TREATMENT OF THE LABIAL PREMAXILLA: USING SPLITTING, SPREADING AND TITANIUM MESH MEMBRANE WITH SIMULTANEOUS PLACEMENT OF IMPLANTS AND DEMINERALIZED FREEZE DRIED BONE.

A CASE STUDY (SIMPLE TECHNIQUE):

Extreme bone loss in the premaxilla makes restoration of missing anteriors with implants impossible. It has been known over the years that bone grafting with all its techniques is proven predictable and successful for reconstructing deficient bone height and width of the maxilla or mandible.

But these techniques are very sensitive procedures, that need special skills and understanding of the way in handling.

As we know widening of the ridge can be accomplished by means of various methods as:

1. Autogenous bone blocks.
2. Bone grafting material covered by titanium mesh membrane or titanium reinforced membrane which will give the contour of the proposed ridge.
3. Use of osteotomes to compress the bone laterally bringing it to better quality or density (used specially in D3 and D4 bone according to Misch classification).
4. Use of bone splitters to split the labial and palatal cortical plates giving room to spread the bone and place the implants.

During the first 2 to 3 years after tooth extraction, it is known that 40 to 60% of bone is resorbed. The width of the ridge is often reduced to 2-4 mm, especially in the premaxilla. This is not sufficient for any implant with a diameter of 3-4 mm to be placed in such a knife edge ridge.

It is in these cases where lateral grafting is needed to produce the necessary amount of bone of at least 1-2 mm around the implants to have a long term implant osseointegration.

So due to the technique sensitivity, high cost, increased morbidity of autogenous bone graft block taken from the jaw to increase the width of the ridge, bone splitting and spreading is a friendly technique to increase these 2-3 mm wide ridges.

Dental Implantology was defined as a restorative treatment which consists of a surgical step. Due to the high demands and expectations of the patients with...
the use of new surgical techniques and technology, esthetics, function and phonetics dictate perfect positioning of the implants regardless of the amount of bone available in the ridge.

**Diagnosis**
Meticulous evaluation of bone volume by means of C.T. scan or dental tomograms and clinically by cross-sectional tissue modeling and probing, and pre-diagnostic casts with diagnostic wax-up will enable the implantologist to have an idea of the amount of widening necessary to be done.

**Case presentation:**

**Materials and technique**

Since we are dealing with the very thin ridge of the premaxilla, and especially it is an esthetically demanding area, the surgical manipulation of this technique must be very meticulous in handling the soft tissue and hard tissue. The 50 years old male patient presented having a 25 years old Maryland Bridge replacing the upper left central and lateral incisors. The bridge was continuously getting uncemented and falling from the patient's mouth. The best treatment option given to the patient was to place implants to functionally and esthetically restoring those missing teeth.

Due to the history of the long term missing teeth, it was anticipated that the labial cortical plate in this region has been resorbed and thus the ridge in this area is very thin to allow simple placement of the implants without guided bone regeneration techniques.

After proper antibiotic coverage, and adequate local anesthesia given to the patient, palatal crestal incision was made extending just mesial to the upper right central and upper left canine, which were previously prepared to receive the fabricated temporary bridge for the post implant insertion healing period.

The incision was made without including the mesial papillae so as to preserve them for better soft tissue contours during the prosthetic stage.

Using specially designed splitters, the labial and palatal cortical plates are split from each other after a horizontal crestal bone incision and 2 semi vertical labial bone incisions (Fig 1).
These vertical incisions give some degree of flexibility to the labial cortical plate to move back and forth while getting into the next step of spreading and laterally condensing the bone. The pilot drill of the implant system is used to create the sites of the 2 osteotomies.

The osteotomes are used to spread and condense bone to the desired diameter of the anticipated implants (Fig 2). The osteotomes are kept in place for 30 to 60 seconds to keep the bone expanded, as it is known that bone has memory and has the tendency to collapse.

After that, the implants are placed, which in this case were 2 x 3.7mm x 13mm tapered screw vent implants (Zimmer) (Fig 3 & 4).

After implant placement the voids between the implants created due to splitting as well as the labial concavity or deficiency was filled with demineralized freeze dried bone (IMTEC corp) (Fig 5). The labial plate is first decorticated to enhance bleeding in this area.

In order to reconstruct the labial and crestal contour, a titanium mesh membrane was used as it has the advantage of flexibility and memory, and takes the shape of the proposed ridge. First the mesh membrane is cut and adjusted around the defective area, so as to be stabilized by titanium screws or tacs in the sound bone surrounding this area (Fig 6).

The Titanium mesh in first adjusted and tucked under the palatal gums, then is turned over meticulously in a labial direction over the DFDB + implants and stabilized on its edges using tags, and the flap is sutured back in place making sure that the bone and membrane are completely covered by the flap in a relaxed, tension free position. This is achieved by dissecting the periosteum, made by a horizontal periosteal incision in the base of the flap. Suturing was made using 4-0 black silk (ETHICON).

Post surgical instructions and medications were given to the patient. The temporary bridge was relieved at the surgical site and temporary cemented for the healing period. Healing will take around 4 to 6 months before prosthetic stage.

References
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Author: Dr. Bassam Rabie

(BDS, FAAIP, FICOI, DICOI)
- Prosthodontic-Pittsburgh U.S.A
- Fellow AAIP American Academy of Implant Prosthodontics
- Fellow ICOI International Congress of Oral Implantologists
- Diplomat ICOI International Congress of Oral Implantologists
- Member ICOI International Congress of Oral Implantologists
- Member AAIP American Academy of Implant Prosthodontics
- Member ESOR Egyptian Society for Oral Rehabilitation
- Member AOIA Alexandria Oral Implantology Association
- Member AO Academy of Ossiointegration
- Member SENAME Oral Implantology association