Potency Preserving Cystectomy With Intrafascial Prostatectomy for High Risk Superficial Bladder Cancer

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Purpose: We report the oncological and functional results of potency sparing cystectomy with intrafascial prostatectomy for high risk, superficial bladder cancer.

Materials and Methods: A total of 37 patients underwent potency sparing cystectomy and orthotopic urinary substitution from 2001 to 2005. Inclusion criteria were age younger than 70 years, Charlson comorbidity index less than 2, high risk superficial bladder cancer, prostate specific antigen less than 4 ng/ml, free-to-total PSA ratio greater than 20% and normal digital rectal examination.

Results: Median patient age was 58 years (range 52 to 66). Median followup was 35 months (range 24 to 71). One patient died of disease progression and 1 died of an unrelated cause. Of the 37 patients 35 (95%) were free of tumor. Daily continence was achieved in 36 patients (97.2%) and nighttime continence was achieved in 35 (95%). Two patients (5%) needed clean intermittent catheterization. A total of 35 patients (95%) stated that they maintained erectile function, including 28 (76%) without oral drugs. A significant decrease in the median International Index of Erectile Function score from baseline was noted 2 years after surgery (25 vs 21). A total of 32 patients (86%) had an International Index of Erectile Function score of greater than 17 at 2 years after cystectomy. Median scores on the International Continence Society male short form questionnaires did not show any significant difference before and after surgery. Prostate specific antigen was lower than 0.2 ng/ml in all cases.

Conclusions: The main criticism about so-called sexuality sparing cystectomy has been the presence of consistent prostatic remnants. Performing intrafascial prostatectomy together with supra-ampullar cystectomy seems to warrant good functional results with while better preserving oncological safety.

Key Words: bladder, bladder neoplasms, cystectomy, urinary diversion, penile erection

Radical cystectomy is the mainstay of treatment for recurrent, high grade superficial and muscle invasive bladder cancer.[1] It is highly morbid since it results in many changes in quality of life, including sexual and social function. In the last decades many steps have been made in the direction of improving quality of life in patients undergoing cystectomy. The orthotopic reservoir is a safe option in patients without posterior urethral involvement. It guarantees recovery of continence in a great proportion of cases.[2] On the other hand, the recovery of sexual activity, also after meticulous nerve sparing dissection, can be achieved in a percent of patients that is only 50% in experienced hands.[3,4] Preservation of the whole or part of the prostate and/or seminal vesicles has been proposed to attain a higher potency rate of 75% to 100%.[5–13] Potency sparing cystectomy is obviously reserved for select young potent patients after having reasonably excluded prostate cancer or bladder cancer prostatic involvement. However, an increased recurrence rate and chronic urinary retention rate, probably related to prostatic remnants, seem to be associated with such procedures. Moreover, the risk of prostate cancer remains unchanged.[14]

We describe the results of modified potency sparing cystectomy, in which the seminal vesicles and deferential ampullae are spared and the prostate is completely removed with intrafascial dissection of the vascular pedicles. An orthotopic reservoir is then created and anastomosed to the urethral stump. Therefore, the continence and chronic retention rates are the same as for the standard orthotopic procedure. On the other hand, the pelvic plexus and erigentes nerves are spared and potency is preserved in most patients.

MATERIALS AND METHODS

Patient Selection

From September 2001 to April 2005 of 289 cystectomies performed in male patients 37 (13%) underwent potency sparing cystectomy with orthotopic urinary substitution and complete prostate removal due to bladder cancer. Inclusion criteria were age younger than 70 years, Charlson comorbidity index 2 or less, high risk superficial bladder cancer, PSA 4 ng/ml or less, free-to-total PSA ratio 20% or less and normal digital rectal examination. Tumors growing into the bladder neck or prostatic urethra were excluded. Negative intraoperative frozen section of the proximal margin of the urethral stump was considered enough to safely proceed with an orthotopic reservoir after cystectomy.

