REGENERATION OF THE ATROPHIC POSTERIOR MAXILLA WITHOUT THE USE OF BIOMATERIALS: THE BEGINNING OF THE END OF LATERAL ACCESS SINUS ELEVATION.

Andrés-García, R. DDS ; Fernández-Farhall, J; Vadillo JM.
Department of Dentistry. San Rafael Hospital, Serrano 199, 28016. Madrid, Spain. *0034 670700997. randresgarcia@gmail.com*

INTRODUCTION:

Placement of dental implants in the posterior region of the maxilla has often required complex vertical augmentation techniques. Within these techniques, the most popular was the lateral access sinus lift described by Tatum more than 25 years ago, where a lateral window was performed and biomaterials were introduced leading to augmentation of the available bone height after months of healing.

Almost 10 years later, Dr. Summers revolutionised the maxillary sinus approach. This author suggested using specially designed instruments called osteotomes to access the sinus with a crestal approach. This technique made it possible to dilate the osseous crest by means of bone compacting and to introduce the biomaterial in the surgically prepared bed.

The macroscopic advances of dental implants and the trend to fabricate conical implants has allowed to place implants in locations with less than 4 mm bone height, with correct primary stability and with survival rates similar to those obtained using conventional procedures.

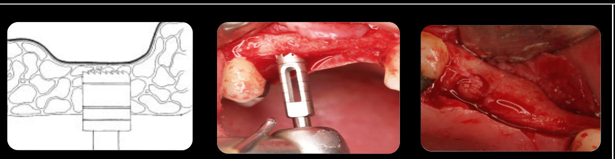
In the last decade, several authors have published studies where spontaneous bone formation occurred after placing implants without biomaterials, using the tent concept, where the bone is completely stable and does not present the "slumping" phenomenon which can be found in cases where a lateral access is performed.

We present a technique whereby implants are placed without using biomaterials in locations with less than 4-5mm bone height, which are spontaneously covered completely with bone after several months.

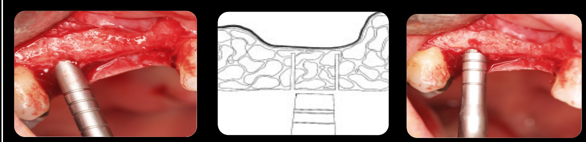
MATERIAL AND METHODS:

A surgical sinus lift technique based on a crestal access was performed with trephines and osteotomes. The procedure is performed using an intra-drilling sequence which allows to obtain a correct primary stability of the implant after its placement. The osseous cylinder displaced into the sinus, will act as an osseous graft, vascularised by the Schneiderian membrane, allowing for the tent-phenomenon which will favor the spontaneous formation of bone around the implant apex.

SURGICAL PROCEDURE:



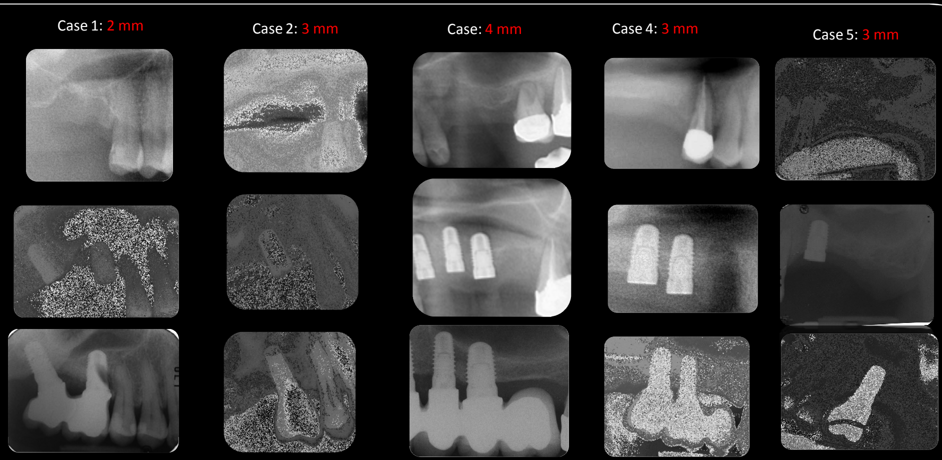
Once we have established the available bone height , the osseous cylinder is marked with a surgical trefine, drilling up to 1mm of the sinus floor.



Using an osteotome, the cortical bone of the sinus floor is fractured and the osseous cylinder and the Schneiderian membrane are displaced apically.

Once the surgical bed is prepared, the implant is inserted. The implant apex will maintain elevated the Schneiderian membrane and the cortical graft, which will produce the tent phenomenon. The space between the implant and the Schneiderian membrane will fill with an osseous coagulum, which with time will calcify and cover partially or completly the implant apex.

CLINICAL SERIES



Bone availiability measured to the sinus floor

Displacement of the osseous cylinder into the elevated sinus. NO biomaterials are used.

Periapical radiology: 18 months after loading, bone surrounding the implant apex can be seen.

CONCLUSIONS:

By performing this surgical technique, implants can be placed in areas of the posterior maxilla with a reduced height (<4mm). Biomaterials are not necessary as the osseous cylinder acts as a tent (vascularised osseous graft) allowing osteoblasts to migrate into the tent- created-space obtaining spontaneous bone formation around the implant apex which will cover partially or totally the mentioned implant.
This procedure eliminates the need of complex sinus augmentations, improving morbidity, reducing the costs and treatment time, and increasing patient satisfaction.

References:

Paul A. Fugazzotto. The Modified Trephine Osteotome Sinus Augmentation Technique Technical Considerations and Discussion of Indications. Implant Dent 10 (Suppl. 4) 2001 / 259-264.
Paul A. Fugazzotto. Immediate Implant Placement Following a Modified Trephine Osteotome Approach Success Rates of 116 Implants to 4 Years in Function. JOMI 17 (Suppl, 1) 2002 / 113-120.
Filippo Graziani, Nikolaos Donos, Ian Needleman, Mario Gabriele, Maurizio Tonetti. Comparison of implant survival following sinus floor augmentation procedures with implants placed in pristine posterior maxillary bone: a systematic review, Clin Oral Impl. Res. 15, 2004 / 677–682.
Emeka Nkenke, Florian Stelzl. Clinical outcomes of sinus floor augmentation for implant placement using autogenous bone or bone substitutes: a systematic review. Clin. Oral Impl. Res. 20 (Suppl. 4), 2009 / 124–133.
Luca Cordaro, Dieter D. Bosshardt, Piermario Palattella, Walter Rao, Giuseppe Serino, Matteo Chiapasco. Maxillary sinus grafting with Bio-Oss or Straumanns Bone Ceramic: histomorphometric results from a randomized controlled multicenter clinical trial. Clin Oral Impl. Res. 19, 2008 / 796–803.
Hilde Browaeys, Peter Bouvry, Hugo De Bruyn. A Literature Review on Biomaterials in Sinus Augmentation Procedures. *Clin Implant Dent R, 9 (Suppl. 3) 2007.*
Maurizio S. Tonetti and Christoph, H. F. Hammerle. Advances in bone augmentation to enable dental implant placement: Consensus Report of the Sixth European Workshop on Periodontology.. J Clin Periodontol 2008; 35 (Suppl. 8): 168–172.
Bjarni E. Pjetursson, Wah Ching Tan, Marcel Zwahlen and Niklaus P. Lang. A systematic review of thesuccess of sinus floor elevation and survival of implants inserted in combination with sinus floor elevation. J Clin Periodontol 2008; 35 (Suppl. 8): 216–240.