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TEMPORARY AND PARTIAL PARALYSIS OF THE FACIAL NERVE AFTER MENTAL NERVE ANESTHETIC BLOCK

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Summary

Local anesthesia is a central component of successful interventions in lip cosmetic procedures. Using regional nerve blocks, effective analgesia can be delivered to a target area while avoiding the toxicity and pain associated with numerous anesthetic infiltrations. To accommodate a multitude of cosmetic procedures and to avoid complications, it is important for clinicians to be well versed in applications of topical and regional anesthesia. In this paper the personal regional nerve blocks technique for lip filler is explained and a rare clinical case of partial and temporary peripheric facial nerve palsy after mental nerve block is described.

Key words: nerve blocks, mental nerve block, lip augmentation, partial facial palsy, cosmetic medicine

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INTRODUCTION

Local anesthesia is a central component of successful interventions in lip cosmetic procedures [1,2]. The number of anesthetic medications and administration techniques has grown in recent years. Regional nerve blocks (RNB) are used for more widespread or complex treatments. Using RNB, effective analgesia can be delivered to a target area while avoiding the toxicity and pain associated with numerous anesthetic infiltrations with no distortion of the lip tissue architecture [2]. To avoid complications, it is important for clinicians to be well versed in applications of topical and regional anesthesia. In this paper the personal regional nerve blocks technique for lip filler is explained and a rare clinical case of partial and temporary peripheric facial nerve palsy after mental nerve block is described.

DESCRIPTION OF THE CASE REPORT

A 45 year old woman presented to our clinic for lip augmentation procedure (Fig. 1). After clinical evaluation and discussion of treatment options the decision was to perform lips augmentation with absorbable Hyaluronic acid previous nerve block procedure. Clinical history was negative for medical pathology, drugs reactions, previous surgery and previous aesthetic medicine procedures; she performed RNB for molar extraction about three years ago.

Figure 1. Pre-injection appearance of the lip. **A)** lateral left view; **B)** frontal view; **C)** ¾ right view; **D)** lateral right view.

For upper lips a bilateral block of the infraorbital nerves and labial nerves is used to provide anesthesia. The localization of infraorbital nerve is carried out by palpating the infraorbital ridge. The infraorbital nerve is targeted via an intraoral route where it exits the maxilla at the infraorbital foramen: 1 ml of anesthetic each side 1 cm below the infra-orbital foramen on the vertical axis of the midpupillary line was administered. The selective block of the upper labial branches is performed by introducing the needle always into the upper gingival fold at the level of the frenulum, and arriving laterally to the maxillary crest, in the direction of the caudal septum, on both sides, for a total of 1 ml of anesthetic.

For lower lips, a bilateral block of the mental nerve is made. The mental nerve can be targeted on each side at the mental foramen, which is located below the root of the lower second premolar. Aiming roughly 1 cm below the gumline,1 ml of anesthetic each side is injected intraorally. A total amount of 5 ml of lidocaine without adding epinephrine was administrated for nerves block. Totally 1 ml of hyaluronic Acid was infiltrated for lip augmentation. After the treatment ice was placed on the treated areas for 10 minutes. No complications were observed during the treatment. After 2 days the patient presented a numbness sensation with a normal lip contour at resting but an evident distortion and right lower lip deviation during the opening of the mouth (Fig. 2). The patient reported ice application for some hours at home by her own decision. Low-dose corticosteroids for 1 week were administered. Electroneurography was negative. The patients started a facial nerve rehabilitation treatment with improvement in 3 weeks and total resolution in 75 days (Fig. 3).

DISCUSSION

The introduction of local anesthetics (LAs) increased the complexity of procedures that could be performed with the patient awake [3]. Topical anesthetics have the advantages of rapid and easy application directly on the areas which have to be treated with the absence of possible complication but its effect is visible after about 20 minutes from application and they are not so efficient in producing a total anesthesia especially in extended areas. RNB produces efficient anesthesia of a large area with only a minimal amount of LA, minimizing the risk of LA toxicity and avoiding deformation of the operative site. RNB provides a longer duration of anesthesia compared with infiltrative techniques reducing the number of injections needed [2]. Perhaps most importantly, RNB decreases postoperative pain, improves

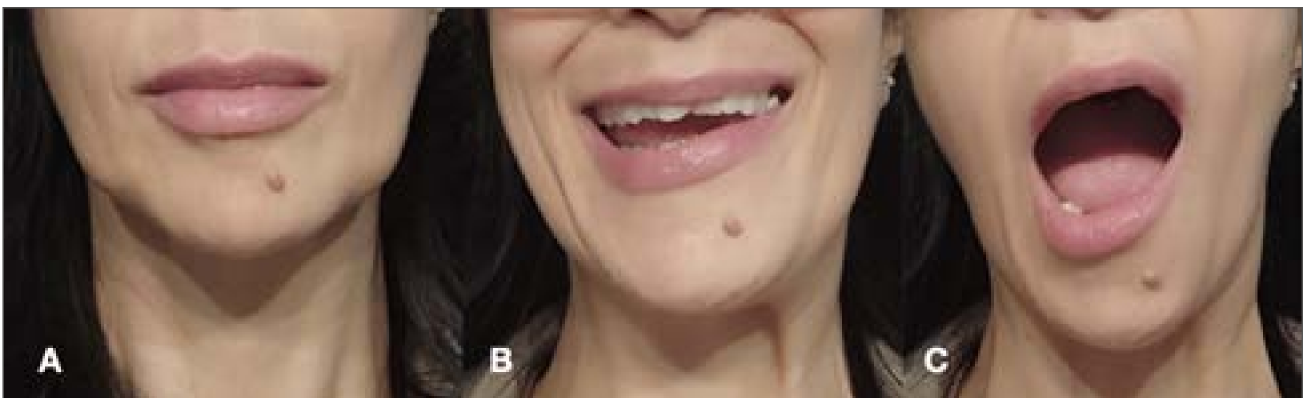

Figure 2. Transent palsy of the facial nerve. **A)** static view; **B)** dynamic view; **C)** dynamic view with open mouth.

