# The risk of stress incontinence after urethral surgery in women

Jeffrey Law, MD; Blayne Welk, MD
Division of Urology, Department of Surgery, Western University, London ON, Canada

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## Introduction

There is limited research on the occurrence of stress urinary incontinence (SUI) after urethral surgery in women. SUI in this setting may result from direct damage to the urethral sphincter, damage to the urethral supports, or damage to the neurovascular structures. Indications for urethral surgery in women are uncommon, and it is often hard to counsel women on the risk of SUI. In some cases, concomitant anti-incontinence surgery is routinely offered, which may or may not be necessary. The objective of our study was to describe the incidence of either de novo or worsening of pre-existing SUI after urethral surgery in women.

## Methods

This study was a retrospective chart review approved by our local research ethics board. All female patients who underwent urethral surgery with a single surgeon (BW) between November 2011 – April 2019 were identified from electronic billing records. Relevant demographic and clinical information was collected from the medical records including pre- and postoperative SUI status, number and type of pads (liner, regular, heavy or diaper), prior urologic surgeries, whether SUI improved with conservative measures or required subsequent anti-incontinence procedures and length of follow-up. A standard history was used for each patient, and all patients underwent a physical exam and provocative test for SUI during their initial evaluation. The ICIQ questionnaire[1] was used to validate the accuracy of the history/physical exam process for detecting SUI during routine practise; an affirmative answer to specific portions of the final question (leak with cough and sneeze, leak when physically active, or leaks all the time) was considered evidence of SUI. Results are reported as means and standard deviations (SD).

**Results**

Between November 2011 and April 2019, 77 women underwent urethral surgery. The mean age was 54.3 years (SD 12.2). Some degree of SUI was common among women at presentation (48%, 36/77), and there was a high correlation between the clinical assessment of SUI and the relevant ICIQ questions (Pearson correlation=0.75, $p<0.01$). The most common surgeries were laser excision of eroded midurethral mesh sling (n=37), open excision of urethral diverticulum (n=12) and sling incision for obstruction (n=11). Most patients had undergone prior SUI surgery (52/77, 67%) with the most common procedure being previous placement of a midurethral mesh sling (46/52, 88%). Six patients underwent concomitant anti-incontinence surgery at time of their urethral surgery, the most common being placement of autologous fascial sling (Table 1).

Out of the 71 patients who had undergone urethral surgery but no concomitant anti-incontinence procedure, 10% (7/71) developed de novo SUI and 10% (7/71) patients developed worsening of their pre-existing SUI. Among those with de novo SUI, the mean number of pads required was 2.6 (SD 2.2, most commonly light pads), and among those with worsening stress incontinence the mean number of pads increased from 1.9 (SD 1.5, most commonly light pads) to 2.7 (SD 1.7, most commonly medium pads).

After a mean follow up of 33.3 (SD 23.0) months, 5/7 patients who developed de novo SUI had resolution of SUI with conservative measures only. No patient in this group underwent additional anti-incontinence procedures. After a mean follow up of 21.4 (SD 17.7) months, only 1/7 patients with worsening of their pre-existing SUI improved with conservative measures (pelvic floor exercises and behavioral changes). Five of these patients required a subsequent anti-incontinence procedure (4 autologous fascial slings and 1 urethral bulking procedure).

**Discussion**

At our institution, we found that de novo or worsening SUI developed in 20% of females after urethral surgery. Most patients with de novo incontinence improved with conservative therapy. A small number of patients were offered concurrent SUI incontinence surgeries at the time of their urethral procedure, and with this practise only 5/71 women required a secondary procedure for stress incontinence. The most common reason for urethral surgery was erosion of midurethral sling mesh. In our series, excision with holmium laser was done more frequently than via an open transvaginal approach and was associated with a low risk of SUI; this is similar to rates that have been reported by other groups for laser excision[2] (21%) and open excision[3] (66.7%). Likewise, we found a low rate of SUI after urethrolysis of an obstructing midurethral or fascial sling (18%, 2/11) which is comparable to the literature[4]. Female urethroplasty is rare clinical entity and reports[5–7] indicate low postoperative risk of SUI. The risk of SUI after urethral diverticulectomy in our series is similar to other reports of about 15% [8,9]; diverticular anatomy may impact postoperative continence, but we could not draw any conclusions from our data because of the small number of patients [10].

There is debate in literature regarding the timing of SUI surgery in the setting of urethral surgery. Some authors have advocated for concomitant SUI surgery in patients undergoing urethral surgery[3,4,11]. It is reassuring that few patients in our series required a subsequent SUI surgery; only 36% of patients who developed new or worsening SUI postoperatively requested surgery for their stress incontinence symptoms, meaning 64% may have been overtreated if they had undergone a concomitant surgery. There is no clear guideline to determine which patients will go on to have significantly bothersome SUI requiring further anti-incontinence surgery. We found that patients with pre-existing SUI generally did not do as well with conservative management, and most went on to have subsequent SUI surgery. We would recommend the decision to perform simultaneous SUI surgery should be based on the degree of existing SUI, and the type of urethral procedure. Diverticulectomy and endoscopic management of mesh erosions appear to be low risk procedures.

