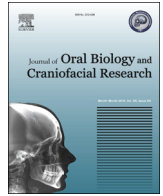




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Case Report

A novel step osteotomy for correction of hemifacial microsomia – A case report

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ABSTRACT

Facial asymmetry is one of the commonest facial anomalies, with reported incidence as high as 34%. Hemifacial microsomia (HFM) has an incidence of 1 in every 4000–5600 children and is one of the commonest causes of facial asymmetry. The standard treatment of HFM is orthognathic surgery by bilateral sagittal split osteotomy (BSSO) or distraction osteogenesis (DO) of the mandible, both of which involve prolonged periods of occlusal adjustments by an orthodontist. Here, we present distraction of the mandible by means of a novel modified step osteotomy to correct the facial asymmetry in a case of hemifacial microsomia without disturbing the occlusion. This novel technique can prove to be a new tool in the maxillofacial surgeons armamentarium to treat facial asymmetry.

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1. Introduction

Facial asymmetry is one of the commonest facial anomalies, with a reported incidence as high as 34%.¹ It may be the manifestation of any amongst a constellation of congenital or acquired craniofacial anomalies. Apart from the problems with facial aesthetics, speech and mastication, it is also responsible for the social anguish in the patient. Often, it is the patient's only reason to seek treatment.

Hemifacial microsomia (HFM) is the commonest congenital craniofacial anomaly, after cleft lip and palate, with an incidence of 1 in every 4000 to 5600 children^{2,3} leading to facial asymmetry. It presents with hypoplasia of five major craniofacial components, the ear (most consistent finding), mandible (most commonly involved skeletal structure), orbit, facial nerve and facial soft tissues, including the muscles of mastication. HFM is mostly unilateral; however, bilateral involvement may also occur.

Facial asymmetry has historically been treated by two principal treatment modalities, orthognathic surgery or distraction osteogenesis. Both of these techniques have their own inherent advantages and shortcomings. However, the clear advantage of distraction over orthognathic surgery is its ability to provide better soft tissue response, theoretically leading to lesser chances and lower magnitude of relapse.⁴

Additionally, for the application of the principles of distraction, osteotomy cuts can be modified to allow selective movements for deformity correction without affecting the occlusion. This eliminates the lengthy and meticulous process of orthodontic management, which was otherwise involved pre- and post-surgery in these patients.

We present here a novel step osteotomy for distraction of the inferior border of the ramus and body of the mandible with a unidirectional distractor for correction of facial symmetry avoiding any occlusal changes.

2. Case description

2.1. Clinical findings

An otherwise healthy 20-year-old male reported to our outpatient clinic for the correction of his facial deformity, with the chief complaint of facial asymmetry, which had undergone worsening with increasing age due to lack of growth on the right side of the face. The patient however did not report any difficulty in breathing.

On clinical examination, the patient revealed bilaterally malformed auricles with absence of patent external auditory meatus. The eyes were normal, but the right malar eminence was hypoplastic. Also, there was a disfigured right body and ramus of mandible (Fig. 1), along with a rudimentary masseter on palpation. The masseter muscle on the contralateral side was hypertrophied, with bowing of the lower border of the mandible (Fig. 2).

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Fig. 1. Frontal view of the patient.



Fig. 2. Profile photographs of the patient.

Severe soft tissue deficit was visible on the right side of the face. However, bilateral TMJ movements were palpable.

Intra-oral examination revealed an Angle's class III occlusion on the left side along with ipsilateral anterior open bite and an occlusal cant with clockwise rotation of the occlusal plane viewed in the frontal plane. The occlusion on the right side could not be assessed due to the absence of lower first molar; however, there was a class II canine relation. He was diagnosed as a case with hemifacial microsomia (Fig. 3).

2.2. Radiographic findings

Radiographic evaluation on OPG showed a hypoplastic hemimandible of the right side with vertical deficiency of the right body and ramus of the mandible. The right temporo-mandibular joint appeared to be rudimentary with absence of the normal deep concavity of the glenoid fossa and protuberance of the articular eminence that can be easily appreciated on the normal contralateral side (Fig. 4).

Based on the clinical findings, the patient's deformity can be classified as Type IIA hemifacial microsomia according the classification provided by Pruzansky and co-workers.

There was a discrepancy of 1.5 cm in the height of the right ramus of the mandible compared to the normal side.



Fig. 3. Intra-oral view of the patient.

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