The Evaluation of Stress Incontinence Prior to Primary Surgery

These guidelines have been prepared by the Urogynaecology Committee and were approved by the Executive and Council of the Society of Obstetricians and Gynaecologists of Canada.

Abstract
Objective: To provide clinical guidelines for the evaluation of women with stress urinary incontinence prior to primary anti-incontinence surgery.
Options: The modalities of evaluation range from basic pelvic examination through to the use of adjuncts including ultrasound and urodynamic testing.
Outcomes: These guidelines provide a comprehensive approach to the preoperative evaluation of urinary incontinence to ensure that excessive evaluation is avoided without sacrificing diagnostic accuracy.
Evidence: Published opinions of experts, supplemented by evidence from clinical trials, where appropriate.
Values: The quality of the evidence is rated using the criteria described by the Canadian Task Force on the Periodic Health Examination.
Benefits, harms, and costs: Comprehensive evaluation of women considering surgery to treat urinary incontinence is essential to rule out causes of incontinence that may not be amenable to surgical treatment. Simplifying the evaluation minimizes the discomfort and embarrassment potentially experienced by women.
Recommendations:
1. Thorough evaluation of each woman is essential to determine the underlying etiology of the urinary incontinence and to guide management. (II-3B)
2. Preoperative pelvic examination should be performed to identify pelvic masses that may provoke lower urinary tract symptoms (e.g., a large fibroid uterus impinging on the bladder), concomitant pelvic organ prolapse, and to rule out latent stress incontinence. All of these findings may necessitate a modification of the surgical approach. (III-C)
3. Hypermobility of the urethra should be confirmed preoperatively, as women with fixed, well-supported bladder necks are less likely to experience a cure following standard anti-incontinence procedures. (II-2B)
4. Stress incontinence should be objectively demonstrated prior to anti-incontinence surgery. (III-B)
5. The volume of postvoid residual urine should be measured prior to anti-incontinence surgery. Elevated postvoid residual volumes are uncommon and should signal the need for further evaluation of the voiding mechanism. (III-C)
6. Urinary tract infection should be identified and treated prior to initiating further investigation or therapeutic intervention for urinary incontinence. (II-2B)
7. In women presenting with pure stress incontinence that can be objectively demonstrated during examination, preoperative urodynamic testing is not necessary (II-3B). For women with other lower urinary tract symptoms and/or mixed urinary incontinence, the clinician’s judgment must guide the use of preoperative urodynamic testing (II-3B).
Validation: These guidelines have been approved by the Urogynaecology Committee and the Executive and Council of the Society of Obstetricians and Gynaecologists of Canada.


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Key Words
Stress incontinence, evaluation, surgery
INTRODUCTION

These guidelines have been developed for the preoperative evaluation of uncomplicated stress urinary incontinence, and therefore apply only to women presenting with either pure stress incontinence or mixed incontinence who have not previously undergone anti-incontinence or pelvic organ prolapse surgery.

For purposes of clarity in the following discussion, the following terms are defined.

Stress urinary incontinence is the complaint of involuntary leakage on effort or exertion, or on sneezing or coughing.1

Pure stress urinary incontinence is used to describe the symptom of isolated stress incontinence, without urge incontinence or other symptoms of bladder or voiding dysfunction.1

Urge urinary incontinence is the complaint of involuntary leakage accompanied by or immediately preceded by urgency.1

Pure urge urinary incontinence is used to describe the symptom of isolated urge incontinence without stress incontinence or other symptoms of bladder or voiding dysfunction.1

Mixed urinary incontinence is the complaint of involuntary leakage associated with urgency and also with exertion, effort, sneezing, and coughing.1

Latent stress urinary incontinence is stress incontinence that occurs (or is unmasked) only when pelvic organ prolapse is reduced (during physical examination or after pessary insertion).2

It should be carefully noted that all the definitions above describe symptoms alone.

The quality of the evidence of the recommendations within this guideline have been ranked using the criteria described by the Canadian Task Force on the Periodic Health Examination (Table 1).3

BASIC ELEMENTS OF EVALUATION

Women presenting with urinary incontinence require careful and comprehensive evaluation in order to determine with certainty the etiology of the incontinence prior to undergoing anti-incontinence surgery. The following components comprise the minimal acceptable preoperative evaluation:

1. Focused history
2. Pelvic examination
3. Demonstration of mobility of the urethrovesical junction (i.e., the bladder neck)
4. Objective evidence of stress incontinence
5. Postvoid residual urine volume measurement
6. Urinalysis and urine culture

For each element of the evaluation, the purpose, methodological options, and application of the information will be discussed.

