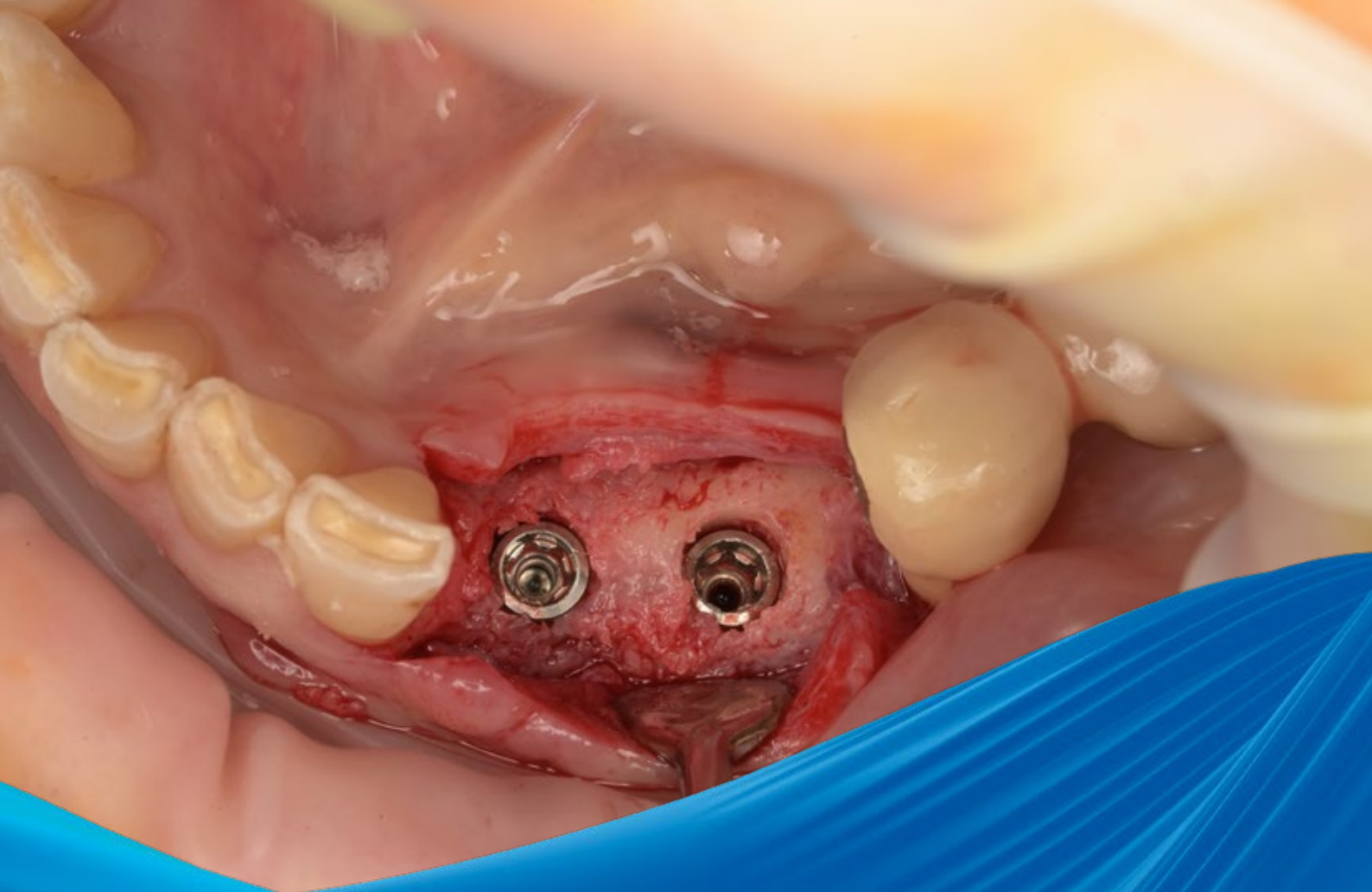




BioBrief

2-STAGE IMPLANT PLACEMENT

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Andrea Ravidà, DDS, MS, PhD | Jasper Wu, DDS, MDS

