

# BioBrief

GUIDED BONE REGENERATION  
FOR PERI-IMPLANTITIS

Andrea Ravida DDS, MS, PhD  
Anu Viswanathan DDS, MDS

## Prosthetic-Surgical Approach to Regenerative Treatment for Peri-Implantitis

leading regeneration

Curious  
about other  
BioBriefs?



Geistlich

# The Situation

A 68-year-old male patient, who received an implant in tooth position #31 about 8 years prior, presented for an examination. He reports bleeding during brushing around the implant and some discomfort. Clinically, there was severe vertical bone loss, profuse bleeding on probing, and deep probing depths, but no pain. The condition was diagnosed as peri-implantitis according to the 2018 classification.

# The Approach

The treatment goals were to eliminate peri-implant infection, regenerate lost hard and soft tissues, and ensure long-term implant stability. A closed regenerative approach was utilized, including crown removal, thorough implant decontamination with PERIOFLOW®, an airpolishing technology, application of the correct bone grafting materials (Geistlich Bio-Oss®, vallos® and GEM 21S®), enclosed healing, and fabrication of a new crown to facilitate hygiene.

# The Risk Profile

	Low Risk	Medium Risk	High Risk
Patient's health	Intact immune system	Light smoker	Impaired immune system
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"
Infection at implant sight	None	Chronic	Acute
Restorative status of adjacent tooth	Intact		Restored
Soft-tissue anatomy	Intact		Compromised
Bone anatomy of the alveolar ridge	No defect	Horizontal defect	Vertical defect

Additional Risk Factors: The patient exhibited bleeding on probing and deep pocket depths. He also reported occasional marijuana use and was inconsistent with periodontal maintenance and oral hygiene visits.

**Andrea Ravidà, DDS, MS, PhD |Pittsburgh PA**  
*Periodontist*

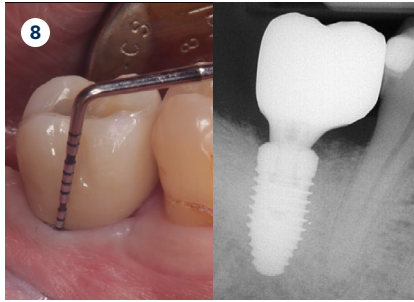
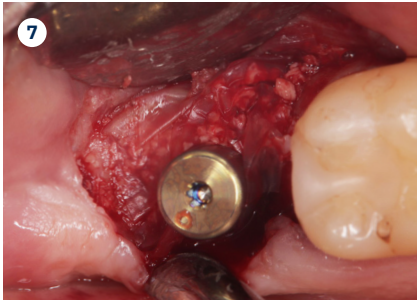
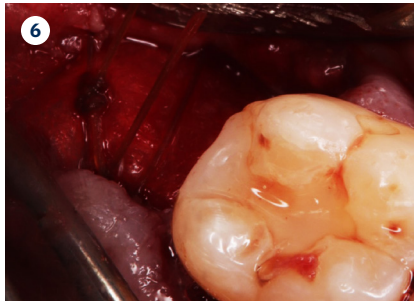
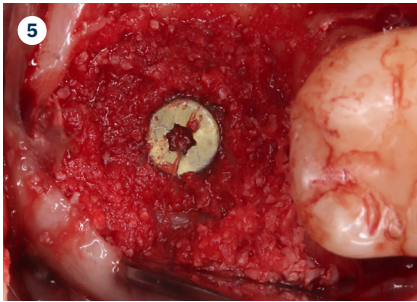
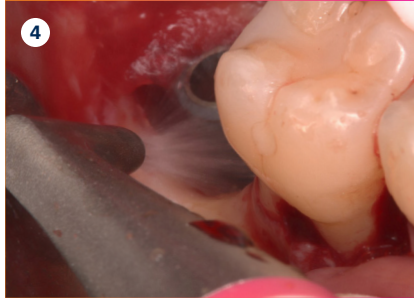
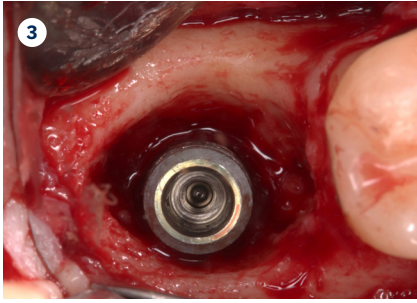
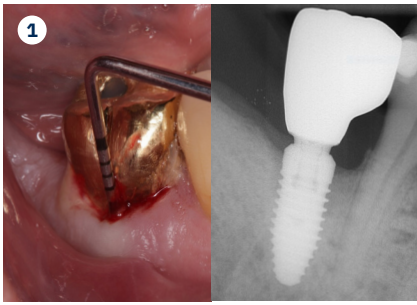
**Anu Viswanathan, DDS, MDS |Pittsburgh PA**  
*Periodontist*

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 70 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.

