

## Mesh erosions after transobturator suburethral tape: a case series

Lucio Cipullo · Luigi Fasolino ·  
Mariacarmen Fasolino · Edoardo Pastore

Received: 4 November 2007 / Accepted: 21 December 2007 / Published online: 17 January 2008  
© Springer-Verlag 2008

**Abstract** The transobturator tape (TOT) is a widely used minimally invasive procedure for the treatment of stress urinary incontinence (SUI). Despite the reported low rate of intraoperative adverse events after TOT, many cases of delayed vaginal erosion were published and are cause of great concern. We reviewed our experience with the TOT procedure using Uratape® (Mentor-Porges, Le Plessis Robinson, France), a non-woven, non-elastic polypropylene tape. In our series of 102 patients treated with TOT for SUI, we noted three cases of delayed vaginal wall erosion (2.9%). All patients were treated with excision of the eroded portion of the tape. Other reports have shown, in some cases, a considerably higher rate of erosion after TOT using the same mesh. Further investigation is needed to evaluate prospectively the relationship between the type of mesh used for surgery and erosions, and the possible aetiological role of other concomitant factors.

**Keywords** Transobturator tape · Stress urinary incontinence · Erosions

### Introduction

Since its introduction in 1995, tension-free vaginal tape (TVT) has become a widely accepted treatment for stress urinary incontinence (SUI). This procedure has radically changed the surgical approach to SUI, showing a cure rate

similar to the gold standard Burch colposuspension [1], with a low rate of intraoperative complications.

The most frequently reported complication *durante operationem* are bladder perforation (2–6%), haemorrhagic complications (<1%), urethral injury (0.6%), the development of retropubic haematomas (2%) and obturator nerve lesion (0.6%) [2, 3]. Major complications such as large vessel injuries and bowel perforation have been reported. These events are directly related to the introduction of the guiding needle and its peculiar course along the mentioned anatomical structures and through the retropubic space. However, not all the cases of atypical course of the needle or misplacement of the mesh become symptomatic [4].

The transobturator tape (TOT) is a novel technique described in 2001 by Delorme et al., which realises the placement of the suburethral sling through a new insertion route passing through the obturator foramen [5]. This new technique has been shown to be easy to perform, with a short operating time and a quick recovery. Several publications evaluating the efficacy of TOT compared with TVT have shown similar cure rates for both procedures, while an ongoing prospective randomised trial has shown a lower overall perioperative complication rate during and after TOT compared with TVT after 1-year follow-up [6, 7]. Despite the reported lower rate of intraoperative adverse events after TOT procedures, many cases of delayed vaginal erosion were published and are cause of serious concern. We reviewed our experience with the TOT procedure using Uratape® (Mentor-Porges, Le Plessis Robinson, France), a non-woven, non-elastic polypropylene tape with a 15-mm-long central (suburethral) silicone-coated section.

The aim of this paper is to report three cases of erosion after a standardised, apparently uncomplicated, surgery and to describe briefly the strategies applied to solve this condition in order to help gain a better insight of this kind of complication occurring after TOT.

L. Cipullo (✉) · L. Fasolino · M. Fasolino · E. Pastore  
Department of Obstetrics and Gynecology,  
Operative Unit of Gynecology,  
General Hospital “S. Giovanni di Dio e Ruggi D’Aragona”,  
Via S. Leonardo-Fuorni,  
84132 Salerno, Italy  
e-mail: luciocipullo@hotmail.com

