
Shades of Dry — Curing Urinary Stress Incontinence

Kris Strohbehn, M.D.

Urinary incontinence is a common condition affecting 20 to 40% of older women.¹ The two most common types of urinary incontinence are stress incontinence, the involuntary loss of urine resulting from increased abdominal pressures (such as with a cough or Valsalva's maneuver), and urge

incontinence, the involuntary loss of urine after an unwanted contraction of the detrusor muscle.² Some patients have mixed incontinence with both types of conditions.

The frequency of both types of urinary incontinence increases with age, with peaks in preva-

lence around menopause and after the age of 65 years.^{3,4} Obesity and multiparity are recognized risk factors for stress incontinence. Even so, many nulliparous teenage women, especially athletes, have episodes of stress incontinence at times of increased physical activity.⁵ The degree to which incontinence bothers a woman may vary, depending on her activity level. Many women adjust their activity to reduce the frequency of leakage, which may adversely affect other health and quality-of-life measures.

The age-adjusted rate of inpatient surgical procedures for urinary incontinence in women in the United States increased from 0.32 per 1000 women in 1979 to 0.60 per 1000 women in 1997.⁶ Much of the rise can be attributed to an increase by a factor of 3 in the number of procedures among women 50 years of age or older (from 0.5 to 1.5 per 1000 women). Given the aging of the U.S. population, the total number of procedures for treatment of urinary incontinence is expected to continue to rise.^{6,7} Yet there are few data from randomized trials to inform surgical decision making.

In this issue of the *Journal*, Albo et al.⁸ report the results of a multicenter, randomized, controlled trial sponsored by the National Institutes of Health (NIH), comparing two surgical treatments for stress incontinence: the pubovaginal sling procedure and the Burch procedure. (Descriptions and illustrations are included in the article.) Both procedures have been considered highly effective, with reported cure rates of 80 to 90%, although in observational studies the Burch procedure has had lower reported cure rates if there is evidence of a very weak urethral sphincter muscle. In the study by Albo et al., at 24 months, the cure rates were significantly higher for the pubovaginal sling than for the Burch procedure for both overall incontinence (47% vs. 38%) and stress incontinence (66% vs. 49%).⁸ Cure rates declined over time in both groups, emphasizing the need for a longer-term study of outcomes. Despite the higher cure rates, the sling group had more complications, including urinary retention, voiding dysfunction, urgency symptoms, urinary tract infections, and reoperation for problems with voiding.

The cure rates in both groups were lower than those commonly reported, an observation that is probably explained by the use of strict criteria to define cure and the variable criteria for cure used

in previous studies. Stress incontinence can be considered to be a subjective symptom (described by the patient), an objective finding on examination (the patient coughs with a full bladder and urine is observed coming from the urethra), or a condition that is determined by subjective and objective findings, including urodynamic evaluation.^{2,9} Accordingly, outcome tools can be subjective (including bladder diaries and validated surveys to determine quality-of-life scores, severity of incontinence, and treatment satisfaction) or objective (weighing a patient's incontinence pads, cough stress testing to observe incontinence, and other complex urodynamic tests). At present, there is no single outcome that adequately measures success after treatment of urinary incontinence. There are as many "shades of dry" as there are shades of gray.

A commentary¹⁰ published in 2002 underscored the dependence of surgical success rates on the outcome measure used for stress incontinence, noting cure rates of 70 to 83% if patients' satisfaction was the only outcome measure; however, cure rates were reportedly as low as 6 to 9% according to very strict NIH criteria (no symptoms of stress incontinence, negative objective testing, and no new problems due to the intervention).⁹ Cure rates in the study by Albo et al. likewise varied, depending on whether subjective, objective, or combined outcome tools were reported.

In comparing outcomes, then, is a patient's report of satisfaction more important, or are results of objective testing (e.g., leakage on a cough stress test) more important? A recent survey¹¹ found a poor correlation between attitudes of clinicians and patients toward outcomes. Contrary to patients' perception of "bothersomeness," a majority of clinicians thought that small or infrequent episodes of leakage were acceptable after treatment.

Patients' perception of bother may also be influenced by new-onset postoperative voiding problems or urgency. Such problems are well described after procedures for stress incontinence, possibly owing to increases in urethral resistance. If urethral resistance exceeds the strength of a woman's voiding detrusor muscle, urinary retention and voiding dysfunction may result; subsequent detrusor-muscle overactivity may lead to urgency, frequency, nocturia, or urge incontinence. At present, there is no testing that accu-

rately identifies patients in whom these problems will develop after surgery for stress incontinence, although data from the study by Albo et al. indicate that such complications are significantly more likely with the pubovaginal sling than with the Burch procedure. If postoperative urinary retention requiring intermittent catheterization develops in a woman who had mildly bothersome stress incontinence, she is likely to be dissatisfied even if her stress incontinence is reduced. However, a patient who had severely bothersome stress incontinence and a similar postoperative complication might be highly satisfied if her incontinence has been eliminated. The primary determinants of perceived “success” in these cases are the difference between preoperative and postoperative “bothersomeness” of symptoms and whether the surgery met the patients’ expectations.

