Crown or same-day onlay?

Take a look at the advantages of indirect laboratory-processed composite resin posterior restorations

By Lorin Berland, FAACD

“The trend in dentistry today is clearly toward more esthetic and less invasive. Indirect resin and ceramic inlays and onlays are not only compatible with this trend, but fulfill very nicely the restorative void between fillings & crowns,” wrote Ronald D. Jackson, DDS, FAGD, FAACD (Cosmetic Tribune, Dec. 2008).

Regarding durability, esthetic inlays & onlays are not new any more. They have a track record and it is good. With today’s materials, longevity is mainly a matter of diagnosis, correct treatment planning and proper execution of technique.

The problem with replacing old amalgams with tooth-colored composites is they are difficult, inconsistent and unpredictable.

Yet, the warranty on these 50-, 40-, 50-year-old silver fillings is running out. We have to remember that amalgam technology is more than 150 years old. At that time, people lost their teeth a lot earlier and died a lot earlier, too. Now, however, we have a large segment of the population that is more older than 50 & growing & they want to keep their teeth feeling good and looking good.

Let’s think like our patients. Our patients want to replace these old amalgams, but they want to do it conservatively, consistently, efficiently, predictably and economically — and they want to do it in one visit.

So, what are the advantages of indirect laboratory-processed composite resin posterior restorations?

Restorations fabricated in this manner look better, under go less shrinkage, help restore the strength of the tooth, have minimal porosity and excellent marginal integrity, and they have smoother surfaces that are kinder to the gums and result in less plaque accumulation. They are very durable and can be done in one visit.

Patients appreciate avoiding the inconvenient, uncomfortable and expensive second appointment. No second appointment means no temporaries, no emergency visits, & best of all, healthy tooth structure is preserved.

By contrast, replacing amalgam restorations with direct posterior composites, especially ones involving an interproximal surface, are difficult for the patient as well as the dentist.

For many reasons, these direct composite replacements frequently prove to be inadequate, especially overtime.

The inherent problems of isolation, the large bulk of composite required and the layered curing of the composite, as well as the effects of shrinkage, all affect contacts, occlusion, margins & postoperative tooth sensitivity.

Gold will always be an excellent restoration for posterior restorations.
Fig. 1: #30 pre-op.  
Fig. 2: FenderWedge in place.  
Fig. 3: Caries detector.  
Fig. 4: Prep with liner.  

Fig. 5: Identic hydrocolloid impression.  
Fig. 6: Basting the poured impression.  
Fig. 7: Silicone model.  
Fig. 8: Model with undercuts waxed.  

Fig. 9: Finishing the onlay.  
Fig. 10: Onlay finished and polished.  
Fig. 11: Expasyl prior to seat.  
Fig. 12: Expasyl and FenderMate prior to seat.  

Fig. 13: Adapting FenderMate.  
Fig. 14: Seating onlay.  
Fig. 15: Final onlay.  

(Photos/Provided by Dr. Lorin Berland)
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teeth, but due to appearance, mass and an increasing price, it is becoming more unacceptable in today’s image-conscious society.

**The prep**

This patient came in with a dental emergency. The filling had fallen out of his broken, lower right molar the day before he was going overseas for three weeks on business. He wanted a “quick & permanent solution” (Fig. 1).

The tooth was anesthetized. Next, a Filler-Wedge (Directa Dental) was used to further isolate the involved tooth, protect the adjacent interproximal surface and pre-wedge the teeth for optimal contacts (Fig. 2).

The Isolite (Isolite Systems) was placed to obtain a dry & ill-detector to ensure complete de-cay removal (Fig. 5). The tooth was then microetched, etched and desensitized with Hemaseal & Cide (Advantage Dental Products, Inc.).

Two layers of self-etching bonding agent (OptiBond All-In-One Unidose, Kerr Dental) were applied to provide reduced post-operative sensitivity and high dentin bond strength. This was then air-thinned and light-cured.