FOCUSED HISTORY

Though research has shown that historical information alone is not sufficient to establish a diagnosis4 for urinary incontinence, a careful, focused history of the urinary incontinence symptoms may help to formulate the differential diagnosis and direct the
subsequent evaluation. The distinguishing historical features of
the different causes of urinary incontinence are found in Table 2.

**RECOMMENDATION**

1. Thorough evaluation of each woman is essential to deter-
mine the underlying etiology of the urinary incontinence
and to guide management. (II-3B)

**PELVIC EXAMINATION**

Pelvic examination is undertaken to achieve the following goals:

1. To identify pelvic masses impinging upon the urinary tract
structures,
2. To quantify the degree of pelvic organ prolapse in each of the
anterior, middle, and posterior vaginal compartments,
3. To detect latent stress incontinence,
4. To assess the strength and voluntary control of the levator ani
muscles,
5. To determine the health of the urogenital mucosa (i.e., to rule
out the presence of urogenital atrophy and/or vulvovaginal
irritation or infection).

Physical examination of a woman with incontinence should
ideally be performed with the woman having a full bladder and
in the supine position (lithotomy or left lateral). The perineum
should be inspected for any evidence of chronic skin irritation.
The integrity of the sacral nerve roots can be assessed by a
simple neurologic evaluation, including the anocutaneous and
bulbocavernous reflexes, sensation to the touch, and voluntary
contraction of the external anal sphincter.

The appearance of the vaginal epithelium can be judged
on speculum examination and used clinically as an indirect
measure of estrogen exposure. The speculum examination should
also include an assessment of the degree of pelvic organ prolapse
in each compartment of the vagina, with the patient perform-
ing Valsalva manoeuvres during examination, as follows:

(a) *Vault or uterine prolapse*: slow withdrawal of the open Graves’
speculum.
(b) *Cystocele*: retraction on the posterior vaginal wall with either
the bottom half of the Graves’ speculum or a Sims’ specu-

**RECOMMENDATION**

2. Preoperative pelvic examination should be performed to
identify pelvic masses that may provoke lower urinary
tract symptoms (e.g., a large fibroid uterus impinging
on the bladder), concomitant pelvic organ prolapse, and
to rule out latent stress incontinence. All of these find-
ings may necessitate a modification of the surgical
approach. (III-C)

<table>
<thead>
<tr>
<th>Question</th>
<th>GSI</th>
<th>UI</th>
<th>Overflow</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description of incontinence episodes</td>
<td>Loss with cough, sneeze, or activity</td>
<td>Sudden urgency with inability to reach toilet</td>
<td>Continuous slow loss</td>
</tr>
<tr>
<td>Precipitating factors</td>
<td>Cough, physical exercise, strain</td>
<td>Full bladder, sensory triggers (e.g., running water)</td>
<td>None, stress may exacerbate</td>
</tr>
<tr>
<td>Urinary frequency</td>
<td>Normal</td>
<td>Often increased</td>
<td>Urinary hesitancy, inability to void</td>
</tr>
<tr>
<td>Nocturia</td>
<td>&lt;1</td>
<td>Variable</td>
<td>Nocturnal enuresis</td>
</tr>
<tr>
<td>Volume of urine loss</td>
<td>Small amounts, pad sufficient</td>
<td>Large amounts, soaked clothing, runs down leg</td>
<td>Continuous dribbling</td>
</tr>
</tbody>
</table>

GSI = genuine stress incontinence; UI = urgency incontinence
DEMONSTRATION OF MOBILITY OF THE URETHROVESICAL JUNCTION
The reported pathophysiology of genuine stress incontinence includes a loss of pressure transmission to the urethrovesical junction (bladder neck). This loss of pressure transmission is a consequence of prolapse of the urethra when intra-abdominal pressure increases. A critical part of the preoperative evaluation is therefore the demonstration of hypermobility of the urethra. This can be accomplished objectively by using a Q-tip test (Table 3), or by using ultrasound, or subjectively by observing the position of the bladder neck at rest and during straining, or by using urethroscopy. These subjective methods have not been examined for their reliability.

Patients with fixed, elevated urethras are less likely to experience a cure of their stress incontinence with surgery.

