

Predictive Factors of Voiding Dysfunction in Females after Surgery for Stress Urinary Incontinence

Thesis

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by

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Summary (in Arabic)	أ, ب

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

« رَبِّ أَوْزِعْنِي أَنْ أَشْكُرَ نِعْمَتِكَ الَّتِي أَنْعَمْتَ عَلَيَّ

وَعَلَى وَالِدَيَّ

وَأَنْ أَعْمَلَ صَالِحاً تَرْضَاهُ وَأَدْخِلْنِي بِرَحْمَتِكَ فِي عِبَادِكَ

الصَّالِحِينَ »

صدق الله العظيم

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

«سبحانك لا علم لنا إلا ما علمتنا إنك أنت العليم الحكيم»

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Key words: voiding dysfunction, urinary incontinence, stress incontinence, uroflowmetry, predictive factors

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LIST OF ABBREVIATIONS

ALPP: Abdominal leak point pressure

ATLA: Arcus tendineus of the levator ani.

ATFP: Arcus tendineus fascia pelvis.
 AUA: American urological association
 AUS: Artificial urinary sphincter.
 AVWS: Anterior vaginal wall sling
 BOO: Bladder outlet obstruction
 BOOI: Bladder outlet obstruction index
 CBC: Complete blood picture.
 CIC: Clean intermittent catheterization
 CMG: Cystometrogram.
 CNS: Central nervous system
 CS: Cesarian section
 DLPP: Detrusor leak point pressure
 DO: Detrusor overactivity
 DSD: Detrusor sphincter dyssynergia
 EMG: Electromyography
 EUS: External urethral sphincter.
 Fr: French
 FDA: Food and drug administration.
 ICS: International Continence Society
 ISD: Intrinsic sphincter deficiency
 IVS: Intravaginal slingplasty
 LMA: Longitudinal muscle of the anus
 LP: Levator plate
 LUTS: Lower urinary tract symptoms.
 MMK: Marshal-Marchetti-Krantz-cystourethropexy.
 MRI: Magnetic resonance imaging.
 MUCP: Maximum urethral closure pressure
 MUI: Mixed urinary incontinence
 OAB: Over active bladder
 Pabd: Abdominal pressure.
 PCM: Pubococcygeus muscle
 Pdet: Detrusor pressure.
 $P_{det}Q_{max}$: Detrusor pressure at maximum flow rate
 PFS: Pressure flow study.
 PMC: Pontine micturition center
 POP-Q: Pelvic organ prolapse quantification.
 PTFE: Polytetrafluoroethylene
 PUL: Pubourethral ligaments
 PUV: Posterior urethro vesical
 Pves: Intravesical pressure.
 PVRU: Post void residual urine
 PVS: Pubovaginal sling
 Qmax: Maximum flow rate
 RU: Residual urine
 SD: Standard deviation
 SUI: Stress urinary incontinence
 TFS: Tissue fixation system
 TOT: Trans-obturator tape
 T.O.T: Trans-obturator tape outside-in
 TVL: Total vaginal length
 TVNS: Transvaginal needle suspension
 TVT: Tension free vaginal tape.

TVT-O: Tension-free vaginal tape-outside (inside-out trans-obturator tape)
UCP: Urethral closure pressure.
UI: Urinary incontinence
UPP: Urethral pressure profile
USL: Uterosacral ligament
UTI: Urinary tract infection.
UUI: Urge urinary incontinence
UR: Urge incontinence
VLPP: Valsalva leak point pressure
VUDS: Videourodynamics
VUR: Vesicoureteric reflux

INTRODUCTION

Urinary disorders in women are common. Among the most distressing of these are the various forms of incontinence.^{1&2}

Urinary incontinence is a significant health problem worldwide with considerable social and economic impact on individuals and society.

