Nine-year experience in sub-urethral prosthesis for the treatment of female stress urinary incontinence

Adrian Haşegan
Department of Urology, Emergency County Hospital Sibiu, Faculty of Medicine

Abstract

Sub-urethral prosthesis in the treatment of stress urinary incontinence under the form of tension-free vaginal tape (TVT) and of transobturator (TOT) type is a well known method. The objective of this paper is to present the nine year experience of Department of Urology Sibiu in the two techniques, TVT and TOT, as well as the indication, technique and results obtained through minimally invasive treatment for fixing the sub-urethral prosthesis at the patients with SUI.

Material and methods: Between December 2005-2014, 322 patients with stress urinary incontinence (SUI) were evaluated in the Urology Clinic of Sibiu. The surgical treatment consisted of TVT technique in 72 patients (34p “in-out” and 38p “out-in”) and of TOT technique in 250 patients. In our study group, urogenital prolapse concomitant correction associated to stress urinary incontinence was performed in 79 patients (p).

Results: The largest share in the studied group is given by the TOT technique with 77.64% of surgeries (250 p/322p). The average operating time was 23.1 minutes, an average of 30.8 ± 9.3 minutes for the TVT technique and 15.4 ± 4.7 minutes for the TOT technique. Urogenital prolapse concomitant correction prolonged the surgical time by 55 minutes on average. The average length of stay was 3.2 days, on average 3.4 ± 1.8 days for the TVT technique and 3.1±1.2 days for the TOT technique. SUI cure in the study group was of 98% (315 p / 322 p). Postoperative satisfaction rate assessed by the TSS (treatment satisfaction scale) questionnaire was of 87% (280 patients).

Conclusion: Sub-urethral prosthesis is the optimal treatment in stress urinary incontinence irrespective of the chosen technique (TOT or TVT).

TVT technique is more effective in the treatment of grade 3 SUI.

SUI treatment concomitant with the urogenital prolapse intervention significantly improves the surgical outcome. Reduced complications, lower length of stay and the rapid socio-professional integration justify the use of the sub-urethral prosthesis in the treatment of SUI.

Keywords: stress urinary incontinence, minimally invasive treatment, TOT, TVT, urogenital prolaps
Introduction

Urinary incontinence is the involuntary loss of urine through the urinary meatus.

Urinary incontinence is not a normal consequence of aging.

Stress urinary incontinence in women is a condition widely encountered in the entire world with a prevalence between 12.8% and 46.0%. Stress urinary incontinence is a public health problem causing a significant decrease in quality of life, involving social, physical, psychological, occupational and sexual suffering of patients (1).

Sub-urethral prosthesis in the treatment of SUI (stress urinary incontinence) under the form of tension-free vaginal tape (TVT) and of transobturator (TOT) type is a well known method.

TVT technique was described by Ulmsten in 1995 and is based on the fitting of a sub-urethral prosthesis through the retropubic passage (2).

TOT technique described by Delorme in 2001 involves the fitting of the sub-urethral prosthesis through the transobturator passage, avoiding bladder injury that may occur in TVT technique regarding the retropubic passage of the operator device. (3)

The objective of this paper is to present the nine year experience of Department of Urology Sibiu in the two techniques, TVT and TOT, as well as the indication, technique and results obtained through minimally invasive treatment for fixing the sub-urethral prosthesis at the patients with stress urinary incontinence.

Methods

Between December 2005-2014, 322 patients with stress urinary incontinence (SUI) were evaluated in the Urology Clinic of Sibiu. Diagnostic algorithm consisted of clinical examination, ultrasound, urinalysis, urine culture, bioumoral examination, micturition calendar filled out by patients for 7 days and the forms of life quality, Q UDI-6 and II-7. The patients with urinary incontinence by medium and severe micturition imperiosity within overactive bladder syndrome were excluded.

In order to quantify the degree of severity of SUI, Stamey classification was used: grade 1 (77p/48.44%), grade 2 (154 p/47.82%), grade 3 (12p/3.72%).

Table 1. Patients’ distribution according to SUI degree of severity

<table>
<thead>
<tr>
<th>SUI degree of severity</th>
<th>No. of patients</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade 1</td>
<td>77</td>
<td>48.44%</td>
</tr>
<tr>
<td>Grade 2</td>
<td>154</td>
<td>47.82%</td>
</tr>
<tr>
<td>Grade 3</td>
<td>12</td>
<td>3.72%</td>
</tr>
</tbody>
</table>

Sub-urethral prosthesis is made of monofilament macropore polypropylene with a length of 40 cm and a width of 1.5 cm. TVT technique was applied in the “in-out” (inside-outside) manner and in “out-in” (outside-in) manner. Regarding the TOT technique, insertion of the device for strip insertion through the obturator orifice was made from out to in (“outside-in”).

The surgical treatment consisted of TVT technique in 72 patients (34p “in-out” and 38p “out-in”) and of TOT technique in 250 patients. The operations were performed under spinal anesthesia, patients receiving antibiotic prophylaxis with 3 doses of cefuroxime intravenously.
In our study group, urogenital prolapse concomitant correction associated to stress urinary incontinence was performed in 79 patients (p): vaginal hysterectomy (6p), Anterior colporrhaphy with Kelly plication in patients with cystocele - (3 P), cystocele cure with Prolene prosthesis (29 p), posterior colpo-perineorrhaphy in the patients with associated rectocele (24 p), anterior and posterior colporraphy with dual Prolene prosthesis in patients with associated cystorectocele (17p).

Results

The largest share in the studied group is given by the TOT technique with 77.64% of surgeries (250 p/322p).

