Post Tension-free Vaginal Tape Voiding Difficulties

Prevention and Management

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Abstract: One of the frequent complications of tension-free vaginal tape (TVT) is postoperative urinary retention. Over-tight tape is the main cause of early postoperative urinary obstruction. Prevention and early correction of this complication may shorten rehabilitation and improve therapeutic results.

Three recurring factors might have led to the postoperative urinary obstruction by overcorrection of the mid urethra: concomitant performing of anterior colporrhaphy; excessive effort applied to overcome occasional difficulties in separating the plastic TVT sleeves; use of the cough method for fine adjustment of the TVT tape.

Ten women suffering from post TVT urinary retention are presented: 6 women with mild urinary retention were managed by repeated catheterizations of the bladder, while 4 women with severe postoperative urinary obstruction were treated surgically to release the tape. Since treatment all patients are voiding normally and continent.

A new surgical approach for treatment of complete urinary obstruction after the TVT operation is described.

Key Words: incontinence, TVT, urinary obstruction

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The Tension-free Vaginal Tape (TVT) procedure for surgical correction of female urinary stress incontinence was described by Ulmsten in 1995 and has become popular very rapidly. The reason for the popularity of the procedure is mainly because TVT is a minimal invasive operation with a high success rate and a low complication rate.[1,2] Well-documented complications of former operations for the treatment of urinary stress incontinence, such as intraoperative blood loss, pelvic or abdominal organ injury, as well as postoperative appearance of rectocele, detrusor instability, sexual mechanical problems and urethral erosion - are extremely rare in the TVT era. Nevertheless, reports are being published on post TVT urinary retention.[3–6] This article was designed to identify relevant risk factors for post TVT urinary retention and to offer better understanding of the surgical background of its occurrence, as well as describing a new approach to overcome the post TVT urinary obstruction.

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MATERIALS AND METHODS

211 TVT procedures were performed in 2 institutions (90 in SZMC and 121 in AMC) from April 1998 to December 2001. A further 103 TVT operations were performed during the first 6 months of 2002 (33 in SZMC and 70 in AMC) when precautions against post TVT voiding difficulties had already been put into practice. The preoperative evaluation includes interview, physical examination, cystometry, leak point measurements, flow profile and ultrasound of the urinary system. Up to December 2001 anterior colporrhaphy was performed with both mild and advanced cystocele, the plastic sleeves were not separated, the women were asked to cough and the TVT was tightened according to the original description to the point where leakage was almost stopped. Choice of anesthesia was given to the women: 22 had local anesthesia, 75 had regional anesthesia and 217 chose general anesthesia. The patients who had general anesthesia had no cough test, the tape being placed at the level of the inferior pubic edge. The medical files were reviewed and the data on women with postoperative voiding difficulty were retrospectively collected. The women's demographic characteristics are presented in Table 1.

RESULTS

Ten of the operated women (10/211 = 4.73%) suffered from postoperative voiding difficulties of various degrees: 6 women had 100–700 mL' residual urine (mild retention), and 4 were completely unable to void (severe retention). Anterior colporrhaphy to correct cystocele (8/10) and technical difficulties with removal of the TVT plastic sleeves (10/10) were both associated with post TVT voiding difficulties. No col-

TABLE 1. Women's Characteristics

No:	211
Age (y):	52.3 (31–89)
Parity:	3.6 (0–14)
Menopausal:	56.2%
Preoperative urge symptoms:	26.6%
Duration of incontinence (y):	12.7 (6m–25y)
Concomitant anterior colporrhaphy:	31.2%

porrhaphy breakdown was noted during the cough tests. Among the women having no subjective voiding dysfunction after TVT (201), cystocele was repaired in 34 (17%) and difficulties with removal of the plastic sleeves were noted in 12 (6%). Neither individual method of anesthesia nor reduced preoperative flow rate were associated with postoperative problems. No postoperative cystocele was reported. Surgical overcorrection and urinary obstruction were diagnosed clinically according to patients reporting voiding dysfunction. This was followed by ultrasonic evaluation of the postmicturition residual urinary volume.

The 6 women with mild urinary retention were treated by repeated urethral catheterizations from 24 hours (four women) to 2 weeks (two women) and all urinary retention was resolved. This was shown objectively by ultrasonic measurements of bladder emptying. It might be presumed that surgically induced bladder deinnervation is the cause of post TVT mild urinary retention. Being a self-limiting disorder repeated catheterization should be the treatment of choice until recovery is achieved spontaneously.

Two of the 4 women with severe retention were treated by catheterization for 3 to 4 weeks and as the retention did not resolve, the tape was cut at the midline. This was performed in the operating room under general anesthesia via a small anterior colpotomy resembling the one needed for TVT. Acknowledging that repeated catheterization does not lead to relief of urinary obstruction, we decided to intervene earlier in the next women suffering from severe urinary retention post TVT. Therefore, the next 2 women diagnosed with this complication were taken to the operating room on the first postoperative day, and a small anterior colpotomy in the midurethra level was performed. Through this incision the suburethral loop of the tape was identified and clamped at both paraurethral sides. The loop was pulled down gently to a distance of about 1 cm, meeting the level of the inferior edge of the pubic bone. Following the surgical correction, no difference was noted between the 2 women treated a month after surgery and the 2 treated on the first postoperative day in terms of recovery and continence. All 4 women treated surgically for severe urinary retention recovered completely while maintaining their continence. This was confirmed by ultrasonic studies showing postmicturition bladder emptiness.

Postoperative difficulties were avoided in the 103 women operated on after December 2001. In these women anterior colporrhaphy was performed by a nontensile method and only for advanced cystocele. While performing plication of the pubocervical fascia, special caution was taken not to cause alteration of the urinary outflow at the bladder base and the mid urethra. The plastic sleeves were separated prior to insertion of the tape, and the cough method was not used.

DISCUSSION

Post TVT voiding difficulties are probably associated with poor surgical technique. Applying excessive tightening power on the tape and over-elevation of the mid urethra, might result in a "nontension-free" operation. Analyzing the medical records of the post TVT urinary retention women, 3 recurring factors which might have led to the postoperative urinary obstruction by overcorrection of the mid urethra were recognized: concomitant performing of anterior colporrhaphy; excessive effort applied to overcome occasional difficulties in separating the plastic TVT sleeves; use of the cough method for fine adjustment of the TVT tape. Postoperative urinary obstruction was therefore avoided by performing concomitant anterior colporrhaphy as loosely as possible and restricting it to only advanced cystocele; by separating the 2 plastic sleeves covering the TVT tape by pulling them apart until a small part of the TVT is exposed, prior to insertion; and by abandoning the cough method – by placing the tape at the inferior pubic margin, the surgeon does not need the cough method for determining the accurate point to which the tape should be pulled.[7] Acting accordingly, one may reduce the post TVT voiding dysfunction rate, yet maintaining the good therapeutic results.

Post TVT urinary retention should be subgrouped into 2 levels: Mild – in those women who are able to void but have more than 100 mL' residual urine volume; and Severe – those completely unable to void. While the mild retention women may benefit from repeated intermittent catheterizations for 24 hours to 2 weeks, the severe retention women will need the tension of the tape to be reduced. Immediate gentle release of the tape is advocated as the treatment of choice for the second group. It is easy to perform, it solves the problem and it does not compromise the therapeutic achievements. This is feasible during the first postoperative 24 hours when the tape has not yet been infiltrated by fibroblasts.[8] Hence, this relatively simple procedure might replace previously reported measures.[9,10,11,12] The TVT should be performed by the strictly tension-free method to avoid postoperative voiding difficulties.

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