Role and Indications of Organ-Sparing "Radical" Cystectomy

The Importance of Careful Patient Selection and Counseling

Svetlana Avulova, MD*, Sam S. Chang, MD, MBA

KEYWORDS

• Vaginal-sparing cystectomy • Prostate-sparing cystectomy • Sexual function • Urinary function • Oncology • Radical cystectomy

KEY POINTS

- Possible benefits of organ-sparing cystectomy include preserving sexual function, decreasing urinary incontinence with orthotopic urinary diversion, and decreasing the postoperative complications of fistulas and pelvic organ prolapse.
- Men should undergo prostate cancer screening.
- Both men and women need to undergo careful cancer evaluation and must have ongoing surveillance for urothelial carcinoma recurrence.
- Tumor multifocality, tumor location at the trigone, bladder neck, or prostatic urethra, and/or presence of CIS should exclude patients from organ-sparing cystectomy.

INTRODUCTION

Organ-sparing cystectomy encompasses preservation of genital or pelvic organs in men and women. In men, this may refer to prostate-sparing or seminal vesicle–sparing (SVS) cystectomy and further is distinguished into apical (apex of prostate) or posterior (posterior prostate and seminal vesicles [SV]) sparing (Fig. 1). In women, the sparing of pelvic organs includes the uterus, fallopian tubes, ovaries, and the anterior vaginal wall (Fig. 2).

The concept of organ-sparing cystectomy was introduced by Spitz and colleagues[1] for management of nonurothelial neoplasms of the bladder in younger and sexually active men to preserve fertility and erectile function, and decrease rates of urinary incontinence with orthotopic urinary diversions. It was not until the early 2000s that several case series were published using this technique in select patients with urothelial malignancies.[2–7] There are several variations of prostate-sparing techniques that exist but the common goal, to preserve the neurovascular bundles, the distal sphincter complex, and the continuity of SV, vasa deferentia, and ejaculatory ducts, is accomplished by incompletely excising the entire prostate and leaving either the prostatic capsule with peripheral zone intact or the distal prostatic tissue including apex and prostatic capsule. Preservation of the posterior prostatic capsule and SV ideally would leave the cavernosal neurovascular bundles undisturbed and decrease

Disclosure: The authors have nothing to disclose.
Department of Urologic Surgery, Vanderbilt University Medical Center, A1302 Medical Center North, Nashville, TN 37203, USA
* Corresponding author.
E-mail address: svetlana.avulova@vanderbilt.edu

