

## CASE REPORTS

### CORRECTION OF FACIAL ASYMMETRY ASSOCIATED WITH UNILATERAL HYPOPLASTIC MANDIBLE WITH MONOBLOC DISTRACTION OSTEOGENESIS IN ADULT

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#### ABSTRACT

Facial asymmetry can be corrected by bimaxillary orthognathic surgery and distraction osteogenesis. We report a case of facial asymmetry which was corrected using monobloc distraction osteogenesis. A monobloc was created using an osteosynthesis fixation device from the zygomatic buttress to the mandible, LeFort I osteotomy was combined with mandibular angle osteotomy and the bloc was distracted using uni-directional distractor.

**Keywords:** Distraction osteogenesis, Facial asymmetry, Monobloc distraction osteogenesis, Unilateral hypoplastic mandible.

#### CASE REPORT

A 29-year old female patient was referred to the Department of Oral and Maxillofacial Surgery AFID on 30<sup>th</sup> March 2010 for treatment. Her main complaints were unaesthetic appearance, difficulty during speech and chewing. She had severe convex profile with a receding chin and a prominent nose (fig-1), and a class II division I malocclusion.

To determine the skeletal deformity, lateral cephalogram, OPG were taken (fig-2) and model surgery was done. Under general anesthesia, an incision was made on anterior border of mandible and the corpus and ramus were exposed on affected side and in upper jaw zygomaticomaxillary buttress was exposed. Prebended miniplate was fixed and then removed to be inserted after completion of osteotomy and placement of distractor. Risdon incision was made extraorally, distractor was oriented at the angle of mandible. Mandibular osteotomy was done. Distractor was fixed with screws. LeFort 1 osteotomy was done below the level of fixation of miniplate. The miniplate (zygomatic ramal plate) was fixed to complete monoblock. Stability of monoblock was enhanced

by intermaxillary fixation with 0.45 wiring.

A 5 days latency phase was waited for callus formation. Afterwards, active distraction was performed at a rate of 0.5 mm, twice daily on affected side for 25 days. Once the desired bone length had been acquired, 3 months for consolidation were allowed. New bone formation was evaluated on monthly basis with the help of serial orthopentograms.

Following the consolidation phase the distractor exposed was under general anesthesia through preexisting incision, bavel unwinded to predistractor position and left there as a retainer, miniplate was removed and the intraoral wounds were primarily closed.

Sliding genioplasty was done after 3 months and for slight occlusal derangement patient was sent to orthodontist for post surgical orthodontics. After 8 months when evidence of complete healing was seen the distractor was removed and miniplate was secured in the region of distraction to prevent relapse. No significant complications were associated with the surgical procedure or postoperatively. Serial panoramic radiographs on monthly basis were taken to monitor new bone formation till the writing of this report (fig-2).

Satisfactory results from both aesthetic and functional standpoints were acquired (fig-1). Correction of the facial asymmetry improved the

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confidence and esthetic appearance of the patient as well as functional improvement.

## DISCUSSION

Traditional methods of surgical procedures for craniomaxillofacial anomalies have many side effects, which include extensive dissection, multiple osteotomies, and possibly bone grafting. Skeletal relapse is proportional to the amount of skeletal expansion, because of the shortage and tightness of the soft tissue. Again, surgical treatment usually requires multiple operations and we have to wait until maturity or at least until most of the facial growth has ceased. The risk of donor site morbidity after harvesting of an autogenous bone graft is always present<sup>2</sup>.

There are two major benefits: when we compare distraction osteogenesis (DO) to conventional orthognathic surgery, distraction osteogenesis can be used in the growing person in whom expansion and new generation of soft tissues envelope is necessary. For patients with midfacial hypoplasia, the second advantage may be of more importance as they lack both bone and soft tissues. The slowly moving bony structures of the midfacial skeleton are used as a framework for the overlying and expanding soft tissues<sup>3</sup>.

Mandibular distraction in adults, who usually have stable dental occlusion, produces good aesthetic results but also severe alterations in the occlusion requiring complex orthodontic treatment over a long period. To avoid this problem, Ortiz-Monasterio in his series of seven patients, did an incomplete Le Fort I osteotomy simultaneously with mandibular corticotomy. Maxilla was distracted simultaneously with the mandible, preserving the preexisting stable occlusion<sup>5</sup>.

DO allows the surgeon to lengthen the maxillomandibular complex simultaneously by gradual advancement of bone i.e. filling the gap that resulted, by using the natural healing process based on the physiological rules of bone healing along with symmetrical improvement of skeletal appearance and of course soft tissue was

lengthened, with improved aesthetic appearance and reduced extent of skeletal relapse<sup>2</sup>.

Cheung et al states that affected side always grows at a slower rate than the other side after distraction has been completed and they suggested over-correction of affected site<sup>4</sup>.

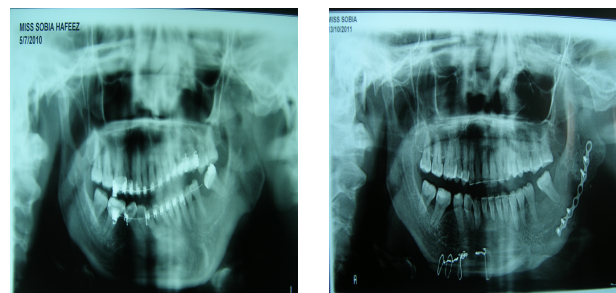
Ortiz-Monasterio et al left the pterygomaxillary junction of the unaffected side, nasal septum and nasal spine intact in their surgical procedure to act as a pivot point and improve the stability of the midface<sup>5</sup>. But in our technique, to be sure that we have completely separated the maxilla, we did complete LeFort 1 osteotomy and enhanced stability with the help of IMF and miniplate subsequently.

For successful maxillary anterior alveolar distraction, blood supply to the osteotomized bony segments has to be sufficient<sup>7</sup>. For this reason adjacent periosteum should not be injured and major blood supply should remain intact.



**Figure-1: Extraoral front view of the patient before and after treatment.**

Shehata et al says that stable fixation during DO is associated with good bone regeneration without a cartilaginous intermediary and so they



**Figure-2: OPG taken before treatment and after treatment.**

maintain intermaxillary fixation throughout consolidation period. Because a prolonged period of intermaxillary fixation is an integral part of their technique, they did not suggest it for very young patients<sup>2</sup>. Padwa et al used Intra-oral mandibular distraction devices with a reduction in the problems encountered with the extraoral distractors<sup>6</sup>.

Internal distraction devices are attractive because they are less bulky and uncomfortable than external devices and are better tolerated by young patients and those unable to cooperate with treatment<sup>6</sup>. We also used intra-oral distractors in our patient and completely agree with Padwa statement.

Krishna Yeshwant et al analyzes skeletal movements in mandibular DO and according to them a distractor with a small pitch can cause a large transverse movement and multidirectional distraction devices can be used to address the 3D

control of craniofacial distraction movement<sup>8</sup> this is a new intervention in our country and first ever case of facial asymmetry treated with monoblock DO with single intraoral distractor in literature according to our knowledge and a lot more is there to accomplish in this regard.

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