Dr. Anu Viswanathan is a Diplomate of the American Board of Periodontology and Implant Dentistry. She earned her Doctor of Dental Surgery degree from the University of Colorado School of Dental Medicine in 2019. Dr. Viswanathan completed a Certificate in Periodontics and earned a Master of Dental Science at the University of Pittsburgh School of Dental Medicine. She also obtained a Certificate in IV Sedation. Dr. Viswanathan is currently in private practice in Shoreline, Connecticut.



“The implant presented with significant bone loss, deep probing depths, and bleeding on probing, placing it at risk of failure and requiring intervention to preserve function and longevity.”



## The Outcome

At the two-year follow-up, clinical and radiographic assessments showed disease resolution, complete bone gain, and stable peri-implant tissues. Probing depths were within healthy ranges, and no bleeding on probing was observed, confirming the long-term success of the treatment.

- 1 Clinical presentation of tooth #31 showing radiographic evidence of bone loss, profuse bleeding on probing (BOP), deep probing depths, and suppuration, indicative of peri-implantitis with a Class I-infraosseous (c) circumferential-type defect, as described in the study by Monje et al. (2019) Clin Implant Relat Res, 21(4)635-643.
- 2 Crown removal by the prosthodontist, followed by placement of a healing abutment for non-surgical therapy using PERIOFLOW®. After therapy, a cover screw was placed, and the tissue was allowed to heal over the implant for eight weeks.
- 3 Surgical treatment initiated with a midcrestal incision and full-thickness flap elevation. Granulation tissue was removed using a surgical curette, revealing a deep infrabony defect.
- 4 Implant thoroughly decontaminated using PERIOFLOW® with erythritol powder to ensure a clean surface for regeneration.
- 5 rhPDGF-BB was used to hydrate bone grafting materials (vallos® Demineralized Cortical Granules and Geistlich Bio-Oss®), which were first hydrated with sterile water before rhPDGF-BB was added. The materials were mixed in a 1:1 ratio and allowed to sit for 10 minutes before being applied to the deep infrabony defect to promote regeneration.
- 6 Collagen membrane stabilized with 5-0 chromic gut sutures using the lasso technique. Flap closed primarily with 5-0 PTFE horizontal mattress and single interrupted sutures for secure closure.
- 7 After 5 months of healing, significant bone gain is evident. Geistlich Bio-Oss® was placed on the buccal site to enhance thickness, covered with an amnion-chorion membrane. A healing abutment was placed at this stage.
- 8 Two-year follow-up shows disease resolution with shallow probing depths, no bleeding or suppuration, and complete bone gain. A new crown was fabricated with an increased final abutment height (>2mm), contributing to optimal maintenance and long-term stability based on evidence supporting its role in promoting long-term success. A second surgery may be necessary to gain additional tissue thickness or cover residual thread exposure to achieve the desired long-term results.

“

Enclosed healing, meticulous implant decontamination, appropriate selection of bone grafting materials, and customized crown design, combined with patient compliance and regular maintenance, contributed to disease resolution and complete bone regeneration.”

Geistlich Pharma North America, Inc.  
Princeton, NJ 08540  
Customer Care Toll-free: 855-799-5500  
info@geistlich-na.com  
<https://geistlich.us>

## Keys to Success



- Removal of the crown to allow better access to implant surface for complete debridement and healing.
- Thorough decontamination of the implant surface.
- Enclosed healing through proper flap management and correct suturing techniques.
- Selection of the appropriate bone grafting materials.
- Fabrication of a new crown designed to facilitate effective oral hygiene and implant cleaning by the patient.
- Emphasizing patient compliance and ensuring regular maintenance visits to monitor and sustain long-term success.



- Air polishing technology to decontaminate the implant.
- Geistlich Bio-Oss®, vallos® and GEM 21S® were used in this case to promote regeneration.

“

The air polishing device with erythritol powder ensured thorough implant decontamination, while the bone grafting materials combined with rhPDGF-BB provided essential biologic support for regeneration and improved peri-implantitis treatment outcomes.”

For more information, please visit:  
[www.geistlich.us](http://www.geistlich.us)

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/dental-professionals/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.

