ORIGINAL ARTICLE

Risk factors for failure after transobturator vaginal tape for urinary incontinence

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Urinary stress incontinence; Surgical treatment; Transobturator vaginal tape; Outcomes

Abstract
Objective: To identify risk factors leading to treatment failure in a sample of 302 women with stress urinary incontinence (SUI) treated by transobturator vaginal tape (TOT) with an average follow-up of 4 years (range 1–6).

Material and methods: A population based cohort study with prospective data from 302 women, aged 41–81 years who underwent TOT between April 2003 and November 2010. Data were collected by validated questionnaire on urinary incontinence (ICIQ-SF) and clinical data-records. Continence was achieved in 262 (group A) and 40 continued with incontinence (group B). We investigated the relationship between age, SUI evolution time, type and number of childbirths (eutopic, dystopic, nulliparous, multiparous status) and medical and/or surgical backgrounds. The International Consultation on Incontinence Questionnaire – Short Form was used to describe whether the surgery outcomes were successful or not.

Results: Group A were younger (p = 0.0001), had less SUI evolution time (p = 0.017); more eutopic childbirths (p = 0.000018). Group B had more dystopic childbirth (p = 0.022), previous tension free vaginal tape (TVT) or TOT (p = 0.03), antidepressant-anxiolytic drugs (p = 0.003), antihypertensive drugs (p = 0.0005), type 1 diabetes (p = 0.02), arterial hypertension (p = 0.0007), respiratory diseases (p = 0.025). Differences were not found with regard to nulliparous (p = 0.701), multiparous status (p = 0.42), obesity (p = 0.18), intestinal disorders (p = 0.59), oophorectomy (p = 0.19), cesarean (p = 0.17), prolapse surgery (p = 0.29), hysterectomy (p = 0.57), allergies (p = 0.48), arthritis (p = 0.22), arthrosis (p = 0.44), depression (p = 0.74), type 2 diabetes (p = 0.44), smoking patterns (p = 0.28), fibromyalgia (p = 0.47).

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Introduction

Urinary incontinence is the involuntary loss of urine through the urethra, objectively demonstrable, which is a social or hygienic problem.\textsuperscript{1,2} It presents significant morbidity, affecting social and occupational life with an impact on psychological, physical, and sexual health of women.\textsuperscript{3} In the stress UI (SUI), the urine leakage should not be preceded by mictorial urgency, and it must be synchronous with effort or exercise.\textsuperscript{4}

The prevalence rates of this process are heterogeneous due to the differences among the studies regarding the definition of incontinence used, the response rates, the inclusion of institutionalized subjects, the methods of data collection, the questionnaires used, and the period over reporting incontinence and the severity or importance of it.\textsuperscript{4} In Spain, the prevalence published before 2003 in people over 60 years is 40%. Other studies report a 35.1% in subjects over 64 years, 23% in women over 18 years, 20% in women of working age, and 14% in women between 40 and 64.\textsuperscript{5}

Many patients delay consultation because of embarrassment or thinking that it is part of the aging process. At least 25% take 5 years to complain.\textsuperscript{5} It causes premature entry into institutions for the elderly.\textsuperscript{6} The absorbents that are used to alleviate it are the main health care cost resulting from this process.\textsuperscript{7}

In this work, we investigated the influence that certain pathological and non-pathological conditions can have on the failure of surgical correction of the SUI by placing transobturator vaginal tape (TOT). We used the ICIQ-SF (International Consultation on Incontinence Questionnaire – Short Form)\textsuperscript{8} because the Spanish version of the same has proved to have reliability, internal consistency, and validity in describing the impact of urinary incontinence, and it also provides guidance on the type of incontinence.\textsuperscript{9}

Material and methods

Between April 2003 and November 2010, 302 TOT implants were performed in two healthcare centers. Pathological factors (allergies, arthritis, osteoarthritis, depression, insulin-dependent diabetes mellitus [IDDM], non-insulin-dependent diabetes mellitus [NIDDM], fibromyalgia, smoking, arterial hypertension [AHTN], obesity, osteopenia, intestinal disorders, respiratory disorders, antidepressant-antihypertensive treatments, antihypertensives, previous interventions (hysterectomy, adnexectomy, cesarean section, colpocle)
Factors with statistically significant differences regarding the outcome of the surgical intervention, success (A) or failure (B), according to the total number of patients.

tension-free vaginal tape TVT or TOT), and non-pathological factors (age, time of evolution of the SUI, number of eutocic and dystocic deliveries, nulliparity, and multiparity) were retrospectively studied. All the patients signed the informed consent and gave their permission to be performed surgery. The patients were admitted between 1 and 12 h before surgery, and they were discharged from hospital after 24 h. Outpatient check-ups were conducted at 48–72 h, every month, semester, and year.

We compared two groups of patients according to the result obtained by the surgical technique: patients in group A (n = 262), in whom a successful outcome was achieved (continence), and group B patients (n = 40), who continued incontinent (failure). These results were evaluated according to the ICIQ-SF. The results were analyzed using descriptive statistics and comparison of groups using various techniques (Student’s t, Chi-square, Fisher’s exact tests and ANOVA). p < 0.05 was accepted as statistical significance.

Results

The patients in group A are younger than those in group B (59.11 vs. 69.57 years; p = 0.0001) and have suffered urinary incontinence for less time (90.65 vs. 195.17 months; p = 0.017). The evolution time of the incontinence did not correlate with the age of the patients (p = 0.77). Given the confounding factor that age may entail for the analysis of the rest of factors investigated, a stratification by age was performed to determine two homogeneous groups regarding age in a range of 48–68 years, leaving group A with n = 169 and group B with n = 27. The factors that showed statistically significant differences between both groups are shown in Fig. 1, which expresses the total number of cases in each group for each variable.

