Anterior urethropexy according to lapides: how effective is it in the treatment of genuine female stress incontinence?

YALÇIN ILKER¹, TUFAN TARCAN², BORA ÖZVEREN³ and ASIF YILDIRIM³.

Department of Urology, Marmara University School of Medicine, Istanbul, Turkey
¹Professor of Urology, ²Associate Professor of Urology, ³Resident in Urology.

Summary.- OBJECTIVES: Anterior urethropexy, introduced by Lapides, is a retropubic suspension procedure in which the anterior urethral wall is secured to the posterior surface of the symphysis pubis by full thickness trans-urethral sutures. Little information exists in the literature about its effectiveness and morbidity as a surgical treatment option for female stress incontinence. In this study, the outcome of this technique in the treatment of anatomic genuine stress urinary incontinence has been evaluated.

METHODS: Thirty women with urodynamically-proven anatomic stress urinary incontinence underwent anterior urethropexy and 27 of them were followed up for a minimum of 12 months with a mean period of 28.9 months.

RESULTS: A complete dry rate of 52% and a significant improvement of 11% were achieved at the mean follow up period. No postoperative retention or other significant complication was observed in the study group. De novo urge incontinence was noted in 2 patients and managed by anticholinergic treatment.

CONCLUSION: Anterior urethropexy is found to be a safe retropubic suspension technique with a considerably low morbidity but revealed a relatively lower success rate compared to other open bladder neck suspension techniques.

Keywords: Female stress incontinence. Anterior urethropexy.

Resumen.- OBJETIVOS: La uretropexia anterior, introducida por Lapides, es una operación de suspensión retropúbica en la que se fija la pared anterior de la uretra a la superficie posterior de la sífisis del pubis mediante puntos totales transuretrales. Hay poca información en la literatura sobre su eficacia y morbilidad como tratamiento quirúrgico de la incontinencia de esfuerzo femenina. En este estudio se han evaluado los resultados de esta técnica en el tratamiento de la incontinencia de esfuerzo femenina pura.

MÉTODOS: Treinta mujeres con incontinencia de esfuerzo anatómica demostrada mediante estudio urodinámico fueron sometidas a uretropexia anterior y 27 de ellas fueron seguidas durante al menos 1 año con una media de 28.9 meses.

RESULTADOS: Un 52% de las pacientes estaban completamente secas y un 11% habían mejorado significativamente en el momento de la evaluación. No aparecieron retenciones urinarias postoperatorias ni otras complicaciones importantes en el grupo de estudio. 2 pacientes desarrollaron urgencia incontinencia que fue tratada con medicación anticolinérgica.
CONCLUSIONES: Se encuentra que la uretropexia anterior es una técnica de suspensión retropúbica segura con una morbilidad asociada considerablemente baja, aunque el porcentaje de éxitos se ha revelado relativamente bajo en comparación con otras técnicas abiertas de suspensión del cuello vesical.

Palabras clave: Incontinencia de esfuerzo femenina. Uretropexia anterior.

INTRODUCTION

Despite many efforts in developing new techniques and strategies, the management of female stress urinary incontinence (SUI) remains to be a challenging problem. More than 100 different techniques of anti-incontinence surgery have been described so far and new techniques are emerging every year. Nonetheless, the results of numerous surgical approaches reveal failure rates between 15 to 70% and a considerable morbidity (1). Thus, we still lack the gold standard treatment of female SUI reflecting our poor understanding of its pathophysiology.

Anterior urethropexy, a retropubic urethral suspension procedure, was originally described by Lapides in 1961 and proposed to be a simple operation of equal efficacy but less morbidity compared with other open bladder neck suspensions (2). The idea of fixing the urethra to the symphysis pubis originated from the observation of Lapides who re-operated on patients with a failed Marshall-Marchetti-Krantz operation (3). Lapides observed in failed cases that it was the bladder which was fixed to the symphysis pubis rather than the urethra. Fixation of the urethra to the symphysis pubis re-established continence in these cases. Lapides also suggested that it was really the scar tissue that caused fixation of the urethra to the pubic bone in anterior urethropexy. Anterior urethropexy was modified by Lapides in 1971 and further by Siegel and Montague in 1989 (4,5). However, only limited information exist in the literature about the outcome of this procedure compared with other retropubic bladder neck suspensions. In this study, we describe our experience with anterior urethropexy in the surgical treatment of female SUI.

MATERIALS AND METHODS

Between 1991 and 1997, 30 female patients with SUI underwent a modified anterior urethropexy operation as described in the literature (5). All had genuine SUI based on history, physical examination, and urodynamic evaluation. The pre-treatment incontinence status was assessed by the physician utilizing a three-item subjective evaluation score (Table I) and the severity was estimated by a 24-hour quantitative pad test. Urethral hypermobility and associated pathological conditions (cystocele, rectocele, enterocele) were noted on physical examination including Q-tip test. All patients had routine urinalysis, urine culture, and post-void residual volume measurements.

