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Major Bone Augmentation



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Dr. Nigam Buch

**Aesthetic Reconstruction
of Anterior Maxillary
Defect with Sausage
Technique of Bone
Augmentation**



The Situation

A Young Male, 34 years old reported with dislodged upper anterior bridge and occasional pain. According to history given, extraction of upper right central incisor was done 8 years ago. CBCT showed good amount of buccal bone

resorption and thin buccal plate with some fenestration defect on buccal bone. There was more loss of horizontal component of buccal bone & little vertical component involved. Simultaneous implant placement with GBR was planned for the patient.

The Risk Profile

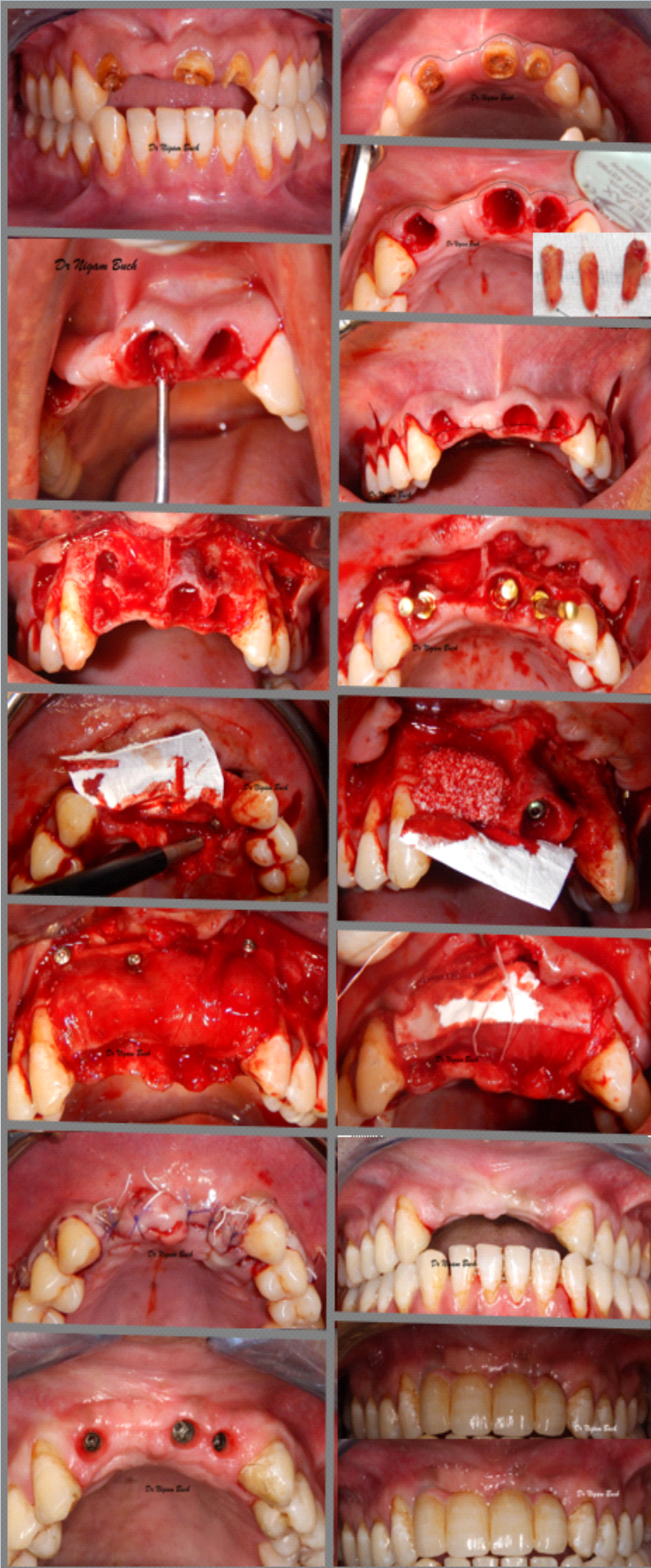
Risk Factors	Low Risk	Medium Risk	High Risk
Patient's health	Intact immune system	Light smoker	Impaired immune system
Patients esthetic requirements	Low	Medium	High
Height of smile line	Low	Medium	High
Gingival biotype	Thick- "low scalloped"	Medium- "medium scalloped"	Thin- "high scalloped"
Shape of dental crowns	Rectangular		Triangular
Infection at implant site	None	Chronic	Acute
Bone height at adjacent tooth	≤ 5 mm from contact point	5.5 - 6.5 mm from contact point	≥ 7 mm from contact point
Restorative status of adjacent tooth	Intact		Restored
Width of tooth gap	1 tooth (≥ 7 m\m)	1 tooth (≤ 7 mm)	2 teeth or more
Soft tissue anatomy	Intact		Compromised
Bone anatomy of alveolar ridge	No defect	Horizontal defect	Vertical defect

