

NEW PROSPECTIVES FOR THE ATROPHIC JAWS USING THE DISTRACTION OSTEOGENESIS

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The Distraction Osteogenesis (D.O.) is the process of generating new bone in a gap between two bony segments in response to the application of graduated tensile stress across the bone gap.

A unique feature of the Distraction technique is that bone regeneration by D.O. is accompanied by simultaneous expansion of the functional soft tissue matrix, including blood vessels, nerves, mucosa and periosteum.

The adaptive changes of the surrounding soft tissue is called distraction histogenesis.

D.O. is routinely used for correcting the cranio facial deformities, in pre prosthetic and pre implantologic surgery it is less currently used.

Our classification of the atrophic jaws is based upon a concept of "remaining bone" that can be used for the reconstruction.

Two dimensions are evaluated : the height and the thickness and based on this two values we can use two different systems of D.O.: the vertical and horizontal.

The vertical D.O. is routinely performed in the thin bone like class 2.3 according to Cadwood and Howen, where the osteotomy is performed with a special ultrasound scalpel (Piezo Surgery. Mectron spa - Italy)

That allows a micrometric cut without bleeding very precise. Of course the green stick fracture can be easily performed in the upper jaw while in the lower jaw is necessary to weaken the bone with a longitudinal cut.

Opening the segment can be achieved using screws of increasing width or using a dilatation screw support.

The D.O. can be done immediately with the placement of the implants in the same session or delayed in six weeks, leaving the blood supply to increase the vitality of the bone. The horizontal D.O. is used in case the residual portion of bone is flat like in class 4 -5 according to Cadwood and Howell. In this situation we generally use D.O. moving up the lid of the osteotomized bone using a pushing system with a screw that allows only a mono directional movement or a lifting system that allows also a bi directional movement. The first is less invasive and better tolerated by the patients, the second is more invasive but gives better results because it is not necessary to calculate the forces vector.

All the described methods give good results, but in basal bone deficiencies it is better to use vascularized free flap or almost a free bone graft before to increase the amount of bone