## Case series

### Case no. 1

The first case is a 42-year-old para 2 suffering from symptoms of urinary incontinence since her last delivery 1 year before. A complete urogynaecologic evaluation revealed genuine stress incontinence, with no evidence of prolapse. The patient showed no improvement after a course of postpartum pelvic floor muscle training. A TOT was performed according to Delorme et al. [5], under loco-regional anaesthesia. Appropriate antibiotics were administered before starting the procedure according to our protocol. Surgery and post-operative course were both uneventful. The patient was discharged the same day after voiding satisfactorily. A preventive course of amoxicillin and clavulanate was prescribed (875 mg+125 mg BID for 7 days). A first post-operative evaluation after 10 days showed a healed flat suburethral scar, without tenderness or vaginal discharge. The patient was continent subjectively, with no voiding abnormalities. A follow-up evaluation after 5 weeks showed no sign of infection or erosion. Ten months later, the patient presented to our department complaining of a feeling of a foreign body in her vagina. A vaginal inspection revealed the presence of a 3-cm-long erosion, with extrusion of the mesh at the site of the suburethral incision with purulent discharge. Under local anaesthesia, the wound edges were excised and the exteriorised portion of the mesh was removed. The mucosal edges were approximated by interrupted stitches of 2-0 Vicryl®. A positive cultural exam of the removed graft revealed the presence of *Escherichia coli*. A course of antibiotics was prescribed. At a check-up 5 months later, the patient was doing well and was still continent.

### Case no. 2

A 58-year-old para 4 presented symptoms related to pelvic organ prolapse (POP) and complained of brief involuntary loss of urine during periods of increased abdominal pressure. A complete urogynaecologic evaluation showed a stage II-C prolapse and a hypermobile urethra. The patient underwent vaginal hysterectomy combined with a TOT procedure using the transobturator sling-system Uratape according to the classical technique described by Delorme et al. [5]. The patient received preoperative antibiotics. Surgery and postoperative course were uneventful and the patient was discharged the same day without voiding problems. A course of antibiotics was prescribed according to our protocol.

A check-up after 10 days revealed, by speculum inspection, a well-healed suburethral wound without signs of inflammation. The patient was continent. After 5 weeks,

she had no complaints. A careful vaginal examination showed a well-healed scar at the site of vaginal incision. Inspection of the vaginal cuff revealed no bleeding or atypical discharge. Five months postoperatively, during a vaginal irrigation, the patient felt a rigid rough surface over the anterior wall of the vagina. At inspection, a 1.5-cm-long erosion was visible at the site of suburethral incision with extrusion of the mesh. An office cystourethroscopy showed normal findings. Under local analgesia, we performed an excision of the exposed piece of mesh. The fibrotic wound wedges were also removed. The margins were approximated by interrupted resorbable stitches. No evidence of bacterial colonisation of the mesh was found. The patient was discharged on oral Levofloxacin 250 mg OD for 7 days. At the 5-month follow-up visit, the patient had no evidence of recurrence at inspection and reported no urinary or vaginal symptoms.

### Case no. 3

A 44-year-old para 1 presented with symptoms of SUI. She went through a complete urodynamic assessment confirming SUI. Urogynaecological evaluation revealed a hypermobile urethra without signs of POP. Surgery was performed under general anaesthesia using Uratape through the transobturator pathway, as described in the first two cases. Prophylactic antibiotics were administered preoperatively as described previously. Surgery and postoperative course were uneventful. The patient was discharged on oral Augmentin 1 g BID for 7 days with spontaneous voiding. Two months after surgery, the patient started to suffer from recurrent cystitis. At the third postoperative month, a cystourethroscopy revealed the presence of a mesh migration into the bladder from 1 to 2 cm. An earlier cystoscopy performed directly after primary surgery had shown normal findings. The intravesical eroded part of the mesh was cut and removed using operative cystoscope, whereas the part of the mesh running in the vaginal and paraurethral space on the same side was removed vaginally. The patient was discharged on oral levofloxacin 250 mg OD for 7 days. A transurethral bladder catheter was left in situ for 14 days. At a follow-up visit 5 months later, the patient had no urinary symptoms.

## Discussion

The suburethral sling has achieved a prominent position among the available options for SUI.

