SEXUAL MEDICINE

A Meta-Analysis Detailing Overall Sexual Function and Orgasmic Function in Women Undergoing Midurethral Sling Surgery for Stress Incontinence

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ABSTRACT

Introduction: More than 200,000 midurethral slings are placed yearly for stress urinary incontinence. Approximately 14% to 20% of women experience worsening sexual function overall after these procedures. We postulated that sling placement injures neural pathways regulating "female prostate" tissue within the anterior vaginal wall.

Aim: To perform a meta-analysis for overall sexual function and orgasm using validated questionnaires for transvaginal tape, transobturator tape, and their variants.

Methods: Effect sizes of preoperative and postoperative questionnaire scores for overall sexual function and orgasm were calculated. Random-effects models were selected for meta-analyses. Statistical analysis involved determination of the ratio of total heterogeneity to total variability.

Main Outcome Measures: Differences of overall sexual and orgasm functions were calculated by subtracting postoperative sling scores from preoperative sling scores. Forest plots of effect sizes were performed.

Results: Sixty-seven percent of midurethral sling procedures analyzed showed no change or improvement in overall sexual function postoperatively, whereas 33% of studies analyzed for orgasm function showed improvement after the procedure. For transvaginal tape, mean total sexual function and orgasm postoperative scores were significantly higher than preoperative scores. For transobturator tape, mean total postoperative score was significantly higher than the preoperative score; however, the mean orgasm postoperative score was not significantly higher than the preoperative score, possibly because of variability in transobturator tape data.

Conclusion: There is a discrepancy between postoperative sexual satisfaction and orgasmic function after midurethral sling surgery. Although overall sexual function remained the same or improved for most women, orgasmic function in only one third of cases improved overall, with most women experiencing no change or deterioration in orgasmic function. Dissection for, and placement of, the midurethral sling can compromise the neural integrity of the anterior vaginal wall, thereby detrimentally affecting the periurethral prostate tissue that is essential to the orgasmic response. We propose that this surgical procedure can compromise orgasmic function in some women. **Szell N, Komisaruk B, Goldstein SW, et al. A Meta-Analysis Detailing Overall Sexual Function and Orgasmic Function in Women Undergoing Midurethral Sling Surgery for Stress Incontinence. Sex Med 2017;X:XX–XX.**

Key Words: Suburethral Sling; Orgasmic Disorder; Transvaginal Tape; Transobturator Tape; Female Prostate

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INTRODUCTION

A major support mechanism for continence in women appears to be the integrity of the attachments of the anterior wall of the midurethra to the pubic bone through extensions of the perineal membrane and the caudal and ventral portions of the arcus tendinous fascia pelvis, the pubourethral ligaments.[1] The pubourethral ligaments appear to restrict movement of the midurethral anterior wall during increases in intra-abdominal pressure. During such increases in intra-abdominal pressure, the midurethra is compressed shut against this hammock-like, firm, ligamentous support.[1,2] Therefore, stress incontinence could be associated with a deficiency or weakness in the pubourethral ligaments that can occur over time, initiated by such factors as childbirth, mechanical compression, and tissue breakdown with aging.[1] Using various surgical reconstructive procedures, most of which are termed *midurethral slings,* also referred to as transobturator tapes (TOTs) or transvaginal tapes (TVTs), mechanical reinforcement that mimics effective ligamentous support in the midurethral region can be achieved.[3] Thus, the continence mechanism has been shown to be well re-established with midurethral sling surgery.[1] In TOT surgery, the sling traverses the obturator foramen in its surgical passage. In TVT surgery, the sling is placed behind the pubic bone adjacent to the urethra.[3] Since 2010, due in part to reliability, efficacy of continence restoration, minimally invasive approach, and ease of reproducibility, there have been more than 200,000 surgical procedures completed annually for stress urinary incontinence.[1] Furthermore, the number of these midurethral sling surgical procedures continues to increase yearly.[1]

