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**CROWN
AND BRIDGE**





Upgrading Your Material Selection

Michael Sesemann, DDS
Lee Culp, CDT

Clinical conditions, functional requirements, and aesthetic demands often dictate the clinician's selection of proper restorative materials and techniques. Today, the clinician/technician team has a wide variety of restorative materials and systems from which to choose, and many manufacturers claim similar benefits or improved features from competitive materials. An educated review and selection of available quality materials and literature by the clinician, staff, and laboratory are critical in order to maintain peak restorative performance and patient care.

One recently introduced upgrade in material selection for conventionally or adhesively placed metal-free restorations is IPS Eris™ (Ivoclar Vivadent, Inc, Amherst, NY). IPS Eris is a layering ceramic for use over the lithium disilicate frameworks of IPS Empress®2 and is part of the entire IPS Empress® family (Ivoclar Vivadent, Inc, Amherst, NY). IPS Eris restorations are indicated for anterior and posterior full-coverage crowns and 3-unit bridges (single pontic, second premolar forward). IPS Eris layering material is a low-fusing fluorapatite glass-ceramic with dilithium silicate and has optimized compatibility with the lithium disilicate framework. The apatite crystals in IPS Eris influence the translucency, brightness, and light-scattering ability of the layering ceramic, much like that of natural dentition.

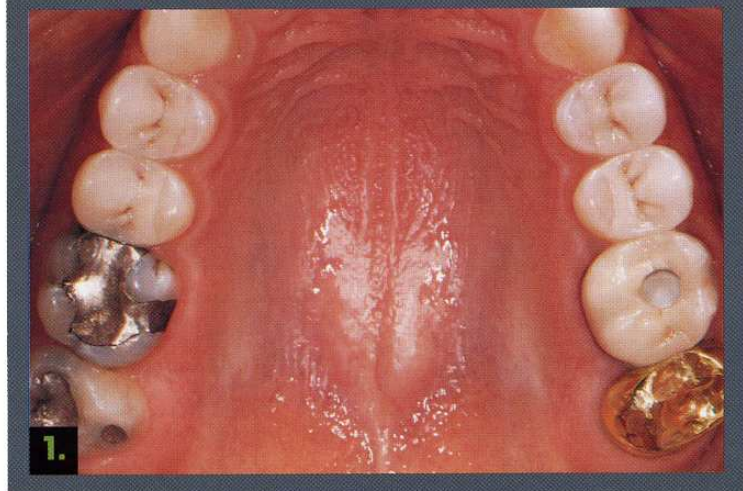
The enhanced compatibility of the IPS Eris layering ceramic to the underlying lithium disilicate framework increases strength and improves clinical and laboratory performance. Because the internal aspects of IPS Eris restorations are etchable (IPS Ceramic Etch, Ivoclar Vivadent, Inc,

Amherst, NY) and can be silanated, they are ideal for use following an adhesive placement protocol. From a practical clinical observation, a key advantage that has been documented through recalls of clinical studies of all-ceramic restorations¹ with the lithium disilicate framework²⁻⁴ of both bridges and single units is the recommendation of conventional cementation. These studies compared all-ceramic restorations seated adhesively with those placed with conventional cementation and found no difference in retention (2 to 4 years). In-vitro examinations also determined that there was no significant difference between conventional cementation and adhesive cementation with regard to the fracture strength of all-ceramic restorations.⁵

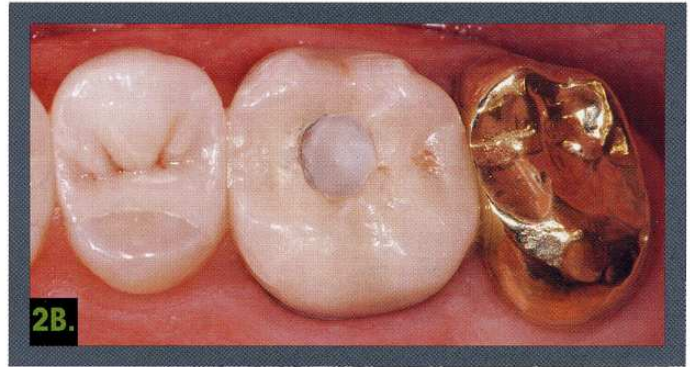
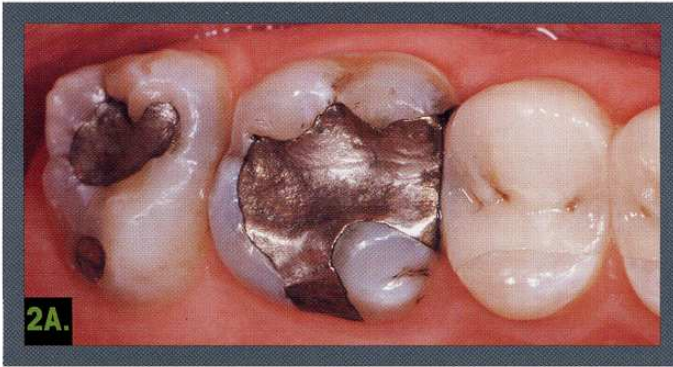
More often than not, clinical reality is that when replacing defective restorations in the posterior, access is compromised and the margins are either equi- or subgingival (as dictated by caries extension or the previous restoration). Combined with the difficulty of isolation in the posterior region and the increasing functional requirements, this makes the ideal high-strength metal-free restoration one that can be placed using conventional placement protocols. The use of conventional (type I) glass-ionomer cements facilitates placement and cleanup and provides consistent results that have been clinically proven with other restorative regimens.

