

OPEN

Facial Nerve Anomaly in a Patient With a Parotid Tumor

A Case Report

Dong Hoon Lee, MD, PhD, Tae Mi Yoon, MD, PhD, Joon Kyoo Lee, MD, PhD,
and Sang Chul Lim, MD, PhD

Abstract: The branching pattern of the facial nerve varies among individuals. These variations increase the risk of facial nerve injury during parotid surgery. We report a new variation of the facial nerve and an unusual relationship with the retromandibular vein during parotid surgery.

Clinicians should recognize this facial anomaly and the unusual relationship with the retromandibular vein to avoid injuring the facial nerve during parotid surgery.

(*Medicine* 95(18):e3601)

Abbreviation: NIM = neurophysiological intraoperative monitoring.

Key Points

- We report a new variation in the facial nerve pattern, and an unusual relationship with the retromandibular vein during parotid surgery.
- Clinicians should recognize this facial anomaly and the unusual relationship with the retromandibular vein to avoid injuring the facial nerve during parotid surgery.

INTRODUCTION

Identifying and protecting the facial nerve is important and essential during parotid surgery.^{1,2} However, variations in the facial nerve have been reported and they increase the risk of facial nerve injury during parotid surgery.¹ Herein, we report a unique case of a parotid tumor in conjunction with a facial nerve anomaly.

Editor: Yung-Song Lin.

Received: December 15, 2015; revised: March 27, 2016; accepted: April 12, 2016.

From the Department of Otolaryngology-Head and Neck Surgery, Chonnam National University Medical School & Chonnam National University Hwasun Hospital, Hwasun, South Korea.

Correspondence: Joon Kyoo Lee, Department of Otolaryngology-Head and Neck Surgery, Chonnam National University Medical School and Hwasun Hospital, Ilsimri, Hwasun, Jeonnam, South Korea (e-mail: joonkyoo@jnu.ac.kr).

The authors have no funding and conflicts of interest to disclose.

Copyright © 2016 Wolters Kluwer Health, Inc. All rights reserved.

This is an open access article distributed under the Creative Commons Attribution-NonCommercial-NoDerivatives License 4.0, where it is permissible to download, share and reproduce the work in any medium, provided it is properly cited. The work cannot be changed in any way or used commercially.

ISSN: 0025-7974

DOI: 10.1097/MD.0000000000003601

CASE REPORT

A 22-year-old female presented to our department with left infra-auricular swelling present for >2 years. The patient's medical history was unremarkable. A physical examination revealed a solitary, firm, nontender, mobile, and ~3-cm sized mass in the left parotid gland. A computed tomography scan of the neck demonstrated a 3.2 × 2.3 cm well-defined, heterogeneously enhancing mass in the left parotid gland (Figure 1). Fine-needle aspiration cytology revealed pleomorphic adenoma of the left parotid gland.

Based on these observations, the preoperative diagnosis was a left-side superficial parotid tumor. A modified face lift incision was performed and a skin flap was elevated anteriorly, exposing the parotid gland. The dissection continued along the tragal pointer to identify the facial nerve. We found the main trunk of the facial nerve in the anticipated location and the nerve was dissected anteriorly and superiorly. We observed 2 unusual nerves ascending to the preauricular region and connecting to the facial nerve. After superficial parotidectomy preserving the facial nerve including the 2 unusual nerves, the 2 unusual nerves were found to connect to the temporofacial division from the main trunk of the facial nerve and were confirmed to be the facial nerve using the neurophysiological intraoperative monitoring (NIM) 2.0



FIGURE 1. Neck computed tomography scan demonstrates a 3.2 × 2.3 cm well-defined, heterogeneously enhancing mass in the left parotid gland.

