The Dual-Path Nerve Integrity Monitor Method for Protection of the External Branch of the Superior Laryngeal Nerve During Thyroid Surgery

Bo Wang, MD

Department of Thyroid Surgery, Fujian Medical University Union Hospital, Fuzhou, China.

Si-si Wang, MD

Department of Thyroid Surgery, Fujian Medical University Union Hospital, Fuzhou, China.

Yu-jing Weng, MD

Department of Thyroid Surgery, Fujian Medical University Union Hospital, Fuzhou, China.

Shou-yi Yan, MD

Department of Thyroid Surgery, Fujian Medical University Union Hospital, Fuzhou, China.

Li-yong Zhang, MD

Department of Thyroid Surgery, Fujian Medical University Union Hospital, Fuzhou, China.

Jing Zheng, MS

Department of Thyroid Surgery, Fujian Medical University Union Hospital, Fuzhou, China.

Wen-xin Zhao, MD, PhD

Department of Thyroid Surgery, Fujian Medical University Union Hospital, Fuzhou, China.

Department of Thyroid and Vascular Surgery, Fujian Medical University Union Hospital, Fuzhou, China.

E-mail: zhaowx@fjmu.edu.cn

Sandy Lin, BS

© Mary Ann Liebert, Inc. and American Thyroid Association DOI: 10.1089/ve.2018.0148

Abstract

Introduction: This video illustrates a case report using our novel dual-path nerve integrity monitor (NIM) method for protection of the external branch of the superior laryngeal nerve (EBSLN) during thyroidectomy.

Methods: The patient was 42-year-old female who initially presented with papillary thyroid cancer (PTC). Ultrasound-guided fine needle aspiration biopsy was done, and the pathology report was positive for PTC. The patient is a teacher, whose voice-related quality of life is of great importance. Therefore, she was selected as a candidate for using our novel dual-path method to aid in the identification and protection of EBSLN. Thyroidectomy was performed with intraoperative nerve monitoring using the Medtronic NIM 3.0 systems. The dual-path method is carefully described as

follows: after exposing the sternothyroid–laryngeal triangle, 1.0 mA electrical current was used to stimulate pars recta and pars obliqua components of the cricothyroid muscle separately to locate bifurcate point of EBSLN into two branches. Then, we traced the first possible path (path A) of EBSLN from this point to the inferior pharyngeal muscles. Then, we detected another possible path (path B) by retrograde stimulating the axis of superior thyroid artery with 3.0 mA current. Finally, the Friedman classification of EBSLN can be determined by combining the result of cricothyroid muscle twitch during path A and path B stimulation. The method and surgical procedure are carefully described in the video.

Conclusions: The dual-path NIM is a novel and simple method for classification and identification of the EBSLN without routine exposure during thyroid surgery.

Acknowledgments: This research was supported by the Professor Academic Development Fund of Fujian Medical University (Grant No. JS15017), the Medical Innovation Project of Fujian Province (Grant No. 2018-CX-17), and the Guiding Social Development Project of Fujian Province (Grant No. 2018Y0035). Additional supporting information may be found in the online version of this article.

Authors' Contributions: This operation was directed by Professor Wen-xin Zhao, and Bo Wang was the chief surgeon. The first assistant was Si-si Wang. Shou-yi Yan and Li-yong Zhang advised on article preparation. Yu-jing Weng and Jing Zheng edited the English text of this article. Sandy Lin narrated this video.

No competing financial interests exist.

Runtime of video: 6 mins 51 secs

Keywords: external branch of the superior laryngeal nerve, intraoperative nerve monitoring, thyroidectomy, Friedman classification

Cite this video

Bo Wang, Si-si Wang, Yu-jing Weng, Shou-yi Yan, Li-yong Zhang, Jing Zheng, Wen-xin Zhao, Sandy Lin, The Dual-Path Nerve Integrity Monitor Method for Protection of the External Branch of the Superior Laryngeal Nerve During Thyroid Surgery, VideoEndocrinology. 2019, DOI: 10.1089/ve.2018.0148.

Original Publication Date: 2019