

AUTHOR CORRECTION

Open Access



# Correction: Long-term follow-up of voice changes after cervical mediastinoscopy

Ikram Achbar<sup>1\*</sup> , Wilson W. L. Li<sup>1</sup>, Simone T. Timman<sup>1</sup>, Stefan M. van der Heide<sup>1</sup>, Olga C. J. Schuurbiens<sup>2</sup>, Erik H. F. M. van der Heijden<sup>2</sup> and Ad F. T. M. Verhagen<sup>1</sup>

**Correction to: Journal of Cardiothoracic Surgery (2022) 17:161**  
<https://doi.org/10.1186/s13019-022-01884-w>

Following publication of the original article [1], the reference no. 4 has been misplaced in reference no. 11, reference 4 should as “Widström A. Palsy of the recurrent nerve following mediastinoscopy. *Chest*. 1975;67(3):365–6.” and other references will be sequenced orderly and the in text citation will be changed as below.

The in text citation for the text has been changed from

Additionally, when the extensiveness of mediastinal lymph node dissection is increased, i.e. with transcervical extended mediastinal lymphadenectomy (TEMLA) or video-assisted mediastinoscopic lymphadenectomy (VAMLA) techniques, the risk of RLN injury also rises [4]. In a contemporary series with 108 patients after VAMLA, recurrent nerve palsy was identified in 5% of patients [5].

to

Additionally, when the extensiveness of mediastinal lymph node dissection is increased, i.e. with transcervical extended mediastinal lymphadenectomy (TEMLA) or video-assisted mediastinoscopic lymphadenectomy (VAMLA) techniques, the risk of RLN injury also rises

[5]. In a contemporary series with 108 patients after VAMLA, recurrent nerve palsy was identified in 5% of patients [6].

The in text citation for the text has been changed from

Chart review (medical and nursing records) was performed retrieving data on preoperative characteristics including demographics and oncological details (if appropriate), intraoperative records regarding harvested lymph node (LN) stations during CM, and postoperative data including voice changes and clinical follow-up. Voice changes with full recovery within 14 days were attributed to intubation-related causes [6].

to

Chart review (medical and nursing records) was performed retrieving data on preoperative characteristics including demographics and oncological details (if appropriate), intraoperative records regarding harvested lymph node (LN) stations during CM, and postoperative data including voice changes and clinical follow-up. Voice changes with full recovery within 14 days were attributed to intubation-related causes [7].

The in text citation for the text has been changed from

In addition, the standardized 30-item self-administered Voice Handicap Index (VHI) questionnaire was used to assess the impact of voice impairment on a patient's QoL [7,8]. A 4-point interval score from ‘never’ (0 points) to ‘always’ (4 points) is used to indicate the frequency of various voice complaints. These items can be combined into a total score, and they can be counted separately into three different domain subscores (functional, emotional and physical), with higher scores indicating more severe voice impairment. In addition, cut-off points have been

The original article can be found online at <https://doi.org/10.1186/s13019-022-01884-w>.

Prior Abstract Presentation: EACTS (European Association for Cardio-Thoracic Surgery) Annual Meeting 2019, 4 October 2019 in Lisbon, Portugal.

\*Correspondence: [ikram.achbar@radboudumc.nl](mailto:ikram.achbar@radboudumc.nl)

<sup>1</sup> Department of Cardiothoracic Surgery, Radboud University Medical Centre, P.O. Box 9101, 6500 HB Nijmegen, The Netherlands  
Full list of author information is available at the end of the article



© The Author(s) 2022. **Open Access** This article is licensed under a Creative Commons Attribution 4.0 International License, which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if changes were made. The images or other third party material in this article are included in the article's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this licence, visit <http://creativecommons.org/licenses/by/4.0/>. The Creative Commons Public Domain Dedication waiver (<http://creativecommons.org/publicdomain/zero/1.0/>) applies to the data made available in this article, unless otherwise stated in a credit line to the data.

proposed (Fig. 2) to categorize the various scores into either mild, moderate or severe voice impairment [7].

to.

In addition, the standardized 30-item self-administered Voice Handicap Index (VHI) questionnaire was used to assess the impact of voice impairment on a patient's QoL [8,9]. A 4-point interval score from 'never' (0 points) to 'always' (4 points) is used to indicate the frequency of various voice complaints. These items can be combined into a total score, and they can be counted separately into three different domain subscores (functional, emotional and physical), with higher scores indicating more severe voice impairment. In addition, cut-off points have been proposed (Fig. 2) to categorize the various scores into either mild, moderate or severe voice impairment [8].

The in text citation for the text has been changed from CM was performed according to the international guidelines [9].

to

CM was performed according to the international guidelines [10].

