

Extended Pelvic Lymph Node Dissection Does Not Affect Erectile Function Recovery in Patients Treated with Bilateral Nerve-Sparing Radical Prostatectomy

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DOI: 10.1111/j.1743-6109.2012.02812.x

ABSTRACT

Introduction. Extended pelvic lymph node dissection (ePLND) might be associated with damages to the pelvic plexus, potentially affecting erectile function (EF) recovery after radical prostatectomy (RP). However, the impact of the extent of pelvic lymph node dissection (PLND) on EF has never been addressed.

Aim. The aim of this study is to evaluate the impact of ePLND on potency recovery in patients who underwent bilateral nerve-sparing RP (BNSRP).

Methods. The study included 396 patients with prostate cancer treated with BNSRP by two high-volume surgeons. Patients were retrospectively divided into two groups based on PLND status: no PLND (N = 161; 40.9%) and ePLND (N = 235; 59.1%) at the time of BNSRP. All patients had preoperative functional and oncological data. Univariable and multivariable Cox regression models tested the association between ePLND and EF recovery after surgery, after accounting for confounders.

Main Outcome Measure. The International Index of Erectile Function (IIEF) was used to evaluate EF after BNSRP. Postoperative EF recovery was defined as an IIEF-EF domain score ≥ 22 .

Results. At a mean follow up of 33.2 months after surgery (median 30), 183 patients (46.2%) recovered EF. Overall, postoperative EF recovery rate at 2 years was 48.4%. No significant differences were recorded when patients were stratified according to the extent of PLND (EF recovery rates at 2-year: 46.6% vs. 49.7% for patients who did not undergo PLND vs. those treated with ePLND; $P = 0.33$). These results were confirmed at multivariable analyses, where only age at surgery and preoperative IIEF-EF (all $P \leq 0.03$), but not ePLND ($P = 0.8$), represented independent predictors of EF recovery.

Conclusions. The extent of PLND is not associated with potency after BNSRP. Conversely, other factors such as age at surgery and preoperative EF represent the major predictors of postoperative potency recovery. Therefore, when indicated, ePLND can be safely performed without compromising EF outcomes. **Gandaglia G, Suardi N, Gallina A, Abdollah F, Capitanio U, Salonia A, Colombo R, Bianchi M, Chun FK, Hansen J, Rigatti P, Montorsi F, and Briganti A. Extended pelvic lymph node dissection does not affect erectile function recovery in patients treated with bilateral nerve-sparing radical prostatectomy. J Sex Med 2012;9:2187–2194.**

Key Words. Prostate Cancer; Radical Prostatectomy; Nerve Sparing; Erectile Function Recovery; Pelvic Lymph Node Dissection; Preservation of Erectile Function

Introduction

Radical prostatectomy (RP) represents one of the most commonly used first-line treatment modalities for men with clinically localized disease

and a life expectancy of at least 10 years [1,2]. Despite excellent oncological outcomes, RP might be associated with disabling functional impairments such as urinary incontinence and erectile dysfunction (ED). These sequelae represent

important determinants of postoperative quality of life, especially in younger men diagnosed with an early stage disease [3–5]. While an increasing number of studies have reported high postoperative rates of urinary continence [6,7], preservation of a satisfactory erectile function (EF) represents a major challenge for practicing urologists. However, even when a bilateral nerve-sparing approach is performed, up to 70% of patients still experience postoperative ED [3,6]. Such high prevalence of postoperative ED can be due to several preoperative, surgical, and post-operative factors. While baseline patient characteristics are unlikely to be modified, intraoperative factors can be controlled during surgery by minimizing injuries to neural structures deputed to sexual function. Moreover, a proper chronic rehabilitation strategy using phosphodiesterase type 5 inhibitors (PDE5) may further improve EF after bilateral nerve-sparing radical prostatectomy (BNSRP) [8,9].

The neural mechanism of erections depends on the integrity of the pelvic plexus, which consists of a variable network of parasympathetic and sympathetic fibers lying superficial to the endopelvic fascia and to the internal iliac vessels [10,11]. Cavernosal nerves deputed to the control of EF branch out from the pelvic plexus and form a complex neural network that surrounds the entire prostatic gland and enters the corpora cavernosa [12]. Based on these anatomical considerations, potential damages to neural fibers controlling EF might happen at two different levels during RP: lower (namely, cavernosal neural network) and higher (namely, pelvic plexus). Therefore, it is possible that mechanical and ischemic injuries to neural fibers deputed to sexual function might also take place during extended pelvic lymph node dissection (ePLND), particularly during the dissection of the internal iliac area, which is contiguous to the pelvic plexus. While such hypothesis has already been tested in surgery for rectal cancer [13,14], no study has ever assessed the association between ePLND and EF after BNSRP for PCa.

Aims

The aim of our study was to evaluate the impact of ePLND on EF recovery in a population of patients who underwent retropubic BNSRP at a single high-volume center.

Methods

The study included 396 patients with clinically localized low-risk PCa according to the D'Amico

classification (namely, cT1–T2a disease, biopsy Gleason score ≤ 6 , and prostate-specific antigen [PSA] < 10 ng/mL) [15]. All patients underwent retropubic BNSRP at a single tertiary referral center between January 2008 and June 2010. Patients were treated with BNSRP performed by two experienced surgeons using a standardized technique [16]. Indication for BNSRP was given regardless of preoperative erectile and urinary function. Decision to perform ePLND was left to the clinical judgment of the treating physician.

All men had complete clinical and functional preoperative data. Baseline EF was assessed the day prior to surgery by the EF domain of the International Index of Erectile Function (IIEF-EF). Patients were stratified as follows: 1–10, severe ED; 11–16, moderate ED; 17–21, mild-to-moderate ED; 22–25, mild ED; and ≥ 26 , no ED [17]. Body mass index (BMI) was prospectively recorded in all patients before surgery and calculated dividing the weight (kg) by the square of the height (m^2).

Patients were retrospectively divided into two groups based on pelvic lymph node dissection (PLND) status: no PLND (Group 1; $N = 161$; 40.9%) and ePLND (Group 2; $N = 235$; 59.1%) at the time of BNSRP.

When ePLND was performed, it consisted of excising the fibrofatty tissue along the external iliac vein, the distal limit being the deep circumflex vein and the femoral canal. Proximally, PLND was performed up to and included the bifurcation of the common iliac artery. All fibrofatty tissue within the obturator fossa was removed, to completely skeletonize the obturator nerve. The lateral limit consisted of the pelvic sidewall, and the medial dissection limit was defined by perivesical fat. Lymph nodes along as well as medially and laterally to the internal iliac vessels were also removed. Moreover, the Marcille's triangular lumbosacral fossa was dissected free in all patients. This area is delimited laterally by the medial border of the psoas, medially by the body of the fifth lumbar vertebra and inferiorly by the border of the sacral wing.

Statistical Analyses

Kaplan–Meier curves assessed time to EF recovery after surgery in the overall population as well as according to PLND status (namely no PLND vs. ePLND), age at surgery, and preoperative EF. Log-rank test was used to compare the rates of EF recovery over time among different groups. The association between PLND status and EF recov-

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