GUIDELINES FOR THE EVALUATION OF GENUINE STRESS INCONTINENCE PRIOR TO PRIMARY SURGERY

These guidelines have been prepared by the Subcommittee on Urogynaecology of the Society of Obstetricians and Gynaecologists of Canada and were approved by its Council in June 1995.

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INTRODUCTION

These guidelines apply to the patient presenting with genuine stress incontinence (GSI). Inclusion criteria for these guidelines are:

1. a diagnosis of genuine stress incontinence;
2. no evidence of detrusor instability (DI); and
3. no previous incontinence or prolapse surgery.

Exclusion criteria are:

1. recurrent urinary incontinence following surgery;
2. either pure urgency incontinence or mixed incontinence; and
3. moderate to severe pelvic prolapse.

Genuine stress incontinence: GSI is defined as a socially inhibiting loss of urine due to increases in intra-abdominal pressure in the absence of bladder activity.

Latent stress incontinence: Stress incontinence is unmasked when moderate to severe degrees of pelvic prolapse are reduced during physical examination. Patients with this condition do not complain of stress incontinence.

BASIC ELEMENTS OF EVALUATION

Introduction

The patient presenting with urinary incontinence requires careful evaluation in order to determine with certainty the aetiology of the incontinence. The following components comprise the minimal acceptable evaluation prior to undertaking surgical correction of stress incontinence:

1. detailed history;
2. pelvic examination;
3. demonstration of mobility of the urethrovesical junction;
4. objective evidence of stress incontinence (including assessment for latent stress incontinence);
5. post-void residual urine measurement;
6. examination of urine; and
7. cystometrogram.

For each element of the evaluation, we will discuss the purpose, methodological options and application of the information.

A) HISTORY

Purpose

A detailed and careful history of the urinary incontinence symptoms helps to formulate the differential diagnosis and direct the subsequent evaluation.
Methods

In Appendix 1 you will find the historical features of some of the aetiologic factors responsible for urinary incontinence. Mixed incontinence presents with a combination of the features of GSI and DI.

Application

The sensitivity and specificity of the most careful history is low. Further evaluation of the patient is essential to determine the aetiology of incontinence.

B) PELVIC EXAMINATION

Purpose

The 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 relaxation;
3. To detect latent stress incontinence;
4. To assess the strength and voluntary control of levator muscles; and
5. To determine the degree of estrogenization of the pelvic structures.

Methods

Physical examination of the incontinent patient can be accomplished efficiently by following these steps:

1. Have the patient come to the examination with a full bladder.
2. Proceed with inspection in the lithotomy position. Inspect the perineum for any evidence of chronic irritation to the skin. Integrity of the sacral nerve roots is assessed by a simple neurologic evaluation including assessment of the anocutaneous and bulbocavernosus reflexes, sensation to the touch, and voluntary contraction of the external anal sphincter; and
3. Perform a speculum examination. The thickness of the vaginal epithelium is an indirect measure of estrogen exposure. During performance of a Valsalva manoeuvre, the degree of pelvic relaxation can be assessed as follows:
   i) Vault or uterine prolapse - slow withdrawal of the open Graves’ speculum.
   ii) Cystocele - retraction on the posterior vaginal wall with either the bottom half of the Graves’ speculum or a Sims’ speculum. The contribution of paravaginal and central components to the cystocele can be determined by supporting the anterior vaginal fornices at the level of the symphysis pubis using a ring forceps.
   iii) Rectocele - with the speculum retracting the anterior vaginal wall, the rectocele +/- enterocele can be graded.
   iv) The patient is asked to cough in the lithotomy position. If stress loss is not evident in this position, the manoeuvre is repeated in the standing position. In patients with moderate to severe degrees of prolapse, latent incontinence will be unmasked by having the patient cough while the prolapse is completely reduced with a Sims or open speculum.
4) **Bimanual examination**

   i) permits detection of pelvic masses impinging on the urinary tract;

   ii) allows for further assessment of the components of pelvic relaxation; and

   iii) gives an opportunity to assess isolation and contraction of the pelvic floor muscles (palpation of the vaginal sidewall just proximal to **hymenal ring**).

