Transvaginal repair of unrecognized bladder injury after transobturator tape surgery

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ABSTRACT

Currently, minimally invasive surgeries, which are often characterized by reliable and successful results, are preferred for the treatment of stress urinary incontinence. Although all of the currently used surgeries are minimally invasive, morbidities, including hemorrhage, voiding dysfunction, infection, pain, skin infection and erosion, and bladder injuries, are observed. We detected bladder injury in a 42-year-old female patient with complaints of burning and pain during urination who had previously undergone transobturator tape (TOT) surgery. Complete abdominal hysterectomy for a secondary myoma and a TOT procedure had been simultaneously performed 3 months prior to her presentation. Cystoscopy demonstrated a foreign body compatible with sling material in the bladder which was extracted transvaginally.

Key words: Bladder injury; stress urinary incontinence; transobturator tape.

Introduction

Stress urinary incontinence (SUI) is an involuntary loss of urine especially seen in middle aged, and parous women which develops as a result of activities which raise intraabdominal pressure (coughing, laughing, and heavy lifting).^[1] Nowadays, minimally invasive surgeries with reliable, and successful outcomes are frequently preferred in the treatment of SUI, Transobturator Tape (TOT) method introduced by Delorme in 2001 is one of these surgical modalities.^[2] Though it is a minimally invasive method, complications such as vaginal perforation, *de novo* incontinence, perineal pain, and vaginal erosion can be seen.^[3] Bladder injuries is one of the rarely reported challenging complications that might occur after TOT.^[4]

Case presentation

Our case presentation was written after approval of the patient was obtained. A 42-year-old female patient consulted to our clinic with complaints of painful urination, frequency, urge incontinence, and severe pelvic pain persisting for nearly 3 months. She hadn't complaints of urine leakage through vagina, and hematuria. She had given two spontaneous traumatic vaginal births, and experienced total

abdominal hysterectomy 3 months ago with the indication of uterine myoma, and in the same session concurrent application of TOT for the management of SUI. Complete urinalysis detected one positive (+) microscopic erythrocyturia, and any bacterial growth was not observed on her urine culture media. Complete blood count, and biochemical test results were within normal limits. Any abnormality was not detected on direct urinary system radiograms, and ultrasonograms. Cystoscopic examination revealed a foreign body possibly consistent with sling material inferolateral to, and 1 cm away from the left ureteral orifice. Millimetric stones were observed on the foreign body. On other parts of the bladder, and urethra any additional pathology was not observed.

After the patient was informed about her present condition, extraction of the foreign body possibly consistent with TOT material was planned. Under spinal anesthesia cystoscopic examination was repeated. Since foreign body was very close to the left orifice, a 6F ureteral catheter was implanted. Then 2 cm inferior to the urethra, nearly 3 cm long midline incision was performed via transvaginal route. Tissues were extremely fibrotic with patchy areas of inflammation. Then, midurethral sling consistent with TOT material was observed,

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Figure 1. Exposure of the TOT material after transvaginal incision
TOT: transobturator tape

Figure 2. TOT material was freed from surrounding tissues as far as possible
TOT: transobturator tape

and tried to be dissected from surrounding tissues (Figure 1). Meanwhile the area where the material traumatized the bladder was detected, and the bladder was opened transvaginally to extract the sling material. The bladder was repaired in 2 layers, and the TOT material was freed from its attachments as far as possible to extract nearly 6 cm segment of the TOT material (Figures 2, 3). On repeat cystoscopy, bladder, and left ureteral orifice were controlled. Any additional pathology was not detected, and a double lumen 16 F Foley catheter was inserted via transurethral route.

Ureteral catheter of the patient was removed on postoperative 3. day. Oral quinolones, nitrofurantoin, and etodolac was prescribe

Figure 3. Nearly 6 cm long TOT material together with damaged bladder tissue

s before her discharge. On postoperative 8. day her Foley catheter was removed, and her complaints, and lower urinary system symptoms disappeared.

