

Reduction Malarplasty Using Modified L-Shaped Osteotomy

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Zygomatic bone, which protrudes on both sides of the midface, plays an important role in determining the facial impression. Many esthetic differences regarding the malar prominence exist between Asians and whites.¹ In the West, augmentation malarplasty is performed mainly because a slightly prominent malar is believed to be esthetically pleasing. In contrast, in the East, a prominent malar is believed to project an aggressive and displeasing impression, particularly for women. Therefore, many reduction malarplasty procedures have been developed. For reduction malarplasty, bone shaving,¹ infracture,² and l-shaped³ and L-shaped osteotomy⁴ methods have been used.

Of these techniques, an l-shaped osteotomy can be used for a moderate or severe malar prominence. This is an effective and safe method for reducing the anterior zygoma with no damage to the maxillary sinus. This method, however, can result in insufficient bone reduction (≤ 5 mm) and disturb the middle 0.333 of the zygoma (the most prominent area).³ An L-shaped osteotomy can be used for severe malar protrusion. The fracture line

is constructed with 2 parallel vertical lines and 1 transverse line in the middle part of the zygoma. The natural malar contour is retained without removing the malar eminence, and the zygoma is moved superiorly using this method.⁴ In contrast, this method can damage the maxillary sinus. A modified L-shaped osteotomy has been performed in our department to overcome the many disadvantages associated with an L-shaped osteotomy. This report describes the surgical procedure and case report.

Surgical Technique

With the patient under general anesthesia, an incision is made on the buccal vestibule from the canine to the first molar area. A subperiosteal dissection is performed to the zygomatic arch, lateral margin of the orbit, and anterior wall of the maxilla, and the anterolateral aspect of the zygomaticomaxillary complex is then exposed. Two isolated osteotomy lines start from the temporal border of the zygomatic bone and move anteromedially. Below the lateral margin of the orbital rim, the lines curve obtusely and continue posterolaterally. The modified L-shaped osteotomy lines end in the infrazygomatic crest (Fig 1C). The distance between the 2 parallel osteotomy lines depends on the amount of reduction. The protruding part of the zygomatic bone is located in the lateral part of each osteotomy line, and the zygomatic arch is osteotomized from medially to laterally using a microdisk with the medial approach. Next, a greenstick fracture is made on the zygomatic arch to be osteotomized from the anteromedial to posterior obliquely at the anterior part of the glenoid tubercle. After the osteotomy of the zygomatic arch, the zygoma complex can be easily moved medially, anteriorly, and superiorly, according to the requirement, because

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0278-2391/12/7001-0\$36.00/0