Urol Clin N Am 45 (2018) 199–214
https://doi.org/10.1016/j.ucl.2017.12.005

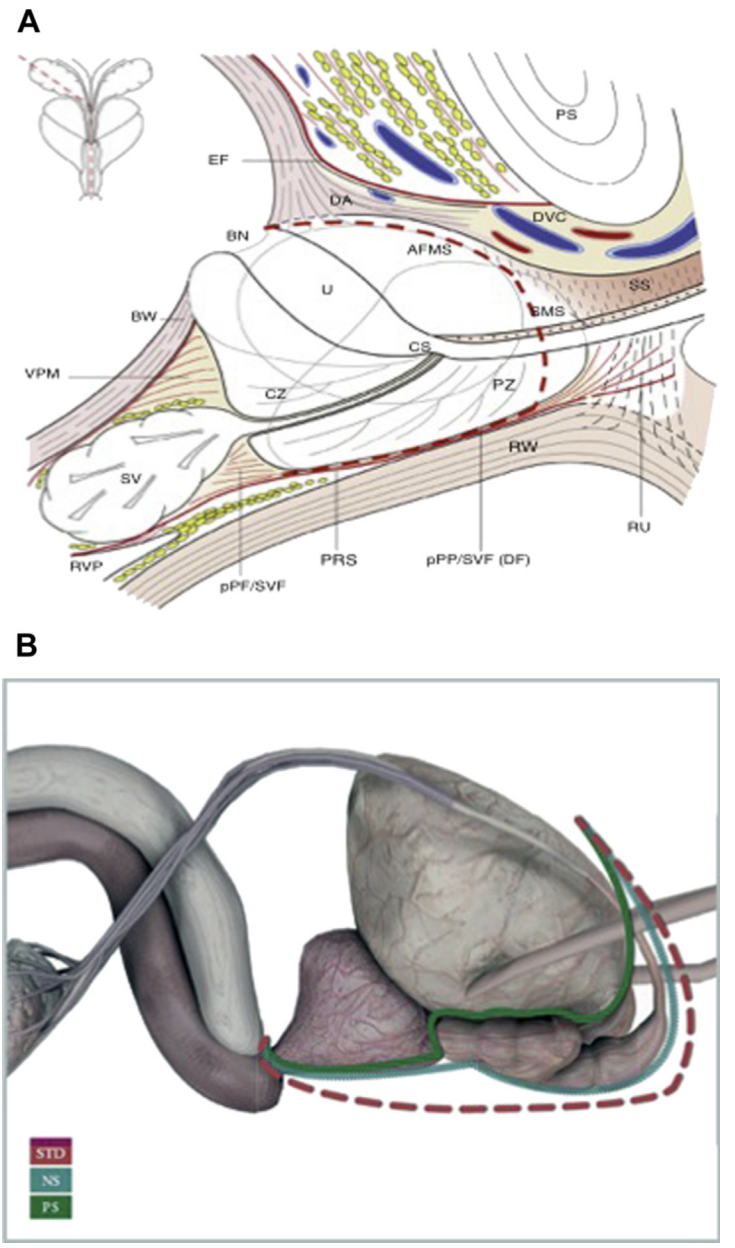

Fig. 1. (*A*) Midline sagittal section of prostate, bladder, urethra, and striated sphincter. The *dotted line* represents the dissection performed for apical preservation with our technique. AFMS, anterior fibromuscular stroma; BN, bladder neck; CS, colliculus seminalis (verumontanum); CZ, central zone; DA, detrusor apron; DVC, dorsal vascular complex; pPF/SVF, posterior prostatic fascia/seminal vesicle fascia (Denormillers fascia); PS, pubic symphysis; PZ, peripheral zone; RU, rectourethralis muscle; SMS, smooth muscle sphincter (lissosphincter); SS, striated sphincter (rhabdosphincter); U, urethra; VPM, vesicoprostatic muscle. (*B*) Dissection in standard radical (STD, *red line*), nerve-sparing radical (NS, *blue line*), and potency-sparing (PS, *green line*) cystectomy. In standard version surgical plane is developed over rectum and vascular pedicles are sectioned in proximity to anterior rectal wall. In nerve-sparing procedure same surgical plane is developed but vascular pedicles are sectioned in proximity to bladder wall, seminal vesicles, and prostate to save damage to neurovascular bundles. In potency-sparing technique surgical plane anterior to seminal vesicles is developed, which ends at ejaculatory ducts. Pelvic plexus left completely untouched behind seminal vesicles.

risk of erectile dysfunction, whereas the preservation of the distal sphincter complex would improve continence rates by leaving the external striated sphincter complex undisturbed. Most organ-sparing cystectomy literature has focused on men because correlation to the prostatectomy literature is made in regards to preservation of neurovascular bundles and sexual function outcomes. In 2005, Hautmann and Stein[8] presented a comprehensive review of prostate-sparing cystectomy with neobladder diversion and hypothesized reasons why (at that time) it was a "step in the wrong direction." In this article, we present an update to this review and comment if and how that view has changed in the last 12 years. We excluded studies with less than 10 patients in a case series.

Organ-sparing cystectomy in women was not really reported until the early 2000s, because adoption of orthotopic urinary diversion in women was slow to catch on due to concern for urethral and local recurrence. However, as studies demonstrated that the urethra could be safely spared in women, interest in organ-sparing cystectomy