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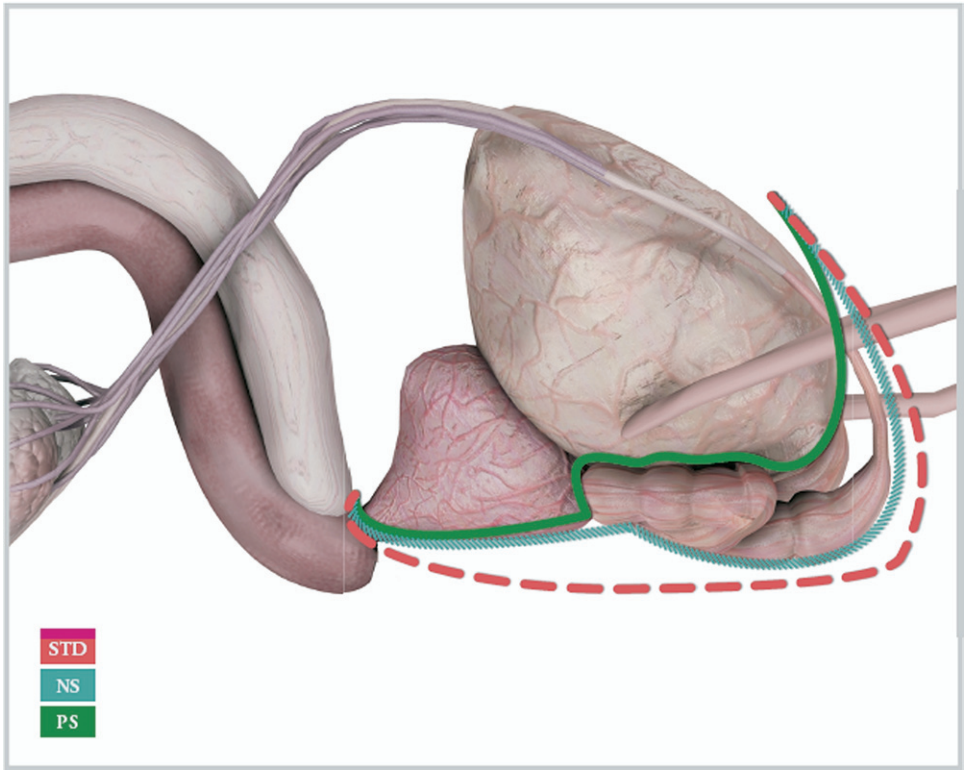

FIG. 1. Dissection in standard radical (*STD*, red line), nerve sparing radical (*NS*, blue line) and potency sparing (*PS*, green line) cystectomy. In standard version surgical plane is developed over rectum and vascular pedicles are sectioned in proximity to anterior rectal wall. In nerve sparing procedure 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 is left completely untouched behind seminal vesicles.

Voiding and sexual function were evaluated respectively by interviews on continence, pad use and erection using the ICS male SF and IIEF erectile function domain score questionnaire (questions 1 to 5 and 15). Patients were completely continent (pad free), stated that they were potent and had an IIEF score of 17 or greater before cystectomy.

Surgical Technique

All procedures were performed by the same surgeon (PP). The laterovesical peritoneum is divided bilaterally up to the internal inguinal ring. The vas deferens is identified and left in situ. The umbilical arteries are divided 1 cm from their origin and the ureters are divided in proximity to the bladder. The peritoneum is incised in transverse fashion about 3 cm anterior to the cul-de-sac. Care is taken to search for cleavage between the posterior bladder wall, and the seminal vesicles and deferential ampullae. Sharp dissection of the bladder from the seminal vesicles and deferential ampullae is performed until the ejaculatory ducts are exposed (figs. 1 and 2). Because there is no need to dissect posterior to these structures, the neurovascular plexus remains untouched. Cystectomy is completed with intrafascial prostatectomy, which is performed in a retrograde manner (figs. 3 and 4).

The main difference respect to standard nerve sparing retropubic prostatectomy is that the rectourethralis ligament is not transected. A surgical plane is developed over the rectourethralis ligament and the anterior layer of Denonvilliers' fascia (figs. 3 and 4). It is joined with the plane previously developed over the seminal vesicles and ampullae of the vas deferens at the level of the ejaculatory ducts. In this fashion the largest part of the pelvic plexus is spared, including the erigentes nerves.

The pathological specimen includes the bladder and whole prostate with the apex. Frozen sections of the distal ureters and the distal urethral stump are sent for pathological evaluation. Bilateral iliac and obturator lymphadenectomy is performed. Dissection over the sacral promontory is performed with care taken to preserve the sympathetic fibers of the pelvic plexus. Finally, a Hautmann ileal neoblad-

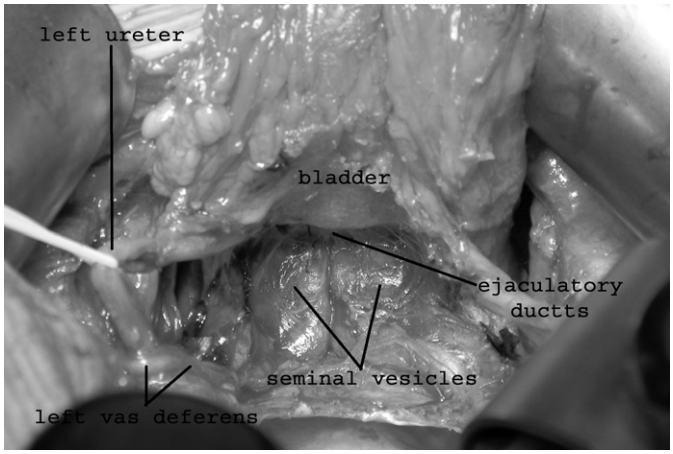

FIG. 2. Posterior dissection route over seminal vesicles until ejaculatory ducts are identified.