Outcome of the Laparoscopic Two-Team Sling Procedure, Tension-Free Vaginal Tape Insertion, and Transobturator Tape Insertion in Women With Recurrent Stress Urinary Incontinence

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Abstract

Objective: Although the surgical treatment of primary stress urinary incontinence (SUI) has been well studied, the optimal treatment of persistent or recurrent SUI represents a significant challenge to the surgeon, and there are limited relevant published data. The aim of this study was to document outcome data for various surgical techniques used at our centre for the treatment of recurrent SUI, and to assess the immediate and long-term complications associated with these procedures.

Methods: This retrospective study assessed the outcome of the laparoscopic two-team sling procedure, tension-free vaginal tape (TVT) insertion, and transobturator tape (TOT) insertion in the treatment of recurrent SUI in women. Data collected included patient demographics, urodynamic data, postoperative subjective cure and objective cure (negative cough stress test), and intraoperative and postoperative complications.

Results: Forty-six women with recurrent SUI were included in the study: 24 had had laparoscopic two-team sling procedures, 15 had had TVT insertion, and 7 had had TOT insertion. For each procedure, objective cure rates were 91.7%, 73.3%, and 85.7%, respectively, and subjective cure rates were 79.2%, 60%, and 57.1% respectively. In the laparoscopic two-team sling group, one woman developed an infected hematoma and one required surgery for a small bowel obstruction.

Conclusion: The laparoscopic two-team sling procedure or TVT or TOT insertion may be used in experienced hands for surgical management of patients with recurrent stress urinary incontinence. We found no statistically significant differences in outcomes between the three groups, possibly because of the small sample size. Larger sample size and longer follow-up within prospective randomized trials are warranted to identify any possible differences.

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Résumé

Objectif : Bien que la prise en charge chirurgicale de l'incontinence urinaire à l'effort primaire (IUE) ait été bien étudiée, la prise en charge optimale de l'IUE persistante ou récurrente constitue un défi considérable pour le chirurgien et les données publiées pertinentes sont limitées. Cette étude avait pour but de documenter les données quant aux issues de diverses techniques chirurgicales utilisées dans notre centre pour la prise en charge de l'IUE récurrente, ainsi que d'évaluer les complications immédiates et à long terme étant associées à ces interventions.

Méthodes : Cette étude rétrospective a évalué l'issue de l'intervention laparoscopique de fronde à deux équipes, de l'insertion d'une bandelette vaginale sans tension (TVT) et de l'insertion d'une bandelette transobturatrice (TOT) dans la prise en charge de l'IUE récurrente chez des femmes. Parmi les données recueillies, on trouvait les caractéristiques démographiques des patientes, les données urodynamiques, la guérison postopératoire subjective et la guérison objective (test à la toux négatif), ainsi que les complications peropératoires et postopératoires.

Résultats : Quarante-six femmes présentant une IUE récurrente ont été admises à l'étude : 24 d'entre elles ont subi une intervention laparoscopique de fronde à deux équipes, 15 ont subi une insertion de TVT et 7 ont subi une insertion de TOT. Les taux de guérison objective ont été de 91,7 %, de 73,3 % et de 85,7 %, respectivement, tandis que les taux de guérison subjective ont été de 79,2 %, de 60 % et de 57,1 %, respectivement. Au sein du groupe « intervention laparoscopique de fronde à deux équipes », une des participantes en est venue à présenter un hématome infecté, tandis qu'une autre a nécessité une chirurgie en raison d'une occlusion de l'intestin grêle.

Conclusion : L'intervention laparoscopique de fronde à deux équipes ou l'insertion d'une TVT ou d'une TOT peuvent être utilisées par des praticiens expérimentés pour assurer la prise en charge chirurgicale des patientes qui présentent une incontinence urinaire à l'effort récurrente. Nous n'avons constaté aucune différence significative sur le plan statistique en matière d'issues entre ces trois groupes, et ce, peut-être en raison de la faible envergure de l'échantillon. La tenue d'essais randomisés prospectifs comptant des échantillons de plus grande envergure et des suivis prolongés s'avère justifiée aux fins de l'identification de toute différence possible.

