

# The ideal union

IPS e.max Press paired with a zirconia framework is the perfect combination for treating edentulous patients.

By Stan Lott, CDT, Accredited Member of the American Academy of Cosmetic Dentistry, AAACD

For the fully edentulous person, dentures serve many purposes beyond just restoring the smile. They assist with speech and mastication, help strengthen facial muscles that control expression, and maintain the vertical dimension of occlusion, thus helping maintain facial features that enhance the patient's beauty and well-being.

Partial and complete dentures often cause more problems over time by allowing—and in most

cases even promoting—the loss of supporting bone. These changes in topography in the mouth are chronic problems that cause sores and discomfort, relines after relines, and require more and more denture adhesives that can become exhausting to you and your patients.

Conventional acrylic implant-supported dentures, however, have drawbacks. Implant-retained dentures are difficult to take out and to

clean. Over time, acrylic-based dentures tend to develop a foul odor. Because they cannot completely prevent resorption and distortion, they often have to be realigned.

Additionally, traditional denture teeth wear faster and need to be replaced every seven or eight years. Therefore, a 50-year-old patient who lives into his or her 80s will require replacement dentures four times over a 30 year period.



### IPS e.max Press

#### Features

- Biocompatible lithium disilicate glass ceramic
- Offers exceptional fit, form, function and flexural strength (400 MPa)
- Kind to opposing dentition
- Offered in low, medium and high opacities to meet clinical needs
- Lifelike esthetics independent of prepared tooth shade
- Allows conventional or adhesive cementation

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Fig. A A pre-procedural view of healed tissue after implant placement.



Fig. B A view of the impression copings prior to luting.



Fig. C An image of the duplicated and reduced provisional denture.



Fig. D The provisional in the patient's mouth.

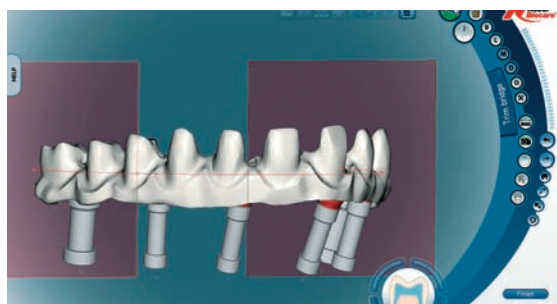


Fig. E A view of the substructure designed with CAD/CAM software.



Fig. F The substructure is evaluated on the master cast.



Fig. G Mandibular teeth were waxed to full contour.

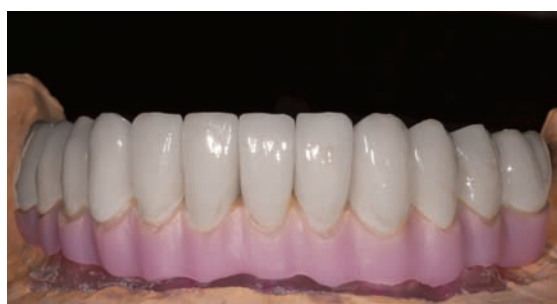


Fig. H A view of characterized and glazed all-ceramic restorations.



Fig. I A bonding agent was applied prior to waxing.



**Fig. J** Waxup of the soft tissue architecture.



**Fig. K** A view of the soft tissue structure with the final restorations removed.



**Fig. L** An image of the sprued, invested and pressed final prosthesis.



**Fig. M** A view of the substructure after staining and glazing.



**Fig. N** A view of the restorations etched and prepared for the final try-in.



**Fig. O** A view of the zirconia-based denture substructure torqued into place.



**Fig. P** An in-vitro view of the final mandibular denture restoration.

**ANOTHER OPTION**

To overcome the inadequacies of conventional dentures, dentists and prosthodontists began searching for an esthetically pleasing, easier to clean prosthesis that lasts the patient's lifetime. In today's world implants are the standard of care when it comes to restoring the above men-

tioned problems of conventional partial or full dentures either tissue, tooth or implant borne. There is a vast array of techniques and components to provide a fixed or removable partial or full prosthesis using materials such as acrylics, composites, metal alloys, milled titanium, milled zirconia and ceramics.

Presently one of the strongest materials in the dental industry, zirconia is ideal for high-stress restorations such as complete fixed restorations. Resulting in not a single failure—according to research performed at Boston University and the UCLA School of Dentistry, as well as in Switzerland and Germany—zirconia is a reliable multi-unit all-ceramic framework for fixed restorations.

Restorations fabricated with a zirconia bar and separate lithium disilicate teeth are easier to clean, do not develop a foul smell, provide excel-

lent esthetics, require no realignment and will last a lifetime. While the restoration substructure is fabricated from zirconia, the actual tooth restorations can be constructed with a strong and versatile lithium disilicate material.

IPS e.max Press lithium disilicate and IPS e.max CAD—Blue Block—lithium disilicate demonstrates exceptional esthetics, strength and durability for a comprehensive range of indications, and is suitable for fully anatomical restorations. Designed to replicate natural tooth function and features, IPS e.max demonstrates strength 2.5 to 3 times higher than other glass-ceramic materials, enabling it to stand up to vigorous forces encountered in the posterior region of the masticatory system. The opalescence, translucency and light diffusion characteristics exhibited in IPS e.max lithium disilicate provide esthetic restorations imperceptible from natural dentition.

Two types of ingots are available when using the press technique, IPS e.max Press and IPS e.max ZirPress. While both feature the same advantageous characteristics, IPS e.max ZirPress can be easily and effectively pressed onto zirconia oxide.

