

# Impact of Omission of Intrapulmonary Lymph Node Retrieval on Outcome Evaluation of Lung Cancer Patients Without Lymph Node Metastasis: A Propensity Score Matching Analysis

Xing Wang, Shi Yan, Chao Lv, Yuzhao Wang, Jia Wang, Shaolei Li, Lijian Zhang, Yue Yang, Nan Wu

## Abstract

**Clinical practice of intrapulmonary lymph node retrieval for pathologic examination varies during lung cancer surgery. This study analyzed 442 cases of pN0 non–small-cell lung cancer (NSCLC) with or without intrapulmonary node collection. Inferior oncologic outcomes of pN0 cases without intrapulmonary node retrieval suggests that the procedure of intrapulmonary lymph node retrieval may play a role in outcome evaluation for pN0 NSCLC patients.**

**Introduction:** Clinical practice of retrieval of segmental (station 13) and subsegmental (station 14) lymph nodes for pathologic examination varies during lung cancer surgery. This study aimed to evaluate whether omitting retrieval of nodes from stations 13 and 14 could affect outcome evaluation for patients with pN0 non–small-cell lung cancer (NSCLC). **Methods:** This retrospective study analyzed 442 patients with NSCLC who were treated with both R0 resection and systematic mediastinal lymphadenectomy with pathologically confirmed stage pN0 NSCLC. The study group included patients in whom N1 nodes including stations 10 to 14 were investigated, and the control group included patients in whom stations 10 to 12 only were investigated. Clinical and pathologic parameters of the groups were balanced by propensity score matching, and oncologic outcomes were assessed by the log-rank test. **Results:** A total of 435 cases were included in the final analysis (170 in the study group and 265 in the control group). In the study group, a mean  $\pm$  SD of  $5.0 \pm 3.0$  nodes per case were collected from nodes 13 and 14. After propensity score matching, 143 cases were included in each group. Overall and disease-free survival improved in the study group compared to the control group ( $P = .027$  and  $P = .021$ , respectively). T staging and intrapulmonary node collection were prognostic factors for pN0 cases. **Conclusion:** Inferior oncologic outcomes of pN0 cases without intrapulmonary node retrieval suggest that the procedure of intrapulmonary lymph node retrieval may play a role in outcome evaluation for pN0 NSCLC patients.

*Clinical Lung Cancer*, Vol. ■, No. ■, ■-■ © 2017 Elsevier Inc. All rights reserved.

**Keywords:** Lymph node, NSCLC, Pathologic staging, Prognosis, Segmental, Subsegmental

The first 2 authors contributed equally to this article, and both should be considered first author.

Key Laboratory of Carcinogenesis and Translational Research (Ministry of Education), Department of Thoracic Surgery II, Peking University Cancer Hospital and Institute, Beijing, China

Submitted: Jan 19, 2017; Revised: Apr 28, 2017; Accepted: May 2, 2017

Address for correspondence: Nan Wu, MD, Department of Thoracic Surgery II, Peking University Cancer Hospital and Institute, No. 52, Fucheng Avenue, Haidian District, Beijing 100142, China  
Fax: 86-10-88122437; e-mail contact: [nanwu@bjmu.edu.cn](mailto:nanwu@bjmu.edu.cn)

## Introduction

Accurate pathologic staging of non–small-cell lung cancer (NSCLC) is fundamental to treatment planning and long-term prognosis.<sup>1,2</sup> Such staging can be achieved by systematic dissection of mediastinal nodes and nodes from N1 stations. According to the International Association for the Study of Lung Cancer (IASLC) nomenclature,<sup>3</sup> N1 nodes are present in 5 zones: the hilar and interlobar zone (stations 10 and 11) and the peripheral zone (lobar station 12, segmental station 13, and subsegmental station 14). Most N1 evaluations involve stations 10 to 12, whereas pathologic examination of nodes 13 and 14 varies in current practice.<sup>4,5</sup>

## Omission of Lymph Node Retrieval

A previous study reported that routine dissection of the segmental bronchi is feasible to collect the intrapulmonary lymph nodes,<sup>6</sup> and such collection may optimize staging accuracy. Two studies also reported that intrapulmonary node metastasis might lead to inferior prognosis compared to node-negative patients.<sup>7,8</sup> A precise protocol for pathologic examination of the nodes after routine examination by thin gross dissection may upgrade 11% of patients at the final pathologic stage.<sup>5</sup> As such, the disease of a large proportion of the patients were still staged as pN0 even after dissection, which raises questions about the survival benefit of this procedure and the treatment protocol followed.<sup>9</sup>

It is thus unknown whether intrapulmonary lymph node retrieval after surgery could affect the oncologic outcomes of patients without lymph node metastasis,<sup>10</sup> even if lymphadenectomy is performed in compliance with the current guidelines. Theoretically, if the intrapulmonary nodes are neglected, then the pathologic N1 status might be understaged as pathologic N0 after operation, and adjuvant therapy may not be administered. Therefore, even patients with disease at a very early stage, such as pathologic N0 status, may experience relapse and develop local recurrence and systematic dissemination.<sup>5</sup>

We thus aimed to use propensity score matching to evaluate whether omitting retrieval of nodes from stations 13 and 14 could affect outcome evaluation for NSCLC patients without lymph node metastasis.

