Sexual Dysfunction After Urethroplasty

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KEYWORDS

• Sexual dysfunction • Urethroplasty • Erectile dysfunction • Urethral stricture • Sexuality preserving

KEY POINTS

- With the voiding function taken care of, the focus is shifting towards the inadvertent complications of urethroplasty, such as sexual dysfunction (SD).
- De novo posturethroplasty SD is uncommon—approximately 1% (0%–38%) after anterior urethroplasty and approximately 3% (0%–34%) after pelvic fracture urethral injury (PFUI) repair.
- The time of assessment and the type of urethroplasty may affect sexual outcomes.
- For bulbar strictures, nontransecting procedures may provide better sexual outcomes compared with excision and anatomosis.
- Although posterior urethroplasty has the highest chance of SD, most of it is attributable to the fracture itself rather than the urethroplasty.

INTRODUCTION

Urethroplasty is considered the standard of care for urethral stricture disease. With its superior long-term success rates, little morbidity, and cost-effectiveness, it has largely replaced endoscopic procedures as the current gold standard.[1,2] The goal of urethroplasty is to restore voiding function; thus, most of the available literature uses this criterion to define success. With good long-term success rates of urethroplasty addressing voiding function, focus is shifting toward inadvertent complications, such as SD.[3–5] As with any other genital surgery, there is a possibility of injury to the cavernous nerves or to the pudendal artery or a chance of penile shortening, which can affect postoperative sexual function. It was Mundy,[6] in 1993, who first reported permanent erectile dysfunction after urethroplasty. In their study of 200 patients, the rate of permanent erectile dysfunction after anastomotic transperineal and abdominoperineal urethroplasty was 5% and that after graft urethroplasty was 0.9%. Corsey and colleagues[7] in 2001 echoed Mundy's results and showed that the overall satisfaction with erection worsened in 30.9% of the patients after urethroplasty, but also noted a worsening of erection in 27.3% of patients in the control group who underwent circumcision. These contradictory findings sparked a debate and led to further evaluation among reconstructive urologists. Currently, there is a growing concern about the ill effects of urethroplasty on the various aspects of sexual function and certain ways have been proposed to reduce or prevent it.

EVALUATION AND QUESTIONNAIRES

Normal sexual function is a result of complex interplay between vascular, nervous, endocrinologic, and psychological systems leading to erection,

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ejaculation, orgasm, and overall satisfaction. From a patient's standpoint, baseline sexual function, cause of the stricture, psychological impact of the stricture or its treatment, postoperative tissue edema or inflammation, or the urethroplasty itself may lead to posturethroplasty SD.[8] Sexual function can be assessed using standard validated questionnaires, such as the International Index of Erectile Function, International Index of Erectile Function – 5, Sexual Health Inventory for Men, O'Leary Brief Male Sexual Function Inventory, and Male Sexual Health Questionnaire for Ejaculatory Dysfunction, but none of these is specific to the posturethroplasty setting. The only validated questionnaire for urethroplasty does not assess changes in the sexual function.[9] Thus, various nonvalidated in-house questionnaires are being used and reported, making comparison among different studies difficult. One such questionnaire, the Post-Urethroplasty Sexual Questionnaire, specifically assesses changes in sexual function after urethroplasty and includes domains, such as genital sensitivity, genital cosmesis, satisfaction after urethroplasty, and the importance of counseling.[5] Another posturethroplasty questionnaire combines the Sexual Health Inventory for Men and Male Sexual Health Questionnaire for Ejaculatory Dysfunction with urethroplasty-specific questions, such as the effect of surgery on the sexual function, postoperative alteration in the penile length, and curvature and genital sensitivity, including glans tumescence and cold feeling of the glans.[10] Various other in-house nonvalidated questionnaires have been used for this purpose but a standard validated uniform questionnaire to assess the sexual outcomes after urethroplasty is still lacking.[11] This review discusses de novo SD after urethroplasty (anterior and posterior urethra), its proposed mechanisms, and the proposed ways to prevent or reduce it.

DE NOVO SEXUAL DYSFUNCTION: EFFECT OF URETHROPLASTY ON VARIOUS ASPECTS OF SEXUAL FUNCTION

SD is a broad term and for a posturethroplasty patient it encompasses erectile dysfunction, ejaculatory dysfunction, penile curvature or chordee, and genital sensitivity disorders. Current available literature suggests that the de novo posturethroplasty SD is uncommon, approximately 1% (0%–38%) after anterior urethroplasty and approximately 3% (0%–34%) after PFUI repair.[12,13] Postoperative de novo erectile dysfunction can result from an injury to the bulbar artery or to the vascular connections between the cavernosa and the spongiosa during the mobilization of the bulbar urethra or from an injury to the cavernous nerves during the intercrural dissection of the urethra (cavernous nerves run at 1 o'clock and 11 o'clock positions, 3 mm outside the spongiosa).[5,12,14,15] The ejaculatory function can either improve or deteriorate after urethroplasty. Relief of the urethral obstruction leads to an increase in the force of ejaculation and reduces the associated burning or pain, thus improving postoperative ejaculation.[5] Whereas injury to the bulbospongiosus muscle (division and retraction of muscle to expose the bulbar urethra) or to the perineal nerves (perineal nerves may be injured during the dissection of central tendon as they emerge from ischiorectal fossa or small branches of the perineal nerve may be injured while dividing and retracting the bulbospongiosus muscle) may lead to reduced stream of ejaculation or postejaculatory dribbling. Weakening of a ventrally placed graft (pseudodiverticula formation) may also result in ejaculatory dysfunction.[5,16] Shortening of the urethra after excision and anastomosis for a long bulbar urethral stricture may result in a new-onset penile curvature and chordee. The mobilization and transection of spongiosa required for primary anastomosis may lead to poor blood flow distal to the transection, resulting in postoperative cold glans and poor glans tumescence during erections.[5,17] Injury to the perineal nerves, which provide sensory supply to perineum, scrotum, and the ventral surface of the shaft of penis, may result in postoperative genital sensitivity disorders.[16] Lastly, the psychological stress of the stricture disease and the recent surgery and postsurgery tissue inflammation and edema may also contribute to the SD.[8] Therefore, urethroplasty can affect multiple domains of sexual function and postsurgery SD is multifactorial in origin.

FACTORS AFFECTING POSTURETHROPLASTY SEXUAL FUNCTION

A patient's age, length of stricture, previous interventions, and type of urethroplasty have been proposed to affect posturethroplasty sexual function, but evidence is mostly lacking. Posturethroplasty erectile dysfunction was initially shown to be higher in older patients with longer strictures (6.8 cm vs 4.4 cm).[7] Further studies have refuted this association, however, and a recent meta-analysis found no association between the length of the stricture and the incidence of postoperative erectile dysfunction.[12,14] Similarly, Erickson and colleagues[18] showed that patients greater than 50 years old had a higher decline in erectile function after urethroplasty, but these findings were not reproduced by others and the association