



Prostate Cancer

Is Pelvic Lymph Node Dissection Necessary in Patients with a Serum PSA < 10 ng/ml Undergoing Radical Prostatectomy for Prostate Cancer?

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Abstract

Objective: Controversy persists concerning the role of pelvic lymph node dissection (PLND) in patients with preoperative PSA values <10 ng/ml undergoing treatment for prostate cancer with a curative intent. The aim of this study was to determine the incidence of lymph node metastasis in this subgroup of patients.

Methods: Patients with clinically localized prostate cancer and a serum PSA < 10 ng/ml, without neoadjuvant hormonal or radiotherapy, with negative staging examinations who underwent radical retropubic prostatectomy with bilateral extended PLND and with ≥ 10 lymph nodes detected by the pathologist in the surgical specimen, were included in the study.

Results: A total of 231 patients with a median serum PSA of 6.7 ng/ml (range 0.4–9.98) and a median age of 62 years (range 44–76) were evaluated. A median of 20 (range 10–72) nodes were removed per patient. Positive nodes were found in 26 of 231 patients (11%), the majority of which (81%) had a Gleason score ≥ 7 in the surgical specimen. Of the patients with a Gleason score ≥ 7 in the prostatectomy specimen 25% had positive nodes, whereas only 3% with a Gleason score ≤ 6 were node positive.

Conclusions: The incidence of positive nodes in patients with clinically localized prostate cancer, a serum PSA < 10 ng/ml and a Gleason score ≥ 7 in the prostatectomy specimen was 25% after extended PLND. It seems that in this patient group extended PLND, including removal of nodes along the internal iliac vessels, is warranted.

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1. Introduction

The role of pelvic lymph node dissection (PLND) in prostate cancer remains controversial. Although it is generally accepted that PLND provides important information regarding tumor stage and prognosis, a consensus has not been reached in which cases and to what extent PLND should be performed.

In patients with a PSA < 10 ng/ml the reported incidence of lymph node metastasis is low and therefore many physicians consider PLND unnecessary in this group of patients [1–4]. However, these reports as well as established nomograms are generally based on a limited lymph node dissection and, therefore, harbour the risk of understaging.

The aim of this study was to determine the incidence and location of positive lymph nodes in a subgroup of patients with clinically localized prostate cancer and a serum PSA < 10 ng/ml who underwent radical retropubic prostatectomy and extended PLND with ≥ 10 lymph nodes detected by the pathologist in the surgical specimen.

2. Patients and methods

A subgroup of 231 consecutive patients with clinically localized prostate cancer (NO M0) and a PSA < 10 ng/ml who underwent radical retropubic prostatectomy and extended bilateral pelvic lymphadenectomy according to a prospective protocol between 1989 and 2004 were analyzed. Preoperative staging examinations including abdominal/pelvic computerized tomography, bone scan and chest X-ray were negative in all patients. None of the patients had undergone prior therapy for prostate cancer such as androgen blockade or radiotherapy.

A standardized extraperitoneal meticulous lymph node dissection was performed through an open approach via a lower abdominal midline incision followed by a radical retropubic prostatectomy. All connective and lymphatic tissue along the external iliac vein was removed, the cranial limit being the bifurcation of the common iliac artery and the caudal limit the deep circumflex iliac vein and femoral canal. Lymphatics along the external iliac artery were routinely left untouched. This reduces the risk of lymphedema of the lower extremity if radiotherapy later becomes necessary due to pelvic recurrence. The obturator fossa was completely cleared of all tissue other than the obturator nerve, vein and artery. Then the internal iliac artery (hypogastric artery) and its branches were freed of all connective tissue including its medial aspect (Fig. 1).

To reduce the risk of lymphocele formation, all lymphatics from the lower extremities were ligated and two drains were placed, one on each side of the pelvis where lymph node dissection was performed. These were progressively shortened from day three on and not removed until the total amount drained was less than 50 ml during the past 24 h. Low molecular heparin was injected into the upper arm instead into the thigh.

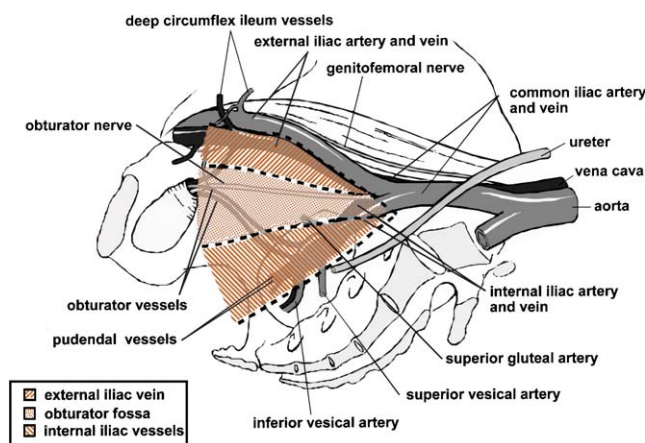


Fig. 1 – View of the right hemipelvis showing the areas of tissue removal during extended PLND.

The tissue from the three different locations (external iliac vein, obturator fossa, internal iliac artery) on each side was sent separately for histological evaluation. The specimens were fixed in neutral buffered 4% formaldehyde for 24 h and then placed in acetone to dissolve the fatty tissue. Lymph nodes were meticulously searched for during the pathological examination and counted according to their specific location and side. Each node was cut into 3 mm sections, which were separately embedded in paraffin and stained with hematoxylin eosin. All were microscopically analysed for metastatic disease by the pathologist. If necessary an immunohistochemical analysis was carried out. The total number of lymph nodes removed as well as the number of diseased nodes were routinely determined according to their location. PLND was considered representative if 10 or more lymph nodes were detected by the pathologist in the surgical specimen and only patients fulfilling these criteria were included in this study.

Gleason score, tumor stage and grade of the prostatectomy specimen were determined by an experienced uropathologist according to the 1997 TNM classification.

3. Results

The median preoperative serum PSA of all 231 patients was 6.7 ng/ml (range 0.4–9.98) and the median age was 62 years (range 44–76). The majority (78%) of the patients had organ confined disease and 22% had extracapsular disease (Table 1). Positive nodes were found in 26 of 231 (11%) patients.

The median number of lymph nodes removed in all patients was 20 (range 10–72) per patient. Of the 26 lymph node positive patients, 12 (46%) had one positive node, 5 (19%) had two positive nodes and 9 (35%) had 3–8 positive nodes. Positive lymph nodes were located exclusively along the external iliac vein, in the obturator fossa or along the internal iliac artery (presacral nodes) in 0/26 (0%), 6/26 (23%) and 8/26 (31%) patients, respectively (Table 2). Positive

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