The Road Map to Achieve A Successful Mandibular distraction osteogenesis (An Evidence-Based Approach and a Center 10 year Experience)

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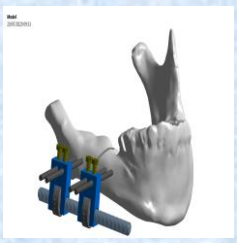
Introduction and Aim: Distraction Osteogenesis is a reliable tool in the management of post-ankylotic defects and hemifacial microsomia. This poster presents a protocol advocated in our center in the last 10 years; 20 patient was managed by this surgical protocol; this protocol was supported by a series of publications published in peer-reviewed journals.

Patient Selection

- Kaban I and Kaban II only cases should be included and avoid inclusion of Kaban III.
- Ideal Age of Distraction is early childhood (6-9 years old in hemifacial microsomia)
- Post ankylotic Cases can be operated more freely at any age.

Computer Planning

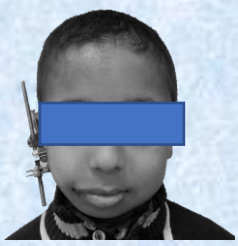


- Extraction Of STL model From CT using Materialise Mimics Software.(1)
- Our Team prefer the oblique Osteotomy plan design to achieve ideal distraction (1)
- Designing and printing the 3D stent to guide through the surgical procedure. (1)

Surgical Procedure

- Intra oral approach to avoid scaring of skin.(1)
- Cutting by Piezo to avoid injury of inferior alveolar nerve and developing tooth buds. (1)

Active Distraction
Regenerate Enhancement



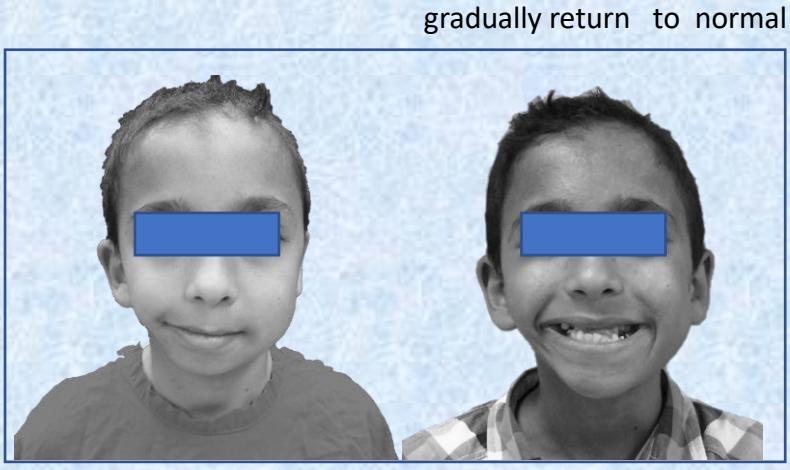
- An Active rate of 1.5 mm per day was used to achieve a rapid distraction without violation of bone quality .(2)
- Injection of Bone Marrow Aspirate Concentrate to improve bone quality .(3,4,5)

Maintenance and
Orthodontic stabilization

- Using Meazzini et al. appliance and protocol to manage the malocclusion following the distraction. The appliance was used during consolidation

Achieving results

- After consolidation and removal of the distractor; patient gradually return to normal function



Pre-operative Post-operative Pre-operative Post-operative

References
1. Hany HE, El Hadidi YN, Sleem H, Taha M, El Kassaby M. Novel Technique and Step-by-Step Construction of a Computer-Guided Stent for Mandibular Distraction Osteogenesis. Journal of Craniofacial Surgery. 2019 Oct 1;30(7):2271-4.
2. El Kassaby M, El Kader KA, Khamis N, Al Hammoud A, Talb AB, el Hadidi YN. The Effect of Bone Marrow Mesenchymal Stem Cells Application on Distracted Bone Quality during Rapid Rate of Distraction Osteogenesis. Craniomaxillofacial Trauma & Reconstruction. Craniomaxillofacial trauma & reconstruction 10 (02), 166-170
3. El Hadidi YN, El Kassaby M, Ahmed SAE, and Khamis NS. "Effect of Mesenchymal Stem Cell Application on the Distracted Bone Microstructure: An Experimental Study." Journal of Oral and Maxillofacial Surgery 74, no. 7 (2016): 1463-e1.
4. El Hadidi YMN, Seif M, Sleem H, Abd El Mohsen K and El Kassaby M. The Effect of Bone Marrow Aspirate Concentrate Application on Distracted Bone Biomechanical Properties. J Craniofac Surg. 2019 Nov-Dec;30(8):2650-2655.
5. El Hadidi YMN, Sleem H and El Kassaby M. The Radiographic Effect of Bone Marrow Aspirate Concentrate on Bone Maturation During Mandibular Distraction Osteogenesis (A Randomized Clinical Trial). J Craniofac Surg. Accepted proof in process