5) **Have the patient void.** The post-void residual can be measured by straight catheterization or by ultrasound.

6) Some method of assessment of the urethrovesical junction mobility completes the evaluation. This will be described under C. A critical part of the pre-operative evaluation is the demonstration of hyper-mobility of the urethrovesical junction.* This can be demonstrated by Q-tip test or by ultrasound. Criteria for both tests are included in the references. 2,3

**Application**

Extrinsic pelvic masses impinging upon the bladder may produce symptoms of urinary frequency and exacerbate stress incontinence. Pelvic relaxation usually accompanies genuine stress incontinence. Studies have shown that neglect of concomitant pelvic relaxation when planning surgical correction of stress incontinence may result in subsequent problems with prolapse. Care must also be taken to look for latent stress incontinence in the patient with severe pelvic prolapse. Evaluation of the patients levator muscle strength and ability to isolate and contract these muscles is essential. The pelvic examination is an opportunity to teach the patient the correct muscle contraction for Kegel exercises. Patients who are not properly instructed may perform Kegel exercises incorrectly and not benefit from them. Patients with poor control of pelvic floor musculature may be candidates for functional electrical stimulation or biofeedback.

**C) DEMONSTRATION OF MOBILITY OF THE URETHROVESICAL JUNCTION**

**Purpose**

The reported pathophysiology of genuine stress incontinence includes a loss of pressure transmission to the urethrovesical junction. This loss of pressure transmission is a consequence of a prolapse of the urethrovesical junction when intra-abdominal pressure increases. Most of the surgical procedures used to correct genuine stress incontinence provide support to the urethrovesical junction.

**Methods**

A lubricated Q-tip cotton swab is inserted into the external urethral **meatus** and 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.

Using a simple Goniometer, 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 urethrovesical junction mobility.

A description of the ultrasound technique for assessing urethrovesical junction mobility is beyond the scope of these guidelines.\(^5\)

**Application**

Patients who do not have hypermobility of the urethrovesical junction are unlikely to experience a cure of their incontinence following standard surgical procedures.

**D) OBJECTIVE MEASURE OF STRESS INCONTINENCE (INCLUDING ASSESSMENT FOR LATENT STRESS INCONTINENCE)**

**Purpose**

Objective evidence of stress incontinence prior to surgical intervention is a necessary finding to confirm the diagnosis of genuine stress incontinence. Latent stress incontinence must be detected preoperatively to ensure that the surgical plan includes necessary incontinence surgery.

**Method**

The stress test is a standardized means of demonstrating stress incontinence. The bladder is filled with 200 to 300 ml of fluid and the patient coughs in a standing position. To detect latent stress incontinence, the stress test can be performed in the supine position with the prolapse reduced. In the absence of objective evidence of stress incontinence, the pad test may be used. Below is an outline of a standardized pad test.\(^6\)

Typical test schedule

a) Test is started without the patient voiding.

b) Preweighed collecting device is put on and first one hour test period begins.

c) Subject drinks 500 ml sodium free liquid within a short period (maximum of 15 minutes), then sits or rests.

d) Half hour period: subject walks, including stair climbing equivalent to one flight up and down.

e) During the remaining period the subject performs the following activities:

i) standing up from sitting, ten times;

ii) coughing vigorously, ten times;

iii) running on the spot for one minute;

iv) bending to pick up small object from floor, five times;

v) wash hands in running water for one minute.
f) At the end of the one-hour test, the collecting device is removed and weighed.

g) If the test is regarded as representative the subject voids and the volume is recorded.

h) Otherwise the test is repeated preferably without voiding. If the collecting device becomes saturated or filled during the test, it should be removed and weighed, and replaced by a fresh device. The total weight of urine lost during the test period is taken to be equal to the gain in weight of the collecting device(s). In interpreting the results of the test, it should be borne in mind that a weight gain of up to one gram may be due to weighing errors, sweating or vaginal discharge. The activity programme may be modified according to the subject's physical ability. If substantial variations from the usual test schedule occur, this should be recorded so that the same schedule can be used on subsequent occasions.