doi:10.1016/j.joms.2011.05.016

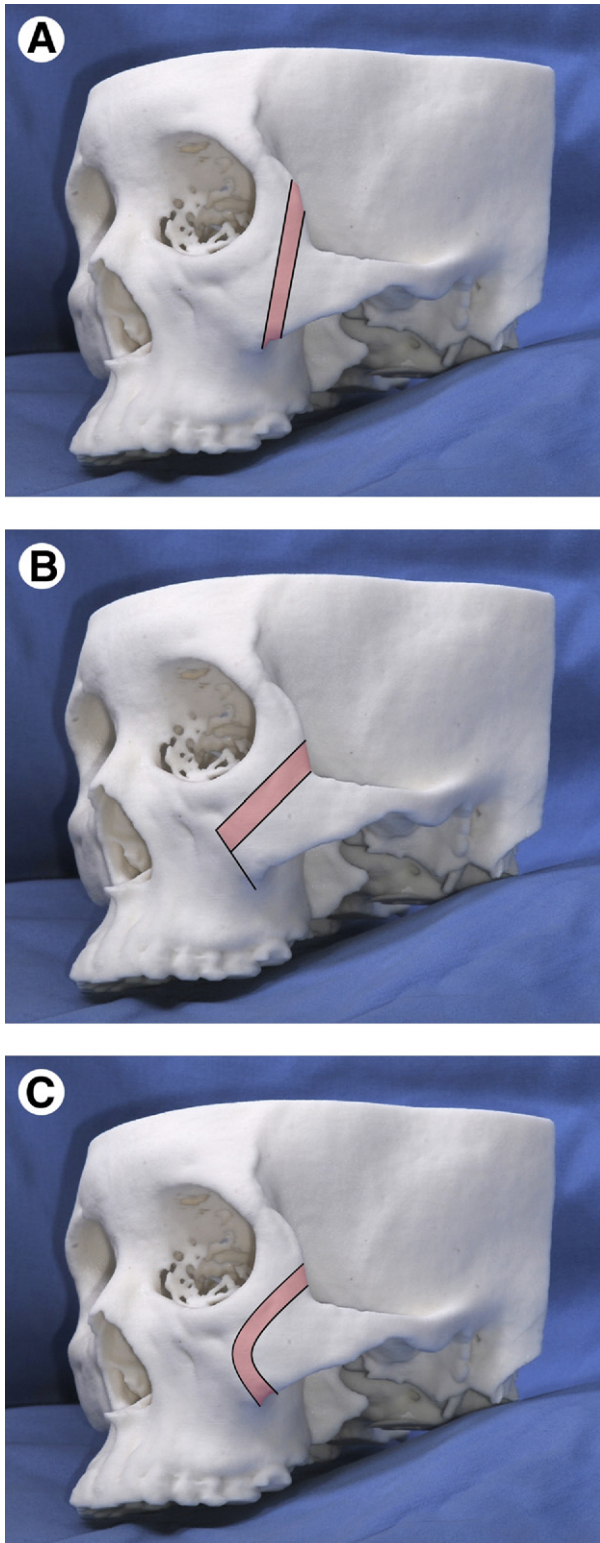


FIGURE 1. Different osteotomy lines for reduction malarplasty. A, L-shaped osteotomy line; B, L-shaped osteotomy line; and C, modified L-shaped osteotomy line.

Kook et al. Reduction Malarplasty. J Oral Maxillofac Surg 2012.

it is maintained only by the masticatory muscles. After repositioning the free zygoma complex to the target area, the zygoma complex is fixed rigidly to the zygomaticomaxillary buttress using a metal plate and screws. The sharp and protruding part of the maxillary lateral border is shaved out, and the step-shaped angle disappears.

Case Report

A 26-year-old female patient had protrusion of both zygomatic bones and mandibular prognathism (Fig 2). With the patient under general anesthesia, the following procedures were performed: reduction malarplasty for the protruded zygomatic body using a modified L-shaped osteotomy through the intraoral approach; a greenstick fracture for the zygomatic arch; and mandibular setback for the mandibular prognathism using bilateral sagittal split osteotomy. After both zygomatic bones were osteotomized 7 mm using the modified L-shaped osteotomy, they were fixed with 4-hole plates (Le Forte System; Jeil Medical Corp, Seoul, Korea) (Fig 3). After surgery, a reduced malar prominence was observed, and the facial shape appeared more oval (Fig 4). Six months after surgery, no relapse or complications were observed.

Discussion

The zygomatic bone plays an important role in determining the overall facial contour.⁵ In the East, a person with a prominent zygomatic bone is believed to be stubborn and to appear old, as well as having a wider face. In some Asian societies, a narrower and egg-shaped face is preferred, because a woman with a prominent malar protuberance is believed to be aggressive and masculine.⁶ In addition, because Asians have a more prominent protruded malar area and wider midface than whites, they prefer reduction malarplasty over augmentation malarplasty, which is performed mainly in the West.⁷

In the preoperative analysis, a treatment plan for reduction malarplasty is made from comprehensive clinical and radiologic examinations. In the clinical examination, each facial part is examined, and the convexity and asymmetry of both malar bones are evaluated. A facial wax pattern can be used. In the radiologic examination, a submentovertex view or posteroanterior cephalogram are mainly used. Computed tomography or 3-dimensional computer imaging are also used for patients with a severe facial deformity. In contrast, although objective information is important for planning malarplasty procedures, the subjective preference of the patient is considered most important.

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