

Communication between the transverse cervical nerve and the marginal mandibular branch of the facial nerve: A rare anatomical variant

Toshinori Iwai DDS, Maiko Shibasaki DDS, Hideyuki Nakashima DDS PhD, Senri Oguri DDS PhD, Makoto Hirota DDS PhD, Kenji Mitsudo DDS PhD, Iwai Tohnai DDS PhD

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Although anatomical knowledge of the facial nerve (FN) is very important to avoid iatrogenic injury during surgery, surgeons are concerned less with the cervical branch, which plays a definitive role in lower lip esthetic and function compared with other branches of the FN. Although communication between branches of the cervical plexus and FN is not well documented, the transverse cervical nerve commonly communicates with the cervical branch of the FN. There are few reports describing direct communication with the marginal mandibular branch. As a rare anatomical variant, the authors report communication between the transverse cervical nerve and the marginal mandibular branch of the FN.

Key Words: Communication; Facial nerve, Marginal mandibular branch; Transverse cervical nerve

Although anatomical knowledge of the facial nerve (FN) is very important to avoid iatrogenic injury during surgery, surgeons are concerned less with the cervical branch (CB), which plays a definitive role in lower-lip esthetic and function compared with other branches of the FN (1). Communication between branches of the cervical plexus and FN is not well documented; however, the transverse cervical nerve (TCN) commonly communicates with the CB of the FN (2-5). There are few reports describing communication with the marginal mandibular branch (MMB) (2). As a rare anatomical variant, we report a communication between the TCN and the MMB of the FN.

CASE PRESENTATION

A 76-year-old woman with tongue cancer (T2N0) underwent partial glossectomy. The patient underwent left functional neck dissection for occult cervical lymph node metastasis six months after surgery. After raising of the subplatysmal flap, the greater auricular nerve, external jugular vein and the TCN were identified. Because the ascending branch of the TCN has common communication with the CB of the FN, a retrograde dissection along the ascending branch of the TCN to identify the MMB of the FN was performed. The TCN divided into anterior and posterior branches in the parotid gland and two branches individually anastomosed the MMB of the FN (Figure 1). Although the MMB was dissected peripherally to identify the CB, the CB could not be found. Therefore, the posterior and anterior branches were considered the CB and ascending branch of the TCN, respectively. Postoperative course was uneventful without weakness in the FN.

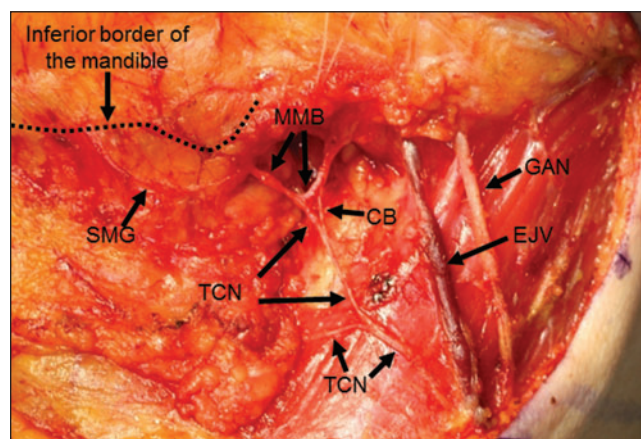


Figure 1 Communication between the transverse cervical nerve (TCN) and marginal mandibular branch of the facial nerve (MMB) occurred within the parotid gland and its position was posterior to the submandibular gland and inferior to the inferior border of the mandible. CB Cervical branch of the facial nerve; EJLV External jugular vein; GAN Great auricular nerve; SMG Submandibular gland

DISCUSSION

The TCN is divided into ascending and descending branches, and the ascending branch passes upward to the submandibular region to form a plexus with the CB of the FN beneath the platysma muscle (3). Domet et al (1) showed that all TCNs send one or two communicating branch(es) to the CB of the FN; 33 communications were identified in all 22 neck halves (11 cadavers). Salinas et al (2) reported that communication between the TCN and CB was identified in 19 of 20 hemifacial cadaver specimens, while only one had direct communication with the MMB (2). A single communicating branch with the CB was present in 50% to 55% of specimens, and two branches with the CB were in 40% to 50% (1,2). According to Salinas et al (2), that the TCN communication was distal to the CB and MMB separation of the FN point in all 20 specimens.

Positions of communication between the TCN and CB have been reported by several authors (1,2). The average distance from the inferior border of the mandible to the TCN communication was 19 mm (range 7 mm to 32 mm) to 25 mm (range 12 mm to 39 mm). According to Domet et al (1), 20 of 33 (60.6%) communications occurred near the inferior border of the submandibular gland, and there were the communications inferior or posterior to the submandibular gland, at an

Department of Oral and Maxillofacial Surgery, Yokohama City University Graduate School of Medicine, 3-9 Fukuura, Kanazawa-ku, Yokohama 236-0004, Japan

Correspondence: Toshinori Iwai, 3-9 Fukuura, Kanazawa-ku, Yokohama, Kanagawa 236-0004, Japan. Telephone 81-45-787-2659, fax 81-45-785-8438, e-mail iwai104oams@yahoo.co.jp



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average distance of 28 mm and 20 mm from the inferior border of the mandible, respectively. Additionally, the communications found inferior or posterior to the submandibular gland averaged 12 mm (range 2 mm to 38 mm) and 14 mm (range 0 mm to 34 mm) from the posterior border, respectively. Salinas et al (2) revealed that the proximal anastomosis (if more than one was present) occurred, on average, 13.9 mm from the parotid border. The communication sometimes occur within the parotid gland (1,2,4), with an incidence of 10% (2). To our knowledge, present case is the second report of communication between the TCN and MMB. In our case, the communication occurred within the parotid gland. Its position was distal to the CB and MMB separation point of the FN and was posterior to the submandibular gland and inferior to the inferior border of the mandible. Therefore, the lower branch of the FN would be transected unconsciously after dissection of the lower pole of the parotid gland if we did not identify the TCN first and perform retrograde dissection of the lower branch of the FN.

Anatomical knowledge of this regular communication between the TCN and CB including direct communication with MMB and its position allows for preservation of high CB that contribute to lower lip depressor function and identification of the FN in retrograde dissection during parotidectomy and neck dissection (1). It may also serve as a target for the CB neurectomy of platysmal motion disorders or aesthetic surgery for rejuvenation of the aging neck (2).

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