The in text citation for the text has been changed from

After chart review, 19 patients were identified who experienced voice changes after CM. Of these, two made full recovery within fourteen days and were therefore attributed to intubation-related causes [6].

to

After chart review, 19 patients were identified who experienced voice changes after CM. Of these, two made full recovery within fourteen days and were therefore attributed to intubation-related causes [7].

The footnotes for the Fig. 2 has been changed from

Cut-off scores for categorization of voice impairment severity for the Voice Handicap Index (VHI) [7]

to

Cut-off scores for categorization of voice impairment severity for the Voice Handicap Index (VHI) [8]

The in text citation for the text has been changed from

The 6.3% incidence of voice changes and 3.7% incidence of confirmed RLN injury after CM in our study is greater than described in the known literature, where RLN injury rates of 0–3% have been reported after CM [3, 10], and even <1% in larger case series [2, 3]. However, the incidence is dependent on the exact definition of the outcome measure and the intensity of the search for this complication. When routine indirect laryngoscopy was performed after CM in a historical series, Widström found a 6% rate of vocal cord palsy [11], already suggesting this problem might be overlooked during regular clinical follow-up in other reports (although the surgical instrumentation may have been different then). Furthermore, our current study is focused on functional patient-reported outcome, with reviewing of both medical and

nursing records, which might be a more accurate method to evaluate the magnitude of this problem. The majority of available reports on RLN injury or palsy after CM [2, 3, 10] rarely provide well-defined data definitions on morbidity outcomes, and it is unclear whether these incidence rates were scored based on functional complaints or laryngoscopy findings, or when the follow-up evaluation was performed.

to

The 6.3% incidence of voice changes and 3.7% incidence of confirmed RLN injury after CM in our study is greater than described in the known literature, where RLN injury rates of 0–3% have been reported after CM [3, 11], and even <1% in larger case series [2, 3]. However, the incidence is dependent on the exact definition of the outcome measure and the intensity of the search for this complication. When routine indirect laryngoscopy was performed after CM in a historical series, Widström found a 6% rate of vocal cord palsy [4], already suggesting this problem might be overlooked during regular clinical follow-up in other reports (although the surgical instrumentation may have been different then). Furthermore, our current study is focused on functional patient-reported outcome, with reviewing of both medical and nursing records, which might be a more accurate method to evaluate the magnitude of this problem. The majority of available reports on RLN injury or palsy after CM [2, 3, 11] rarely provide well-defined data definitions on morbidity outcomes, and it is unclear whether these incidence rates were scored based on functional complaints or laryngoscopy findings, or when the follow-up evaluation was performed.

The in text citation for the text has been changed from

Traditionally, CM remains the diagnostic test with the highest negative predictive value to rule out mediastinal lymph node (N2) disease [9, 15]. In the current guidelines on mediastinal staging for lung cancer patients, confirmatory CM is still indicated in situations of high clinical suspicion of mediastinal metastases if endoscopic staging procedures such as endobronchial (EBUS) and esophageal endosonography (EUS) are negative [9, 15], and is advised to prevent unforeseen N2 disease at surgical resection. However, with the advancements and increasing accuracy of these endoscopic staging techniques, the role of CM has been questioned [10, 16].

to

Traditionally, CM remains the diagnostic test with the highest negative predictive value to rule out mediastinal lymph node (N2) disease [10, 15]. In the current guidelines on mediastinal staging for lung cancer patients, confirmatory CM is still indicated in situations of high clinical suspicion of mediastinal metastases if endoscopic staging procedures such as endobronchial (EBUS) and

esophagealendosonography (EUS) are negative [10, 15], and is advised to prevent unforeseen N2 disease at surgical resection. However, with the advancements and increasingaccuracy of these endoscopic staging techniques, the role of CM has been questioned [11, 16].

The original article has been corrected.

#### Author details

<sup>1</sup>Department of Cardiothoracic Surgery, Radboud University Medical Centre, P.O. Box 9101, 6500 HB Nijmegen, The Netherlands. <sup>2</sup>Department of Pulmonary Diseases, Radboud University Medical Centre, P.O. Box 9101, 6500 HB Nijmegen, The Netherlands.

Accepted: 26 August 2022

Published online: 29 August 2022

#### Reference

1. Achbar I, et al. Long-term follow-up of voice changes after cervical mediastinoscopy. *J Cardiothorac Surg.* 2022;17:161.

#### Publisher's Note

Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

Ready to submit your research? Choose BMC and benefit from:

- fast, convenient online submission
- thorough peer review by experienced researchers in your field
- rapid publication on acceptance
- support for research data, including large and complex data types
- gold Open Access which fosters wider collaboration and increased citations
- maximum visibility for your research: over 100M website views per year

At BMC, research is always in progress.

Learn more [biomedcentral.com/submissions](https://biomedcentral.com/submissions)

