ABSTRACT

Although the prevalence of urinary incontinence varies greatly depending on the criteria used to define this condition, estimated prevalence is 10% to 30% in women and 1.5% to 4.5% in men. Many factors in a patient's medical history may complicate the evaluation and management of urinary incontinence. Effective evaluation of urinary incontinence is often complicated by conflicts between findings from the patient history and symptoms, the physical examination, and urodynamic assessment. Certain clinical scenarios make disease management challenging, such as voiding dysfunction after previous incontinence surgery, incontinence following radical prostatectomy, and incontinence in patients who have undergone previous radiation therapy. Successful treatment of urinary incontinence begins with an accurate diagnosis. The ability to interpret conflicting information obtained in the patient evaluation is essential for an effective, individualized approach to surgical repair. (Advanced Studies in Medicine. 2002;2(19):672-676)

URINARY INCONTINENCE POSES MAJOR MEDICAL AND SOCIAL PROBLEMS FOR A SUBSTANTIAL PROPORTION OF THE POPULATION. THE PREVALENCE OF THIS MEDICAL CONDITION VARIES GREATLY, DEPENDING ON THE DEFINITION USED TO CHARACTERIZE INCONTINENCE, BUT GENERALLY ACCEPTED ESTIMATES RANGE FROM 10% TO 30% IN WOMEN AND 1.5% TO 4.5% IN MEN. MAJOR FACTORS THAT INCREASE THE RISK OF INCONTINENCE INCLUDE CHILDBIRTH, OBESITY, OLDER AGE, FEMALE SEX, AND RACE.

At a minimum, evaluation of a patient for urinary incontinence should include medical history, physical examination, measurement of postvoid residual urine volume, and urinalysis. The clinical presentation associated with urinary incontinence may not be straightforward, so the evaluation should be sufficient to identify subtle clues to the problem. Inadequate evaluation is one of the major pitfalls in the assessment of urinary incontinence. Moreover, clinicians may have to resolve conflicts that arise among different sources of information about the condition.

In some cases, other factors in the patient's medical history can complicate evaluation and management of urinary incontinence, including voiding dysfunction following surgery, persistent incontinence after surgery to correct incontinence, and previous radiation therapy. These and other factors can make disease management more difficult.

EPIDEMIOLOGY OF INCONTINENCE

One useful definition of urinary incontinence encompasses 3 key factors: involuntary loss of urine,
demonstrable leakage, and social or hygienic problems as a result of incontinence. The definition applies to each of the 4 major types of incontinence: stress, urge, mixed, and overflow.

To review briefly, stress urinary incontinence typically is activity related. Urge incontinence is associated with a strong desire or urge to void. Mixed incontinence comprises components of stress and urge incontinence. Patients with overflow incontinence typically characterize the condition as frequent or constant dribbling, which may be difficult to separate from stress incontinence because the overflow often becomes more pronounced with sneezing or straining. Occasionally, accidental urine loss may result from other causes, including fistula, ectopic ureter, urethral diverticulum, and functional incontinence.

A variety of predisposing, inciting, promoting, and decompensating factors can contribute to the development of urinary incontinence, particularly stress incontinence. Key predisposing factors include female sex and race. The impact of race is variable: whites have a predisposition toward stress incontinence, whereas urge incontinence more often affects African Americans.

Chief among inciting factors are childbirth, hysterectomy, vaginal surgery, radical pelvic surgery, radiation, and injury. Childbirth has a well-established association with stress incontinence, as 30% of women develop stress incontinence within 5 years of a first vaginal delivery. Almost 5% of women have a history of stress incontinence before their first pregnancy. Women who experience incontinence during pregnancy or puerperium have a 4-fold increased risk of stress incontinence 5 years later compared with women who remained continent throughout pregnancy and in the first weeks after childbirth.

Notable promoters of incontinence include obesity, lung disease, smoking, menopause, constipation, recreational activities, certain occupations that involve straining, certain medications, and infections. Major decompensating factors are aging, dementia, debility, disease, environmental factors, and certain medications.

Epidemiologic studies have employed a host of definitions for urinary incontinence. These definitions include incontinence episodes over 6 days during the past 12 months; 1 episode per month; 2 episodes per month; and any episodes in the previous year. The International Continence Society (ICS) defines incontinence as urine leakage that is demonstrable and causes problems for the patient. Perhaps not surprisingly, the prevalence of urinary incontinence varies greatly according to which definition is used. Among women, the range has been as low as 5% and as high as 53%; prevalence has ranged between 1.6% and 24% for men in various population studies. Median values in the same studies ranged between 14% and 41% for women and 4.6% to 15% for men.