2-Stage Implant Placement
in the Posterior Mandible Using
the Sausage Technique™

leading regeneration

Geistlich

The Situation

A 49-year-old female patient presented for periodontal treatment and implant consultation. Tooth 22* required extraction as it exhibited 100% bone loss on initial presentation with calculus deposits to apex. After extraction the site demonstrated a Siebert Class I defect with a significant horizontal discrepancy. The final goal was to restore the site with dental implants after treatment of periodontal disease and guided bone regeneration to correct the horizontal discrepancy.

*Universal Numbering System

The Approach

The treatment goal in this case is restoration of bone dimensions via guided bone regeneration and subsequent implant placement. The Sausage Technique™ was used for reconstruction of bone volume together with resorbable collagen membrane, fixation pins, and bone graft material.

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



**Andrea Ravidà, DDS,
MS, PhD, Periodontist**
Pittsburgh, Pennsylvania, USA

Dr. Andrea Ravidà is the Director of the Graduate Periodontics Program in the department of Periodontics at the University of Pittsburgh. He conducts clinical research focusing on peri-implantitis, periodontitis, and short implants. He has published more than 90 peer-reviewed articles and conference abstracts/presentations related to periodontics and implant therapy. He is section editor of the International Journal of Oral Implantology and the Journal of Translational Medicine.



**Jasper Wu, DDS, MDS
Periodontist**
Pittsburgh, Pennsylvania, USA

Dr. Jasper K. Wu received his Doctor of Dental Surgery degree from SUNY University at Buffalo School of Dental Medicine in 2019. He practiced both private and hospital-based dentistry in Buffalo, NY. Dr. Wu completed a Certificate in Periodontics and earned an MDS degree at the University of Pittsburgh School of Dental Medicine in 2026. He has received advanced training in periodontal plastic surgery, dental implant therapy, and regenerative procedures.

“A significant discrepancy in bone dimensions would compromise implant placement and positioning if approached without guided bone regeneration.”

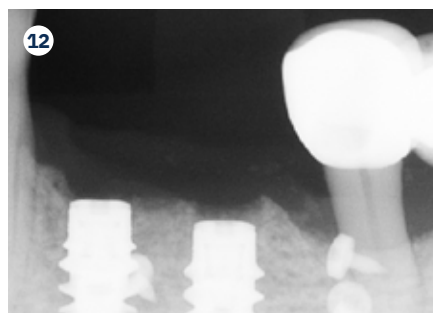
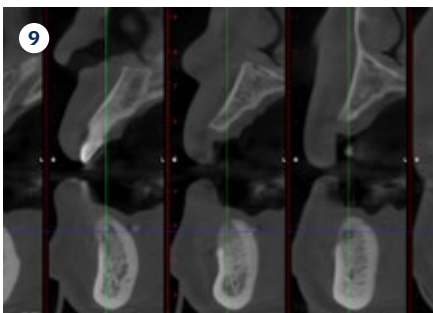
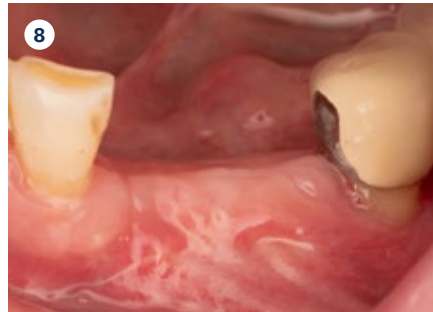
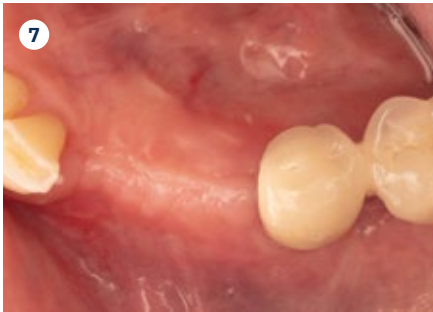
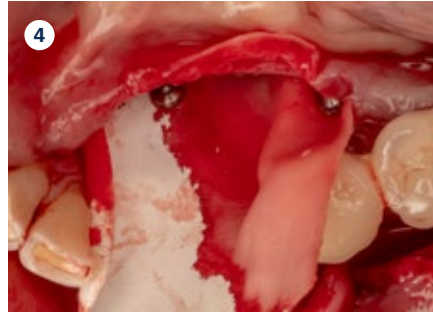
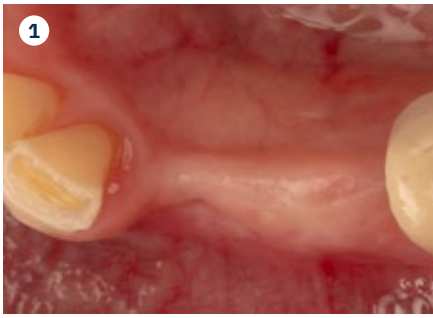
Dr. Andrea Ravidà

