

“Teeth in One Day”

Which Full-Arch Hybrid Prostheses Are Right For Your Office?

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Dr. Bobby Birdi

Dr. Birdi is one of North America's very few Certified Dual Specialists in Periodontics and Prosthodontics, and the first and only specialist in the world to attain Canadian and American board certifications in both Periodontics and Prosthodontics.

He received his dental degree from the University of Saskatchewan and his post-graduate specialty training in both periodontics and prosthodontics from the University of Minnesota. He is a Fellow and Examiner for the Royal College of Dentists of Canada, and a Diplomate of both the American Board of Periodontology, and the American Board

of Prosthodontics. He is also an active member of the Canadian Academy of Periodontology and the British Columbia Society of Periodontists, as well as the Association of Prosthodontists of Canada and British Columbia Society of Prosthodontists. Dr. Birdi is a member of the American Academy of Implant Dentistry, the International Congress of Oral Implantologists, the Academy of Osseointegration, and the International Team for Implantology. He is well-published in the areas of dental implants and surgery. Dr. Birdi is a reviewer for the Journal of Oral Implantology, Clinical Advances in Periodontics, and the International Journal of Oral and Maxillofacial

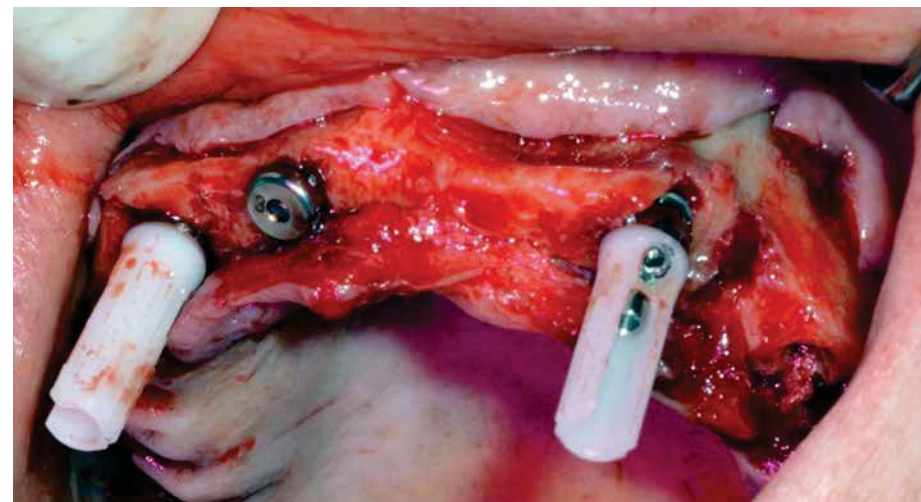
Implants (JOMI). Dr. Birdi is an adjunct Assistant Professor at the University of British Columbia and the University of Minnesota. He also actively lectures both nationally and internationally in the fields of implant surgery and prosthetics, as well as aesthetic dentistry. Dr. Birdi is presently the co-director of the Pacific Institute for Advanced Dental Education located in Vancouver, Canada. He is also currently practicing at the BC Perio Dental Health and Implant Centres in Vancouver, Canada. His practice focuses on comprehensive periodontal and prosthetic treatment with a major focus on esthetics and implant dentistry.

“Teeth in One Day” has become an everyday phrase in our practice, and I can confidently say that the integration of immediate function full-arch therapy has revolutionized how we provide treatment in our office. We now plan to utilize immediate loading protocols for 100% of the full-arch fixed implant cases we provide. This is irrespective of whether the final restoration is a “hybrid” type prosthesis, or implant supported crown & bridge restorations. All arches are immediately provisionalized utilizing a cross-arch stabilized fixed provisional restoration that is screw-retained onto multi-unit abutments. The key to this is the utilization of implants that provide good initial stability while still allowing for variability in depth of placement. I find this is best met by using a parallel-walled internally connected implant which allows for bi-cortical fixation where needed (e.g., Avinent Coral). Furthermore, it is essential to utilize angled multi-unit abutments and for a system to have multiple angulation options available (e.g., Avinent 22 degree multi-unit abutment).

In deciding which types of restorations to offer in our office, we set the following minimum requirements:

1. Esthetically pleasing and functionally stable opposing all restoration types.
2. Minimization/Elimination of all chipping possibilities.
3. Ease of repair or adjustment.
4. Retrieval option (Screw-Retained).
5. Utilization of CAD-CAM technology only.

Through our partnership with Aurum Ceramic/Classic Dental Laboratories and Core3dcentres®, we have narrowed our options for full-arch hybrid prostheses to 3 final restorative designs. As a result, each patient is presented with 3 different final restorative options and the advantages vs disadvantages of each. This article will showcase all 3 of these designs and highlight the pros and cons of each.



▲ Figure 1 – 22 Degree Multi-Unit Abutments.