An increased number of eutocic deliveries was associated with lower probability of becoming incontinent after the intervention (p = 0.000018). In women with eutocic deliveries, whether multiparous or not, there is a 12.6% probability of failure of the technique, while 56% in the patients with dystocic births. The previous dystocic delivery was associated with increased likelihood of incontinence after surgery (p = 0.002). In women with dystocic births previous to the probability of failure of the technique it is 50 vs. 14% in patients without them. The IDDM as a secondary diagnosis associated a 66% probability of failure versus 16% in the patients that do not suffer from this disease (p = 0.02). Hypertensive patients have a 41% probability of failure versus 12% when they are not so (p = 0.29), correlating with the same results if they are on antihypertensive treatment (p = 0.0004). The patients with concomitant respiratory failure had a 66% probability of failure versus 16% for those who do not it suffer (p = 0.0251). Antidepressant-antixiolytic treatments were associated with a 37% probability of failure versus 12% in the untreated ones (p = 0.003). In the patients previously operated on by TVT or TOT, the technique failed in 100%, versus 17% in unoperated ones (p = 0.03).

The factors that showed no differences between groups are multiple. The possibility of failure of the TOT does not vary in relation to being nulliparous or not (25 vs. 18%; p = 0.7), or being multiparous or not (13 vs. 18%; p = 0.4). Other non-significant factors were a history of allergies (12 vs. 19%; p = 0.48), arthritis (50 vs. 17%; p = 0.22), arthrosis (28 vs. 17%; p = 0.44), simultaneously suffering from depression (29 vs. 17%; p = 0.74), NIDDM (28 vs. 17%; p = 0.44), fibromyalgia (33 vs. 17%; p = 0.47), history of being an ex-smoker (20 vs. 17%; p = 0.9) or a current smoker (18 vs. 0%; p = 0.28), presenting obesity (40 vs. 16%; p = 0.18), normal bone density (9 vs. 18%; p = 0.4), suffering from intestinal disorders (22 vs. 17%; p = 0.59), no history of hysterectomy (13 vs. 18%; p = 0.57), no adnexectomy (6 vs. 19%; p = 0.19), absence of previous cesarean (0 vs. 18%; p = 0.17), and no colposuspension in the past (30 vs. 16%; p = 0.29).

Discussion

A great variety of surgical techniques have been described in the treatment of urinary incontinence. 10 In 1995, there was a revolution in the treatment of SUI when the TVT was introduced. 11 While looking for alternatives, the TOT technique 12 emerged. It presented its main advantages as the more anatomical position of the tape, the absence of abdominal incisions, the decreased risk of bladder and bowel injury by not passing the needle through the retropubic space, and the fact that it does not require cystoscopy. 10,13

Peripheral nerve damage, not only motor but also sensory or autonomic as well, is considered the most common
damage caused by the DM, getting to affect up to 50–60% of the patients. This percentage increases progressively with age and the time of the disease course. Genitourinary autonomic neuropathy manifests itself as a urinary bladder dysfunction in 37–50% of patients, with initial loss of bladder filling and sexual dysfunction.14 We found more failures in patients with IDDM than in those who have NIDDM. This fact can be explained by the longer disease course, worse metabolic control or both. So far, no data exist to clarify this difference.

Some authors have reported the relationship between pregnancy, childbirth, and the appearance of urinary incontinence.15–17 The main factors that influence stress incontinence after pregnancy are age, previous incontinence, prolonged labor, and vaginal delivery. Others find no relation between the prevalence of the incontinence and childbirth.18 In primiparous women, incontinence occurred in 13% during the first year, as opposed to 0% in those who underwent cesarean section. 91% of these primiparous women were again interviewed after 5 years. At that time, 30% did suffer from incontinence, so time seems to play an essential role.19 The incidence of incontinence appears to be higher in women after vaginal delivery, and the cesarean section seems to be a protective factor.20 The fact that incontinence remains three months after childbirth, parity, late pregnancy, the high weight of the fetus at birth, and the use of forceps in dystocic deliveries could be a risk marker for long-term incontinence.21 In our study, the history of dystocic labor was associated with the failure of TOT, while nulliparous or being a before nulliparous multiparous woman was not a significant factor.

We know that diverse drugs can trigger urinary incontinence.22 In this study, the patients under antidepressant, anxiolytic, and antihypertensive treatments, and those with respiratory disorders presented more failures, which could be related to the drugs used to treat this pathology.

With age, physiological changes that occur in the lower urinary tract are detected, among which detrusor overactivity, decreased bladder capacity, decreased ability to postpone emptying, increased postvoid residual, urethral epithelium atrophy due to estrogen deficiency, various drug treatments and comorbidity conditions that alter the urinary excretion of fluids stand out. But the presence of each of these factors is not in itself enough to develop urinary incontinence, although we know that between 65 and 85 years incontinence is 2:1 times more frequent in women. This ratio becomes equal from 80 years on.23

In our environment, we have found statistically significant age-related differences, since the women who remained incontinent after surgery have a higher average age. Also, some studies find that women with a higher body mass index develop incontinence more frequently.14 In our series, obesity did not turn out to be a risk factor for failure of the TOT. On the other hand, the patients previously operated with TVT did show a greater number of failures.

In summary, old age, the long SUI evolution time, the number of dystocic deliveries, the presence of IDDM, AHTN or respiratory disorders, antidepressant-anxoylctic and antihypertensive treatment, and the presence of surgical history of TOT or TVT were associated with the failure of the TOT intervention. The history of eutocic delivery correlates with a successful outcome.

Conflict of interest

The authors declare that they have no conflict of interest.

References