Discussion

Tension-free vaginal tapes (TVT) were described in 1996, and because of procedural complications, Transobturator Tape (TOT) midurethral sling application which was introduced by Delorme in the year 2001, have been used since then as the first line therapy in the surgical management of stress incontinence in women.^[2,5,6] The procedure is a minimally invasive intervention, nevertheless, voiding dysfunction, infection, pain, skin infection, and erosion, and bladder injuries can be seen.^[7]

In a study performed by Demirkesen et al.^[7] the authors observed voiding dysfunction (n=3), and painful urination (n=3) in their 85 patients who had undergone TOT operations. In a study by Önel et al.^[8] obstructive voiding dysfunction (n=2; 4%), and *de novo* urgency (n=4; 9%) were reported among 42 patients who had been treated with TOT. Abdel-Fattah et al.^[9] evaluated 390 patients who had experienced TOT operations, and observed lower urinary system (n=4; 1%), urethral (n=2; 0.5%), and bladder (n=2; 0.5%) injuries. Schanz et al.^[10] detected bladder injury in only 3 of 200 patients which occurred during dissection with scissors (n=1), and at the beginning of the learning curve (n=2). Johnson et al.^[11] reported 6 cases, and emphasized that sling materials which eroded bladder wall may lead to the development of bladder stones, and major urinary system symptoms. In 6 patients, intravesical sling material was observed during antegrade cystoscopic examination performed through suprapubic route, and incrustations on the sling material were fragmented using holmium laser. Then the sling material

was cut with scissors, and the remaining sling material was cauterized with holmium laser.

However, Oh, and Ryu^[12] evaluated 11 TVT, and 3 TOT patients who developed bladder wall erosion after the procedure. They detected complaints of dysuria (n=9), hematuria (n=7), urge incontinence (n=5), and pelvic pain (n=2). Among them bladder stones were detected in 6 patients. Firstly cystolithotripsy, and then transurethral resection (TUR) were performed to excise mesh material. The authors emphasized that TUR is an easily applicable method to relieve vesical complications developed following midurethral sling procedure. Similarly, Jo^[13] evaluated complications developed after midurethral sling surgery, and detected retained intravesical (n=20), and intraurethral (n=3) meshes. They performed TUR procedures on these 23 patients using electrode loop (n=16), and holmium laser (n=7). Residual mesh material was left in situ in the electrode loop (n=1; 6.2%), and holmium laser (n=5; 71.4%) groups. Only 3 residual mesh material left after holmium laser TUR were extracted via transvaginal route. Concurrently, vesicovaginal fistulas developed in 2 patients in the electrode loop group. and repaired through vaginal route during the procedure.

In a case report, Vila et al.^[14] presented a 51-year-old female patient with a previous history of Burch colposuspension who developed bladder injury during TOT procedure. The patient began to complain of pollakiuria, and dysuria on postoperative 15. day, and cystoscopy confirmed the bladder injury. Sling material was removed through vaginal approach, and its intravesical part was excised during endoscopy. We also excised the sling material which eroded bladder wall using intravaginal approach. Even though we encountered difficulties during excision of the sling because of diffuse fibrosis, a 6-cm-long sling material was extracted successfully.

In midurethral sling applications surgical experience, concurrent pelvic organ prolapsus, presence of cystocele, previous surgery, synchronous surgeries may effect the frequency of complications to some extent. In experienced hands dysuria, urinary retention, urge incontinence are less frequently observed. In patients with a history of genitourinary system surgery, during dissection of vaginal mucosa or lower edge of pubic ramus laterally, lower urinary tract injury is more frequently seen.^[14-16] In cases with supraphysiologic residual urine volume without severe pelvic organ prolapsus, patients who evacuate their bladders with Valsalva manoeuvre, those with obstructive urinary symptoms, and women who want to become pregnant, midurethral sling surgery should not be performed.^[16]

Whatever the reason might be, postoperative control cystoscopy should be performed to identify complications at an early phase, and rule out bladder injuries conclusively.^[14-16] Cystoscopic

examination will establish the diagnosis of bladder wall injury as soon as possible, and complications can be treated immediately. During the cystoscopic examination mesh which traumatized the bladder mucosa should be extracted instantly, and under digital guidance it should be passed through an appropriate route complying with surgical principles. There is no need for suturing perforated area, and bladder catheterization for 2-4 days usually suffices.^[16] When perioperative diagnosis was made, and necessary interventions were implemented, complaints arising from complications will not be observed, quality of life of the patients will increase, and need for additional intervention will be eliminated.

