

Two cases illustrating a potential difference between transobturator and retropubic slings

Moses Mukai · Ramzi Aboujaoude · Patrick J. Culligan

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Abstract The transobturator sling procedure is a relatively new technique as compared to the retropubic version. The functional differences between these two procedures are largely unknown. Two cases of failed transobturator slings are reported. In both cases, the procedure was done under local anesthesia and a cough stress test was performed to adjust the tape. The transobturator slings were unable to stop the leakage and we replaced them with the retropubic versions, which were successful. Even when pulled very tightly, some transobturator slings will fail to stop stress incontinence that is amenable to cure from a typically placed “tension-free” retropubic sling. The cough stress test can identify such cases.

Keywords Suburethral sling · Cough stress test · Stress urinary incontinence · Local anesthesia

Introduction

Stress urinary incontinence is defined by the International Continence Society as involuntary leakage on effort, exertion, sneezing, and/or coughing [1]. The overall prevalence of urinary incontinence ranges from 33 to 41% of women with the highest prevalence among the elderly [2].

R. Aboujaoude
University of Medicine and Dentistry of New Jersey,
Newark, NJ, USA

M. Mukai (✉) · P. J. Culligan
Division of Urogynecology and Pelvic Reconstructive Surgery,
Atlantic Health System,
95 Madison Ave., Suite 204,
Morristown, NJ 07962, USA
e-mail: HarleyMukai@yahoo.com

The midurethral sling supports the urethra, prevents its descent during increases in abdominal pressure, and provides urethral compression [3]. These slings such as the tension-free vaginal tape are widely used and appear to be as effective as the Burch colposuspension for the treatment of urinary stress incontinence [4].

Recently, many surgeons have been using the transobturator sling as an alternative approach to midurethral sling placement. The proposed benefits of the transobturator sling relative to the retropubic sling center around a theoretical decreased risk of bladder perforation or vascular injury. However, both of these complications have been reported with transobturator slings [5, 6].

We report two cases that illustrate the potential difference between midurethral slings placed via retropubic and transobturator techniques.

Case report

Case 1

The first case is a 56-year-old patient whose medical history was remarkable for one vaginal delivery 20 years before presenting at our facility. Two years after that vaginal delivery, she underwent a Marshall–Marchetti–Krantz procedure which cured her stress urinary incontinence for approximately 7 years. Upon presentation to our clinic, the patient complained of daily stress incontinence. Her leakage was so bothersome that she was restricting her fluid intake and increasing her voiding frequency, in hope of minimizing the incontinence episodes. She was also experiencing one to two episodes of nocturia each night.

Her physical exam was remarkable for urethral hypermobility which was obvious while visualizing her anterior

compartment during Valsalva maneuver. In our practice, the cotton swab test is reserved for patients who do not have obvious urethral hypermobility on visual exam. This patient's urethral mobility was obviously greater than 45°, so no cotton swab test was performed. Physical exam revealed no evidence of prolapse or neurologic abnormalities. Multichannel urodynamic studies demonstrated a maximum cystometric capacity of 385 ml, and urodynamic stress incontinence was demonstrated with a leak point pressure of 73 cm H₂O.

Due to the theoretical increased risk of bladder perforation among women with a previous Marshall–Marchetti–Krantz procedure, we offered her a transobturator sling (Uretex TO® CR Bard, Murray Hill, NJ, USA).

In the operating room, the patient was given adequate intravenous conscious sedation. A local anesthetic solution of lidocaine and marcaine was injected along the entire path of the device using a 22-gauge spinal needle. The mid portion of her urethra was identified by palpation against the Foley catheter. Sharp dissection was used to create tunnels underneath the vaginal epithelium to the level of the inferior pubic rami bilaterally without breaking through the perineal membrane. Under direct finger guidance, both trocars were placed using the outside to inside technique. Cystoscopy indicated there were no defects or lesions within the bladder. The transobturator sling was then placed and the conscious sedation was discontinued. The bladder was filled to a volume of 250 ml and the patient was asked to cough vigorously thereby demonstrating her leakage. Increasing the tension on the sling failed to stop the patient's leakage even when the sling was pulled very tight. Therefore the transobturator sling was removed and a retropubic sling (Uretex® CR Bard, Murray Hill, NJ, USA) was placed. To do so, the exact same vaginal “tunnels” created for the transobturator sling were used to insert the retropubic trocars. Cystoscopy was again normal. The tension was adequately set via the cough stress test. The retropubic sling proved successful with the “usual” setting. In other words, a very tight setting on the transobturator sling could not stop leakage that was readily controlled with a typical “tension-free” setting on the retropubic sling.

The patient was discharged home 4 h later after a satisfactory voiding trial in the recovery area. That voiding trial consisted of a spontaneous void greater than 300 ml and a postvoid residual amount of 30 ml. At the 3-month postoperative interval, the patient was voiding well and having no stress incontinence symptoms.

Case 2

The second case was a 37-year-old patient who had two previous vaginal deliveries. Six years before her presentation to our clinic, the patient had undergone a pubovaginal

sling with bone anchor fixation. This sling alleviated her stress incontinence for only 6 months. One year later—also before her presentation at our clinic—she underwent a periurethral collagen injection which gave her no benefit.

On presentation to our clinic, she was experiencing incontinence on a daily basis with coughing, sneezing, and routine physical activity. She was unable to exercise, had decreased her fluid intake and increased her voluntary voiding frequency—both in a conscious effort to diminish the size of her leakage episodes.

