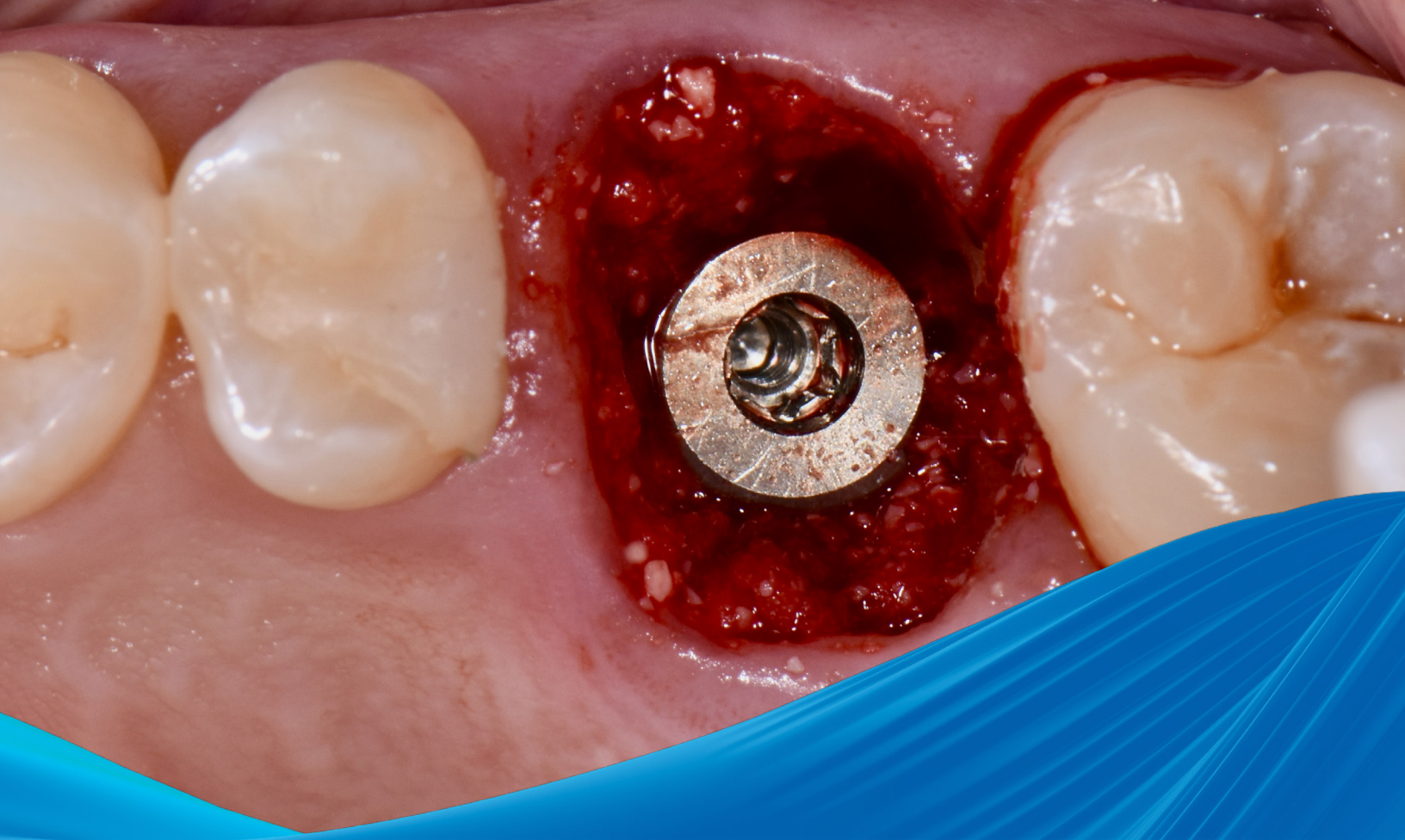


BioBrief

GUIDED BONE REGENERATION
FOR IMMEDIATE IMPLANT PLACEMENT

Curious about other BioBriefs?

Waldemar D. Polido, DDS, MS, PhD
Wei-Shao Lin, DDS,FACP, PhD,MBA

Bone Grafting and Immediate Implant Placement in the Maxillary First Molar Region

leading regeneration

Geistlich

The Situation

Patient presented with unrestorable left maxillary first molar. After data collection with Cone Beam Computed Tomography (CBCT) and intra-oral scanning, and clinical examination, the situation was considered favorable for minimally traumatic extraction and immediate implant placement.

The Approach

A fully guided approach was utilized, with an immediate provisional Computer-Aided Design (CAD) and Computer Aided Manufacturing (CAM) crown. Alveolar socket gaps were grafted with Geistlich Bio-Oss Collagen®, after implant placement. The provisional crown was used also as a socket seal, optimizing healing. After 3 months, a final ceramic crown was delivered. A one-year and a 3 year follow up show excellent clinical contour of the alveolar bone, and integration of the implant.

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"
Shape of dental crowns	Rectangular		Triangular
Infection at implant sight	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 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
Additional Risk Factors: Roots were divergent, and intra-radicular bone (septal bone) was excellent, with more than 5 mm of remaining apical bone to achieve optimal primary stability.			