Although Albo et al. provide important information for patients and clinicians in deciding between the Burch procedure and the pubovaginal sling, new techniques are rapidly expanding the available options. A new generation of mesh synthetic slings has been introduced in the past decade, with cited advantages of lower rates of urinary retention, smaller incisions, less pain, quicker recovery, and lower cost and complications. Such slings are placed blindly with needles through the retropubic or transobturator space, guiding the sling to the midurethral area through a small vaginal incision. However, risks include possible vaginal, urethral, or bladder erosion of the synthetic materials. Injuries to adjacent structures (bowel, bladder, urethra, and large blood vessels) have also been reported owing to the blind nature of needle passage. Data from a recent randomized trial suggested that midurethral mesh slings have success rates similar to those with the Burch procedure,¹² but these slings have not been directly compared with pubovaginal slings.

Randomized trials such as that of Albo et al. greatly advance our ability to counsel patients and effectively compare surgical options for treatment of stress incontinence. Objective and subjective outcome data are often discordant, and

there is no consensus on which “shade” of dry is most important. Future surgical trials should continue to use multiple outcome measures, including ones directed by patients, to identify whether surgical procedures have met patients’ expectations and goals.^{13,14}

No potential conflict of interest relevant to this article was reported.

From the Department of Obstetrics and Gynecology, Dartmouth Medical School, and the Division of Urogynecology and Reconstructive Pelvic Surgery, Dartmouth–Hitchcock Medical Center — both in Lebanon, NH.

1. Hunskaar S, Burgio K, Diokno A, Herzog AR, Hjalmas K, Lapitan MC. Epidemiology and natural history of urinary incontinence in women. *Urology* 2003;62:Suppl 1:16-23.
2. Abrams P, Cardozo L, Fall M, et al. The standardisation of terminology of lower urinary tract function: report from the Standardisation Sub-committee of the International Continence Society. *Neurourol Urodyn* 2002;21:167-78.
3. Hannestad YS, Rortveit G, Sandvik H, Hunskaar S. A community-based epidemiological survey of female urinary incontinence: the Norwegian EPINCONT study. *J Clin Epidemiol* 2000; 53:1150-7.
4. Hunskaar S, Arnold EP, Burgio K, Diokno AC, Herzog AR, Mallett VT. Epidemiology and natural history of urinary incontinence. *Int Urogynecol J Pelvic Floor Dysfunct* 2000;11:301-19.
5. Nygaard IE, Thompson FL, Svengalis SL, Albright JP. Urinary incontinence in elite nulliparous athletes. *Obstet Gynecol* 1994;84:183-7. [Erratum, *Obstet Gynecol* 1994;84:342.]
6. Boyles SH, Weber AM, Meyn L. Procedures for urinary incontinence in the United States, 1979-1997. *Am J Obstet Gynecol* 2003;189:70-5.
7. Waetjen LE, Subak LL, Shen H, et al. Stress urinary incontinence surgery in the United States. *Obstet Gynecol* 2003;101: 671-6.
8. Albo ME, Richter HE, Brubaker L, et al. Burch colposuspension versus fascial sling to reduce urinary stress incontinence. *N Engl J Med* 2007;356:2143-55.
9. Weber AM, Abrams P, Brubaker L, et al. The standardization of terminology for researchers in female pelvic floor disorders. *Int Urogynecol J Pelvic Floor Dysfunct* 2001;12:178-86.
10. Hilton P. Trials of surgery for stress incontinence — thoughts on the ‘Humpty Dumpty principle.’ *BJOG* 2002;109:1081-8.
11. Robinson D, Anders K, Cardozo L, Bidmead J. Outcome measures in urogynaecology: the clinician’s perspective. *Int Urogynecol J Pelvic Floor Dysfunct* 2007;18:273-80.
12. Ward KL, Hilton P. A prospective multicenter randomized trial of tension-free vaginal tape and colposuspension for primary urodynamic stress incontinence: two-year follow-up. *Am J Obstet Gynecol* 2004;190:324-31.
13. Hullfish KL, Bovbjerg VE, Gibson J, Steers WD. Patient-centered goals for pelvic floor dysfunction surgery: what is success, and is it achieved? *Am J Obstet Gynecol* 2002;187:88-92.
14. Hullfish KL, Bovbjerg VE, Steers WD. Patient-centered goals for pelvic floor dysfunction surgery: long-term follow-up. *Am J Obstet Gynecol* 2004;191:201-5.

Copyright © 2007 Massachusetts Medical Society.