INTRODUCTION

Stress urinary incontinence is the involuntary leakage of urine associated with effort or exertion, or with sneezing or coughing.[1] Surgical treatment is usually considered after conservative treatment fails.

Midurethral slings are considered by many to be the surgical treatment of choice for primary SUI. Insertion of tension-free vaginal tape, the first synthetic retropubic midurethral sling, was first reported by Ulmsten et al. in 1996.[2] TVT has reported long-term effectiveness, with an objective cure rate of 84% to 90% and an subjective cure rate of 77% at 11 years.[3,4] A second generation midurethral sling, the transobturator tape, was described by Delorme in 2001.[5] There are two techniques available for inserting the transobturator tape: the "outside-in" technique, in which the needle passes from the obturator region into the vagina, and the "inside-out" technique, in which the needle passes from the vagina to the obturator region. There appeared to be no significant differences in subjective and objective SUI cure rates in a meta-analysis comparing the inside-out with the outside-in TOT procedure.[6] An objective cure rate of 72.9% after five years of follow-up was reported with the transobturator suburethral tape.[7]

Despite the high success rate of these procedures, 5% to 20% of women have surgical failure.[8] Persistent SUI refers to stress incontinence that persists after a surgical procedure intended to resolve it. Recurrent SUI refers to the recurrence of SUI after a surgical treatment that had resulted in cure.[9] Multiple risk factors for sling failure have been reported, including increasing age, previous incontinence surgery, urge incontinence and overactive bladder, a BMI > 25 kg/m^2, diabetes, and intrinsic sphincter deficiency.[10] It has also been reported that placement of the sling at the level of the bladder neck or more proximally may cause distortion of the urethral closing mechanism and can result in failure of midurethral slings.[11,12]

Treatment of persistent or recurrent SUI is frustrating for patients and challenging for the surgeon. Women with recurrent stress incontinence have urethral electromyography findings indicating poorer neuromuscular function than those who have not had previous surgery.[13] Most authorities recommend performing urodynamic studies in women who have had failure of a previous continence surgical procedure.[14,15] Guidelines from the Society of Obstetricians and Gynaecologists of Canada recommend conservative measures as first-line management for women with recurrent SUI,[15] although there is insufficient evidence to confirm the usefulness of medical treatment for women with persistent or recurrent SUI after surgical therapy. Periurethral injection of a bulking agent had a cure rate of 35% to 80% in patients with recurrent or persistent SUI in a Korean study.[16] Among the different management options, the use of a midurethral sling has been shown to be a valid option for recurrent SUI after a failed primary procedure. The laparoscopic two-team sling is a procedure in which suburethral polypropylene mesh is sutured to Cooper's ligaments. In some centres, it has been used in women with recurrent SUI.[17]

The aim of this study was to provide outcome data for various surgical techniques used at our centre for the treatment of recurrent SUI, and to assess the immediate and long-term complications associated with these procedures.

ABBREVIATIONS

MUCP	maximum urethral closure pressure
SUI	stress urinary incontinence
TOT	transobturator tape
TVT	tension-free vaginal tape

METHODS

We conducted a retrospective cohort study using the health records of women who underwent laparoscopic two-team sling procedure, TVT insertion, or TOT insertion for recurrent SUI between 2006 and 2011. Data collected included patient demographics, results of urodynamic testing (including post-void residual measured by urethral catheterization or bladder scan, uroflowmetry, and maximum urethral closure pressure), degree of prolapse, and type of previous continence surgery. Postoperative subjective cure was defined as having no subjective leaking during stressful activities, such as coughing, laughing, sneezing, or exercising. Objective cure was defined as having negative cough stress testing, performed with a subjectively full bladder in the supine and standing positions. Intraoperative and postoperative complications were also reported.

Descriptive statistics were used to present the data. Between-group comparisons for categorical variables were performed using chi-square or Fisher exact tests and Kruskal-Wallis test for numerical variables. All analyses were performed using SPSS v.18 (IBM Corp., Armonk, NY). Significance level was set at $P < 0.05$.

The surgical procedure chosen was at the discretion of the attending surgeon, and was performed under general or spinal anaesthesia. TVT insertion (Gynecare TVT, Ethicon Endo-Surgery Inc., Somerville, NJ) was