

Urinary incontinence

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Recommendations

Frequency-volume charts and bladder diaries should be used when evaluating women with urinary incontinence. Uroflowmetry and an evaluation of post-void residual (urinary volume) are recommended before any form of surgical treatment.

If possible, non-surgical treatments (weight reduction, cessation of smoking and pelvic floor muscle training) should be recommended and attempted before any surgical treatment of stress or mixed urinary incontinence.

In the case of over active bladder, conservative measures such as bladder training and drug treatment should always be tried before any invasive treatment (Botox or sacral nerve stimulation/SNS).

Review of the literature

Up to date, pub-med, National Institute for Health and Clinical Excellence (NICE), Cochrane Database, International Consultation on Incontinence (ICI) 5th Edition, Royal College of Obstetricians & Gynaecologists

ICD-10

N 39.3 Stress urinary incontinence
N 39.4 Urgency urinary incontinence
N 39.8 Mixed urinary incontinence

Surgical codes

LEG 10 Retropubic midurethral sling (MUS), i.e. tension-free vaginal tape (TVT, TVA etc.)
LEG 13 Transobturator midurethral sling (MUS), i.e. TVT-O, TOT, Ajust etc.
LWW 96 Sling mobilization after MUS due to urinary retention
KDH 96 Sling transection after MUS due to urinary retention
LEW 96 Reoperation after MUS due to mesh erosion or expulsion
KDV 22 Transurethral submucosal injection (Bulkamid)
KCW 98 Intravesical Botox injections

Definitions¹

Urinary incontinence

Complaint of involuntary loss of urine

Stress urinary incontinence

Complaint of involuntary loss of urine on effort or physical exertion (e.g. sporting activities), or on sneezing or coughing

Urodynamic stress urinary incontinence

Involuntary leakage of urine during filling cystometry, associated with increased intra-abdominal pressure

Urgency

A sudden, compelling desire to pass urine which is difficult to defer

Urgency urinary incontinence

Complaint of involuntary loss of urine associated with urgency

Mixed urinary incontinence

Complaint of involuntary loss of urine associated with urgency and also with effort or physical exertion or on sneezing or coughing.

Occult urinary incontinence

Stress urinary incontinence only observed after the reduction of a co-existent prolapse

Frequency

A complaint that micturition occurs more frequently during waking hours than previously deemed normal by the woman

Nocturia

Complaint of interruption of sleep one or more times because of the need to micturate

Over active bladder syndrome (OAB)

A symptom complex consisting of urinary urgency, usually accompanied by frequency and nocturia, with or without urgency urinary incontinence, in the absence of urinary tract infection or other obvious pathology

Nocturnal enuresis

Complaint of involuntary urinary loss of urine which occurs during sleep

Low maximum urethral closure pressure (MUCP)

When the maximum difference between the urethral pressure and the intravesical pressure is ≤ 20 cm H₂O

Post-void residual (urine volume)

The volume of urine left in the bladder at the completion of micturition

Detrusor sphincter dyssynergia (DSD)

The incoordination between detrusor and sphincter during voiding due to a neurological abnormality (i.e. detrusor contraction synchronous with contraction of the urethral and/or periurethral striated muscles)

Extra urethral incontinence

Leakage of urine through channels other than the urethral meatus, e.g., fistula

Prevalence

Urinary leakage affects a large proportion of the female population. In a epidemiologic study using HUNT-data from North- and South Trøndelag (the Norwegian EPICONT study) 1 in 4 women reported having had some form of involuntary urinary leakage.² Of the women reporting urinary incontinence, 50 % had stress urinary incontinence (SUI), 36 % mixed urinary incontinence (MUI) and 11 % urgency urinary incontinence (UUI). Both prevalence and the severity of urinary incontinence was shown to increase with increasing age.²

Pathogenesis

Stress urinary incontinence (SUI)

The cause is believed to be multifactorial; weakening support structures attaching the anterior vaginal and the urethra to the pelvic wall (including damage to the pubo-urethral ligament and/or the pubocervical fascia) and/or injury to the pudendal nerve innervating the muscles of the pelvic floor and the urethra.³

Urgency urinary incontinence (UUS)

The pathogenesis is unknown, but is suggested to involve an increased amount of afferent signalling from the bladder in combination with reduced capacity in the central nervous system to process the increased nervous output from the bladder. One proposed explanation is that of an involuntary micturition reflex initiated by a relaxation of the urethral sphincter followed by a detrusor contraction. Urgency urinary incontinence might be the result of imbalance in the signalling to the bladder in which the parasympatic nerve output might dominate over the sympatic nervous output in the regulation of the bladder function. The involuntary micturition reflex is for most patients with UUS triggered by increased bladder filling, but can in some instances be triggered by increased abdominal pressure (i.e. coughing, standing up from the supine position) and might therefor easily be misjudged as stress urinary incontinence. The latter has been demonstrated in 5 % of women with mixed urinary incontinence⁴.