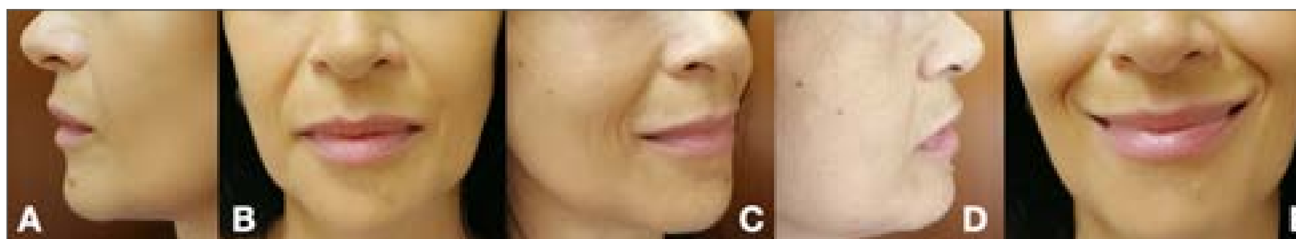

Figure 3. Resolution of the complication. **A)** lateral left view; **B)** frontal view; **C)** ¾ right view; **D)** lateral right view; **E)** dynamic frontal view.

patient satisfaction and enhances patient experience. Among its disadvantages there are the following possible complication: bleeding and hematoma, infection, failure and incomplete anesthesia, pain paresthesia, vascular puncture, Systemic LA toxicity and Nerve Injury; clinical experience in manage RNB is mandatory to avoid complication.

Lips augmentation with filler is an important part of an aesthetic surgeon clinical activity, both as a single therapeutic act, and even more often as a complementary treatment, in patients who have already undergone cosmetic surgery on the face. Furthermore, our trend is to perform a total lip infiltration, instead of the still valid strategy of using fillers in each single wrinkle.Due to this global lip filling approach, the main problem is how to manage and avoid pain. Global lip filing approach includes infiltration of Vermillion line, Cupid's Arch, filtrum column and red lip augmentation. We usually perform peripheral anesthetic blocks when a total lip procedure have to be done; we use topical anesthesia when only red lip augmentation is required. To obtain complete anesthesia of the lips it is therefore advisable to block both the infraorbital nerve, superior labial branches and mental nerves. We use a total of 5 ml of 2% lidocaine without the association of epinephrine to not have a long anesthetic effect. To avoid possible complications of RNB, aspiration before infiltration is essential [2]. Furthermore, pushing the needle into the foramina can lead to mechanical injury to the nerve. Peripheral nerve injury is an uncommon complication of regional anesthesia, therefore details of nerve damage for individual regional blocks are difficult to estimate accurately. Most nerve injuries are often transient and sub-clinical [4]. Patients with pre-existing nerve pathology, such as diabetes and neurological disorders are more susceptible to peripheral nerve complications. The incidence of transient paresthesia in the initial post-nerve block period can be as high as 10%. However, permanent neurological injury has been reported to occur in only 1.5 per 10.000 peripheral nerves block [5].

In this case a partial peripheric lower lip palsy occurred after 2 days from the cosmetic procedure. Lower lip palsy is related to an injury at the marginal mandibular branch. A person with injury to the marginal mandibular branch presents a very conspicuous deformity on opening the mouth, smiling or grimacing. This complication has been related to inferior alveolar nerve block and no cases related to mental nerve block have been reported since now. A cadaveric study evidenced in 84% cases, the presence of different anastomoses between the marginal mandibular nerve and other ones. On 14/50 cases (28%) anastomoses between the marginal mandibular branch and the mental nerve (sensitive, V cranial nerve) have been showed [6]. The complication described could be explained by these anatomic findings or by the prolonged application of cold ice performed by the patients. Different studies and experimental data support the hypothesis of low temperatures in the pathogenesis of bell palsy [7,8], due to a dysfunction of the vasa nervorum during coldness application [9].

CONCLUSIONS

RNB is a valid strategy to reduce pain during the application of fillers for lip remodeling while contact anesthesia often highlights its limits. Topical anesthetics are not efficient in obtain a total and prolonged anesthesia.The use of RNB certainly is more invasive and so it is advisable to reserve this anesthetic choice in selected cases when the infiltrative maneuvers are extensive both on the surface and in depth as in case of so called "Lip volumetric restructuring" [10].

Nerve palsy is a possible complication of RNB and clinicians should inform patients before the procedure of all the possible complication related to the procedure. In cases of reversable nerves paralysis occur, it is important to manage the patient with a multidisciplinary team and with a reassuring approach.

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Conflict of interest statement

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Author contributions

The authors contributed equally to the work.

Abbreviations

A: conceived and designed the analysis
D: collected the data
DT: contributed data or analysis tool
S: performed the analysis
W: wrote the paper
O: other contribution (specify contribution in more detail)

Ethical consideration

Not applicable.

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