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Case report

Peripheral facial palsy after set-forward orthognathic surgery: A case report and review of literature

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ABSTRACT

The complications of orthognathic surgery may include but are not limited to postoperative unexpected bleeding, abnormal fractures, infections, and nerve damages. Peripheral facial palsy is rare. We report a case of 23-year-old woman with signs of malocclusion, including pectus excavatum, wrist sign, and thumb sign for Marfan syndrome (MFS) underwent peripheral facial palsy after orthognathic surgery with mandibular advancement. Because cardiovascular, thoracic, and ocular abnormalities were absent, she was suspected of having MFS but not definitively diagnosed. On the other hand, she was diagnosed with a maxillary protrusion with mandibular retrognathism. After presurgical orthodontic treatment, we performed Le Fort I osteotomy and 8 mm advancement by bilateral sagittal split ramus osteotomy. Because the periosteum is vulnerable, we checked the bleeding more are fully and frequently during the operation than usual. The day after the operation, peripheral facial palsy with inability to wrinkle the forehead, blink, and grimace were found. The patient was administered mecobalamin, linear polarized infrared irradiation, and stellate ganglion blocks. The patient was also administered valacyclovir for 6 days and steroid pulse therapy for 7 days. Six months after the operation, the facial palsy had disappeared completely.

In 58 previous reports, the facial palsy was induced by the reasons, including the operative procedure, postoperative hematoma, edema, perioperative stress, and tissue vulnerability. In the present case, because of the suspected MFS, tissue vulnerability was considered to be one of the major cause of facial palsy, which should be paid attention more carefully in addition to general causes.

1. Introduction

The common complications of orthognathic surgery are unexpected bleeding, abnormal fractures, and nerve injuries. In particular, maxillary and mandibular trigeminal nerve injuries are often seen. Few reports of facial nerve injury can be found, and most of them are setback cases of bilateral sagittal split ramus osteotomy (SSRO). Here, we report an extremely rare case of facial palsy after mandibular advancement with SSRO.

2. Case report

In February 2012, a 23-year-old woman was introduced to Kyushu University Hospital from a private dental clinic with a chief complaint of malocclusion. (Fig. 1A, B).

She was 167 cm in height and 42 kg in weight. The thumb sign, the wrist sign, and pectus excavatum were evident. (Fig. 2A, B). However, there were no past, social, and familial histories in particular. The cardiovascular surgeon and the ophthalmologist found no cardiovascular disease and no ectopia lentis. Finally, she was diagnosed on suspicion of having Marfan Syndrome (MFS).

Angle Class II, division 2 malocclusion was observed as follows: +1 mm of overjet and +6 mm of overbite, and +1 mm deflection of the mandible to the left side (Fig. 3A–G). The result of cepharometric analysis is indicated as follows; convexity: +3 SD, SNB: −3 SD, ANB:

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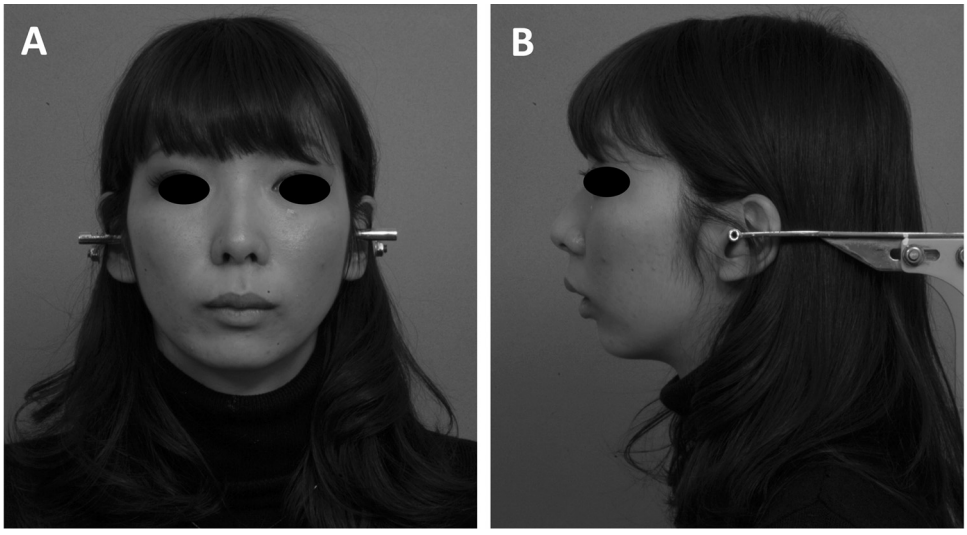

Fig. 1. Facial photographs at pretreatment (A and B).

