

URETHRAL INJURY WITH TRANSOBTURATOR MIDURETHRAL SLING

Hypothesis / aims of study

Transobturator midurethral slings were developed in response to complications seen with retropubic slings. While they have revolutionized surgical correction of stress incontinence, retropubic slings have known rates of bladder injury and rare reports of bowel, urethra, and major vessel injury which the transobturator approach can significantly reduce. Despite this, we aimed to demonstrate the necessity of performing cystoscopy with visualization of the urethra as urethral injuries are not completely eliminated with the transobturator approach.

Study design, materials and methods

We present a case of a 74-year-old female who presented with complaints of urge predominant mixed urinary incontinence. She had undergone a transobturator sling at an outside institution 1 year previously and suffered from continued urgency with subsequent deterioration of continence status. She was unsuccessfully prescribed 3 antimuscarinic medications prior to presenting to our office where urethral injury was diagnosed.

Results

Our patient presented with symptoms of mixed urinary incontinence. Initial examination revealed vaginal atrophy and a surgically absent uterus and cervix. There was no significant prolapse or urethral hypermobility. There was no evidence of urinary tract infection or retention. Subsequent multi-channel urodynamics revealed a maximal cystometric capacity of 250 mL with uninhibited bladder contractions and resultant incontinence at that volume. No stress urinary incontinence testing was able to be performed due to repetitive spasms. Cystourethroscopy discovered a polypropylene mesh sling perforating the urethra at the 9 o'clock position (figure 1). The bladder was unremarkable.

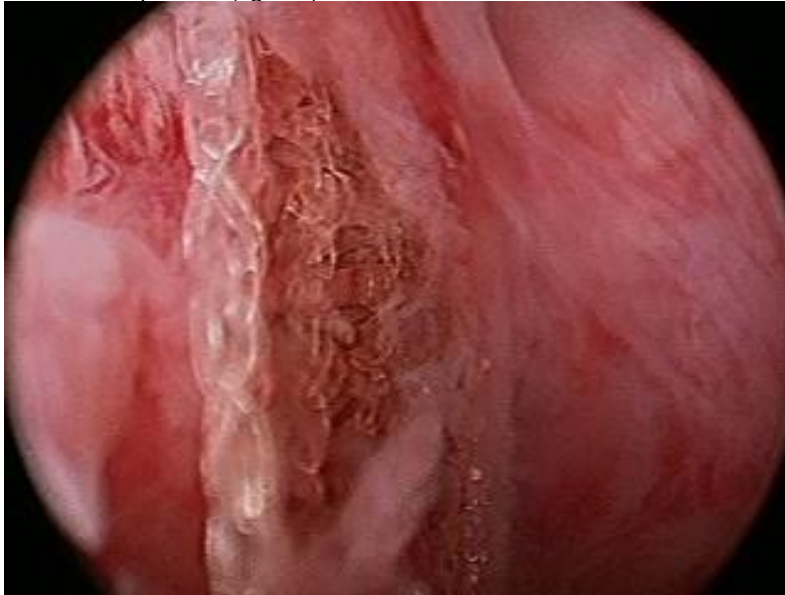


Figure 1: Cystourethroscopy demonstrating urethral injury after transobturator sling

The patient elected surgical removal of the transobturator mesh. Under general anesthesia, 0.5% lidocaine with 1:200,000 epinephrine was used to infiltrate the vaginal wall underneath the urethra. After a sagittal incision, sharp dissection was performed from the urethral meatus to the urethrovesical junction and laterally in both directions. The polypropylene transobturator tape was palpated and mobilized from the underlying bladder by transecting the mesh at the left pubic ramus and dissecting medially along its course towards the urethral injury on the patient's right. With gentle traction to palpate its path we dissected the mesh to its entry into the muscular wall of the urethra. By isolating its path from the right pubic ramus distally we freed the sling from the urethra (figure 2).

We then confirmed that there was no large defect in the urethra. No repair was necessary, and a foley catheter was inserted. The fibromuscular layer of the urethra was reinforced with interrupted sutures, and the sagittal incision on the vagina was sutured. The patient was discharged on the day of surgery and was seen in follow-up 9 days later. A voiding cystourethrogram confirmed no leakage of dye through the repaired urethral injury.