Application

Surgeons should demonstrate objective evidence of stress incontinence before suggesting or performing corrective surgery.

E) POST-VOID RESIDUAL URINE ASSESSMENT

Purpose

Post-void measurement of residual bladder urine volume is important to rule out both neurologic abnormalities and/or obstructive voiding.

Methods

Measurement of post-void residual can be accomplished by using straight catheterization or by ultrasound. Non-invasive ultrasound is tolerated better by the patient but has limitations. Transabdominal ultrasound is inaccurate when small residual volumes are present and transvaginal ultrasound becomes inaccurate at larger volumes of residual urine.

Application

Significant post-void residuals can result in symptoms of urinary frequency, nocturia, overflow incontinence and recurrent urinary tract infection. This finding should prompt further careful evaluation.

F) EXAMINATION OF THE URINE

Purpose

Urinary tract infection can mimic various causes of urinary incontinence including bladder instability and genuine stress incontinence.
Method

A midstream urine specimen should undergo both urinalysis and microscopy. Urine obtained by catheterization provides a cleaner specimen for culture, but results may be falsely positive for haematuria.

Application

Urinary tract infection should be ruled out prior to initiating either further investigations or therapeutic interventions. Particularly in the older age group, urinary tract infection may present with symptoms that are not classical. Treatment of urinary tract infection will often result in resolution of symptoms, thus avoiding further investigation and unnecessary treatment.

G) CYSTOMETROGRAM

Purpose

The clinical history is insufficient to distinguish satisfactorily between genuine stress incontinence and incontinence due to detrusor instability. The only reliable means of detecting detrusor instability is the cystometrogram. Most authors concur that some form of cystometrogram should be undertaken prior to surgical correction of stress incontinence.

Methods

Cystometry is designed to detect uninhibited contractions of the detrusor muscle. The simplest form of cystometry requires the connection of the transurethral foley catheter via a two-way stop cock to a fluid source on one side and a column of water on the other. The bladder is filled with increments of fluid. After each increment, the stop cock is shifted so that the fluid column is directly connected to the bladder by the catheter. Such aneouvres as coughing and heel bouncing are used to stimulate unstable bladder contraction. A sustained rise in bladder pressure of ≥ 15 cm of water is interpreted as detecting unstable bladder. More sophisticated methods of cystometry are available using micro tip pressure transducer catheters and multichannel recorders.

Application

Detection of detrusor instability prior to surgery is important for two reasons. Medical therapy can be used to achieve resolution of the detrusor instability prior to surgery. The physician must counsel the patient preoperatively that the surgery is designed to correct the stress incontinence. It may result in a correction of the concomitant detrusor instability but it may also aggravate that problem or cause de novo development of detrusor instability.

Discussion

These guidelines provide a structure for the basic evaluation of a patient prior to primary surgery for stress incontinence. They are by no means exhaustive and are intended for the selected groups of patients outlined at the beginning of this document. Furthermore, extensive evaluation may be necessary in selected cases.
REFERENCES


### APPENDIX 1

**DISTINGUISHING INCONTINENCE AETIOLOGY BY HISTORY**

<table>
<thead>
<tr>
<th>Question</th>
<th>GST</th>
<th>DI</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 (i.e. running water)</td>
<td>none: stress may aggravate it</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>≤ 1</td>
<td>variable</td>
<td>nocturnal enuresis</td>
</tr>
<tr>
<td>Volume of urine loss</td>
<td>small amounts: sufficient protection with pad</td>
<td>large amounts: soaked clothing; runs down leg</td>
<td>continuous dribbling</td>
</tr>
</tbody>
</table>

GSI - genuine stress incontinence
DI - detrusor instability