Informed Consent: Written informed consent was obtained from patients who participated in this case.

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References

1. Abrams P, Blaivas JG, Stanton SL. The standardization of terminology lower tract function. *Scand J Urol Nephrol* 1988;114:5-12.
2. Delorme E, Droupy S, de Tayrac R, Delmas V. Transob-turator Tape (Uratape®): A new minimally-invasive procedure to treat female urinary incontinence. *Eur Urol* 2004;45:203-7.
3. Afşar S, Üyetürk U, Dilli A, Haytoğlu E, Yiğit A, Kemahli E. Effectiveness, and complications of transobturator tape operation: Analysis of 120 cases. *Abant Med J* 2012;1:125-8.
4. Vila F, Castanheira de Oliveira M, Gomes MJ, Marcelo F. Bladder injury during trans-obturator tape surgery in a patient with previous colposuspension: is there a connection? *Arch Esp Urol* 2012;65:834-6.
5. Ulmsten U, Henriksson L, Johnson P, Varhos G. An ambulatory surgical procedure under local anesthesia for treatment of female urinary incontinence. *Int Urogynecol J Pelvic Floor Dysfunct* 1996;7:81-6.
6. Fritel X, Fauconnier A, Bader G, Cosson M, Debodinance P, Deffieux X, et al. Diagnosis and management of adult female stress urinary incontinence: Guidelines for clinical practice from the French College of Gynaecologists and Obstetricians. *Eur J Obstet Gynecol Reprod Biol* 2010;151:14-9.
7. Demirkesen O, Çetinel B, Çitgez S, Önal B, Öner A. Are the effectiveness and complication rates of Transobturator and Tension-Free Vaginal Tape similar? *Turkish Journal of Urology* 2008;34:456-62.

8. Önel FF, Tanıdır Y, Önel YŞ, Köse O, Akbaş A, Özbek E. A comparison of the Transobturator and retropubic mid-urethral sling procedures in the management of female stress urinary incontinence. *Turkish Journal of Urology* 2008;34:325-31.
9. Abdel-Fattah M, Ramsay I, Pringle S. Lower urinary tract injuries after transobturator tape insertion by different routes: a large retrospective study. *BJOG* 2006;113:1377-81.
10. Pardo Schanz J, Ricci Arriola P, Tacla Fernández X, Betancourt Ortiz E. Trans obturator tape (TOT) for female stress incontinence. Experience with three years follow-up in 200 patients. *Actas Urol Esp* 2007;31:1141-7.
11. Johnson MH, Ferguson GG, Klutke CG. Antegrade endoscopic removal of retained urethral sling mesh in the bladder. *J Endourol* 2012;26:980-2.
12. Oh TH, Ryu DS. Transurethral resection of intravesical mesh after midurethral sling procedures. *J Endourol* 2009;23:1333-7.
13. Jo DJ, Lee YS, Oh TH, Ryu DS, Kwak KW. Outcomes of transurethral removal of intravesical or intraurethral mesh following midurethral sling surgery. *Korean J Urol* 2011;52:829-34.
14. Vila F, Castanheira de Oliveira M, Gomes MJ, Marcelo F. Bladder injury during trans-obturator tape surgery in a patient with previous colposuspension: is there a connection? *Arch Esp Urol* 2012;65:834-6.
15. David-Montefiore E, Frobert JL, Grisard-Anaf M, Lienhart J, Bonnet K, Poncelet C, et al. Peri-operative complications and pain after the suburethral sling procedure for urinary stress incontinence: a French prospective randomised multicentre study comparing the retropubic and transobturator routes. *Eur Urol* 2006;49:133-8.
16. Yalcın O. Minimally invasive surgeries in stress urinary incontinence, midurethral slings. In: Yalcın O, editor. *Temel Urojinekoloji*. İstanbul: Nobel Tıp Kitabevleri; 2009.p.359-73.