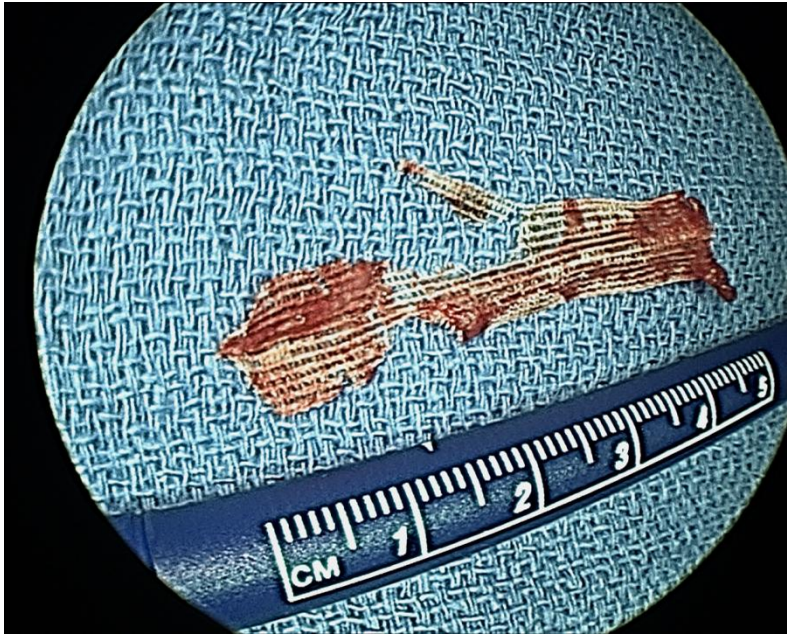


Figure 2: Transobturator Mesh After Removal From Urethra
 Interpretation of results

Urethral and bladder injuries were initially thought to be eliminated with the transobturator approach. Early experience with 500 patients led one author to conclude that “no perioperative cystoscopy is required because the TVT-O tape does not enter the pelvic region at any time.”[1] Kocjancic presented an abstract at the International Continence Society in Paris in 2004 where the transobturator sling is 2 cm away from the urethra in the endopelvic space. Despite these observations, various case reports have reported bladder injuries since that time, the first appearing in 2003. Since that time, cystoscopy has been recommended as an important step in the procedure. We would advocate this step and stress the importance of visualizing the path of the urethra to confirm it was not injured.

With the initial technique for transobturator midurethral slings, urethral injuries were seen. However, injuries were eliminated after a finger was inserted into the vaginal dissection while passing the trocar in an effort to protect the urethra. We are aware of only 2 other reports of urethral injuries. Harris, et al. reported the first published case of urethral erosion 5 months after placement of a transobturator male sling.[2] This case may be vastly different from a typical female midurethral sling, as the patient was post-prostatectomy with resultant poor tissue quality due to radiation therapy. The authors also acknowledge that the typical male sling is placed under tension to aid the continence mechanism whereas female slings are tension-free. Abdel-Fattah, et al. recently performed a randomized trial comparing inside-out and outside-in transobturator slings. With 341 total patients, they experienced 1 urethral injury with the outside-in approach (0.3%).[3]

Our first evaluation of this patient occurred 1 year post-operatively after surgery at an outside hospital. Therefore, we cannot determine if this was an erosion of the tape into the urethra or whether there was an injury at the time of surgery. We presume from the fact that the patient’s symptoms continued after the surgery and then worsened over time that there was a urethral injury at the time of surgery. While cystourethroscopy is not 100% sensitive to identify injury, we feel that it is an essential step of the transobturator sling procedure. It requires minimal extra operative time, and it can eliminate the need for a second surgery such as in our case to remove urethral mesh.

Concluding Message

It is important for all physicians who perform midurethral slings to recognize that the risk of bladder and urethral injury is not completely eliminated and to diligently assess for these complications at the completion of every operation.

References

1. de Leval J, Waltregny D. New surgical technique for treatment of stress urinary incontinence TVT-Obturator: new developments and results. *Surg Technol Int* 2005;14:212-21.
2. Harris SE, Guralnick ML, O’Connor RC. Urethral erosion of transobturator male sling. *Urology* 2009;73:443e19-20.
3. Abdel-Fattah M, Ramsay I, Pringle S, Hardwick C, Ali H. Evaluation of transobturator tapes (E-TOT) study: randomized prospective single-blinded study comparing inside-out vs. outside-in transobturator tapes in management of urodynamic stress incontinence: Short term outcomes. *Eur J Obstet Gynecol Reprod Biol* 2009 Epub ahead of print.

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Is this a clinical trial?	No
What were the subjects in the study?	HUMAN
Was this study approved by an ethics committee?	No
This study did not require ethics committee approval because	After consulting with the IRB chairman at our institution to inquire if an expedited review should be filed, I was informed that this was not considered "research" and therefore does not fall underneath the review of the IRB. I can supply email correspondence to document this interchange if required.
Was the Declaration of Helsinki followed?	Yes
Was informed consent obtained from the patients?	Yes