Fixation of membrane and sufficient amount of composite graft and tension-free closure of flap is the Key to successful GBR procedure.



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He is Consultant Senior Periodontist & Senior Dental Implantologist, Practicing since last 15 years at Rajkot. He completed his graduation and post graduation from A. B. Shetty memorial institute of Dental Sciences, Mangalore. He is the Pioneer in Latest techniques of bone augmentation for treatment of deficient bone for implants and periodontal tissue as well as simple to complex dental implant rehabilitation procedures. He is a co-director of Sanjivani dental academy where he is one of teaching faculty for clinical courses conducted for young dentists. He has been trained extensively for advanced Implantology at Korea, Israel and Germany. He has also received "Implant Fellowship" of ISOI in 2013. He is an active member of IDA, ISP and ITI.



The Approach

- Extraction – curettage of cystic lesion.
- Safety Flap incision involving two teeth distal to augmentation site.
- Immediate implant placement utilizing maximum of palatal bone to avoid buccal trajectory.
- Bone augmentation using 70:30 by weight – Geistlich Bio-Oss® : Autologous mixture & was stabilized by Geistlich Bio-Gide®.
- Fixated the Geistlich Bio-Gide® with Tacks.
- Primary closure by coronally advancing flap using “Sub-Orbicularis” technique prescribed by Prof. Istvan Urban to achieve tension free flap closure.
- Pre-fabricated CAD-CAM milled PMMA bridge given without compressing soft tissue. Later, resin material can be added to develop emergence profile and for papillary support
- Healing time– min. 6 months considering buccal defect.

The Outcome

The outcome of this staged approach method was very predictable. Although implant was placed simultaneously along with GBR, due attention was given to flap management and membrane stabilization to avoid any exposure of GBR site. Interim Maryland prosthesis was given to avoid any soft tissue trauma during healing. At 6 month interval sufficient bone volume was achieved which can support biology for long.

1. Baseline Pre-Operative picture.
2. Thin biotype – Carious tooth surface – infected root canals.
3. Atraumatic extraction using periosteal elevator. Observe extended GP points-one of the cause for PA pathology.
4. Using curette to completely remove granulation tissue with cystic lining.
5. Papilla sparing safety flap design with bilateral vertical release incision..
6. Defect including- Dehiscence defect, Think buccal wall & Apical fenestration defect.
7. Correct angulations leaving very thin palatal bone behind.
8. Stabilization of Geistlich Bio-Gide® in the palatal aspect.
9. Geistlich Bio-Oss® & Autologous graft placed in ratio of 70:30 by weight and Geistlich Bio-Gide® fixed using titanium tacks getting sausage type filling.
- 10 & 11. Second Geistlich Bio-Gide® placed over existing membrane as advocated by Prof. Daniel Buser & cover defect on left lateral incisor implant.
12. Primary closure achieved using Vicryl sutures.
13. Re-entry after 5 months for abutment preparation and keratinized zone creation.
14. Event free wound healing.
15. 6 month post-operative situation



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Keys to Success

- ✓ Through debridement of extraction socket.
- ✓ Safety flap preparation to gain flexibility of flap so exposure of GBR site can be avoided during healing.
- ✓ Implant placement should be according to arch shape and also considering buccal and palatal bone availability.
- ✓ Fixation of membrane and sufficient amount of composite graft and tension-free closure of flap is the Key to successful GBR procedure.



1. Geistlich Bio-Oss® particulate graft is the most hydrophilic material among all grafts available and when mixed with autogenous bone. it can provide better regeneration with long term stability.

2. Geistlich Bio-Gide® is one of the very few native collagen membrane, which has good adaptability to graft and also good stretching capability to cover large grafting area without tearing away.

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