Furthermore urinary incontinence has wide spread human and social implications, causing discomfort, shame and loss of self-confidence, and may negatively affect the quality of life. It can result in a loss of self-esteem and decreased ability to maintain an independent life style. In elderly women, urinary incontinence may lead to possible rejection on the part of a relative and may be an important factor in the decision on whether to institutionalize an elderly person.^{3&4}

Stress urinary incontinence(SUI) is the involuntary loss of urine during maneuvers that increase intra-abdominal pressure (for example coughing), and reflects urethral hypermobility or intrinsic sphincter weakness.⁵ It is considered one of the most common types of urinary incontinence accounting for about 50% of all cases.⁶

There are two main types of sphincter abnormality: urethral hypermobility & intrinsic sphincter deficiency (ISD).⁷ However, both conditions may co-exist, especially when subjective loss of urine is high.⁸ Urethral hypermobility occurs when there is a defect in the pelvic support of the bladder neck, while intrinsic sphincter deficiency is defined as loss of bladder outlet closure potential.⁹

As more women seek for treatment of SUI, the demand for safe, effective, minimally invasive and durable form of therapy has increased.¹⁰

Understanding the physiopathological concepts of female (SUI) has consistently improved over the past decades and their application has lead to the development of numerous surgical techniques aimed at curing this disorder.¹¹

Surgical procedures for treatment of stress urinary incontinence in females are designed to compensate for a defective urinary continence mechanism. Many types of operations have been developed based on different theories of urinary continence. This surgical treatment was drastically changed in 1995 by the description of a new concept, the mid-urethral support without tension, by **Ulmsten and Petros**.¹² Among the numerous surgical techniques aimed at curing female (SUI), retro-pubic tension-free vaginal tape (TVT) has probably been the most revolutionary.¹³

The wide use of retro-pubic TVT has been associated with various peri- and post-operative complications, including bladder perforation, temporary or persistent retention, pain, urinary infection, and de novo instability.¹⁴ Other rare but severe-and possibly under-estimated-complications have been reported with this approach.

Indeed, the blind passage of the needle into the retro-pubic space can result in injuries to organs other than the bladder, in particular the urethra, vessels, nerves and bowel.¹⁵

A new surgical approach has been introduced maintaining the position under the mid-urethra of the tension-free vaginal tape but reducing or even eliminating complications related to the penetration of the retro - pubic space by placing the tape between the two obturator foramina.¹⁶ Anatomic studies ruled out the risk of lesion to the obturator pedicle in theory. The alternate approaches with a trans-obturator passage of the tape have continence rates roughly similar to those after the 'classic' retro-pubic TVT.¹⁸

The original design of this new technique described by **Delorme** in 2001, called trans-obturator tape (T.O.T.), was to place the tape between the two obturator foramina, from outside to inside.¹⁷ The reported results are

very close to those reported in most of the observational series of tension-free vaginal tape.¹⁸ No vascular, nerve or bowel injuries have been reported, justifying the interest in the trans-obturator route.¹⁶ At the end of 2003, a novel surgical technique was described by **de Leval**, with the passage of the tape through the obturator foramina from inside to outside, which was called tension-free vaginal tape-outside (TVT-O).¹⁹

Clinicians, who have been convinced that the trans-obturator approach is safer than the retro-pubic approach, now have the possibility to choose between outside in TOT and inside out TVT-O. This technique avoids damage to the urethra and bladder and, for this reason, makes cystoscopy not necessary.¹⁹

All operations obstruct the urethra to some degree. A major consideration in incontinence surgery therefore is the risk of postoperative voiding dysfunction and the development of urinary retention. The true incidence of obstruction after incontinence surgery is not known. Older studies estimated it to occur in between 2.5% and 24% of patients.

The study of voiding dysfunction and urinary retention after continence surgery is limited by the lack of standardized definitions.

The question is whether these postoperative voiding dysfunctions are predictable preoperatively. The International Consultation on Incontinence suggests that urodynamics be used when the information is expected to alter clinical management and subsequently improve clinical outcomes²⁰. Identifying patients at risk for postoperative voiding dysfunction would allow for improved counseling and possibly altered treatment.

The aim of this thesis: is to identify and evaluate risk factors related to postoperative voiding dysfunctions after T.O.T procedure for treatment of SUI and to determine if those symptoms are predictable preoperatively.

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