Ethnic differences are prominent among women with urinary incontinence. Stress incontinence tends to predominate among white women, whereas African American women are more prone to develop urge incontinence. Age has a powerful influence on the risk of incontinence in women, regardless of the definition of incontinence that is applied. Overall, the incidence of incontinence in women increases with age.

Incontinence also has well-recognized sex differences, not only in prevalence but in the types of incontinence that predominate among men versus women. Stress incontinence accounts for approximately 50% of all cases of incontinence in women; mixed incontinence constitutes almost 30%. Among men, urge incontinence predominates, accounting for almost 75% of all incontinence prevalence, followed by mixed incontinence in about 20% of cases. Stress incontinence represents less than 10% of incontinence in men.

Although urodynamic testing is frequently used in the diagnostic workup of stress incontinence, dissociation exists between stress incontinence symptoms and urodynamic findings. About three fourths of women with incontinence have stress symptoms, but only about two thirds of those women have genuine stress incontinence as determined by urodynamic assessment. The disparity in these findings emphasizes the misleading conclusions that can arise from overreliance on urodynamic testing.

Incontinence affects substantially more women than men from adolescence and early adulthood through the middle of the eighth decade of life. Considering all age groups, prevalence is 2-fold to 3-fold greater in women than in men.

In the United States, a generally accepted range of prevalence is 1.5% to 5% in men and 10% to 30% in women. Incontinence symptoms increase in severity with advancing age, and more than 50% of patients in nursing homes have incontinence. Among women, incontinence is more prevalent than other notable chronic conditions, including hypertension, depression, and diabetes.
Effective evaluation of urinary incontinence begins with an appreciation of the pitfalls of the evaluation process. In particular, 2 potential problem areas should be remembered: the possibility of inadequate evaluation and the conflicting information from different sources relied upon during the evaluation. Not uncommonly, conflict may arise from findings of the patient history and symptoms, the physical examination, and urodynamic assessment.

The Agency for Health Care Policy and Research (AHCPR) has established guidelines for evaluation of incontinence, and these guidelines should be considered as a minimum level of thoroughness. The AHCPR guidelines state that evaluation of incontinence should comprise a medical history, physical examination, urinalysis, and measurement of postvoid residual volume.1

Patient history should cover the duration and character of the patient’s incontinence, which is often helpful in pointing the diagnosis toward stress, urge, or mixed incontinence. Similarly, knowing the patient’s most bothersome symptom can provide clues to the nature of the condition and to the correct diagnosis. Frequency and timing of voiding should be reviewed, as well as voided volume and information about incontinent episodes. Other issues to discuss include fluid intake, changes in bowel or sexual function, medical and surgical history, and bladder record. Finally, an effort should be made to determine the patient’s expectations. Does the patient expect to be completely dry or to merely improve symptoms? Do the patient’s expectations revolve around specific types of activities, such as dining out?

The physical examination should include a general, abdominal, and rectal examination, evaluation of male genitalia, a pelvic examination in women, and direct observation of urine loss by means of a cough stress test. Additionally, the ICS has approved the pelvic organ prolapse quantification (POPQ) scale for evaluating pelvic organ prolapse, information that will prove useful in assessing a considerable number of female patients who have prolapse in addition to incontinence. The POPQ scale can be found on the Internet.10

Urinalysis should include chemical and microscopic examinations that have a particular focus on hematuria. Other possible findings of interest are bacteriuria, pyuria, glycosuria, and proteinuria.

Measurement of postvoid residual volume should be a component of the minimum standards for evaluation of incontinence. Catheterization is useful to rule out infection in patients who appear to have contaminated urine. Bladder volume instrument evaluation can be employed at the same time that a catheter specimen is obtained.

The extent of urodynamic testing should be guided by the nature of clinical suspicion aroused by the patient’s history and physical examination. Depending on the level of suspicion, cystometry can include abdominal leak-point pressures, video urodynamics, measures of urethral resistance, and electromyography of the urethral sphincter.

Difficult Management Problems

Some patients will have complicated clinical scenarios that pose particularly difficult management problems, including voiding dysfunction following previous incontinence surgery, other types of previous surgery, and a history of urinary retention. Increasingly, incontinence following radical prostatectomy is a complicated clinical scenario among men.

A substantial number of patients have voiding dysfunction or continued incontinence following anti-incontinence surgery. Although the surgical procedures have been simplified to some extent, they are not necessarily simple operations. Patients with continued incontinence or voiding dysfunction after anti-incontinence surgery probably constitute the fastest-growing population in my own practice.