Flowable composite (Premise Flowable, Kerr Dental) was added to the internal walls and floor, creating an even floor and filling in undercuts that were originally prepared for caries removal and amalgam retention (Fig. 4).

After the tooth was insulated, the prep was refined with a flat-end cylinder, fine-grit, short Shank diamond. Two Identic hydrocolloid impressions (Dux Dental) were taken to make the onlay in the lab (Fig. 5).

**Lab work**

After disinfecting the impressions, the assistant immediately poured them with MAGHI-SLO (Parkell) and based them with a rigid, last-setting bite registration material such as BluMousse (Parkell) (Fig. 6).

Within two minutes, we had a silicone working model on which to build the onlay (Fig. 7).

The undercuts were then blocked out with a waxer, paying special attention to avoid the margins (Fig. 8). Starting with the Premise Indirect (Kerr Dental) dentinal shades and ending with incisal shades, the onlay was incrementally fabricated in layers. The onlay was then placed in the Premise curing oven (Kerr Dental).

In approximately 10 minutes, the onlay was ready to be finished with various finishing burs (Fig. 9).

The onlay was polished for a high shine and then checked on the model to verify accurate interproximal contacts & margin (Fig. 10).

**Seating the onlay**

When seating the onlays, the Isolite (Isolite Systems) was reapplied for isolation, ease of placement & patient comfort during cementation of the onlay.

Prior to cementation, Exaplay (Kerr Dental) was gently packed into the sulcus, creating a dry space between the tooth & tissue without any risk of rupturing the epithelial attachment (Fig. 11).

The aluminum chloride dries the tissue, reducing the risk of sulcal seepage & contamination.

The FenderMate (Directa Dental) was then inserted beneath the interproximal floor to slightly separate and isolate the adjacent teeth & to help facilitate seating the onlay (Fig. 12).

The Exaplay (Kerr Dental) was rinsed off thoroughly and FenderMate (Directa Dental) was adapted to the adjacent interproximal surface with a condenser (Fig. 15).

The enamel and composite core were then etched for 15-30 seconds.

A single component fifth generation adhesive (OptiBond Solo Plus Unidose, Kerr Dental) was applied in two coats and air-thinned until there was no more movement. Flowable composite (Premise Flowable, Kerr Dental) was dispensed into the prepped tooth prior to inserting the onlay into the tooth.

The FenderMate (Directa) was removed and the onlay was further seated using a condenser with gentle pressure.

Complete seating was facilitated using the contra-angle pac-ker/condenser (Fig. 14).

An explorer is helpful in removing excess flowable before curing.

The restoration was cured from all angles, starting at the interproximal gingival floors where leakage is most likely to occur.

Occlusal flash and excess flowable composite was “buff-ed” with a short flame carbide while the interproximal margin were adjusted with bullet or needle carbides.

A Bard Parker #12 scalpel was used to remove interproximal cement.

Once the proper occlusion was established, a diamond-impregnated point and/or cup was used to polish the restoration (Fig. 15).

**Conclusion**

There are certainly clear advantages for both the patient and the dentist when doing indirect composite resin restorations. These restorations have helped me save my patients’ teeth, time and money. Over the last 20 years, I have tweaked, updated and modified these restorations in terms of techniques, materials and equipment.

These restorations not only save time and conserve healthy tooth structure, they are a valuable service to provide to your patients.

Wherever you practice, however you practice, these restorations are durable, esthetic, economical and very much appreciated.

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**About the author**

Dr. Lorin Berland is a fellow of the AACD, pioneered the Dental Spa concept in his multi-doctor practice in the Dallas Arts District. His unique approach to dentistry has been featured on television (“20/20”) and in national publications and major dental journals, including Time magazine. In 2008, he was honored by the AACD for his contributions to the art and science of cosmetic dentistry. For more information on The Lorin Library Smile Style Guide, www.den- tirewearers.com, and Biomimetic Same Day Inlays/Onlays at ACD Credits CD-ROM, call (214) 999-0110 or visit www.berlanddentalarts.com.