



The Use of Distraction Osteogenesis for treatment of the mandibular deformity in hemifacial microsomia: A case report of the double osteotomy technique

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Summary

A patient presenting with hemifacial microsomia with Grade IIB mandibular deformity was treated by distraction osteogenesis after double osteotomy of the ramus and the body. A satisfactory facial symmetry was achieved following the surgery without any complications.

Key words : Distraction osteogenesis, Double osteotomy mandibular deformity

Introduction

Hemifacial microsomia is a congenital anomaly presenting with mandibular deformity, which includes hypoplasia of the ramus and body. Surgical correction of this deformity is difficult and often unsatisfactory. Distraction osteogenesis by double osteotomy technique may become the future treatment modality with distinct advantages.

Case Report

A 7-year-old girl with hemifacial microsomia presented with mandibular deformity. The patient also had microtia for which correction with silicone prosthesis had been tried but had failed due to extrusion of the implant. The patient also had cleft lip and palate (complete) of the same side with microstomia, all of which had been corrected. There was a deviation of the chin to the left side with flattening of angle of the mandible. The occlusal plane in this patient was tilted with

evidence of maxillary hypoplasia on the same side. Scarring could be noted around the angle of jaw due to the failed attempt at ear reconstruction. This patient was investigated completely, which included dental models, cephalogram, and orthopantomogram and transcranial projection for evaluation of the mandibular condyle. The patient was then taken up for mandibular osteotomy and distractor application under general anesthesia. Two 50 mm double pin distractors were used for distraction of the ramus and the body. Two osteotomies were made one in the body and one in the ramus i.e. on either side of the angle of mandible, through intraoral route. Five days after the surgery distraction was started at the rate of 0.5 mm twice a day (Fig 1). After satisfactory correction of the deformity and radiological confirmation (Fig 2 and 3), distraction was stopped 17 days after the surgery. The distractors were retained for a period of 6 weeks and were removed after radiological confirmation of bony healing.



Fig. 1. Photograph of the patient showing the double distractor arrangement with three pins



Fig 2. Pre-distraction x-ray (lateral cephalogram)



Fig 3. Post-distraction x-ray (lateral cephalogram)

The procedure was well tolerated by the patient. A satisfactory level of cosmetic correction was

achieved in the patient without any significant occlusal abnormality.

Discussion

Before the advent of distraction osteogenesis hemi facial microsomia was treated by surgical methods. In patients with a severe (Grade III or IV) mandibular abnormality, this involved osteotomy of the mandible through an extra oral route and advancement. Distraction osteogenesis can deal with even severe mandibular deformities. This is done with minimal dissection and without the need for bone grafting¹.

McCarthy² et al first reported distraction osteogenesis for mandibular deformity in hemi facial microsomia in 1992. However the authors used a single osteotomy at the angle of mandible with uniaxial distraction. In 1994 Pensler et al reported the use of multiplanar distractor in these patients³. Even though these multiplanar devices offer the possibility of three-dimensional distraction, these devices are not currently manufactured in our country and are very expensive. In 1995 Molina et al reported the use of bi-directional distraction in these patients⁴. This involved two osteotomies, a vertical one in the body and a horizontal one in the ramus. With this technique a Molina's bi-directional distractor was used. In our patient we believe that we have accomplished the same using two uniaxial distractors. This has significantly cut down the cost of treatment without any compromise of the result. Bi-directional distraction achieves better reconstruction of the ramus and the condyle. This does result in a lateral open bite deformity, which later compensates with growth. However when used in fully grown adult patients the mandibular distraction should be combined with distraction or surgical advancement of the maxilla⁵.

Bi-directional distraction with double osteotomy is an excellent technique for the correction of the mandibular deformity in patients with hemi facial microsomia. It is a safer and more dependable alternative to surgical reconstruction.

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