+3 SD, ramus plane to SN: +3 SD, ramus plane to Frankfurt plane: +2 SD, intergonial angle: −2 SD, occlusal plane to SN: +2 SD. (Figs. 4A, B, 5, and 6). The orthognathic operation with 3 mm upward of the ANS with Le Fort I osteotomy and 8 mm advancement of the mandible with SSRO was planned.

After preoperative orthodontic treatment flaring upper incisors to the normal inclination without extraction, Le Fort I osteotomy and SSRO were carried out in November 2014 at age 25. Since the periosteum was so vulnerable in both maxilla and mandible, there were some difficulties to operate the periosteum and stop bleeding during the operation. The length of general anesthesia was 6 h 57 min. The length of operation was 4 h 59 min. There was 327 g of bleeding with 280 ml of autotransfusion. No problems in cardiorespiratory dynamics occurred in the perioperative period. On the day after the operation, the patient was diagnosed as peripheral facial palsy on the right side. She could not wrinkle the forehead, blink, close the eyes tightly, wrinkle the nose, or depress the lower lip on the right side. The score on the Yanagihara's 40-point grading scale was 14 points. It was considered to be caused by a facial nerve compression, injury, and/or edema of the surrounding tissue. One thousand five hundred mg/day of mecobalamin was administered immediately. Otorhinolaryngologist suggested steroid pulse treatment with 40 mg/day of prednisolone for one week. On the 9th day after the operation, the enzyme immunoassay (EIA) level of herpes simplex virus (HSV) in serum IgG was 49, and that of varicella zoster virus (VZV) was 17. The EIA levels of both serum IgMs were within normal limits. There seemed to be a possibility of herpes zoster from perioperative stress, we consulted to otorhinolaryngologist, 3000 mg/day of valacyclovir for 6 days were administered. From the 6th to 34th days, total 14 times of linear polarized infrared irradiation (Super Lizer; Tokyo Iken Co., Ltd, Tokyo) were administered to the stellate ganglion. As the recovery was so slow, additionally 13 times stellate ganglion block (SGB) were administered from the 11th day to the 75th day after operation. The score on the Yanagihara's 40-point grading scale was 24 points at discharge (23 days after operation). At 6 months after the operation, the score was fully 40 points, and the facial palsy had fully recovered. (Figs. 7, 8A–G, 9A, B, 10, 11).

3. Discussion

Dendy [1] was the first to report a case of peripheral facial palsy after SSRO. The incidence of peripheral facial palsy has been reported from 0.14 to 1% [24]. The reasons for palsy indicated in previous reports were as follows: (a) compression by anterior segment following SSRO, (b) fracture of the styloid process, (c) instrumen-

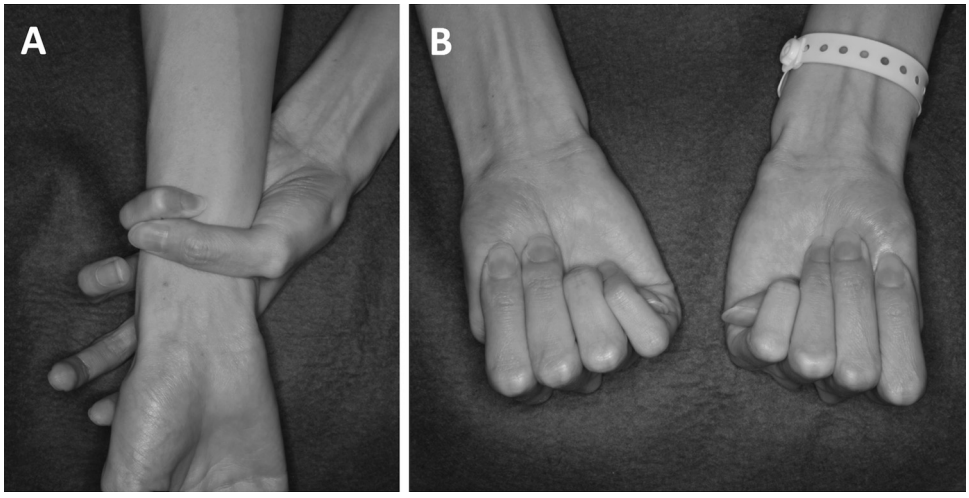

Fig. 2. Walker-Murdoch wrist sign (A) and Steinberg thumb sign (B).

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