RECOMMENDATION
3. Hypermobility of the urethra should be confirmed preoperatively, as women with fixed, well-supported bladder necks are less likely to experience a cure following standard anti-incontinence procedures. (II-2B)

OBJECTIVE EVIDENCE OF STRESS INCONTINENCE (INCLUDING ASSESSMENT FOR LATENT STRESS INCONTINENCE)
Objective evidence of stress incontinence should be sought prior to surgical intervention. Latent stress incontinence must be detected preoperatively to ensure that the surgical plan includes necessary anti-incontinence surgery. Observation of urine loss associated with a cough or Valsalva manoeuvres during a supine pelvic exam is acceptable evidence of stress incontinence. The stress test is a more standardized means of demonstrating stress incontinence. In this test, the bladder is filled with 200 mL to 300 mL of fluid, and the woman coughs in a standing position. The test is considered positive if stress loss is seen, and negative if no urine leak is identified. To detect latent stress incontinence, the stress test is performed with the prolapse reduced. In the absence of objective evidence of stress incontinence, the pad test may be used (Table 4).

RECOMMENDATION
4. Stress incontinence should be objectively demonstrated prior to anti-incontinence surgery. (III-B)

TABLE 3

THE Q-TIP TEST

- A lubricated Q-tip cotton swab is inserted into the external urethral meatus and is advanced until resistance decreases, indicating that the bladder has been entered. It is then withdrawn until resistance is first perceived. It should now be located at the urethrovesical junction (i.e., bladder neck).

- Using a simple goniometer, which measures the angle formed between the distal portion of the Q-tip and the horizontal, the angle is measured at rest and the test repeated with the patient performing a maximal Valsalva manoeuvre.

- The excursion of the Q-tip during straining is an indirect measure of urethral mobility. A Q-tip angle at rest or with straining of >30o is considered abnormal.

POSTVOID RESIDUAL URINE VOLUME MEASUREMENT
Measurement of postvoid residual urine volume can be accomplished by using straight catheterization or by ultrasound. Ultrasound is less invasive and accurate enough for routine clinical use. A residual volume of <100 mL is generally accepted as normal.

RECOMMENDATION
5. The volume of postvoid residual urine should be measured prior to anti-incontinence surgery. Elevated postvoid residual volumes are uncommon and should signal the need for further evaluation of the voiding mechanism. (III-C)

URINALYSIS AND URINE CULTURE
Urinary tract infection can mimic various causes of urinary incontinence, including detrusor overactivity (instability) and urodynamic (genuine) stress incontinence. A midstream urine specimen should be tested both by urinalysis and microscopy. Urine obtained by catheterization provides a cleaner specimen for culture, though on urinalysis, catheter specimens may be falsely positive for blood. In symptomatic patients, urinalysis has a significant false negative rate and should be accompanied by urine culture and sensitivity.

RECOMMENDATION
6. Urinary tract infection should be identified and treated prior to initiating further investigation or therapeutic intervention for urinary incontinence. (II-2B)

URODYNAMICS
While urodynamic testing, including cystometry and urethral pressure profilometry, can detect detrusor overactivity (instability) and compromised urethral function, the clinical significance of these findings is controversial. The detection of an unstable bladder and/or low-pressure urethra may modify patient management options and surgical outcomes. However, patients with mixed incontinence symptoms and proven unstable bladder still have high rates of cure following incontinence surgery.
Diagnosis of a low urethral pressure is controversial and a recent prospective study has demonstrated that in women with a maximum urethral closure pressure of less than 20 cm of water, the Burch procedure and the pubovaginal sling procedure produce equivalent short-term subjective and objective results. The cost effectiveness of urodynamic testing before surgery has been questioned, and because of the widespread lack of availability of urodynamic equipment, the Agency for Health Care Policy and Research in the United States has developed clinical practice guidelines for identifying patients who could undergo surgery without undergoing preoperative urodynamic testing.

A recent Cochrane review concluded that there is a lack of research evidence proving that urodynamic testing improves patient outcomes following surgery. The reproducibility and reliability of urodynamic testing is also questionable. Until the usefulness of urodynamic testing is proven, its use in the evaluation of women with primary symptoms of stress urinary incontinence must be left to the discretion of the treating physician. Until further research is conducted, the issue of preoperative urodynamics testing will remain controversial.

**RECOMMENDATION**

7. In women presenting with pure stress incontinence that can be objectively demonstrated during examination, preoperative urodynamic testing is not necessary (II-3B). For women with other lower urinary tract symptoms and/or mixed urinary incontinence, the clinician’s judgment must guide the use of urodynamic testing (II-3B).

**DISCUSSION**

These guidelines provide a structure for the basic evaluation of women prior to anti-incontinence surgery for uncomplicated stress urinary incontinence. They are by no means exhaustive and are intended only for a select group of women who present with either pure stress incontinence or mixed incontinence and who have not previously undergone anti-incontinence or pelvic organ prolapse surgery. More extensive evaluation may be necessary in selected individual cases.

**REFERENCES**