The overall complication rate is low, although it seems to be underreported in the current available literature when compared to the data reported in the MAUDE database (FDA Manufacturer And User facility Device Experience database) [8]. Efforts to compare the transobturator method

with the retropubic access in terms of complications have revealed a true difference in complication rate, with a significantly lower incidence of adverse events during the surgery with the transobturatorial approach. A recent review assessing the effectiveness and complications of TOT comparing this procedure with TVT for the treatment of SUI showed that adverse events, such as bladder injuries (OR 0.12; 95% CI 0.05–0.33) and voiding difficulties (OR 0.55; 95% CI 0.31–0.98) were less common, whereas groin/thigh pain (OR 8.28; 95% CI 2.7–25.4), vaginal injuries or erosion of the mesh (OR 1.96; 95% CI 0.87–4.39) were more common after tape insertion by the transobturator route [9]. The incidence of intraoperative complications is thought to be independent from the type and characteristic of the mesh used, and directly related to the route of insertion of the needle. Nevertheless, the risk of erosion and extrusion of the sling into the vagina and urethra is still a major concern.

Several studies have shown the erosion rate of the retropubic approach using TVT being in the range of 0.5% to 1.3% [10, 11]. Deval and Haab found that the risk of erosion for the suburethral sling ranges from 0.2% to 22% when considering the overall incidence for both the retropubic and transobturatorial approaches [12]. The intrinsic characteristics of the tape and its inherent biomechanical behaviour may play a major role on the integration failure of the implant. The analysis of meshes utilised in hernia repair suggests that type I meshes (larger pores >75 µm) have low infection rates, low inflammatory response and the best tissue integration (when compared with types II and III [13, 14]). An *in vivo* comparison between the three sling tapes, Monarc (American Medical System, Minnetonka, MN), ObTape (Mentor-Porges, Le Plessis Robinson, France) and the IVS Tunneller mesh (Tyco Healthcare UK Ltd., Gosport, UK), showed remarkable differences in terms of tissue response and subsequent quality of tissue ingrowth. The open-knit structure of the larger-diameter monofilament (Monarc) showed a stronger ingrowth of fibrous connective tissue when compared with ObTape and IVS Tunneller mesh [15]. Clinical studies have shown that the use of type II meshes for the TOT suburethral sling was associated with significantly more erosions when compared with the type I polypropylene sling. The particular use of Uratape, a multi-filament micro-porous mesh with a silicone-coated central portion, has been associated with a high incidence of erosion after TOT for SUI. Other factors, such as initial superficial insertion at surgery, rolling of the tape, previous or concomitant surgery, vaginal incision suturing and individual metabolic factors, may cause or trigger the mechanism of erosion. The impact of surgeon experience and patient age on erosions after TOT are also not clearly identified.

According to our experience, 102 patients were operated on using the TOT technique with Uratape, a multi-filament

micro-porous polypropylene sling (pores <10 µm). All surgical procedures were performed by the same experienced surgeon. The rate of erosion in our series was slightly less than 3% (3/102). All of the patients developed the erosions within a few months after an apparently uncomplicated surgery and were treated with partial removal of the eroded sling.

We did not attempt a conservative management of this condition. We believe that trimming of the resection of the extruded tape together with excision of the fibrotic wound edges are necessary in the case of erosions longer than 1 cm. Nevertheless, a complete spontaneous healing after conservative management in a number of cases has been reported. In one of our cases, an expectant management was strictly not indicated (case no. 3). All patients in whom vaginal erosion occurred were sexually active. All three patients remained continent after removal of the sling. This is probably due to the natural fibrosis formed along the sling, which reinforces the strength of the pubourethral and paraurethral tissues, and warrants the efficacy of the continence mechanism.

In case no. 3, we performed an intraoperative cystoscopy as a part of the procedure without specific indications. Generally, we do not perform an intraoperative cystoscopy routinely. In this series, we started to carry out intraoperative cystoscopy at a certain point and stopped again after a fixed number of cases. These decisions were influenced by the lack of strong evidence available on this topic.

The erosion rate which we found in our series after TOT with Uratape is not more than 3%. Other reports have shown, in some cases, a considerably higher rate of erosion, up to 27%, after TOT using the same type of sling [16].

