

Suburethral sling procedures after previous surgery for urinary incontinence or pelvic organ prolapse



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Objective. To compare the outcome of suburethral sling procedures (tension-free vaginal tape (TVT), obturator tape (Ob-tape)) for stress urinary incontinence (SUI) in women with previous surgery for SUI or pelvic organ prolapse (POP).

Methods. A comparative, descriptive, retrospective study was done using information drawn from a urogynaecological database of 195 women with urinary incontinence. We divided 195 women into a group with previous surgery for urinary incontinence or POP (study group, $N = 106$) and a group without previous incontinence surgery (control group, $N = 89$). All women underwent a TVT (86%) or Ob-tape procedure (14%). The mean follow-up in the study group was 25 months (range 2 - 61 months) and in the control group 24 months (range 1 - 49 months). Since a urodynamic evaluation facility was not available for most women, the diagnosis of SUI and other types of incontinence was made clinically.

Results. On admission 43 women in the study group presented with SUI (40.6%), compared with 34 in the control group (38.2%) (95% confidence interval (CI) -11.3%; 15.7%). Urge incontinence was present in 10 women in the study group (9.4%) and 6 in the control group (6.7%) (95% CI -5.7%; 10.6%). Mixed incontinence was present in 47 (44.3%) of the study group and 39 (43.8%) of the control group (CI -13.3%; 14.2%). The diagnosis was unknown in 6 women in the study group and 10 in the control group.

Following surgery, SUI recurred in 25 (23.6%) women in the study group and 12 (13.5%) in the control group (95% CI -1.0%; 20.6%). Overactive bladder symptoms were present postoperatively in 43 women in the study group (40.6%) and 39 controls (43.8%) (95% CI -16.9%; 10.4%).

Follow-up surgery was performed in 14 women in the study group (13.2%) and 6 controls (6.7%) (95% CI -2.4%; 15.0%). Included were mesh removals (4 study group, 1 control), Burch colposuspension (1 and 2, respectively), and TVT or Ob-tape (2 and 1, respectively).

Conclusion. Statistically, previous surgery was not a risk factor for recurrent SUI, but a tendency was observed towards more SUI in these women.

Urinary incontinence is a common problem in women. Thomas *et al.* reported occurrence of an episode of incontinence at least twice a month in 25 - 33% of women in different age groups (25 - 85 years).¹ Diokno *et al.* reported a prevalence of 38% in women older than 60 years.² Hunskar *et al.* concluded that the urinary incontinence components that contribute towards the total prevalence are as follows:³

- stress urinary incontinence (SUI): 50% (range 24 - 75%)
- urge incontinence: 21% (7 - 49%)
- mixed incontinence: 29% (11 - 61%).

The prevalence of SUI is about 15% in the general female population and increases with age. This correlates

closely with a pelvic organ prolapse (POP) prevalence of 11%.⁴

The Burch colposuspension was generally regarded as the gold standard for the surgical correction of SUI.^{5,6} During recent years, however, the tension-free vaginal tape (TVT) procedure has delivered similar results.^{7,8} Since it is a simpler procedure, it is currently regarded by many as the new benchmark. In more recent times, the obturator tape (Ob-tape) approach has replaced TVT to some extent due to its even greater degree of simplicity and similar results.⁹

SUI is mainly associated with two conditions: hypermobility of the urethra and intrinsic sphincter deficiency (ISD).^{10,11} The main indication for TVT and

Ob-tape procedures is hypermobility-associated SUI. There are many reports on these procedures done as primary surgery, but little evidence exists for their effectiveness after previous SUI or POP surgery. The aim of this study was to report on our experience with TVT and Ob-tape for SUI after previous surgery.

Patients and methods

A comparative, descriptive, retrospective study was done using information from a urogynaecological database in the Division of Urogynaecology, Universitas Hospital, Bloemfontein. The information consisted of case records of women with urinary incontinence or POP. For each woman treated in the unit, a data sheet was completed on discharge from hospital. These data sheets were reviewed at weekly meetings in the unit and entered into the computer database (Epi-Info 6.04d, Centers for Disease Control and Infection, Atlanta, Georgia, USA and World Health Organization, Geneva, Switzerland). Follow-up data were also entered into the database. When a woman did not return for follow-up, she was contacted by telephone or mail and asked to complete a standardised questionnaire determining the presence of pain, urinary, coital and rectal symptoms, vaginal discharge and awareness of prolapse symptoms.

The inclusion criteria for cases from this database included the TVT, Ob-tape, anterior intravaginal sling (IVS) and tension-free vaginal tape 'inside out' (TVT-O) procedures. A total of 195 cases were selected, which were divided into two groups: those with previous surgery for SUI or POP (study group, $N = 106$), and those without previous surgery (control group, $N = 89$). These two groups were compared with regard to demographic data, presentation, treatment and results.

