

Mandibular advancement with monodirectional intraoral device, and contemporary floating bone technique - Case report

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SUMMARY

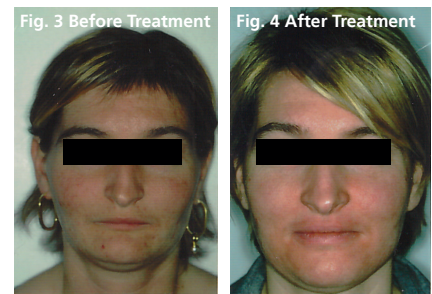
Mandibular advancement with monodirectional intraoral device using the contemporary floating bone technique permit three dimensional movement of the inferior jaw with an excellent functional and aesthetic result. (Fig. 1, 2, 3, 4, 12, 14).

INTRODUCTION

Osteogenesis distraction and Orthodontics always present major indications in the treatment of class II dentofacial deformities, especially when the mandibular hypoplasia is superior to 10 mm (fig. 8, 12). One of the greatest problems to be encountered when using intraoral device is the impossibility of moving skeletal segments in the three dimensions of space, movements that are indispensable if one is to obtain a correct dental occlusion.

The use of multidirectional intraoral device currently presents problems of encumbrance, and for this reason they are very often not tolerated by the patients. An interesting technique, The Floating Bone Concept, has demonstrated the possibility following the elastic traction method, of modeling and orientating bone which still has not mineralised.

This technique however envisages the removal of the bilateral distraction device applied to the jaw only two to three weeks from the conclusion of the movement of the jaw. Although the author refers to the complete lack of complications and in a particular way to pseudo-arthritis, we know from the Ilizarov's studies, that a surgical intervention in the bone regeneration zone, which is still in the phase of consolidation, could damage neo-vascularization with the consequent risks of infection, pseudo arthritis, or anomalies in the form of bone calluses. The consequences in time could be at the expense of functional stability of the bone stumps.



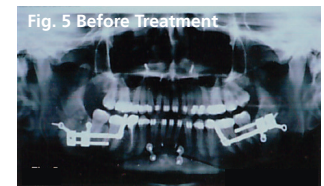
Aesthetic aspect before and after osteogenesis distraction



Orthopaedic elastic traction during the treatment



Occlusal situation Distraction at the end of the treatment



MATERIALS AND METHODS

Our proposals, while following the extremely valid Floating Bone principles, envisages the use of distractors that can remain on site for the complete period of mineralization (12 weeks - Fig. 7). The method presents a double advantage: 1) it allows jaw rotation under the action of elastic force with complete stability of the bone stumps (Fig. 10, 13, 2) it allows, through the activation of the intraoral device, an advance movement, a translatory motion and a possible mandibular retraction, to obtain a perfect dental occlusion and centring of the dental median line (Fig. 7, 11, 14). The method has been applied to a 33 years old patient affected by class II dentofacial deformity and with a mandibular retraction of 14 mm (Fig. 8, 12). Ten days after the surgical bilateral retromolar osteotomy and the application of two monodirectional distraction device, fixed on the ramus of the jaw with a single osteosynthesis screw that allowed the rotation of the mandibular body, the distraction movement was initiated, 1 mm a day for 14 days (Fig. 5, 11). Contemporarily, a strong elastic traction force was applied together with an orthopedic action which had the objective of rotating the mandibular body (Fig. 10); these elastic forces were modulated day by day, and at the same time small movements of retraction were made by distraction device (about 1 mm in total) obtaining in this way a perfect occlusion of dental arch (Fig. 1, 2, 9, 10, 11).

RESULTS

The method presented, and followed by us, has the following advantages:

- Optimum stability of the bone stumps, for the whole period of treatment;
- The possibility of mandibular movement in three dimensions of space;
- The minimum risk of complications to the regenerated bone, undisturbed in its natural process of healing.



X ray situation after distraction (note the open bite)