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Peripheral Nerve

M-Point: A Landmark for Locating the Marginal Mandibular Branch of the Facial Nerve

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INTRODUCTION

Facial nerve injuries after aesthetic surgery such as facelifts and neck dissections are fortunately rare but represent a debilitating consequence of the surgery, not to mention a significant medicolegal risk. Although early repair is the gold standard, prevention is better than cure, and the key to this is the accurate and consistent identification of these nerve branches. Although surface landmarks such as the Pitanguy line[1] and Zuker point[2] have been described in the literature (and are commonly used) for the temporal and buccal branches of the facial nerves, respectively, no such surface landmark exists for the marginal mandibular nerve, which along with the temporal branch of the facial nerve, is a common facial nerve injury. In this article, the author describes a simple and consistent method of identifying the marginal mandibular nerve (VII_m) during facelift and neck dissections, based on a consistent neurovascular landmark; the first submental artery perforator (first SMAP).

PATIENTS AND METHODS

In an observational study of 50 selective neurolysis[3] procedures for the management of nonflaccid facial paresis (n = 50) by the author during a 5-year period (2019 to 2023) in a tertiary center for facial palsy management, there were two consistent musculocutaneous perforators, arising from the submental artery, traversing the platysma, and perfusing the overlying skin. In all cases, the VII_m was identified, using the technique described in the following section.

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Technique

In terms of preoperative localization, the best surface landmark to use is a preoperative Doppler test along the submental artery, which is itself situated approximately 2 cm below the inferior border of the mandible. Using a Doppler or Duplex device, the first SMAP can be identified preoperatively.

Intraoperatively, when dissecting in the supra-SMAS plane, the first SMAP is found within 2 cm of the lower border of the mandible and approximately 2–3 cm anterior to the posterior border of the platysma. In these cases, the first SMAP is usually ligated in the supraplatysmal plane, and using this as a surgical landmark, the perforator is followed into the subplatysmal plane. Extra care is taken here not to use excessive cautery and damage the VII_m and its branches. The VII_m is then found giving off a branch to the overlying platysma. This can be confirmed on nerve stimulation. Using this as a pointer, the platysmal muscle branch is followed proximally to the main VII_m branch. The VII_m is either found looping around the first SMAP before heading cranially towards the depressor anguli oris or the depressor labii inferioris muscles. Stimulating this nerve branch at 1.5 mA (NIM 3.0 Medtronic) can usually confirm the VII_m branches to the lower lip depressors. Once done, this nerve branch is marked with blue ink and extra caution is taken around this nerve branch. In the case of a neck dissection, the first SMAP can be directly approached in the subplatysmal plane. This operating sequence is shown in the video. [**See Video (online)**, which shows an intraoperative dissection showing the ligated first SMAP in the supraplatysmal plane.]

DISCUSSION

The exact position of the VII_m during surgery has not been well described as there exist, craniofacial variations from individual to individual. Hence, Using a surface landmark of the marginal mandibular nerve on absolute measurements and ratios[4] does not work in practice. The other issue is that the VII_m is not a single branch but a group of branches, which arises either from the main VII_m branch or as an offshoot of the cervical branch of the facial nerve (VII_c). An optimal landmark would therefore have to be (1)

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anatomically consistent and (2) be part of the VII_m nerve complex and be used as a guide to find the remaining branches of the VII_m either by ante- or retrograde dissection.

Batra et al[5] reverted to finding the VII_m by identifying it because it lay superficial to the facial vessels, as a more consistent landmark, rather than using cephalometric measurements alone. Based on this template, because there are consistent perforators from the submental artery further distally, it follows that there is an interrelationship between a branch of the facial artery: the submental artery and VII_m. In this observational study, the VII_m was intimately related to the first SMAP in 100% of cases. As such, one can identify the nerve in an antegrade manner and allow identification of the specific VII_m branches to the depressor anguli oris and depressor labii inferioris muscles so as to avoid damaging it, choosing to perform a neurectomy or to use it in nerve transfer procedures. Another advantage is that although the position of the VII_m varies from case to case, its relationship with the first SMAP is consistent and therefore once this perforator is identified, the VII_m will reveal itself with deeper dissection.

Nevertheless, a limitation of this study is that there is no cadaveric or anatomical study to illustrate this surgical landmark beforehand, but it must be noted that in cadavers, the precise identification of the first SMAP may prove difficult due to a lack of blood flow. Identifying the first SMAP is, therefore, easier to illustrate in the clinical setting, with the preoperative use of a Doppler or Duplex device. From a clinical standpoint, it must be noted that electrocautery or plication of the platysma in the vicinity of the first SMAP must be carefully performed, to avoid damaging the underlying VII_m nerve complex.

CONCLUSIONS

In summary, the use of the first SMAP as a consistent anatomical landmark is a simple and reproducible technique to localize the VII_m and its branches. This is termed the "M-point" in this article.

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DISCLOSURE

The author has no financial interest to declare in relation to the content of this article.

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