

Placement of Implants in Anterior Deficient Maxilla by Bone Expansion

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Abstract

Placement of implant has always been a challenge to the clinician as the final outcome is always dependent upon the case selection, so the clinician always wants a perfect platform to place implant to avoid turbulence. One of the challenging aspect of implant placement is to create sufficient space for implant diameter in ridges with deficient width. This article exhibits a clinical case report in which bone width has been increased with the help of osteotomes to accommodate the selected dimension of implant. Success in implant dentistry requires evaluation of more than 50 dental criteria, of which bone width and bone density are primary determining factors.

Key words; Osteotomes, Bone density, Bone width.

Review

Maxillary and mandibular atrophy after tooth loss was determined by J. MISCH in 1922, while in 1913 GREENFIELD had already suggested the significance of bone width and bone density. ATWOOD proposed the bone loss in anterior mandible by suggesting 6 residual ridge stages and he suggested that bone loss in the 1st year of the tooth extraction is approximately ten times greater than the following years, he also described that anterior maxilla resorbs in height slower than the anterior mandible. The changes in the edentulous anterior maxillary region can be dramatic in height and width i.e upto 70% when mandibular

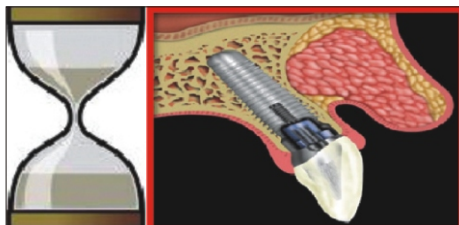
extractions are performed. WEISS and JUDY (1974) developed a classification of mandibular atrophy and its influence on periosteal implant therapy. KENT suggested a classification for alveolar ridge deficiency designed for alloplastic bone augmentation. LEKHOLM and ZARB (1985) studied on residual bone morphology related to branemark fixtures. MISH and JUDY (1985) described 4 basic divisions of available bone.

Introduction

In the anterior maxilla, the alveolar bone is rapidly re-contoured after the loss of natural teeth.

There is a 25% decrease in volume during the first year and 40-60% decrease in width within the first 3 years after tooth loss.

-Roberts E W, Turley P K Journal of California dental association 1987 15:54-61. The labio-palatal bone is often 4-6 mm wide at the crest or it may present an "hourglass concavity"



Bone expansion: Manipulation of a bony ridge by placement of an osteotome to split the cortical ridge and hence enhance bone width (GPT-7) Bone spreading may be used to expand the available bone width before implant placement.

History of Bone Spreading

Tatum developed bone spreading in the

early 1970's. He performed this technique by using calibrated osteotomes (graduated wedges) matching the dimensions of the endosteal implants he placed. Bone expansion technique was primarily used in regions of bone to increase the width of bone rather than using onlay grafts. The narrower the ridge, the greater the risk of fracture of the labial plate.

Rationale for bone expansion in maxillary arch

The softer the trabecular bone quality, the lower the elastic modulus and the greater the viscoelastic nature of the ridge. (Tatum O.H DCNA 1986,39:209-229) The lesser the bone density, the easier and more predictable the bone expansion. Maxillary division A bone is the most ideal to expand.

Division A bone	Division B bone	Division C bone	Division D bone
width > 6mm	Width 2-6mm	Width 0-2mm	Severe atrophy
Height > 12mm	Height > 12mm	Height < 12mm	
Mesio-distal length > 7mm	Mesio-distal length > 6mm	Mesio-distal length	

Armamentarium



UNTI IMPLANT KIT was used with drills D2.0, D3.33, D3.7, D4.3, D5.3, D6.0.

A Case Report

A 30 year old male reported to the



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DURRADENT VEDIC
Dental Chair Under The Arm Delivery
Use With 4 Programs:

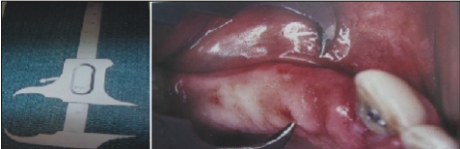
- 3 Back Operator Chair (Controls on delivery unit, foot control & assistant side)
- 4 Exercise Program
- Auto return to Zero position
- Intuitive Flexible Control Solution
- Programmable seat belt for operator and assistant through femoral vein control
- Synchronized movement of back rest & seat
- Seator & Patient spreader Two assembly operating by side right
- High Back Restable Recliner
- Intervention Tray with Pneumatic lock
- Monitor with Gas pedal for seat free movement
- Scientifically supported upholstery for lumbar support
- Lean & High Pneumatic section on control assistant arm
- Multi-adjustable foot control
- Pneumatic Dr. Stool



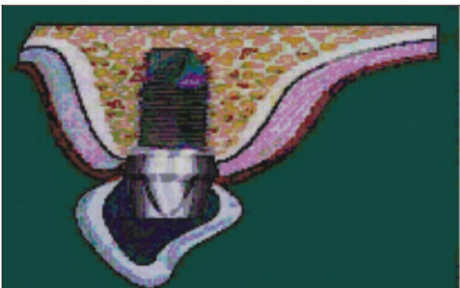


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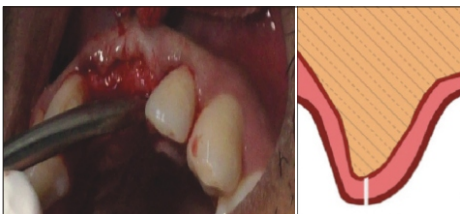
department of prosthodontics HI-Tech Dental College & Hospital ,bhubaneshwar, Ccomplaining of loss of upper front teeth, due to trauma before two years .



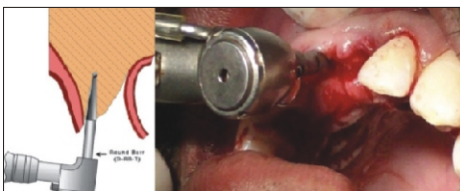
Anteriorly deficient maxilla was appreciated with lack of bone width and it was a challenge to place implant in it as the patient was willing for implant therapy. A VERNIOR callipers was used to determine the bone width.



Our aim was to place the implant in between the two cortical plates exactly for poper biomechanical support



Incision was made supracrestally and the crestal bone was exposed. A 2mm end cutting pilot drill 1000 rpm, Copious amount of saline irrigant. pilot drilling done.



2 mm osteotome was used initially. 2mm osteotome at each 5mm pause 15-30 sec

,wait 1-2min before removal. 2.5mm osteotome at each 5mm pause 15-30 sec wait 1-2min before removal.

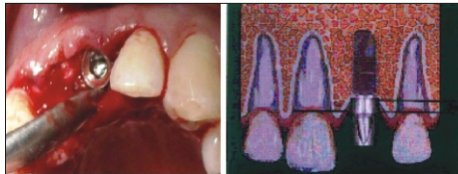


3mm osteotome at each 5mm pause 30-60 sec wait 2-4min before removal. 3.7mm osteotome at each 5mm pause 30-60 sec wait 2-4min before removal.

The final implant is threaded into position using a slow speed torque hand-piece.



An Implant Driver Is Used.



Wider Implant Requires Less Apical Positioning



Wider Implant Requires Less Apical Positioning



Pre operative



Post operative

Advantages

- Less time consuming
- Better primary stability
- Better esthetics
- Less chance of infection
- No donor site surgery required.

Complications

1. Splitting of the labial plate during expansion.
2. Dehiscence of the labial plate after healing and bone remodeling around the implant.
3. Poor implant positioning.

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