When planning the treatment of functional and aesthetic cases, materials that can support

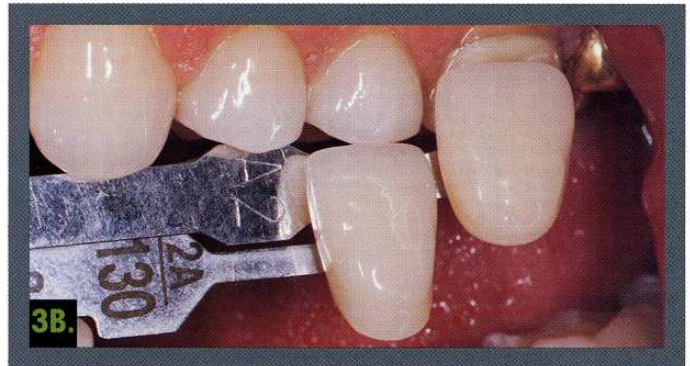
Case Study



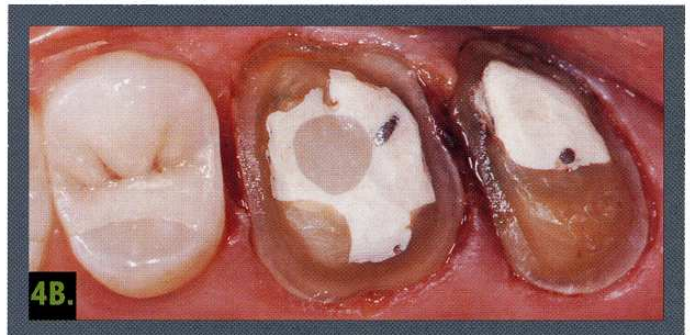
As part of a comprehensive treatment evaluation, this patient's final restorative work would include the functional, aesthetic restoration of several endodontically treated posterior teeth and defective restorations (teeth #2 and #3, #14 and #15). Previous work had been completed on premolar restorations that maintained the lingual cusps. IPS Empress veneers and full-coverage crown restorations had been placed in the anterior segment.



The defective restoration in tooth #2 would be replaced with an aesthetic direct restoration. Tooth #3 had been endodontically treated and required a full-coverage restoration. Teeth #14 and #15 had also been endodontically restored and required the replacement of defective restorations. Due to the anticipated preparation design and functional requirements of the endodontically treated posterior teeth, IPS Eris restorations were selected as the treatment of choice.



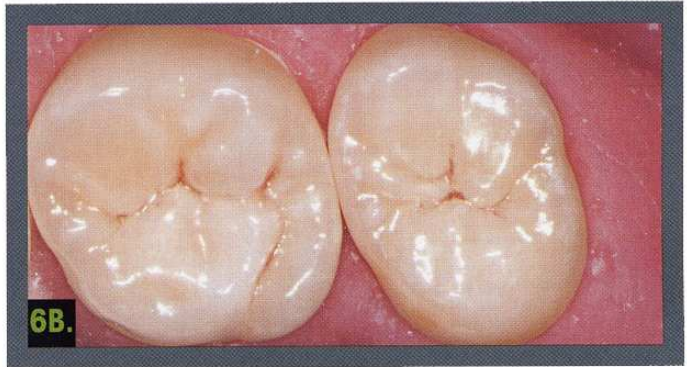
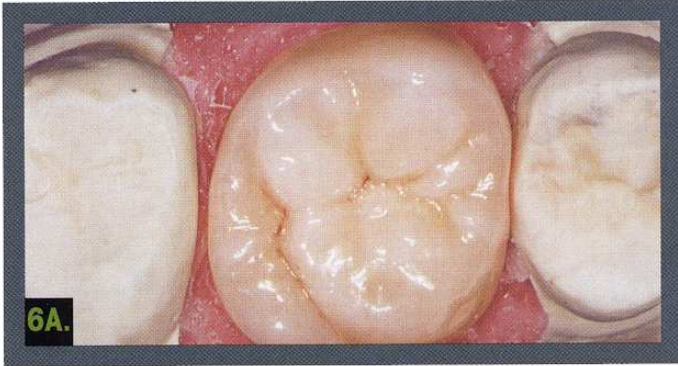
Shade selections were made using the Chromascop™ shade guides (Ivoclar Vivadent, Inc, Amherst, NY) and Vita™ shade guides (Vident, Brea, CA). While matching shades with the middle third of buccal surfaces, photographs were taken with the shade guides in place to provide the technician with adequate information.



