some patients need advice on pants and pads while awaiting the benefits of pelvic floor exercises or referral. District nurses are adept at giving advice on the best and most suitable products available. In some regions continence advisers are able to advise on more specialized cases.

Conclusion

The management of incontinence is a suitable problem for a shared care plan between the primary health care team and local gynaecologists and urologists as more precise diagnosis involves hospital based tests and treatment. However, we have to raise the expectations of women who consider incontinence to be an inevitable occurrence after childbirth or with increasing age. Low expectations in the face of a wide variety of management techniques are unnecessary. Indeed, such low expectations and how to raise them are themselves a worthy subject for research among our patients suffering incontinence.

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Useful addresses

British Association of Continence Care, Prism International, Pinewood Studios, Iver Heath, Buckinghamshire SLO 0NH. Helpline: 0753-656716. Colgate Medical Limited (suppliers of vaginal cones), 1 Fairacres Estate, Dedworth Road, Windsor, Berkshire SL4 4LE.

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