

Advances In Prosthodontics™

New Findings & Best Practices for Cosmetic & Restorative Dentistry

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SPECIAL REPORT

What Material is Best for Fixed Hybrid Restorations?



“**Fixed Hybrid**” generally can be used to describe a restoration that is screwed into place on 4 or more abutments in either the maxilla or mandible and is used to replace all or part of the teeth in that arch, and that is not removable.

Although the term **Fixed Hybrid** is generically used to describe a variety of materials, understanding the unique properties of the **material** for Fixed Hybrid restorations is essential for delivering long-term success and patient satisfaction. The two most common materials used for hybrids are:

- **PMMA** (Poly Methyl Methacrylate) a.k.a. acrylic “Denture Teeth”
- **Zirconia**, the new standard

Each option offers distinct advantages in terms of esthetics, durability, and repairability, but also presents specific clinical and technical challenges. This publication will review the advantages and limitations associated with each material.

Read more on the next page...

◆ Do you want another opinion on a complex case? Or to talk and share ideas?

There are many ways we can help each other by working together on complex cases and by sharing knowledge and experience.

If you'd like to discuss a treatment, or talk on the phone about how we can help each other, please call or email our office with specific days and times when you're available.

More Examples

Stay informed on new findings and best practices for cosmetic and restorative dentistry.

See more examples of complex cases online:



AdvancedProsthodontist.com
/ RenuPros

What Material is Best for Fixed Hybrid Restorations?

by the Specialists of *Renu Prosthodontics* — Dr. Maggie Chao & Dr. Olivia Nguyen

As Prosthodontists, we work on challenging cases every day and coordinate treatment with general dentists and other specialists. A question that often comes up is what material should be used for the definitive prosthesis, especially when replacing a full arch. We hope the following is helpful, and if you have questions or want to discuss a case, please call us at: **(925) 425-7545**

Implant Survival and Prosthetic Complications of Mandibular Metal-Acrylic Resin Implant Complete Fixed Dental Prostheses

Priest G, Smith J, Wilson MG. J Prosthet Dent. 2014 Jun;111(6):466-75. doi: 10.1016

Purpose: This study examined and recorded long-term implant survival and complications of patients treated with mandibular metal-acrylic resin implant complete fixed dental prostheses delivered in a private practice setting over a 22-year period.

Materials and Methods: Records were examined for all patients in the authors' private prosthodontic practices who between April 1988 and April 2011 had received mandibular metal-acrylic resin implant complete fixed dental prostheses supported by 4 to 8 implants and who had completed at least 1 year of follow-up after implant placement.

Results: Forty-five patients who had received a total of 247 implants met the inclusion criteria. In the course of the 1- to 22-year follow-up period (mean 8 years and 3 months), only 2 implants failed (0.81%) in 1 patient before definitive prosthetic reconstruction, which resulted in a cumulative implant survival rate of 97.78% ±2.2%. No screws were found to be loose or fractured. Individual denture-tooth fracture and chairside repair occurred 10 times in 5 patients. Because of wear, all the teeth had to be replaced by the laboratory 10 times in 8 patients between 5 and 12 years. Framework fractures occurred 6 times and affected 3 prostheses (twice for each of the 3 patients).

Conclusion: Implant failure was rare with this traditional mode of treatment and occurred before definitive restoration. The replacement of denture teeth due to wear or fracture was the most common prosthetic complication, and cantilevered frameworks exhibited a high risk of fracture when opposed by fixed prostheses. No fractures occurred for any of the frameworks opposed by complete dentures or removable implant prostheses.

PMMA Hybrid

This is the original hybrid and where the term “Hybrid” prosthesis was coined in dentistry. This material is processed to a metal framework; the most common is Titanium (Ti), Gold (Au), or Chromium Cobalt (CrCo). Denture teeth are used and processed using denture resins to this metal substructure, giving the name of Hybrid for Fixed technology because the metal substructure and denture teeth are joined together.

Advantages

- Most researched and many long-term studies (10-15 years using this material).
- Can be repaired (in most cases) in our office, to have a quick turnaround time.

Limitations

- Prone to wear, but good esthetics (although Zirconia is now better, see on next page).



Other option

◆ Do you have a patient needing a full arch restoration? Or another complex case?

If you have a question about a case and want another opinion, give our office a call. Or, if there's a case that you want to work together on, please see the enclosed referral info sheet to learn more about what you and your patient can expect when referring to our specialty office. We will take great care of your patient and keep you informed. Dental professionals refer to us as **The Complex Case Specialists™** because we perform complex cases every day.

Zirconia Hybrid

Constructed of Monolithic Zirconia material, a Zirconia Hybrid can be cemented to a Ti, Au, or CrCo framework and delivered as one unit to the patient. This would be similar to Conventional PMMA Hybrid but the PMMA has been replaced with Zirconia. Zirconia Hybrids can also be without a supporting Titanium bar, where Zirconia is physically touching the implant abutment without an intermediate material.

Advantages

- Better esthetics than PMMA / denture teeth.
- Strong and resistant to wear.

Limitations

- Can be brittle when restorative space is tight.
- If single tooth fractures, cannot repair individual part, must replace entire arch.
- Extremely tight manufacturing techniques must be employed to ensure passive fit on fixtures.
- No ISO standards for the manufacturing of Zirconia, many poor knock-off options.