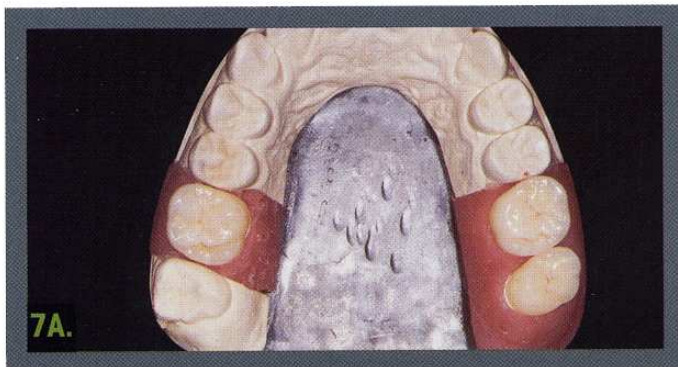
Access and isolation were performed with relative ease, and it was decided that the IPS Eris restorations would be prepared and placed using a conventional cementation protocol. The preparations followed conventional crown and bridge requirements for adequate retention and resistance form. Wherever possible, margins were kept equi- or supragingival to facilitate cleanup and hygiene and to maintain gingival architecture and health. Adequate axial height and minimal taper of the preparations are critical when considering conventional means of retention. Internal angles were rounded, and the margins provided 1-mm shoulders. A self-cure buildup was adhesively placed and prepared to provide ideal preparation form.



Provisional restorations were fabricated using a bisacryl temporary material and shaped with a Sil-Tech Putty matrix (Ivoclar Vivadent, Inc, Amherst, NY) modeled from preoperative study casts of existing restorations. The provisional restorations were seated with a temporary cement (Provolink, Ivoclar Vivadent, Inc, Amherst, NY) following extraoral finishing and polishing. At this point, care was taken to ensure that all cement had been removed and that the provisional restorations replicated function and maintained (or improved) gingival health while awaiting the final restorations. The provisional restorations were in place for four weeks prior to final cementation.



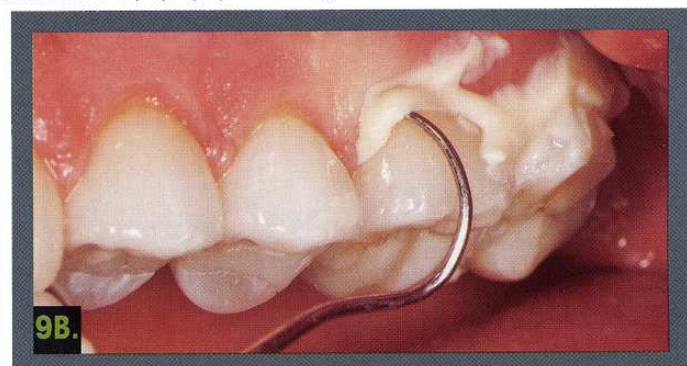
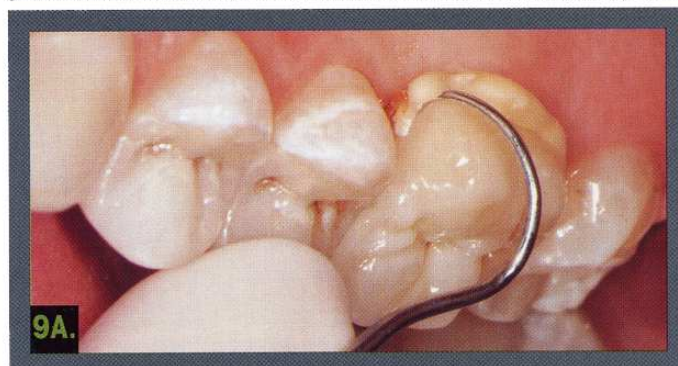
In the laboratory, the IPS Eris layering technique was used in conjunction with a pressed IPS Empress 2 framework (lithium disilicate). IPS Eris layering ceramic was placed and fired to final form and contour. The compatibility of the layering ceramic and the pressed framework provided the final IPS Eris restoration with increased strength and unsurpassed aesthetics and enabled conventional or adhesive placement.



