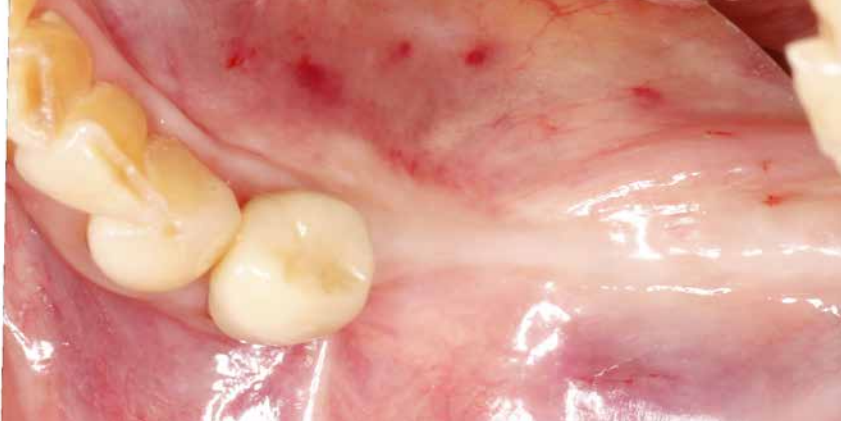




A CASE REPORT BY  
JOHN KIM, D.M.D.

## Horizontal Ridge Augmentation in the Posterior Mandible of a 90-Year-Old Female



► **The Situation**

A 90-year-old female presented requesting dental implants be placed in the left mandibular posterior region. Her chief complaint was increased drooling and difficulty chewing on only one side. She lost her bridge one year prior to her visit and firmly stated that she did not want to wear a partial denture. The clinical exam and CBCT showed that there was a horizontal alveolar ridge deficiency that precluded the implants from being placed in a restoratively desirably position. Therefore, a horizontal ridge augmentation was done using multiple layers of Geistlich Bio-Gide® Compressed over a 1:1 ratio of autogenous bone and Geistlich Bio-Oss® xenograft.

► **The Risk Profile**

Esthetic Risk Factors	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"
Shape of dental crowns	Rectangular		Triangular
Infection at implant site	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

Note: Very limited range of opening



Guided Bone Regeneration  
Periodontal Plastic Surgery

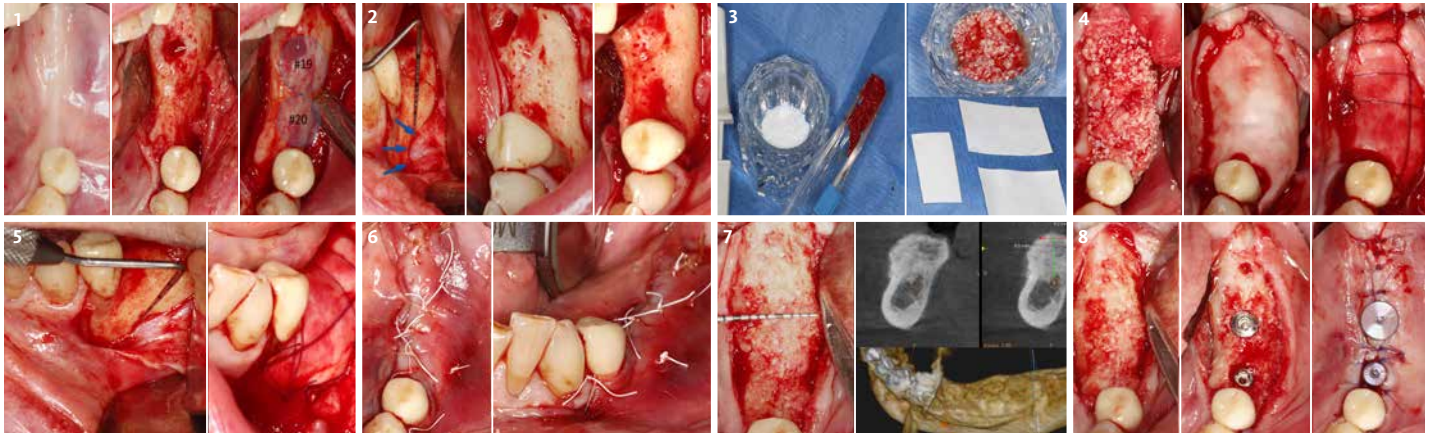
*"A predictable ridge augmentation procedure was needed to help our 90-year-old patient avoid having nutritional deficiencies due to lack of proper chewing ability and also to improve her quality of life."*