Our Thoughts: When restoring a complete arch with an implant-retained full arch prosthesis, the choice of material becomes extremely important. The material can be chosen based on these factors (among others): **the opposing dentition, number and location of dental implants, patient parafunctional habits and interocclusal space.**

If you have a patient with a broken prostheses, or other issues present (such as several missing, broken or severely worn teeth), they may be a candidate for oral rehabilitation. To discuss more, please call us at: **(925) 425-7545**

Complications and Clinical Considerations of the Implant-Retained Zirconia Complete-Arch Prosthesis with Various Opposing Dentitions

Gonzalez J, Triplett R. Intl Journal of Oral & Maxillofacial Implants
2017 July/August; 864-869; doi: 10.11607

Purpose: To evaluate the performance of the implant-retained zirconia complete-arch prosthesis with various opposing dentitions.

Materials and Methods: The 40 patients included in this retrospective case series study were treated with one or two implant-retained zirconia complete-arch prostheses (ZIRCAP) using the Zirkozahn protocol. Prettau zirconia frames were created with strategic cutbacks in the structure to extend zirconia incisal coverage of the esthetic anterior sextants and complete monolithic zirconia in the molar areas; subsequent layers of porcelain were applied to nonfunctional and esthetic areas. Patients had three possible occlusal scenarios: (1) maxillary ZIRCAP and mandibular ZIRCAP, (2) maxillary ZIRCAP and mandibular natural dentition, and (3) maxillary ZIRCAP and mandibular conventional hybrid prosthesis. Complications were recorded during follow-up appointments 3, 6, and 12 months after definitive prosthesis delivery. The mean treatment observation period was 33 months.

Results: Eight prosthetic complications were noted for the 40 implant-retained zirconia complete-arch prostheses (18.18%), including six cases of minor porcelain chipping and two cases of debonding of the metal insert from the zirconia framework. Maxillary ZIRCAP opposing mandibular ZIRCAP and maxillary ZIRCAP opposing mandibular natural dentition occlusal scenarios presented the same complication ratio of 4. No complications were seen in the maxillary ZIRCAP opposing mandibular conventional hybrid prosthesis group, yet 16 complications were found as denture tooth fractures in 12 mandibular conventional hybrid prostheses (ratio of 0.75).

Conclusion: The results indicate that the implant-retained zirconia complete-arch prosthesis offers acceptable performance for use as an alternative to the conventional titanium framework acrylic veneer prosthesis for complete edentulism with a lower incidence of prosthetic complications and fewer maintenance appointments. Chipping of veneering porcelain was the most common complication, but a low incidence was observed in this study. Acrylic denture teeth may represent the weakest link when restoring complete edentulism with a maxillary ZIRCAP and mandibular conventional hybrid prosthesis.

◆ **How can a Prosthodontist assist you and your dental team?**

We specialize in the treatment of complex cases, usually involving several procedures over months of care. The next time you see a challenging case, please feel free to call us and we can discuss treatment planning or help you with any part of the treatment. Our goal is to be a resource for your office by helping manage difficult and time-consuming procedures, restoring the function and esthetics that the patient desires, then referring them back to your office for their ongoing care.

ABOUT OUR SPECIALTY PRACTICE



Dr. Maggie Chao and Dr. Olivia Nguyen are specialists in prosthodontics and available to help you and your patients with complex cases.

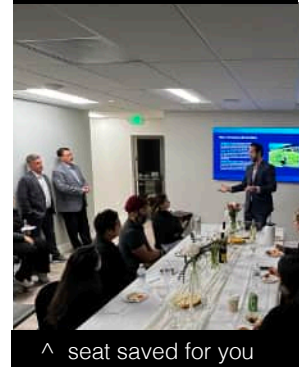
Renu Prosthodontics is a comprehensive, specialty practice that focuses on the restoration and replacement of missing teeth with natural-looking, well-fitted, comfortable prosthetic teeth. The Renu Prosthodontics team has training and private practice experience that make treatments of complex cases more successful, including the following examples:

- Patients with severely worn/damaged teeth, missing all teeth, or with ill-fitting dentures can receive a full arch of natural-looking teeth to restore function & esthetics.
- Patients with congenital defects, a chronic condition, or traumatic injury can receive oral prostheses, which may be a combination of dental implants, crowns, bridges, or veneers.
- Patients with difficult anterior cases in the esthetic zone can receive single or multiple dental implants to replace missing teeth, or veneers or crowns to improve the appearance of their smile.

In addition, Renu Prosthodontics is equipped with an **in-house dental lab**, for your referred patients to receive custom restorations from the best materials using the latest technology. **RENU mission:** Restore smiles, Enhance lives, Nurture trust, and Unite communities through exceptional prosthodontic care!

New Lecture Space

Training events with colleagues!



^ seat saved for you

Our Pledge

When your patient is referred:

- ✓ We will only treat what your patient needs.
- ✓ We will send you updates.
- ✓ We will be part of your team, not take over your patients.

◆ Have you seen a patient in one of these situations?

These are the most common reasons why other dentists refer to a Prosthodontist:

- **Failing Restorations** — Broken or worn prosthetics, or poorly-fitting dentures
- **Implant Complications** — Mal-positioned or loose implants, or multiple systems
- **Severe Wear** — Advanced attrition from grinding or erosion, and collapsed vertical
- **Terminal Dentition** — Perio disease or neglect, requiring extractions and prosthetics
- **Edentulous Problems** — Resorbed ridges or lack of bone, wanting a fixed solution
- **Occlusal Issues** — Advanced mal-occlusion, jaw discrepancies, canted plane
- **Challenging Esthetics** — Un-esthetic restorations, high smile line, high expectations
- **Missing Anteriors** — Central incisors from trauma or laterals from genetics

These “complex cases” may drain your time — how to help these patients:

Prosthodontists can be a resource to ask questions or help properly stage and manage complex treatment, often involving multiple specialists and providers over months of care. They can coordinate repair or replacement of teeth with fixed or removable prosthetics, to give patients ideal function and esthetics, then refer the patient back to you.