There have been assessed the degree of postoperative urinary continence and quality of life of patients undergoing surgery, as well as the technical issues of sub-urethral strip fixing in both techniques TVT and TOT. The average operating time was 23.1 minutes, an average of 30.8 ± 9.3 minutes for the TVT technique and 15.4 ± 4.7 minutes for the TOT technique.

Urogenital prolapse concomitant correction prolonged the surgical time by 55 minutes on average.

The average length of stay was 3.2 days, on average 3.4 ± 1.8 days for the TVT technique and 3.1±1.2 days for the TOT technique. It was noted that there is no statistical difference between the two techniques regarding the length of stay (p = 0.540).

Resumption of voiding 24 hours later was similar in both groups.

Immediate postoperative continence (24 hours after removing the urethrovesical probe) and at distance (12 months-48 months) was good, as judged by the clinical examination and micturition calendar.

Stress urinary incontinence cure in the study group was of 98% (315 p / 322 p). Postoperative continence rate was of 97.2% (243p / 250 p) in the TOT group and of 100% (72p/72p) in the TVT group.

Postoperative complications: vaginal fornix lesion 1p / 250p in the TOT group, vaginal erosion p 1p/250, bladder injury 1p/34p in the TVT group (in-out).

Urogenital prolapse correction did not negatively influence resumption of micturition and postoperative continence cure.

Postoperative satisfaction rate assessed by the TSS (treatment satisfaction scale) questionnaire was of 87% (280 patients).

Discussions

Prospective randomized studies that have compared TVT technique with the classic Burch colposuspension method showed a similar therapeutic effect. While TVT technique was associated with a higher rate of intraoperative complications, Burch procedure was associated with a higher rate of postoperative complications and a longer recovery period of time and professional reintegration (4). TVT technique common complications included bladder injuries, intraoperative bleeding, postoperative infections and intestinal lesions (5). Since surgical procedures have become dominant compared to the non-surgical treatment of stress urinary incontinence, Delorme has made an adaptation of the TVT technique to avoid the complications occurred by introducing the TOT technique. Through his technique, Prolene sub-urethral prosthesis passes through the obturator orifice, replacing the retropubic space (3).

TOT technique that does not require urethrocystoscopy at the end of the intervention because the surgeon always controls the operator device.

It is not necessary to perform cystoscopy either in TVT technique from outside-in (out-in) because the tip of the device can be controlled by the surgeon throughout the lateral vesical retropubic trajec.

The risk of bladder injury is greater if using inside-outside (in-out) TVT technique. This requires per-
Clinical studies

The success of surgery, aimed at improving the patients’ satisfaction is an important parameter in determining groups. Although it is a subjective evaluation, patient improvement in the quality of life after surgery in both incontinence measured by UDI-6 and IIQ-7 showed a marked severity rate of urinary incontinence. The severity rate of urinary incontinence and a lower rate of intra- and postoperative complications (8).

Patients in the TOT group, in whom incontinence persisted postoperatively (7p/250p) had grade 3 incontinence. All patients in the TVT group were continent after surgery regardless of the preoperative incontinence grade.

It is recognized that proper identification and correction of defects of the diaphragm pelvis in the same surgical session of correcting urinary incontinence, significantly improves the surgical outcome (6).

The incidence of urogenital prolapse that needs surgical correction concomitant with the intervention for SUI was reported at a rate of 42% (6). Several studies have reported clinical outcomes of patients who received TVT and TOT simultaneously, the solving of the urogenital prolapse. Only a few studies have correctly evaluated the safety and efficacy of TVT and TOT in combination with pelvic reconstructive surgery.

A retrospective study is performed by Horton et al. comparing 47 patients who benefited from TVT technique along with vaginal corrective interventions, with 133 patients who underwent only TVT technique (7).

No intraoperative complications occurred in the operated patients; bleeding was minimal; vesical catheter was kept with more than 24 hours as compared with the patients requiring only SUI correction SUI (48 hours). Postoperative continence was good, the patients being dry at the monitoring check-ups.

The published postoperative results that followed have shown good efficacy in the cure of stress urinary incontinence and a lower rate of intra-and postoperative complications (8).

Assessing the impact of urinary incontinence on the quality of life of patients is important in the preoperative evaluation of patients (9). The two questionnaires UDI-6 and IIQ-7 can quantify the degree of severity of urinary incontinence. The severity rate of urinary incontinence measured by UDI-6 and IIQ-7 showed a marked improvement in the quality of life after surgery in both groups. Although it is a subjective evaluation, patient satisfaction is an important parameter in determining the success of surgery, aimed at improving the patients’ quality of life.

Overactive bladder symptoms, especially urinary imperiosity or urinary incontinence may have a negative impact on the patients’ quality of life and the satisfaction of treatment (10).

In our study, postoperative satisfaction rate assessed by the TSS questionnaire was of 86.9% (280p). 21 patients felt the treatment was a failure (6.52%). These patients had either persistent postoperative urinary imperiosity (19 patients / 5.9%) or de novo postoperative imperiosity (two patients / 5.9%). Preoperative imperiosity associated to stress urinary incontinence was the only predictor that negatively influenced postoperative satisfaction.

Conclusions

Sub-urethral prosthesis is the optimal treatment in stress urinary incontinence irrespective of the chosen technique (TOT or TVT).

TVT technique is more effective in the treatment of grade 3 SUI.

SUI treatment concomitant with the urogenital prolapse intervention significantly improves the surgical outcome.

Reduced complications, lower length of stay and the rapid socio-professional integration justify the use of the sub-urethral prosthesis in the treatment of SUI.

References

7. Horton TR, Druckenmiller J, Lucente V. Concomitant vaginal surgery with tension-free vaginal tape pubovaginal sling for treatment of female stress urinary incontinence and pelvic support defects. 27th Scientific Meeting of the Society of Gy-
Clinical studies