**JOHN KIM, D.M.D., ROCKY MOUNT, NC**  
Periodontist

Dr. Kim, originally from Fairfax, VA, received his DMD from Harvard School of Dental Medicine. He completed his residency and received his M.S. in Periodontics at UNC School of Dentistry at Chapel Hill. Dr. Kim is a Diplomate of the American Board of Periodontology and actively speaks as an expert on guided bone regeneration, implant therapy, soft tissue grafting, and managing complications domestically and internationally. He is also an adjunct faculty at UNC Adams School of Dentistry.

## The Approach

The treatment goal was to gain adequate horizontal bone dimension to allow for prosthetically-driven implant placement. Guided bone regeneration was performed in which autogenous bone was mixed with Geistlich Bio-Oss® xenograft in a 1:1 ratio. PRF was used to create “sticky bone” and was covered by multiple layers of Geistlich Bio-Gide® Compressed. The membrane was stabilized with periosteal biting stabilizing sutures. Tension-free primary closure was achieved and the grafted site was allowed to heal for 8 months prior to the implant surgery for #19 and #20.



- 1 Pre-operative situation showing the horizontal ridge deficiency (left). Buccal bone concavity evident after full thickness flap elevation (middle). There is insufficient bone to place implants in an ideal restorative position (right).
- 2 It is important to locate the mental foramen. Intramarrow penetrations were done to allow for improved blood supply to the bone graft.
- 3 The clinical cocktail used for guided bone regeneration: 1) 50/50 mixture of autogenous bone chips, collected with Geistlich SafeScraper TWIST, and Geistlich Bio-Oss®, and 2) Geistlich Bio-Gide® Compressed 20 x 30 mm and 13 x 25 mm.
- 4 “Sticky bone”, created by combining PRF with the bone graft, adapted well to the site of the defect. Periosteal biting sutures were used for stabilization of the multiple layers of Geistlich Bio-Gide® Compressed and underlying bone graft.
- 5 Geistlich Bio-Gide® Compressed was carefully trimmed to be mindful of the mental nerve.
- 6 Tension-free primary closure achieved with horizontal mattress sutures and simple interrupted sutures.
- 7 Re-entry and CBCT scan at 8 months showing a significant increase in horizontal bone dimension.
- 8 Sufficient regenerated bone to allow for implant therapy (left). Implants #19 and #20 placed. Vital bone from guided bone regeneration as evidenced by the bleeding bone (middle). Tension-free primary closure achieved using 5-0 glycolon sutures.

Horizontal Ridge Augmentation

In a 90-year-old patient

*“Stabilizing Geistlich Bio-Gide® Compressed and the underlying particulate graft allows for predictable ridge augmentation across multiple edentulous sites.”*

*(See image to the left)*

## The Outcome

The horizontal ridge augmentation procedure resulted in adequate bone for implant therapy as evidenced by the CBCT scan and re-entry surgery. With a sufficient quantity of good quality regenerated bone, implants for #19 and #20 were placed using a surgical guide based on a diagnostic wax up. Our 90-year-old patient is very happy to be able to chew efficiently again.

# Briefly Speaking

## ► Keys to Success

1. Understanding the biology and rationale for the choice of biomaterials when performing a ridge augmentation procedure.
2. Use of a barrier membrane that has excellent handling properties like, Geistlich Bio-Gide® Compressed, in a difficult surgery (patient had a very limited range of opening).
3. Proper and minimally invasive flap design to allow for optimal healing and avoidance of complications.
4. Adequate periosteal release of the mucogingival flap from the buccal and lingual to ensure tension-free primary closure of the healing wound.
5. Harvesting autogenous bone chips using the Geistlich Safescraper TWIST.
6. Use of a slowly resorbing Geistlich Bio-Oss® xenograft to maintain volume.