If there are other factors influencing the outcome of surgery for SUI rather than just the mechanical properties of the material used for the sling, it is a matter that should be further investigated. Therefore, we want to stress the need for large comparative trials aiming to detect true clinical differences in the use of different graft materials for the treatment of SUI. A possible aetiological role of concomitant factors and their significance in the development of erosions also need to be investigated beyond the level of anecdotal experience.

## References

1. Bezerra CA, Bruschini H, Cody DJ (2007) Traditional suburethral sling operations for urinary incontinence in women. *Cochrane Database Syst Rev* 3:CD001754. DOI [10.1002/14651858.CD001754.pub2](https://doi.org/10.1002/14651858.CD001754.pub2)
2. Kuuva N, Nilsson CG (2002) A nationwide analysis of complications associated with the tension-free vaginal tape (TVT) procedure. *Acta Obstet Gynecol Scand* 81:72–77

3. Sergent F, Sebban A, Verspyck E, Sentilhes L, Lemoine JP, Marpeau L (2003) Per- and postoperative complications of TVT (tension-free vaginal tape). *Prog Urol* 13(4):648–655
4. Rahn DD, Marinis SI, Schaffer JI, Corton MM (2006) Anatomical path of the tension-free vaginal tape: reassessing current teachings. *Am J Obstet Gynecol* 195(6):1809–1813
5. Delorme E, Droupy S, de Tairac R, Delmas V (2004) Trans-obturator tape (Uratape): a new minimally-invasive procedure to treat female urinary incontinence. *Eur Urol* 45(2):203–207
6. David-Montefiore E, Frobert JL, Grisard-Anaf M, Lienhart J, Bonnet K, Poncelet C, Daraï E (2006) 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* 49(1):133–138
7. Zullo MA, Plotti F, Calcagno M, Marullo E, Palaia I, Bellati F, Basile S, Muzii L, Angioli R, Panici PB (2006) One-year follow-up of tension-free vaginal tape (TVT) and trans-obturator suburethral tape from inside to outside (TVT-O) for surgical treatment of female stress urinary incontinence: a prospective randomised trial. *Eur Urol* 51(5):1376–1382
8. Deng DY, Rutman M, Raz S, Rodriguez LV (2007) Presentation and management of major complications of midurethral slings: are complications under-reported? *Neurourol Urodyn* 26:46–52
9. Latthe PM, Foon R, Toozs-Hobson P (2007) Transobturator and retropubic tape procedures in stress urinary incontinence: a systematic review and meta-analysis of effectiveness and complications. *BJOG* 114(5):522–531
10. Meschia M, Pifarotti P, Bernasconi F, Guercio E, Maffioli M, Magatti F, Spreafico L (2001) Tension-free vaginal tape: analysis of outcomes and complications in 404 stress incontinent women. *Int Urogynecol J Pelvic Floor Dysfunct* 12(Suppl 2):S24–S27
11. Levin I, Groutz A, Gold R, Pazner D, Lessing JB, Gordon D (2004) Surgical complications and medium-term outcome results of tension-free vaginal tape: a prospective study of 313 consecutive patients. *Neurourol Urodyn* 23:7–9
12. Deval B, Haab F (2006) Management of the complications of the synthetic slings. *Curr Opin Urol* 16(4):240–243
13. Bellón JM, Buján J, Contreras L, Hernando A (1995) Integration of biomaterials implanted into abdominal wall: process of scar formation and macrophage response. *Biomaterials* 16:381–387
14. Bellón JM, Contreras LA, Buján J, Palomares D, Carrera-San Martín A (1998) Tissue response to polypropylene meshes used in the repair of abdominal wall defects. *Biomaterials* 19:669–675
15. Slack M, Sandhu JS, Staskin DR, Grant RC (2006) In vivo comparison of suburethral sling materials. *Int Urogynecol J Pelvic Floor Dysfunct* 17(2):106–110
16. Lazarou G, Powers K, Wang A, Mikhail MS (2005) Vaginal erosions after transobturator suburethral tape. *J Pelvic Med Surg* 11(6):297–301