Localised causes in the bladder are urinary tract infections (UTIs), bladdertumors, bladderstones or idiopathic age-related degenerative processes (idiopathic OAB). Causes in the central nervous system: neurologic disease or injury such as spinal cord injury, Parkinson's disease, dementia and cerebrovascular disease. Multiple sclerosis can cause both urgency urinary incontinence and detrusor sphincter dyssynergia.

Mixed urinary incontinence (MUI)

The pathogenesis comprises elements of both stress urinary incontinence and urgency urinary incontinence

Risk factors

Stress urinary incontinence

Increasing age², obesity⁵, increasing parity^{6;7}, vaginal delivery^{7;8}, pregnancy⁹, hysterectomy¹⁰, genetic factors¹¹

Mixed urinary incontinence

Increasing age², obesity⁵, increasing parity⁶, genetic factors^{11;12}

Urgency urinary incontinence

Increasing age ², obesity ⁵, genetic factors ¹²

Diagnose

General

Patient history – the use of validated questionnaires can be helpful. NKIR questionnaire (former NUGG questionnaire) ¹³, Sandvik's Severity Index ¹⁴ and ICIQ-Urinary Incontinence Form ¹⁵ is all validated in Norwegian.

Frequency-volume chart

24 hour bladder diary ¹⁶

A full gynaecologic examination including a vaginal ultrasound in order to exclude underlying abdominal or pelvic pathology

Urinary dip-stick

When the patient history suggests stress urinary incontinence

A stress test in the semi-lithotomy position visualises the urethra enabling evaluation of any hypermobility and whether or not the leakage occurs synchronous with coughing.

Caution: If the leakage continuous after cessation of coughing (not synchronous) a detrusor contraction must be suspected. A detrusor contraction elicited by coughing occurs in approximately 5 % of women complaining of mixed urinary incontinence. ⁴ If the stress-test in the semi-lithotomy position is negative it should be repeated in the upright position or with the use of a trampoline. ¹⁷

The standardised and reproducible cough-jump pad stress-test recommended before surgery: In the standing position the women coughes three times as forcefully as possible and performs 20 jumping jacks (jumping on the spot, abducting and adducting the legs) with the bladder filled with 300 ml saline. A pad is worn and weighed before and after the test. ^{17;18}

The ability to contract the pelvic floor muscles as well as the contractile force should be evaluated as well as perineal sensitivity and the ano-cutaneous reflex.

Before any surgery

Uroflowmetry with minimum 200 ml voided volume. ¹⁹

Post-void residual volume measured by catheter or ultrasound ("bladder scan").

Measurement of post-void urinary residual volume has a low reproducibility and should therefore be repeated. ²⁰ Caution should be exercised before surgery if post-void residuals repeatedly are > 100 ml

(Pressure-profile of the urethra)

When the patient history suggests urgency urinary incontinence

Exclude underlying neurologic disease (perineal sensitivity, ano-cutaneous reflex, uroflowmetry and post-void residuals)

Exclude urinary tract infections (urine dip-stick or urine culture)

Exclude haematuria

If no haematuria or suspicion of neurologic disease, medical treatment for suspected idiopathic overactive bladder (OAB) may be initiated without further investigations

In the case of haematuria: Cystoscopy and urography

If no response to medical treatment: Cystoscopy and filling cystometry

If there is inconsistency between patient history and findings at the standardised filling cystometry, an ambulatory cysto-urethrometry with a leakage detector might be considered.

When patient history suggests mixed urinary incontinence

Evaluate the patient as having both stress- and urgency urinary incontinence, but focus on the dominating component.