Preoperative urodynamic evaluation (Synectics®, The Netherlands) included a filling cystometry via 8F double-lumen at a medium filling rate with simultaneous abdominal pressure recordings and cough-induced leak point pressure (LPP) measurement. Exclusion criteria for anterior urethropexy were: 1. A

| Table I: Subjective incontinence assessment score |
|-----------------|-----------------|
| I. Stress-type incontinence |
| 0. no urine leakage |
| 1. leakage with strenuous activity |
| 2. leakage with moderate activity |
| 3. leakage with minimal activity |
| II. Protection |
| 0. No protection |
| 1. Used only for certain activities/ occasions |
| 2. Used often |
| 3. Used continuously |
| III. Urge-type incontinence |
| 0. No urge type incontinence |
| 1. Rarely |
| 2. Frequently |
| 3. Every day |
LPP less than 60 cm H2O that required a sling operation, 2. An organ prolapse greater than Grade 2 that required a vaginal correction, 3. A previously failed anti-incontinence surgery that required a sling operation 4. Presence of a neurogenic voiding dysfunction.

**Surgical Technique:**
Anterior urethropexy is a modification of the Marshall-Marchetti-Krantz retropubic urethropexy whereby the suspending sutures are placed through the full thickness of the anterior urethral wall and secured to the posterior surface of the symphysis pubis. The patient is placed in a low lithotomy position. The retropubic space is entered through a transverse suprapubic incision, and the bladder and proximal urethra are sufficiently mobilized by removing the periurethral and perivesical fatty tissue. A urethral metal dilatator is used to aid in accurate positioning of the sutures. The initial 2-0 PDS suture with a reverse super-cutting needle is placed through the anterior urethral wall as far distally as technically possible. The suture must pass through the full-thickness of the anterior urethral wall and "sweep" the metal dilator, without any attempts of sparing the mucosa. The free end of the suture is then threaded to another reverse cutting needle and placed deeply in the fibrocartilage of the posterior wall of the symphysis pubis, in parallel with the urethral bite, and tied without tension. Two more proximal full-thickness sutures are then placed in close proximity so that the anterior urethral wall coapts the posterior surface of the pubis. As the last suture is knotted, the superior edge of the symphysis pubis abuts the urethrovesical junction. Lastly, one 2/0 polyglactin stitch is placed on each lateral side of the anterior bladder wall close to the vesical neck, adjoining it to the posterior aspect of the anterior rectus fascia. A penrose drain is placed in the space of Retzius. The bladder is drained with a Foley catheter for 48 hours. All patients were advised to abstain from sexual intercourse and physical exertion for 6 weeks.

**Post-operative assessment:** All patients were evaluated on the first and sixth months and, annually after the operation. Continence status of the patients was re-assessed by the same 3-item subjective incontinence score filled by the physician. Additionally, all patients were briefly asked whether they had been satisfied (Yes / No / Neutral) with the overall results in regard to their preoperative complaints. In this study "cured" is accepted as equate to dry and wearing no protection. Significant improvement in SUI is defined as a decrease in post-operative subjective incontinence score to less than half of the pre-operative score.

**Statistical analysis:**
Paired student t test was used and a value of p<0.05 was accepted significant.

**RESULTS**

**Preoperative assessment:** All patients had SUI, while 12 of them additionally complained of urge incontinence. Only 3 patients who had reported urge incontinence were found to have detrusor instability in the pre-operative cystometric study. The 24-hour pad test revealed a mean urinary leakage of 120 gr/day (range 32-560 gr/day). Five patients with SUI had grade 1 cystocele.

Twenty-seven of the patients who underwent anterior urethropexy were available for postoperative evaluation. They were aged 44 to 72 years (mean 59 years). The mean time of follow up was 28.9 months (range 12 to 52 months).

The average operation time was about 45 minutes and the mean postoperative hospital stay was 3 days (range 2-5 days). There were no intra-operative complications. The drain was removed on the first postoperative day in all patients. There was no incidence of urinary retention upon catheter removal on the second post-operative day. One patient had wound infection that was managed by incisional drainage and appropriate antibiotics. One patient complained of moderate disparanue at sixth-month follow up that ceased afterwards.

Evaluation in a mean follow-up more than two years showed that 14 women (52%) were completely cured of SUI, and 3 patients (11%) had significant improvement with only rare episodes of urinary leakage with combined stress and urge nature. The mean preoperative subjective incontinence score was 7.44. Following surgery the mean score decreased to 3.26 (p<0.05). Overall, 16 (59%) patients expressed satisfaction with respect to the management of their previous incontinence status, whereas 7 (26%) were
dissatisfied and 4 were feeling neutral. Ten patients (37%) remained wet and they reported no difference in the severity of stress incontinence as compared to their preoperative condition. No obstructive symptoms were encountered in the study group.