However, understanding the various final restorative options available to finish the cases allows us to plan our surgical therapy accordingly. As a result, we truly aim to provide prosthetically-driven implant surgery. Now there are many different restoration types and materials available in the market. Various materials and designs have been marketed such as Prettau® Zirconia, Chrome-cobalt based Acrylics, and porcelain fused to metal. It can be a daunting task to utilize all of these types of restorations, and it can also be a very overwhelming idea from a patient's point of view to understand which type of restoration you are recommending.



▲ Figure 2 – Immediate Maxillary Full-Arch Provisional Bridge.

1. Titanium Milled Bar with Acrylic Overlay

This type of prosthesis is more of the “classic” hybrid prosthesis that classically involved a cast bar (precious metal or base metal alloy) with an acrylic overlay. Now, with the use of CAD-CAM technology, we now utilize a custom titanium milled bar and a custom acrylic overlay that provides superior results. This is by far the most common type of hybrid prosthesis design utilized in the market.

Advantages:

1. Low Cost.
2. Ease of repair/adjustment and additions.
3. Long-term evidence based.
4. Provides less rigidity and more occlusal “cushioning”.
5. Major changes in tooth position/shape can be attained.

Disadvantages:

1. Teeth stain and wear down over time. Will need to be replaced.
2. Acrylic can harbor bacteria.
3. Not as aesthetic as other options.
4. Not as strong. Acrylic can chip and fracture.
5. Wear more easily when opposing porcelain restorations.



▲ Figure 3 – Pre-Operative Intra-oral Image.



▲ Figure 4 – Final Fixed Titanium-Acrylic Hybrid Prostheses.



▲ Figure 5 – Maxillary Occlusal View.

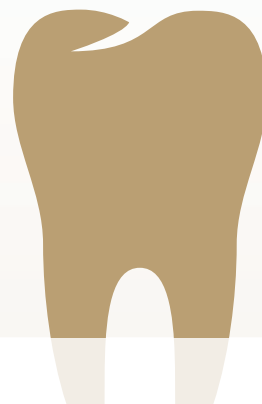


▲ Figure 6 – Pre-Operative Smile.



▲ Figure 7 – Post-Operative Smile with Titanium-Acrylic Hybrid Prostheses.

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2. Monolithic Zirconia

CAD-CAM technology has paved the way for Zirconia milled restorations. Zirconia was first introduced as a substitute for metal to be utilized as a substructure. However, through the evolution of this material, new techniques and versions allow for staining and colouring prior to final sintering. This is a major advantage which allows for zirconia to look “alive”. As a result, we are now utilizing it as a monolithic restoration with little to no staining or glazing. In our practice, the advantages of this type of restoration far outweigh any drawbacks, and with the help of Core3dcentres®, it is becoming our most popular final restoration type.

Advantages:

1. Median Cost.
2. High Strength, virtually no chipping or wear.
3. Good Esthetics.
4. Less restorative space needed.
5. Can be broken up into sections as a final restoration.

Disadvantages:

1. Can wear opposing dentition if not correctly polished.
2. More difficult to repair/adjust and add to.
3. Not as much long-term evidence.
4. Not as esthetically flexible.
5. Precision in tooth position is mandatory.



▲ Figure 8 – Pre-Operative Intra-oral Image.



▲ Figure 9 – Final Fixed Monolithic Zirconia Hybrid Prostheses.



▲ Figure 11 – Pre-Operative Smile.



▲ Figure 10 – Maxillary Occlusal View.



▲ Figure 12 – Post-Operative Smile with Fixed Monolithic Zirconia Hybrid Prostheses.

“CAD-CAM technology has paved the way for Zirconia milled restorations.”

3. AurumTek® Multiple Implant Solution (High Esthetic) Bridge

The AurumTek® Multiple Implant Solution (High Esthetic) Bridge provides the highest level of esthetics while still remaining flexible and repairable. This type of restoration utilizes a patient specific, digitally designed and precision-milled screw-retained all-zirconia framework onto which IPS e.max® restorations are cemented. Pink porcelain and/or pink composite are utilized for gingival contour and colour.

Advantages:

1. High Esthetics.
2. High Strength.
3. More natural feeling and can floss between crowns.
4. Flexible and can be repaired.
5. Shade/shape of teeth can be changed by replacing crowns.

Disadvantages:

1. Higher Cost.
2. More restorative space required.
3. Not as much long-term evidence.
4. Chipping is minimized, but possible.
5. More complex of a restoration.

Dental materials are an area which is ever evolving with new materials and designs coming to the market every year. It is important to understand the attributes of new materials, and how they can be effectively utilized in treating out patients. New materials with very different attributes are coming to the market (e.g., PEEK plastic, Pectin, etc.) and we will have to stay tuned to see how they perform over time.



▲ Figure 13 – Pre-Operative Intra-oral Image.



▲ Figure 14 – Maxillary AMIS Zirconia Framework.



▲ Figure 15 – Final Maxillary AMIS Bridge.



▲ Figure 16 - Maxillary Occlusal View.



▲ Figure 17 – Pre-Operative Smile.



▲ Figure 18 – Post-Operative Smile with Maxillary AMIS Bridge.