BioBrief

2-STAGE IMPLANT PLACEMENT

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Muhammad Saleh, BDS, MSD, PhD | **Karim Ghishan,** BDS, MS

Vertical Ridge Augmentation in the Anterior Maxilla

leading regeneration

Geistlich

The Situation

The site of tooth 7* had a history of peri-implantitis followed by implant removal, with severe vertical bone deficiency & insufficient bone for implant placement.

*Universal Numbering System

The Approach

The goal was to achieve adequate ridge width and height to place the implant in a prosthetically driven position.

The Risk Profile

	Low Risk	Medium Risk	High Risk
Patient's health	**Intact immune system/ Non-smoker**	Light smoker	Impaired immune system/ Heavy smoker
Patient's 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 sight	None	**Chronic**	Acute
Bone height at adjacent tooth site	**≤ 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 mm)**	1 tooth (≤ 7 mm)	2 teeth or more
Soft-tissue anatomy	Intact		**Compromised**
Bone anatomy of the alveolar ridge	No defect	Horizontal defect	**Vertical defect**

Muhammad Saleh, BDS, MSD, PhD, Periodontist
Ann Arbor, Michigan, USA

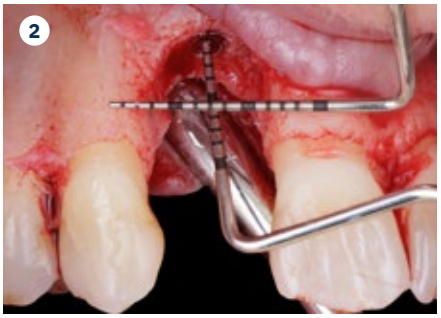
Dr. Muhammad H. Saleh, Diplomate of the American Board of Periodontology, is a full-time faculty member at the University of Michigan and an internationally recognized lecturer in periodontology and implant dentistry. He has published over 140 peer-reviewed articles and reviews for leading Q1 journals. His numerous honors include the 2021 AAPF Schoor Award, 2022 Ramfjord Symposium Award, 2022 AAP Institute Award, 2024 AAPF LEAD and Nevins Awards, and the 2025 Roy H. Roberts Award.

Karim Ghishan, BDS, MS, Periodontist
Ann Arbor, Michigan, USA

Dr. Karim Ghishan is a specialist in Periodontology and Implant Dentistry. He earned his Doctor of Dental Medicine degree from Jordan University of Science and Technology in 2020, completed a two-year Visiting Scholar Program in Periodontics at the University of Iowa in 2023, and completed a Certificate in Periodontics and Master's Degree at the University of Michigan in 2026. He has advanced training in periodontal plastic surgery, dental implant therapy, and regenerative procedures and currently practices in East Lansing, Michigan.

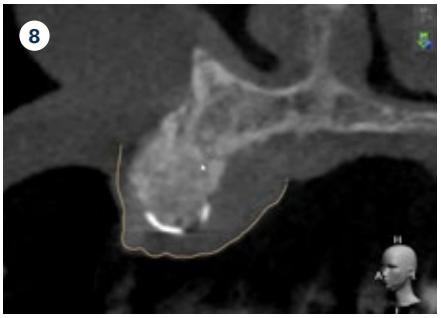
"Geistlich Bio-Gide® Forte is a versatile membrane that can be used in more indications than other membranes. It can be tacked, it can be screwed, it can be stitched or simply laid flat on a contained defect. It will behave well regardless of how you treat it."

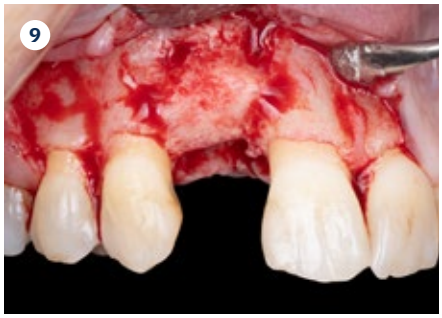
Dr. Muhammad Saleh

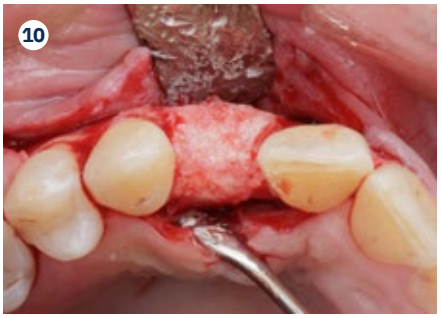


The Outcome

The use of Geistlich Bio-Gide® Forte, vallos® & RPM™ in guided bone regeneration led to significant horizontal and vertical bone gain, allowing for prosthetically driven implant placement.







1 Six-week healing at the site of tooth 7* following implant removal – occlusal view.

2 Site condition prior to vertical ridge augmentation. The 8 mm defect (from bony peaks) indicates the need for vertical augmentation.

3 Ridge augmentation was performed using vallos® mineralized cortical-cancellous granules, autogenous bone, and RPM™ Reinforced PTFE Mesh to support bone regeneration.

4 Adaptation and fixation of the RPM™ Reinforced PTFE Mesh over the grafted site using titanium screws to ensure space maintenance and graft stability.

5 Adaptation and stabilization of Geistlich Bio Gide® Forte over the augmented site.

6 Eighteen-day postoperative view demonstrating early soft tissue healing and wound closure over the augmented site.

7 Five-month follow-up evaluation – occlusal view demonstrating favorable ridge contour and soft tissue maturation at the regenerated site.

8 Five-month radiographic evaluation of the regenerated site. Restored ridge volume is evident, supporting readiness for implant placement.

9 Six months after bone augmentation after removal of RPM™ Reinforced PTFE Mesh, showing vertical bone gain – Frontal (labial) view

10 Occlusal view – six months after bone augmentation, showing horizontal bone gain.

11 Occlusal view – placement of a 3.75x10 mm implant.

12 Occlusal view – suturing using 5-0 polypropylene.

*Universal Numbering System

Geistlich

Keys to success

- → Waited 6 weeks for the infection to resolve before attempting vertical ridge augmentation
- → Adequate flap release, tension-free primary closure, and stable suturing to protect the grafted volume
- → The use of a collagen membrane
- → Selection of the appropriate bone grafting materials
- → Emphasizing patient compliance and ensuring regular maintenance visits to monitor and sustain long-term success

swiss made

"Adequate flap release and respecting biology were ensured by avoiding overgrafting outside the bone housing and contour."

Dr. Muhammad Saleh

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