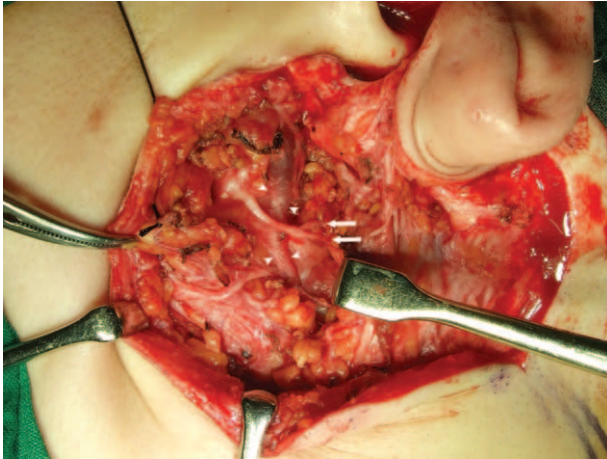


FIGURE 2. Two unusual nerves (arrows) connected to the temporofacial division from the facial nerve main trunk are detected after superficial parotidectomy, and the retromandibular vein (arrowheads) is lateral to the cervicofacial division but medial to the temporofacial division.

system (Medtronic; Minneapolis, MN) (Figure 2). In addition, an anomalous relationship was detected between the retromandibular vein and the facial nerve. The retromandibular vein was lateral to the cervicofacial division and medial to the temporofacial division (Figure 2). The patient had no temporary or permanent postoperative facial nerve palsy. The histopathological analysis of the parotid mass demonstrated pleomorphic adenoma. The patient has been regularly followed up without a recurrence.

This study was approved by the institutional review board of the Chonnam National University Hwasun Hospital. Informed consent was given by the patient.

DISCUSSION

The incidence of facial nerve palsy during parotid surgery is up to 21%.³ Therefore, understanding surgical landmarks for the facial nerve is essential for safe and effective parotid surgery.⁴ The most commonly used surgical landmarks are

the stylomastoid foramen, the tympanomastoid suture, the posterior belly of the digastric muscle, the tragal pointer, and the retromandibular vein.^{1,2,4,5} Among these landmarks, the retromandibular vein is most commonly used to locate lesions and the facial nerve.^{1,5} Several reports have found that the retromandibular vein is medial to the facial nerve in up to 90% of cases. However, in the present case, retromandibular vein was lateral to the cervicofacial division and medial to the temporofacial division.

The branching pattern of the facial nerve varies among individuals.⁴ The most common branching pattern is cervicofacial and temporofacial divisions.⁴ However, we observed 2 unusual nerves connecting the temporofacial division in the present case. These 2 nerves were confirmed to be the facial nerve using an NIM system. A limitation of this report is that we never found the origin of these unusual nerves.

In conclusion, we report a new variation in the facial nerve pattern, and an unusual relationship with the retromandibular vein during parotid surgery. Clinicians should recognize this facial anomaly and the unusual relationship with retromandibular vein to avoid injuring the facial nerve during parotid surgery. Intraoperative nerve monitoring and careful dissection are important to avoid intraoperative facial nerve injury, particularly in patients with a facial nerve anomaly.

REFERENCES

1. Babademez MA, Acar B, Gunbey E, et al. Anomalous relationship of the retromandibular vein to the facial nerve as a potential risk factor for facial nerve injury during parotidectomy. *J Craniofac Surg.* 2010;21:801–802.
2. Saha S, Pal S, Sengupta M, et al. Identification of facial nerve during parotidectomy: a combined anatomical and surgical study. *Ind J Otolaryngol Head Neck Surg.* 2014;66:63–68.
3. Gooden E, Witterick IJ, Hacker D, et al. Parotid gland tumours in 255 consecutive patients: Mount Sinai Hospital's quality assurance review. *J Otolaryngol.* 2002;31:351–354.
4. Rai AR, Rai R, Bhat K, et al. Anomalous location of facial nerve deep to parotid gland. *J Craniofac Surg.* 2011;22:652–653.
5. Touré G, Vacher C. Relations of the facial nerve with the retromandibular vein: anatomic study of 132 parotid glands. *Surg Radiol Anat.* 2010;32:957–961.