The final restorations were checked on the master model for fit, contour, and aesthetics. Prior to placement, the internal aspects of all IPS Eris restorations are etched with hydrofluoric acid (IPS Ceramic Etch, Ivoclar Vivadent, Inc, Amherst, NY) regardless of intended cementation protocol. Utilizing an all-ceramic restoration with a translucent framework that was available in a variety of shades provided natural translucency and shade match.



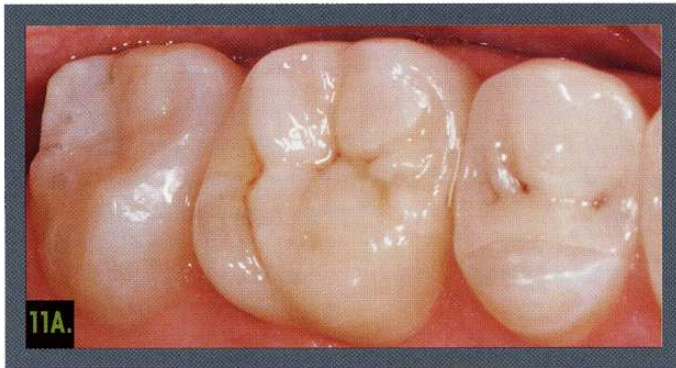
A conventional (type 1) glass-ionomer cement is recommended. Vivaglass Cem (Ivoclar Vivadent, Inc, Amherst, NY), a predosed powder/liquid in convenient capsules, was mixed using an amalgamator (Silamat, Ivoclar Vivadent). Mixed Vivaglass Cem was injected directly into the restorations. The preparations were cleaned and not over-dried to aid in the setting of the glass ionomer cement. The restorations were seated with firm intermittent pressure and held in place during the setting reaction. As with all glass ionomers, there is a slight inherent bond to tooth structure, but primary retention was relative to proper preparation design.



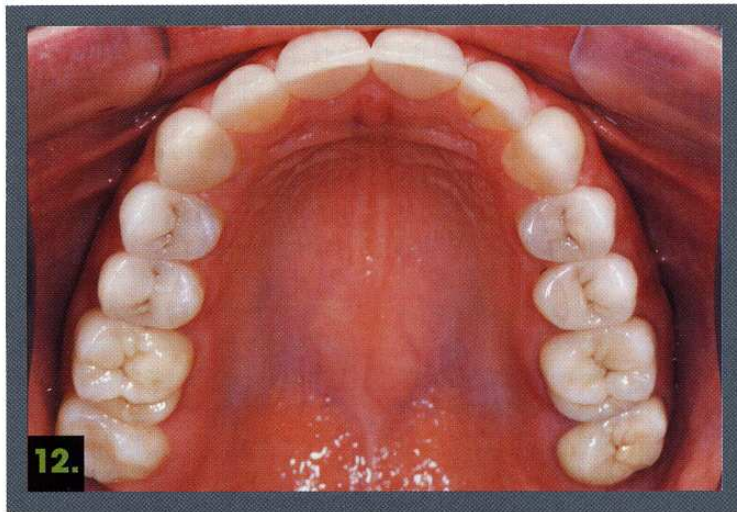
A major benefit of using conventional cementation is the ease of cleanup. Following setting, a scaler was used to easily remove excess cement from dentinal hard and soft tissues. The majority of the excess was removed in large pieces; interproximal excess was removed with floss and instrumentation.



The final posterior restorations complemented the existing IPS Empress restorations in both aesthetics and function. The ease of placement and cleanup also left the gingival health in good condition immediately following the dental procedures. Occlusion was evaluated and adjusted as necessary.



Anatomical detail and proper contouring of the facial and lingual surfaces from all aspects resulted in a completely natural-looking restoration that protected the underlying tooth structure.



Comprehensive treatment planning, sequencing of treatment, and overall patient, clinician, and technician commitment to quality care resulted in the restoration and maintenance of the entire oral environment.

the comprehensive care protocol, meet the needs and capabilities of the clinician and technical team, and provide patients with improved performance and aesthetics should be considered.

A complete IPS Eris summary is available for review at www.signatureon-line.com, click on **Signature Journals, Volume 9, Number 1**.

Conclusion

The newly introduced IPS Eris restorative system complements the use of conventional materials (eg, glass-ionomer cements) for predictable, functional, and aesthetic care. The addition of IPS Eris for full-coverage single- and multiple-unit restoration provides yet another alternative for quality patient care.

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Michael R. Sesemann, DDS

Michael R. Sesemann, DDS, is a national lecturer and maintains a private practice in Omaha, Nebraska.



Lee Culp, CDT

Lee Culp, CDT, is the owner of Mosaic Studios, and founder of the Institute for Oral Art and Design, Bradenton, Florida.