When voiding dysfunction arises after anti-incontinence surgery, symptoms typically occur almost immediately. A review of 51 cases showed that most patients reported symptoms of incontinence within 1 month after surgery.11 Preoperative urodynamic testing revealed obstruction by pressure-flow assessment in only 20% of the cases, so urodynamic assessment does not necessarily identify patients at increased risk of postoperative incontinence. Most of the patients had a contractile detrusor. Detrusor instability was seen in slightly more than one third of the cases. Most of the 51 patients (n = 48) had evidence of overcorrection.

The review findings reflect a scenario that has become increasingly common in my practice. A patient presents with straightforward stress incontinence before surgery. After surgery, the patient has predominantly urge symptoms, associated with poor
emptying. This combination of findings raises my clinical suspicion to a level that requires little additional evidence to convince me to offer the patient some type of therapy.

Options for conservative treatment include clean intermittent catheterization, anticholinergics, and urethral dilation. However, symptoms persisting for more than 3 months are unlikely to resolve with conservative management. Three months is a reasonable amount of time to delay consideration of a repeated operation or a takedown procedure.

The approach to a takedown procedure depends on the initial surgery. In my experience, if an abdominal approach was used initially, then a retropubic approach tends to work best, but a vaginal approach also may be used. For a takedown following bladder-neck suspension or needle, I always attempt to take down the sling vaginally. Only in rare cases does a sling takedown involve a retropubic or abdominal approach.

The next consideration is whether the patient requires resuspension. I tend to perform a resuspension procedure in patients who complain not only of voiding dysfunction but of continued stress incontinence. I also perform a resuspension in patients who have significant hypermobility after a takedown procedure, usually an abdominal or retropubic takedown.

The final consideration relates to the possible need to interpose some type of tissue. With an abdominal or retropubic approach to takedown, a portion of the omentum frequently can be used. If the takedown involves a vaginal approach, a Martius flap is an option, which some surgeons use routinely. Other surgeons reserve the use of a Martius flap for failed takedown procedures.

Incontinence following radical prostatectomy has emerged as a major health issue in older men. Evidence suggests a disparity between physicians' and patients' perceptions of postprostatectomy incontinence. Pooled data from 6 studies involving 6528 men showed a 7% incidence of postprostatectomy incontinence as assessed by physicians. In contrast, survey questionnaires completed by 4510 men in 12 studies showed that 50% reported some degree of urine leakage after prostatectomy, and almost 25% reported using absorbent pads. The surveys were completed by a third party who was uninvolved in the management of the patients' prostate cancer, suggesting that patients might be more willing to share information about incontinence with someone other than their surgeons.

Intrinsic sphincter deficiency is a contributing factor in 90% of cases of postprostatectomy incontinence and is the sole factor in two thirds of cases. Detrusor overactivity is a contributing factor in about one quarter of cases.

About 40% of men with post-prostatectomy incontinence have stress incontinence, and another 40% of this population have stress incontinence associated with high-pressure detrusor instability.

Treatment options for postprostatectomy incontinence consist largely of collagen injection and artificial sphincters. Results with collagen injections vary according to the severity of incontinence. On the basis of available data, the best candidates for collagen probably are those who use fewer than 3 absorbent pads daily, have adequate sphincter length, a leak-point pressure exceeding 60 cm H₂O, and no history of radiation, surgery, or bladder-neck incision. Additionally, the patient must be willing to undergo multiple injections.

Results with artificial urinary sphincters are fairly encouraging. Studies suggest that almost 90% of patients remain dry or substantially improved at follow-up.

Patients who have received radiation treatment constitute another population in whom incontinence can be particularly difficult to manage. Data from multiple studies of patients receiving artificial urinary sphincters have shown that radiation greatly increases the risk of erosion and the need for a repeated operation. In various series, erosion rates ranged between 7% and 20% in patients who underwent radiation therapy, compared with 5% or less in patients who did not receive radiation therapy. Repeated operation rates also were substantially higher in patients who received radiation treatments, exceeding 50% to 60% in some series.
**CONCLUSION**

Urinary incontinence is a common and bothersome problem in both men and women. Successful treatment begins with an accurate diagnosis, which requires a thorough evaluation and the ability to interpret the sometimes confusing information found in the patient's medical history, physical examination, and urodynamic testing. Patients with complex cases require a more extensive workup and an individualized approach to surgical repair.

**REFERENCES**