**CLINICAL PROTOCOL**

Our middle-aged female patient was "sick and tired" of her "ill fitting, foul smelling denture." Her next comment really struck a chord with our staff. "I'm sure that you dentists must not be wearing dentures, because if you did you would most certainly never want your patients to have to put up with such a poor replacement for teeth." Indeed conventional dentures are not a good answer for restoring that which was lost, and indeed we can do better today.

After an initial consultation, the patient agreed to a full denture prosthesis supported by implants that would be placed in a guided implant surgical procedure. The proposed prosthesis would be fabricated with a zirconia bar as the substructure and customized IPS e.max Press lithium disilicate pressed restorations.

**01** A CT scan was performed to determine proper implant placement. This step was taken to avoid patient discomfort and the ultimate return of an improperly designed prosthesis. The implants were surgically placed and allowed to heal before performing the prosthetic procedure (**Fig. A**).

**02** Impression copings were placed (**Fig. B**) prior to luting with acrylic (Relate), and impressions were taken to create a master model.

**03** Appropriate records were taken for denture tooth set up so every detail could be mimicked in the final ceramics.

**04** Temporary abutments and acrylic were used to verify implant placement in the master cast.

**05** The approved provisional denture was duplicated and reduced in every dimension to accommodate full-contour crowns and pressed simulated tissue (IPS e.max Press), to restore proper architecture of the teeth and alveolar process (**Figs. C and D**).

**06** The zirconia substructure was designed using CAD/CAM software (**Fig. E**) prior to milling, coloring and sintering.

**07** Upon completion of milling, the zirconia substructure was evaluated on the master cast (Fig. F).

**08** The mandibular teeth to be created from pressed ceramic were waxed to full contour and completed function (Fig. G).

**09** After pressing, the full ceramic restorations were characterized and glazed prior to waxup of the soft tissue replica (Fig. H).

**10** Prior to waxing the gingival replica, a bonding agent (Zirliner) was applied to the zirconia substructure (Fig. I).

**11** The soft tissue architecture was waxed up to mimic nature, yet allow for routine cleaning and oral hygiene (Fig. J).

**12** The finished restorations were removed from the waxed-up soft tissue substructure (Fig. K).

**13** The waxup and Zirlined zirconia substructure were sprued, invested and pressed in gingival pink porcelain, shade G3 (IPS e.max) to mimic the gums (Fig. L).

**14** The gingival structure was moderately layered and accented with gingival stains in shades G3, G4 and G5, then subsequently stained and glazed (Fig. M).

**15** The full denture preparations were cleaned by etching, and the intaglio surface of the crowns was etched with hydrofluoric acid and silanated prior to the final try-in (Fig. N).

**16** The zirconia-based denture substructure was torqued into place (Fig. O), and cementation of the final all-ceramic restorations (IPS e.max Press) performed (Fig. P).

### CONCLUSION

As the dental industry continues to grow and evolve, new and progressive materials and procedures provide dentists and patients with innovative options. Denture wearers are no longer confined to conventional dentures

and their deficiencies. Dentures fabricated with a zirconia substructure and IPS e.max pressed restorations are easy to clean, eliminate the odor associated with dentures, function and present as natural dentition, and just as natural teeth, will last the patient's lifetime. **lab**

*Dentistry by Dr. Jared Hill, Hailey, Idaho*



### ABOUT THE AUTHOR

Stan Lott, CDT, founded his full service lab, Precision Dental Arts, in Twin Falls, Idaho in 1979 ([precision-dental-arts.com](http://precision-dental-arts.com)).

A graduate of the Howa School of Dental Technology in Salt Lake City, he has pursued continuing education on the latest materials and techniques throughout his career and is one of 23 accredited ceramists in the American Academy of Cosmetic Dentistry.

When he is out of the laboratory Stan enjoys spending time with his wife, Cathy, exploring the outdoors, rafting, skiing, hiking and fishing.

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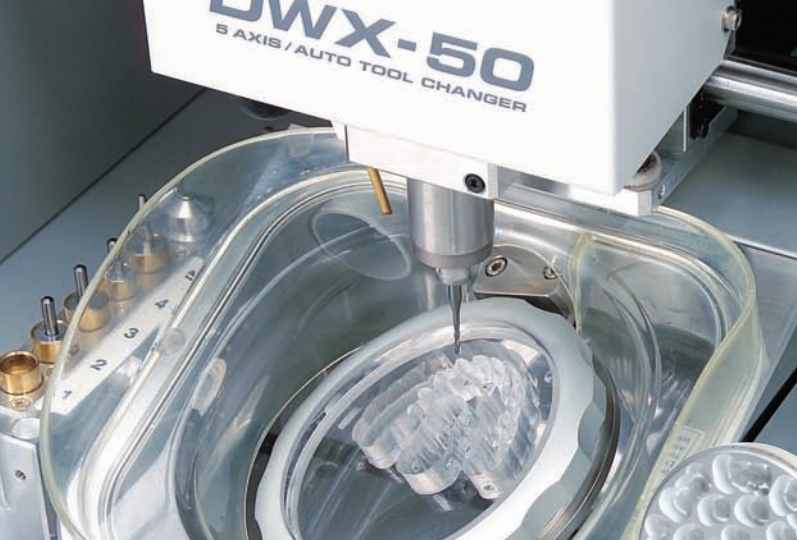
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