The diagnosis of SUI (or other types of urinary incontinence) was made clinically in the majority of women, as urodynamic evaluation was not freely available. The classification of Baden and Walker¹² was used for staging the degree of POP. We regarded grades 2, 3 and 4 (to the level of the hymeneal remnants or more) as recurrent prolapse.

The two groups were compared using descriptive statistics, namely frequency and percentages for categorical data, and medians and percentiles for continuous data. Comparisons were made using 95% confidence intervals (CI) for chi-square tests or Fisher's

exact test (as appropriate) for categorical data, and Kruskal-Wallis test for continuous data.

This study was approved by the Ethics Review Board of the Faculty of Health Sciences, University of the Free State, Bloemfontein.

Results

The median age of the study group (with previous surgery) was 63.5 years (range 38 - 86 years) and of the control group (without previous surgery) 65.0 years (26 - 93 years) (95% CI 1; 10). There were no significant differences with regard to median parity (3.0 in both groups) and racial distribution (90% and 92% Caucasian, respectively).

Previous surgical procedures in the study group were as follows:

- surgery done at another hospital (details mostly unknown) ($N = 48$; 45.3%)
- posterior colporrhaphy ($N = 13$; 12.3%)
- posterior colporrhaphy and Burch colposuspension ($N = 29$; 27.4%)
- Burch colposuspension ($N = 16$; 15.1%).

The types of urinary incontinence diagnosed are listed in Table I. Although there were no significant differences between the groups, the majority presented with SUI and mixed incontinence.

Difficulty in defaecation (manual assistance during defaecation) was reported by 15 (14.2%) women in the study group and 13 (14.6%) controls (95% CI -10.8%; 9.4%).

Table II summarises the prevalence of prolapse in the two groups. There were significantly more cases of anterior compartment and post compartment prolapse in the control group. The surgical procedures are listed in Table III. Only posterior colporrhaphy differed significantly, with more of these procedures in the control group.

Follow-up information was obtained for 103 women in the study group (97.7%) and 85 controls (95.5%). The median duration of follow-up was 25 months in the study group (range 2 - 61 months) and 24 months in the control group (range 1 - 49 months).

Recurrent SUI occurred in 25 women (23.6%) in the study group and 12 (13.5%) controls (95% CI -1.0 %; 20.6%). Overactive bladder symptoms were present

Table I. Final diagnosis of the women based on clinical evaluation

Diagnosis	Study group ($N = 106$)	Control group ($N = 89$)	95% CI
SUI	43 (40.6%)	34 (38.2%)	-11.3%; 15.7%
UI	10 (9.4%)	6 (6.7%)	-5.7%; 10.6%
MI	47 (44.3%)	39 (43.8%)	-13.3%; 14.2%
I	6 (5.7%)	10 (11.2%)	-14.3%; 2.4%

SUI = stress urinary incontinence; UI = urge incontinence; MI = mixed incontinence; I = incontinence of unknown kind.

Table II. The prevalence of pelvic organ prolapse, stages 2 - 4*

Type of prolapse	Study group (N = 106)	Control group (N = 89)	95% CI
Anterior compartment	31 (29.3%)	42 (47.1%)	-30.9 %; -4.3%
Enterocoele	33 (31.1%)	26 (29.2%)	-11.0 %; 14.5%
Post compartment	27 (25.4%)	53 (60.7%)	-46.2 %; -20.3%

*Some women had more than one type of prolapse.

Table III. Surgical procedures performed on women in this study*

Surgical procedure	Study group (N = 106)	Control group (N = 89)	95% CI
TVT	94 (88.7%)	74 (83.2%)	-4.3 %; 15.8%
Ob-tape	12 (11.3%)	15 (16.8%)	-15.8 %; 4.3%
Posterior colporrhaphy	24 (22.6%)	42 (47.2%)	-36.9 %; -11.2%

*Some women had more than one procedure.
TVT = tension-free vaginal tape; Ob-tape = trans-obturator tape.

postoperatively in 43 women in the study group (40.6%) and 39 controls (43.8%) (95% CI -16.9%; 10.4%).

Follow-up surgery was performed in 14 women in the study group (13.2%) and 6 controls (6.7%) (95% CI -2.4%; 15.0%). Included were mesh removals (4 in the study group and 1 in the control group), Burch colposuspension (1 and 2, respectively), TVT or Ob-tape (2 and 1, respectively), and posterior colporrhaphy (1 and 0, respectively), sacrocolpopexy for prolapse (0 and 1, respectively), and urethrolysis (2 and 1, respectively).