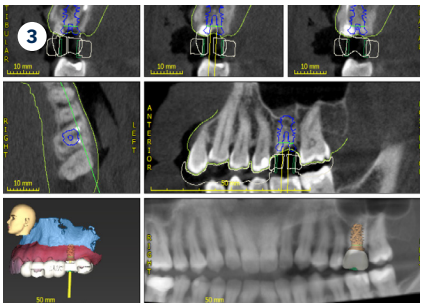
Waldemar D. Polido, DDS, MS, PhD | **Indianapolis, IN**
Oral and Maxillofacial Surgeon

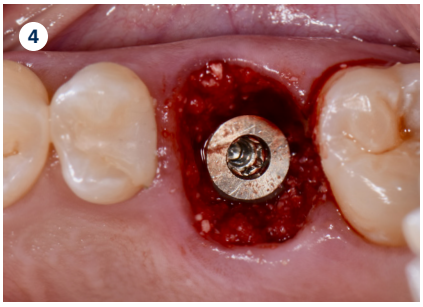
Dr. Polido is an Oral and Maxillofacial Surgeon with MS and PhD degrees from the PUCRS School of Dentistry in Porto Alegre, RS, Brazil. He completed his residency in Oral and Maxillofacial Surgery at The University of Texas, Southwestern Medical Center in Dallas, Texas. Currently, Dr. Polido is a Clinical Professor of Oral and Maxillofacial Surgery at the Indiana University School of Dentistry. He is also the Co-Director of the Center for Implant, Esthetic, and Innovative Dentistry at Indiana University School of Dentistry in Indianapolis.

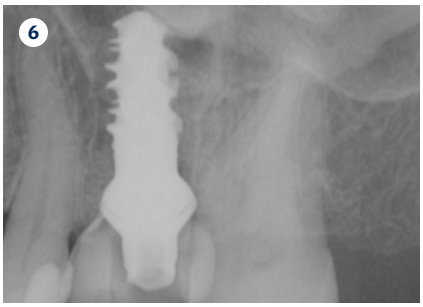
Wei-Shao Lin, DDS,FACP, PhD,MBA | **Indianapolis, IN**
Prosthodontist

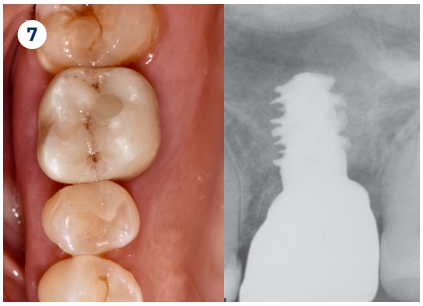
Dr. Lin is a tenured Professor and Chair of Prosthodontics at Indiana University School of Dentistry. He earned his DDS from Chung-Shan and Surgical Implant Fellowship at the University of Rochester (2010). He holds a PhD in Educational Leadership (2020) and an MBA in Healthcare Administration (2022) and is currently pursuing a Master's Intelligence. Dr. Lin specializes in dental implants, digital dentistry, and AI applications, with over 120 peer-reviewed publications. A Diplomate of the American Board of Prosthodontics and Fellow of ITI and ACP, he also serves as an associate editor for the Journal of Prosthodontics and maintains a clinical practice at Indiana University.

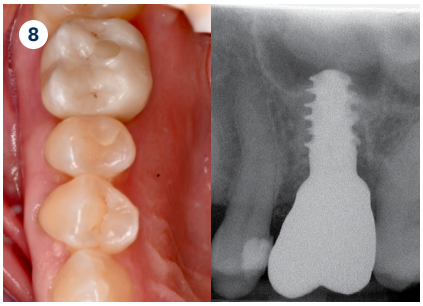
"Immediate implant placement and loading in molars is a feasible technique, with excellent long-term outcomes, if case selection is adequate, treatment planning is optimized by digital technology, and proper surgical and restorative techniques are applied."











The Outcome

This case shows a three-year follow-up of an immediate implant placement, using Geistlich Bio-Oss Collagen® as a graft material on the gap. Careful tissue management, minimally traumatic extraction, and proper planning, including guided implant surgery can optimize treatment outcomes.

1 Pre-operative occlusal view showing the involved tooth's condition.

2 Pre-operative periapical radiograph capturing the cross-section of the involved tooth.

3 Comprehensive Digital Planning for Implant Placement – A multi-view CBCT and 3D reconstruction showcasing precise anatomical assessment and guided surgical approach.

4 Geistlich Bio-Oss Collagen® placement, demonstrating the material packed around the implant within the socket.

5 Immediate provisional crown, occlusal view showcasing restoration alignment technique.

6 Immediate crown periapical view, reflecting the initial stability of the implant and prosthesis.

7 Final crown occlusal view, illustrating the restoration's integration and final crown periapical view, emphasizing implant stability post-restoration

8 Occlusal view at the 3-year post-implant placement, highlighting tissue health and crown durability. Periapical CBCT view at the 3-year post-implant placement, providing insight into bone stability over time.

> "Immediate implant placement usually requires a bone graft to fill the gap between the implant and the socket walls. The use of bovine granules with the addition of porcine collagen (Geistlich Bio-Oss Collagen®) has demonstrated long-term stability to maintain alveolar contour and optimal bone level and soft tissue support around implants."

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

Keys to Success

- → Careful patient and site selection for immediate implant placement
- → Minimally traumatic extraction, preserving bone and soft tissues
- → Virtual surgical and restorative planning
- → Guided implant surgery
- → User friendly and stable graft material
- → Adequate management of restorative contour and occlusion

- → Sectioning of the tooth with 702L drill
- → Periotomes and luxators to mobilize root tips
- → Root tip forceps
- → Guided implant surgery
- → Tissue level (hybrid) implant design for optimal implant stability
- → Small plugger to optimize bone substitute placement and condensation

For more information, please visit:
www.geistlich.us.com

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.