No significant decline in the success of the procedure was observed during follow up. The dry rate of patients after 1st, 2nd and 3rd year of follow up were found to be 52% (n=27), 46% (n=24) and 53% (n=17), respectively.

**DISCUSSION**

The Female Stress Urinary Incontinence Clinical Guidelines Panel report determined that retropubic suspensions and sling operations are the most efficacious procedures for long term success (1). Although, slightly better long-term success rates are reported after sling operations, retropubic suspensions still constitute the most widely performed anti-incontinence procedures. The advantage of retropubic suspensions is their low morbidity and easy surgical technique compared with sling operations whereas, recurrence of incontinence in the long term appears to be their major drawback (1). Open bladder neck suspensions remain to be the first choice of treatment for most female urologists especially if a concomitant abdominal operation such as abdominal hysterectomy needs to be performed at the same time.

Open bladder neck suspensions are found to be superior over vaginal needle suspensions or anterior colporraphy (1). The Female Stress Urinary Incontinence Clinical Guidelines Panel report indicates an 84% median cure/dry improvement rate following retropubic suspensions at 24 to 47 months follow-up where this rate remained unchanged after 48 months (1). In randomized trials, objective continence rates including substantial improvement at 6 to 12 months after surgery were reported to be 89.9% and 80.3% following Burch and Marshall-Marchetti-Krantz colposuspension, respectively, indicating a slight superiority for Burch operation over other open bladder neck suspensions (1).

In contrary to other retropubic suspension techniques, little information exists in the literature about the outcome of anterior urethropexy. In one of the few reports about anterior urethropexy, 35 women were followed up for an average of 3.5 years after the operation (6). The authors achieved a complete dry rate of nearly 100% (21 out of 23) in women with pure stress incontinence whereas only one-third of women with mixed type of stress incontinence became completely dry. In this study, it was to note that the bladder was drained postoperatively for 3 weeks by a urethral catheter. Another study of 86 women who underwent a modified anterior urethropexy revealed a dry rate of 72% where the follow up period ranged from less than 1 year up to 12 years (7). In both studies, no significant morbidity or postoperative voiding dysfunction was reported.

Although no precise data is shown yet, the major advantages of anterior urethropexy over other suspension techniques are suggested to be its lower morbidity and durable urethral fixation. Obstructive or irritative voiding symptoms are among common complications seen after retropubic suspension procedures (1,8) Voiding difficulties may be manifested as persistent urinary retention or as irritative symptoms including de novo urge incontinence. Retropubic procedures designed to correct SUI work, at least partly, by causing some degree of urethral obstruction (8). Median rate of postoperative retention more than 4 weeks has been reported to be 5% after other types of retropubic suspensions (8). Furthermore, about 10% of patients with no preoperative urgency or detrusor instability develop postoperative urgency (1,8). Compression or kinking of the urethra may be caused by anchoring periurethral and vaginal wall tissue to symphysis pubis in retropubic operations (8). The compression of urethra frequently leads to difficulty in voiding postoperatively and is not necessary for success of the repair (8). During anterior urethropexy, three sutures through the anterior urethral wall and the additional single sutures on either side of the bladder neck obviate any kinking or compression of the urethra. Post-operative urinary retention and obstructive urinary complaints were not encountered in our series. However, post-operative urge-type incontinence without any SUI was reported in 2 patients, who had no urge incontinence before the operation. These patients had satisfactory urinary control with anticholinergic medication after surgery. De novo urge incontinence may develop conceivably due
to the purposeful violation of the urethral wall, urinary extravasation into the submucosa, subsequent fibrosis and scarring of the submucosal tissue, loss of the "mucosal seal" mechanism and creation of intrinsic sphincter deficiency. These potential problems are also of concern for other retropubic suspension procedures such as Marshall-Marchetti-Krantz. Urethritis may be expected to be a common complication after anterior urethropexy, however, no case of urethritis is seen in our series or in other reports, to the best of our knowledge.

Suture "pull through" from the vaginal and periurethral anchoring tissue has been demonstrated as a probable cause of recurrent urethral hypermobility that may lead to recurrence of incontinence after retropubic suspension techniques (9). Another advantage of anterior urethropexy over other retropubic suspension techniques is proposed to be the durable urethral fixation that is achieved by the fixation of the anterior urethral wall with full-thickness sutures to the symphysis pubis and also by scar tissue formation between the urethra and symphysis pubis. Supporting the durability of urethral fixation in anterior urethropexy, the dry rate of our patients who completed 3 year-follow up was similar compared to 1st year evaluation.

CONCLUSION

Our study has revealed 63% favorable outcome after anterior urethropexy in a group of patients with anatomic SUI. Anterior urethropexy has been found to have obvious benefits such as technical simplicity, low morbidity and absence of postoperative urinary retention or obstruction compared to other open bladder neck suspensions. However, its success rate has been found to be relatively lower compared to other open bladder neck suspensions.

REFERENCES AND RECOMMENDED READING (*of special interest, **of outstanding interest)