## Patients and Methods

### Patient Eligibility

From September 2003 to January 2011, a total of 442 consecutive patients with clinical early-stage NSCLC who were admitted to Peking University Cancer Hospital were enrolled. These patients comprised the study cohort and were treated with standard lung resection with systematic mediastinal lymph node dissection and postoperative pathology—confirmed complete resection (R0) and pathologic N0. Patients with nonprimary lung cancer or carcinoid tumor, and patients treated with neoadjuvant chemotherapy were not included in the study. The institutional review board at Peking University Cancer Hospital approved this study and waived the need for patient consent.

### Diagnosis Procedure, Surgery, and Pathologic Examination

Preoperative staging procedures were followed according to National Comprehensive Cancer Network (NCCN) guidelines.<sup>11</sup> Routine preoperative staging included chest computed tomography, brain magnetic resonance imaging, abdominal ultrasonography, bone scintigraphy, and/or positron emission tomography/computed tomography. The type of pulmonary resection (ie, lobectomy, bilobectomy, sleeve lobectomy, or pneumonectomy) was decided according to the tumor location.

All patients were scheduled to receive systematic mediastinal lymphadenectomy according to the quality requirements of the NCCN guidelines, namely, dissection of at least 3 stations of N2 nodes. Definition of lymph node stations was based on the nomenclature of the IASLC.<sup>12</sup> Pathologic staging was performed as described in the 7th edition of the tumor, node, metastasis classification system for malignant tumors.<sup>13</sup>

For the N1 stations, surgeons collected lymph nodes from stations 10 to 12 during the operation and labeled them separately. Because there was no standardized protocol for intrapulmonary node dissection during the investigation period, segmental station 13 and subsegmental station 14 were retrieved at the surgeons' discretion. This procedure was encouraged but not mandatory. If the surgeon collected the abovementioned nodes, he or she would label them according to the location of the attached segments and subsegments on the basis of the lymph node map of Naruke et al.<sup>14</sup>

All cases were categorized into 2 groups on the basis of the status of intrapulmonary lymph node retrieval from the pathologic report. In the study group, N1 nodes including stations 10 to 12 and segmental station 13 and/or subsegmental station 14 were investigated. The control group comprised investigation of N1 stations 10 to 12 only.

Samples of tissue and lymph nodes were sent for routine pathologic analysis with paraffin-embedded blocks. Lymph nodes were bivalved along their longitudinal axis and totally submitted for microscopic evaluation. Small nodes ( $\leq 0.4$  cm) were submitted without bivalving. A single hematoxylin–eosin–stained slide was prepared from each block.

### Statistical Analysis

The propensity scores, which represented the probability of inclusion in the study or control group, considered the following variables: sex, T stage, histology, adjuvant chemotherapy, and mediastinal lymphadenectomy performed in compliance with NCCN criteria. We matched propensity scores individually using the nearest-neighbor method, with no replacement, and 0.1-caliper width. Finally, 143 patients from the study group and 143 matched patients from the control group were included in the analysis. The characteristics of patients from both groups were compared before and after propensity score matching. Depending on the normality of distribution, the Student *t* test or Wilcoxon rank test was used to compare continuous variables between the matched groups. The Pearson's chi-square test or Fisher's exact test was used to compare proportions, as appropriate. Survival was estimated by the Kaplan-Meier method, and the significance of the difference was determined by the log-rank test. Multivariate Cox regression analyses were used to determine the factors significantly associated with survival, and the hazard ratio was calculated for 95% confidence intervals. All statistical tests were 2 sided, with the significance level set at .05. SPSS 22 software (IBM SPSS, Chicago, IL) was used for statistical analyses.

## Results

The final follow-up was conducted in January 2014. Two patients were excluded because they died within the perioperative period, and 5 patients were lost to follow-up. Four hundred thirty-five patients were included in the final analysis, comprising 170 patients in the study group and 265 patients in the control group. The median duration of follow-up for the entire cohort was 52 months (range, 3.1–117 months). The rate of mediastinal lymphadenectomy fulfilling with NCCN criteria in the whole cohort was 78% (339/435).

In the study group, segmental station 13 was collected from 163 patients (95.9%), and subsegmental station 14 was collected from 103 patients (60.6%). A total of  $5.0 \pm 3.0$  (mean  $\pm$  SD) intrapulmonary lymph nodes were collected, which included  $3.1 \pm 1.9$  nodes from station 13 and  $2.0 \pm 2.2$  nodes from station 14. The

Download English Version:

<https://daneshyari.com/en/article/8615075>

Download Persian Version:

<https://daneshyari.com/article/8615075>

[Daneshyari.com](https://daneshyari.com)