On physical exam, her anterior compartment suggested very little urethral mobility during cough and Valsalva maneuver. Minimal urethral mobility was verified with a cotton swab angle of negative 15° with straining. Her multichannel urodynamic studies demonstrated stress incontinence with a leak point pressure of 85-cm H₂O and a maximum cystometric capacity of 515 ml.

She declined repeat periurethral injections and was therefore offered a transobturator sling. In the operating room, the patient was given adequate conscious sedation and local anesthesia using the same techniques described in case 1.

Under direct finger guidance, the transobturator sling (Uretex TO® CR Bard, Murray Hill, NJ, USA) was placed after the usual outside to inside technique. Cystoscopy indicated that there was no damage or other abnormal findings within the bladder. The bladder was filled to a volume of 250 ml and the conscious sedation was discontinued. The cough test was used to set sling tension.

Increasing the tension on the sling failed to stop the patient's leakage even when the sling was pulled very tight. The transobturator sling was removed and replaced by a retropubic sling (Uretex® CR Bard, Murray Hill, NJ, USA) in the usual fashion using the exact same “tunnels” previously dissected for the transobturator sling. Cystoscopy was again normal. The tension was adequately set via the cough test to stop the leakage. At this time, the sling was successful with a “tension-free” setting.

Four hours later, the patient was discharged after she passed her voiding trial. She spontaneously voided greater than 350 ml and her postvoid residual amount was 60 ml.

Her recovery was uneventful except for bilateral self-limited superficial cellulitis in the groin area at the level of the transobturator sling incisions. At the 5-month postoperative interval, the patient was voiding well and having no stress incontinence symptoms.

Discussion

We report two cases of recurrent stress urinary incontinence. Both patients underwent a transobturator sling placed under local anesthesia. These tapes were elevated

incrementally but failed to restore continence. Therefore, these transobturator procedures were converted to retropubic procedures in which successful continence was easily obtained. For both patients, no amount of tension on the transobturator sling could produce dryness. In other words, each transobturator sling was placed under quite a bit of tension and still could not stop the leakage produced during the cough stress test. However, for each patient, a retropubic sling placed via the same vaginal incision was able to stop the leakage while in a “tension-free” position.

In 2001, Delorme described the technique of transobturator placement for midurethral slings. The sling is inserted around the inferior ischiopubic ramus in a relatively horizontal plane through the obturator foramen [7]. In contrast, the retropubic sling is placed in a more vertical plane. While many surgeons believe the transobturator slings to be less obstructive than the retropubic slings, little objective evidence supports these beliefs. Nevertheless, some surgeons tend to use transobturator slings for “routine” stress incontinence patients or for those patients with a perceived increased risk of postoperative voiding dysfunction. Likewise, some surgeons reserve retropubic slings for patients with more severe incontinence.

These two cases support the idea that transobturator slings are less obstructive than retropubic slings. We would not have known that such a difference existed in these patients if we had not used local anesthesia and the cough stress test.

Some evidence suggests other advantages of the cough stress test for sling placement. In a retrospective cohort study, Murphy et al. [8], found better long-term success among patients who underwent retropubic sling via local anesthesia as compared to those who had general anesthesia and no cough stress test.

In that study, 132 patients were followed for an average of 32 months (range 18–48). Seventy-four (46.5%) women had their sling placed under general anesthesia, and the 85

(53.5%) remaining subjects received local analgesia. Greater improvements in stress incontinence were seen when the suburethral sling was placed under local anesthesia and adjusted using the cough stress test. Based on this study, we believe that the cough stress test under local anesthesia is a helpful step in predicting the procedure outcome. In the two cases presented above, the patients were likely to have experienced poor surgical results if their procedures had been performed under general anesthesia without benefit of the cough test.

References

1. Abrams P, Cardozo L, Fall M, Griffiths D, Rosier P, Ulmsten U, van Kerrebroeck P, Victor A, Wein A (2002) Standardization subcommittee of the International Continence Society. The standardization of terminology of lower urinary tract function: report from the standardization sub-committee of the International Continence Society. *Neurourol Urodyn* 21(2):167–178
2. Anger JT, Saigal CS, Litwin MS, Urologic Diseases of America Project (2006) The prevalence of urinary incontinence among community dwelling adult women: results from the National Health and Nutrition Examination Survey. *J Urol* 175(2):601–604, Feb
3. Papa Petros P, Ulmsten U (1993) An integral theory and its method for the diagnosis and management of female urinary incontinence. *Scand J Urol Nephrol* 153 (Suppl):1–93
4. Ward KL, Hilton P, UK and Ireland TVT Trial Group (2004) 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* 190(2):324–331, Feb
5. Rajan S, Kohli N (2005) Retropubic hematoma after transobturator sling procedure. *Obstet Gynecol* 106(5 Pt 2):1199–1202 (Nov)
6. Minaglia S, Ozel B, Klutke C, Ballard C, Klutke J (2004) Bladder injury during transobturator sling. *Urology* 64(2):376–377 (Aug)
7. Delorme E (2001) Transobturator urethral suspension: minimally-invasive procedure in the treatment of stress urinary incontinence in women. *Prog Urol* 11:1306–1313
8. Murphy M, Culligan PJ, Arce CM, Graham CA, Blackwell L, Heit MH (2005) Is the cough-stress test necessary when placing the tension-free vaginal tape? *Obstet Gynecol* 105(2):319–324 (Feb)