The Outcome

Significant horizontal gain in bone volume was achieved utilizing guided bone regeneration with the Sausage Technique™ and Geistlich Bio-Gide® Forte resorbable collagen membrane, allowing for prosthodontically driven implant placement.

- 1 Initial clinical presentation showing reduced ridge width after extraction of tooth 22*.
- 2 Pre-operative intraoral view of the edentulous ridge demonstrating horizontal deficiency prior to flap elevation.
- 3 Decortication is performed and the flap is mobilized.
- 4 Fixation of Geistlich Bio-Gide® Forte using the Sausage Technique™ was initiated on the lingual aspect.
- 5 The space beneath the membrane is filled with a 50:50 mixture of Geistlich Bio-Oss® and autologous bone.
- 6 The densely packed membrane is secured with pins on the buccal aspect (Sausage Technique™).
- 7 Three-month follow-up shows visible horizontal bone gain and favorable soft-tissue conditions.
- 8 Three-month occlusal view demonstrating increased ridge width and favorable soft-tissue maturation following horizontal augmentation.
- 9 Five-month CBCT cross-sections showing consistent horizontal ridge augmentation and implant-ready bone.
- 10 Six-month re-entry showing a stable, well-integrated graft ready for implant placement, with a Geistlich Panorama® retractor used to enhance visibility and access.
- 11 Six-month occlusal view showing implant placement following successful graft maturation.
- 12 Prosthetically driven implant placement awaiting uncover and crown fabrication.

*Universal Numbering System





Keys to success

For more information, please visit:
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- Primary closure and undisturbed healing through proper flap management and correct suturing techniques
- Selection of the appropriate bone grafting materials
- Proper fixation of membrane is crucial for space maintenance and stability of grafted site
- Emphasizing patient compliance and ensuring regular maintenance visits to monitor and sustain long-term success



Careful handling of flap and materials with good fixation of graft and membrane is crucial for guided bone regeneration with the Sausage Technique™.



CAUTION: Federal law restricts these devices to sale by or on the order of a dentist or physician. For more information on contraindications, precautions, and directions for use, please refer to the Instructions for Use at: <https://www.geistlich-na.com/dentalprofessionals/instructions-for-use>

Disclaimer: These results are not guaranteed; individual outcomes may vary depending on patient circumstances. This information is for informational purposes only and may not reflect Geistlich's official position, opinion, or recommendation. Treatment decisions are made at the physician's discretion, based on the unique needs of each patient.

“Geistlich Bio-Gide® Forte offers excellent handling, especially when fixed with pins as in the Sausage Technique™. It adapts seamlessly around pins and can be repositioned or stretched without folding or wrinkling.”

Dr. Andrea Ravidà