Discussion

The two groups were comparable with regard to demographic data, but there were more patients with prolapse in the control group, probably because of the previous surgery in the study group. The profile of urinary incontinence was similar for both groups.

Ideally, all women should have been evaluated urodynamically pre- and postoperatively. In this study, only a small proportion of the patients was evaluated in this way.

Although more women with previous surgery presented with recurrent SUI, the difference was not statistically significant. Few reports deal with this problem. Rezapour and Ulmsten¹³ reported excellent results of treatment of 34 patients who had undergone previous surgery - 82% were cured and a further 9% objectively improved. Lo *et al.*¹⁴ reported on 41 patients who underwent TVT procedures after previous failure of incontinence surgery. In this study, 82.9% of women were cured and 4.9% objectively improved. Both these studies delivered results similar to those in our control group but better than in our study group (23.6% of our study group and 13.5% of our control group reported recurrent SUI). The reasons for these high failure rates may include the inclusion of cases with urge

incontinence, ISD and other causes of incontinence, which would have been accurately identified on pre-operative urodynamic evaluation.

The first attempt at surgery for SUI is the most successful. Repeat surgery leads to more periurethral fibrosis and ISD, which is more difficult to cure. Although the IVS and Ob-tape procedures are simple, great care must be taken in the selection of patients as these procedures are not indicated for ISD and overflow incontinence.

In conclusion, previous surgery for urinary incontinence or POP was not a risk factor for recurrent postoperative SUI, although there was a tendency towards more SUI in women with previous surgery.

1. Thomas TM, Plymat KR, Biannin J, Meade TW. Prevalence of urinary incontinence. *Br Med J* 1980; 281: 1243-1245.
2. Diokno AC, Brock BM, Brown MB, Herzog AR. Prevalence of urinary incontinence and other urologic symptoms in the noninstitutionalized elderly. *J Urol* 1986; 136: 1022-1025.
3. Hunskaar S, Burgio K, Diokno AC, Herzog AR, Hjalmsås K, Kapitan MC. Epidemiology and natural history of urinary incontinence. In: Abrams P, Cardozo L, Khoury S, Wein A, eds. *Incontinence*. Plymouth, UK: Health Publications, 2002: 176-179.
4. Olsen AL, Smith VJ, Colling JC, Clark AL. Epidemiology of surgically managed pelvic organ prolapse and urinary incontinence. *Obstet Gynecol* 1997; 89: 501-506.
5. Tanagho EA. Colpocystourethropexy: the way we do it. *J Urol* 1976; 116: 751-753.
6. Drouin J, Tessier J, Bertrand PE, Schick E. Burch colposuspension: long-term results and review of published reports. *Urology* 1999; 54: 808-814.
7. Petros P, Ulmsten U. Intravaginal sling plasty. An ambulatory surgical procedure for treatment of female urinary incontinence. *Scand J Urol Nephrol* 1995; 29: 75-82.
8. Bezerra CA, Bruschini H, Cody DJ. Suburethral sling operations for urinary incontinence in women. *Cochrane Database of Systematic Reviews* 2001, Issue 3. Art. No.: CD001754. DOI: 10.1002/14651858.CD001754.
9. Costa P, Delmas V. Trans-obturator-tape procedure - 'inside out or outside in': Current concepts and evidence base. *Curr Opin Urol* 2004; 14: 313-315.
10. Koelbl H, Mostwin J, Boiteux JP, Macarake E, Petri E, Schafer W, Yamaguchi O. Pathophysiology. In: Abrams P, Cardozo L, Khoury S, Wein A, eds. *Incontinence*. Plymouth, UK: Health Publications, 2002: 225-226.
11. Urinary Incontinence Guideline Panel. *Urinary Incontinence in Adults. Clinical Practical Guidelines*. AHCPR Pub. No. 92-0038. Rockville, MD: Agency for Health Care Policy and Research, Public Health Service, US Department of Health and Human Services, 1992.
12. Baden WF, Walker TA. Genesis of the vaginal profile: a correlated classification of vaginal relaxation. *Clin Obstet Gynecol* 1972; 15: 1048-1054.
13. Rezapour M, Ulmsten U. Tension-free vaginal tape (TVT) in women with recurrent stress urinary incontinence - a long-term follow up. *Int Urogynecol J* 2001; 12: suppl 2, S9-S11.
14. Lo TS, Hoang SG, Chang CL, Huang HJ, Tseng LH, Liang CC. Tension-free vaginal tape procedure after previous failure in incontinence surgery. *Urology* 2002; 60: 57-61.