Limitations of our study include those common to retrospective reviews, with limitations due to the extraction of data from clinical charts. Most patients did not undergo urodynamic evaluations, and the individual complexity of the different cases is difficult to quantify. Different procedures obviously have different risks of SUI, and most of these procedures are uncommon. Finally, the low number of patients who had recurrent incontinence means we were unable to do any meaningful multivariable modelling.

## References

1. Avery K, Donovan J, Peters TJ, Shaw C, Gotoh M, Abrams P. ICIQ: A brief and robust measure for evaluating the symptoms and impact of urinary incontinence. *Neurourol Urodyn* 2004; 23: 322–30.
2. Karim SS, Pietropaolo A, Skolarikos A, *et al.* Role of endoscopic management in synthetic sling/mesh erosion following previous incontinence surgery: a systematic review from European Association of Urologists Young Academic Urologists (YAU) and Uro-technology (ESUT) groups. *Int Urogynecol J* 2020; 31: 45–53.
3. Syan R, Peyronnet B, Drain A, *et al.* Exploring stress urinary incontinence outcomes after sling excision for perforation or exposure. *LUTS Low Urin Tract Symptoms* 2019; 11: 206–10.
4. Drain A, Enemchukwu E, Shah N, *et al.* Current Role of Urethrolysis and Partial Excision in Patients Seeking Revision of Anti-Incontinence Sling. *Female Pelvic Med Reconstr Surg* 2018; 00: 1–6.
5. Schwender CEB, Ng L, McGuire E, Gormley EA. Technique and results of urethroplasty for female stricture disease. *J Urol* 2006; 175: 976–80.
6. Gozzi C, Roosen A, Bastian PJ, Karl A, Stief C, Tritschler S. Volar onlay urethroplasty for reconstruction of female urethra in recurrent stricture disease. *BJU Int* 2011; 107: 1964–6.
7. Kowalik C, Stoffel JT, Zinman L, Vanni AJ, Buckley JC. Intermediate outcomes after female urethral reconstruction: Graft vs flap. *Urology* 2014; 83: 1181–5.
8. Reeves FA, Inman RD, Chapple CR. Management of symptomatic urethral diverticula in women: A single-centre experience. *Eur Urol* 2014; 66: 164–72.
9. Lee UJ, Goldman H, Moore C, Daneshgari F, Rackley RR, Vasavada SP. Rate of De Novo Stress Urinary Incontinence after Urethal Diverticulum Repair. *Urology* 2008; 71: 849–53.
10. Seth, J., Naaseri, S., Solomon, E., Pakzad, M., Hamid, R., Ockrim, J., Greenwell, T. Correlation of MRI features of urethral diverticulum and pre- and post-operative stress urinary incontinence. *Neurourology and Urodynamics* 2019; 38(1), 180 - 186.
11. Ganabathi K, Leach GE, Zimmern PE, Dmochowski R. Experience with the Management of Urethral Diverticulum in 63 Women. *J Urol* 1994; 152: 1445–52.

**Figures and Tables**

**Table 1. Type of urethral surgeries performed with proportion with de novo or worsening SUI post urethral surgery**

| Type of urethral surgery | Total patients | Patients with concurrent SUI Surgery | De novo SUI (excluding those with a concurrent SUI procedure) | Worsening SUI (excluding those with a concurrent SUI procedure, or de novo SUI) | Total (Either de novo or worsening SUI) |
|---|---|---|---|---|---|
| Laser excision of eroded midurethral mesh sling | 37 | 1 fascial sling, 1 retropubic suspension | 6% (2/35) | 12% (4/35) | 17% (6/35) |
| Open excision of urethral diverticulum | 12 | 0 | 8% (1/12) | 0% (0/12) | 8% (1/12) |
| Vaginal flap urethroplasty | 10 | 0 | 30% (3/10) | 0% (0/10) | 30% (3/10) |
| Open incision of autologous fascial sling or midurethral sling (for obstruction) | 11 | 0 | 0% (0/11) | 18% (2/11) | 18% (2/11) |
| Open excision and removal of midurethral mesh sling (for erosion/pain) | 5 | 3 fascial slings | 50% (1/2) | 50% (1/2) | 100% (2/2) |
| Repair of urethrovaginal fistula | 2 | 1 fascial sling | 0% (0/1) | 0% (0/1) | 0% (0/1) |

SUI: stress urinary incontinence.