Caution: Women with overactive bladder might also leak during coughing (detrusor contractions elicited by coughing). This leakage continuous after cessation of coughing.⁴

Treatment

General

Equipment for urinary incontinence (i.e. catheters, pads) is covered/reimbursed by the use of "blåresept" §5.1

Weight reductions in overweight women²¹

Topical oestrogen treatment if vaginal atrophy²²

Stress urinary incontinence

Pelvic floor muscle training led by competent physiotherapist²³ A list of physiotherapist that have been trained to treat women with urinary incontinence is found online at

www.quintet.no

Incontinence pessaries can be used during physical exercise like Contrelle Acitvgard^R

Retropubic tension-free vaginal tape (TVT) has demonstrated excellent long-term results.^{24;25}

Obturator slings (TOT, TVT-O) has promising 5-7 years results.²⁶ However, women with a low-pressure urethra has been shown to benefit more from a retropubic TVT than a TVT-O or TOT procedure.²⁷

The most common postoperative complications after both TVT and obturator slings are voiding dysfunctions and de novo or worsened symptoms of overactive bladder (OAB). All women should therefore be offered minimum one postoperative follow-up consultation 6 – 12 months after surgery to evaluate the subjective and objective result and any potential unwanted effects of the surgery (i.e. voiding difficulties or de novo/worsened OAB). This follow-up evaluation should include the standardised cough-jump pad stress test, uroflowmetry and a post-void residual measurement.

Voiding difficulties after incontinence surgery may be transient and can in some instances be handled by teaching the woman intermittent self-catheterisation. If no improvement transecting/cutting the sling should be considered. There is to-day no recommendation/consensus in published literature whether or not there exists an optimal time after surgery for cutting the sling. The sling may be transected/cut in the midline or lateral (uni- or bilateral), but cutting laterally lowers the risk of urethral injury.

By cutting the sling the woman runs the risk of having recurrence of her incontinence. It is therefore important to inform the woman of the possibility of recurrence before cutting the sling. As an alternative to intermittent catheterisation the sling might be loosened by taking the woman back to the operating theatre, opening the vaginal wound and pull on the sling. This is easiest performed in the first postoperative days, but has been reported performed up to 3 week after surgery.²⁸

De novo or worsened OAB symptoms after sling surgery might be caused by obstruction and therefore transecting/cutting might be indicated in some patients. To which extent this alleviate the symptoms is poorly documented in published literature.

Transurethral submucosal injection of Bulkamid is used as treatment in patients that is regarded as having a high risk for complications with sling surgery or in cases where sling surgery has not been successful.²⁹ However, this treatment has so far proven to be less successful than mid-urethral slings.

Manifest stress urinary incontinence and anterior wall prolapse

If both conditions is symptomatic and in need of surgical treatment, the most used treatment regimen in Scandinavia is a two-step procedure. In a two-step procedure, it is important to do the prolapse surgery first as it has been documented that up to 1/3 of the patients are also cured of their incontinence by the prolapse surgery alone and therefore in no need for further incontinence surgery.³⁰

Occult urinary incontinence and anterior wall prolapse

Occult urinary incontinence (stress urinary incontinence on prolapse reduction) as a predictive test for postoperative stress urinary incontinence (POSUI) after prolapse surgery has too low predictive value/diagnostic accuracy to be of use selecting candidates that might benefit from prophylactic sling surgery at the time of prolapse surgery.³¹

Urgency urinary incontinence

Bladder training³²

Medical treatment^{33;34}

- Antimuscarinics (tolterodin, fesoterodin, oxybutynin, solifenacin, darifenacin) is recommended taken in the afternoon to minimise dry mouth (most common side effect) leading to the patient discontinuing the treatment. The dry mouth will then occur during sleep and for most patients be tolerable. Other common side effects are constipation, urinary retention, blurred vision, drowsiness and reduced cognitive function in elderly patients.
- Selective β_3 adrenoreceptor agonist (mirabegron) seems to be more tolerable with fewer side effects. However, it is still not clear whether its efficacy is equal or superior to the antimuscarinic drugs.

Botox injections in the bladder wall³⁵

Neuromodulation treatment; sacral nerve stimulation (SNS), pudendal nerve stimulation and transcutaneous electrical nerve stimulation – TENS (i.e. tibial nerve stimulation)³⁶

Bladder augmentation/Enterocystoplasty (urology)

Urinary diversion surgery (urology)

Mixed urinary incontinence

Treatment is equal to treatment for stress- and urgency urinary incontinence focusing on the most domination component.

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