Retropubic Single Incision Minisling versus Tension Free Vaginal Tape for Management of Stress Urinary Incontinence

: a randomized controlled trial

Thesis
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Ahmed Reda

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List of abbreviations

BMI	body mass index
cc	cubic centimeter
CI	confidence interval
CLPP	cough leak point pressure
GSI	genuine stress incontinence
h	hour
ISD	internal sphincteric deficiency
kg	kilogram
m	meter
min	minute
ml	milli liter
MMK	Marshall-Marchetti-Krantz
n	number
OR	odds ratio
PDFI-20	Pelvic Floor Distress Inventory-20
PISQ-12	Prolapse/Urinary Incontinence Sexual Questionnaire-12
PVR	post void residual volume
QoL	quality of life
RR	relative risk
SIMS	single incision minisling

List of abbreviations (continued)

SUI	stress urinary incontinence
TOT	trans obturator tape
TVT	tension free vaginal tape
UI	urinary incontinence
VLPP	valsalva leak point pressure

Introduction

Urinary incontinence is a common problem among adult women, with an estimated overall prevalence of 40% and between 6-10% of women with severe incontinence. Stress urinary incontinence (SUI) is the predominant type of incontinence affecting approximately 50% of incontinent women. Thus, 20% of adult women will experience stress urinary incontinence. SUI reduces quality of life, causes important social limitations and represents an important economic burden ***(Hunskaar et al., 2004)***.

According to the International continence society, stress urinary incontinence is defined as "A condition in which involuntary loss of urine on effort or exertion, or on sneezing or coughing" ***(Abrams et al., 2003)***.

The understanding of SUI pathophysiology has consistently improved over the past decade, and has resulted in the development of many surgical techniques ***(Palma, 2011)***.

Midurethral slings have revolutionized the surgical management of stress urinary incontinence in women and several procedures for midurethral slings have been reported ***(Papatsoris et al., 2007)***.

Based on the Integral Theory, Petros and Ulmsten proposed the tension-free vaginal tape (TVT). According to this theory a mid-urethral tape can stabilize the urethra during straining without modifying urethral mobility ***(Petros and Richardson, 2005)***.

The TVT is an effective operation for SUI that may be done in more complicated cases, such as intrinsic sphincter deficiency other than in primary cases. TVT creates a neopubourethal ligament that anchors the three muscle forces activating urethrovesical closure, including pubococcygeus muscles, longitudinal muscle of the anus and levator plate ***(Sekiguchi et al., 2009)***.

Recognized complications of retropubic mid-urethral slings include voiding dysfunction and the potential for bowel, bladder, and vascular injuries ***(Ogah et al., 2011)***.

In 2001, Delorme described a new method of inserting the tape, which passes through the obturator foramen (termed transobturator tape [TOT]), thus theoretically avoiding some of the complications such as bladder perforation ***(Petros and Richardson, 2010)***.

Clinical trials have demonstrated that transobuturator slings are associated with equivalent subjective cure rates to

retropubic slings, with less voiding dysfunction and fewer bladder perforations ***(Novara et al., 2010)***. However, transobturator slings have lower objective cure rates and have greater risk of postoperative neurologic symptoms in the obturator region ***(Richter et al., 2010)***.

Traditional retropubic and transobturator midurethral slings are reliable, safe, and effective treatments for stress urinary incontinence. Unfortunately, they also are associated with rare but severe complications, such as bladder or bowel perforation, vascular injury, nerve damage, and/or groin muscle pain that can occur with the blind passage of trocars. To maintain efficacy and patient satisfaction while avoiding such complications, minimally invasive mini-slings have been developed ***(Neuman, 2007)***.

Mini-slings often are performed as an outpatient surgery, with minimal morbidity, pain, and quick patient recovery ***(Kennelly and Myers, 2011)***.

Single-incision sling procedure for SUI is meant to be less invasive by avoiding the blind trocar passage through the retropubic or transobturator spaces associated with standard midurethral slings. As such, it has the potential for fewer complications, less postoperative pain, and decreased anesthesia requirements than standard slings. This device can