The path of the surgically placed midurethral sling traverses the anterior vaginal wall and lies within adjacent periurethral female prostatic tissue. Recent advances in translabial ultrasonography have shown that the sling makes an approximately 100° angle underneath the midurethra, with the exact angle depending in part on the surgical approach used for sling placement (Figure 1). There is slight variation in the exact angle depending on the surgical approach of sling placement.[4]

The midurethral sling is positioned within the periurethral tissue in the plane between the female urethra and the adventitia of the anterior vaginal wall. Within this periurethral anterior vaginal wall tissue is situated the female prostate[5] (Figure 2A, B). The female prostate tissue can constitute a component of the unique characteristic of the palpated anterior vaginal wall that Grafenberg[6] described. Immunohistochemical studies of periurethral female prostatic tissue have reported positive staining for prostate-specific antigen, prostate-specific alkaline phosphatase, and androgen receptor, consistent with female prostatic tissue. Perineal ultrasound and biochemical studies of female ejaculate in those women who have noted small volumes of fluid expulsion during orgasm have confirmed that the ejaculated fluid is rich in prostate-specific antigen and poor in creatinine and therefore biochemically similar to male ejaculate.[7,8] This is to be distinguished from large-volume "squirters" during orgasm, which is biochemically shown to be more consistent with urine.[7,8]

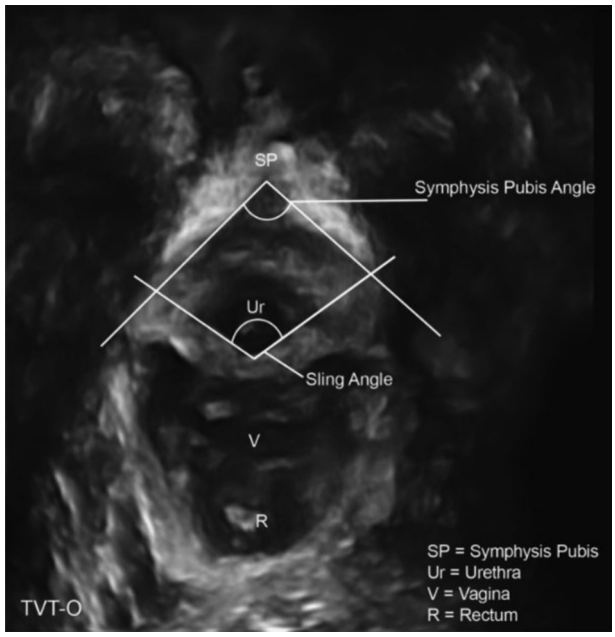

Figure 1. Coronal view of translabial ultrasound of the female urethra.

During sexual activity, women can experience orgasm from different types of stimulation, including genital and non-genital sites.[9,10] For genital orgasms, some have used the term *vaginal* or *internal orgasm* as a separate experience from clitoral orgasm. Internal orgasm also can refer to a cervicouterine orgasm. Some women achieve only vaginal orgasm, some experience blended vaginal and clitoral orgasms, and some experience only clitoral orgasm. Some women can distinguish among orgasm types and achieve sexual satisfaction from one or another type of orgasm.[9,10] However, there is a subgroup of women in whom stimulation specifically of the anterior vaginal wall adjacent to the periurethral female prostate can lead to orgasm and small-volume ejaculation, independent of clitoral stimulation.[7,8]

We assessed several women in our sexual medicine clinic who, despite having undergone successful midurethral sling placement, were devastated after losing their ability to experience small-volume ejaculation and vaginally elicited orgasm. These women claimed orgasmic dysfunction after midurethral sling surgery. This motivated us to review in the literature the prevalence of orgasmic satisfaction changes of women with stress urinary incontinence who underwent midurethral sling placement surgery. We performed a meta-analysis of women who underwent midurethral sling placement by various methods and who provided objective data concerning sexual and orgasmic function using the Female Sexual Function Index and/or the Pelvic Organ Prolapse/Incontinence Sexual Questionnaire. Then, we analyzed their orgasm function in relation to these databases. We postulated that mechanical injury or destruction of this periurethral female prostate tissue by midurethral sling