## ► My Instruments

1. 15c and 12 blade on round scalpel handle
2. Orban knife, Buser periosteal elevator
3. Mini-Me Microsurgical Periosteal PFIWDS1MK for periosteal release
4. Geistlich SafeScraper TWIST to obtain autogenous bone chips
5. Geistlich Bio-Gide® Compressed 20 X 30 mm and 13 X 25 mm
6. Geistlich Bio-Oss® small granules 0.5 g
7. CBCT scan for pre and post-operative assessments
8. Centrifuge for LPRF and IPRF (sticky bone)
9. 5-0 glycolon and 4-0 cytoplast sutures

## ► My Biomaterials

Geistlich Bio-Gide® Compressed has superior handling properties and stabilizes the underlying graft material in ridge augmentation cases. Geistlich Bio-Oss® provides long-term volume stability. In addition, Geistlich Safescraper TWIST is a valuable tool in the treatment process.



*“For larger ridge augmentation procedures, it is absolutely important to use autogenous bone as it is osteogenic, osteoconductive, and osteoinductive. The Geistlich SafeScraper TWIST makes it easy to harvest autogenous bone in a minimally invasive way.”*

### Geistlich Bio-Gide® Compressed

A compressed membrane designed for alternative handling



Geistlich Bio-Gide® Compressed has a smoother surface, a firmer feel and is easier to cut



*Beyond being biocompatible, it is especially important to have a barrier membrane with easy handling like Geistlich Bio-Gide® Compressed. With alternative handling properties, this otherwise challenging posterior ridge augmentation was significantly simplified, reducing patient morbidity.*



Watch this case here

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## ABOUT BIOBRIEF

We know that exposure to new or refined treatment approaches brings innovation to practice. Geistlich Biomaterials is pleased to introduce a periodic opportunity to get up close and personal with creative clinicians from around the world. Focused on peer-to-peer exchange, BIOBRIEF features clinically relevant cases and techniques in specific therapeutic areas – highlighted with valuable insights about materials and instrumentation, as well as KEYS TO SUCCESS.

Geistlich Biomaterials – bringing you *regeneration on time*.

## ► The Therapeutic Area

Geistlich biomaterials can play a significant role in the treatment of Major Bone Augmentation. Geistlich Bio-Oss® with its slow resorption properties is the ideal biomaterial for maintaining volume stability. Geistlich Bio-Gide® Compressed is specifically designed for alternative handling and is easy to cut.



**CAUTION:** Federal law restricts these devices to sale by or on the order of a dentist or physician.

**Indications:**

Geistlich Bio-Gide® Compressed is indicated for the following uses: Augmentation around implants placed in immediate and delayed extraction sockets; Localized ridge augmentation for later implantation; Alveolar ridge reconstruction for prosthetic treatment; Filling of bone defects after root resection, cystectomy, removal of retained teeth; GBR in dehiscence defects; and GTR procedures in periodontal defects.

**Warnings:**

As Geistlich Bio-Gide® Compressed is collagen products, allergic reactions may not be totally excluded. Possible complications which may occur with any surgery include swelling at the surgical site, flap sloughing, bleeding, dehiscence, hematoma, increased sensitivity and pain, bone loss, redness, and local inflammation.

**Indications:**

Geistlich Bio-Oss® is indicated for the following uses: Augmentation or reconstructive treatment of the alveolar ridge; Filling of periodontal defects; Filling of defects after root resection, apicoectomy, and cystectomy; Filling of extraction sockets to enhance preservation of the alveolar ridge; Elevation of the maxillary sinus floor; Filling of periodontal defects in conjunction with products intended for Guided Tissue Regeneration (GTR) and Guided Bone Regeneration (GBR); and Filling of peri-implant defects in conjunction with products intended for GBR.

**Warnings:**

Possible complications which may occur with any surgery include swelling at the surgical site, flap sloughing, bleeding, local inflammation, bone loss, infection or pain. As Geistlich Bio-Oss Collagen® contains collagen, in very rare circumstances cases of allergic reactions may occur.

For more information on contraindications, precautions, and directions for use, please refer to the Geistlich Biomaterials Instructions for Use at: [www.geistlich-na.com/ifu](http://www.geistlich-na.com/ifu)