

eLEARNING PROGRAM REVIEW: THREE-PART VIDEO SERIES—ACCREDITATION CASE TYPE I: SIX OR MORE INDIRECT RESTORATIONS



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The goal of this section is to enhance your experience and education through AACD's online eLearning Program. As cosmetic dentistry continues to rapidly evolve, it is even more essential that you seek progressive dental education and invest in yourself and your team. The AACD eLearning Program is being offered to all members as the AACD expands its educational offerings on a global level.

In this first article, regarding AACD's Accreditation Case Type I: Six or More Indirect Restorations, Dr. John Weston covers the three-part eLearning courses (mock-up, preparation, and seating). This column will be a continued series that will provide additional education written by an eLearning educator and will complement the material covered in their eLearning course offered on www.aacd.com.

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For more details and instructions, see page 66. If you have questions or need assistance, please contact the AACD Executive Office at 800.543.9220, 608.222.8583, or meetings@aacd.com.

BACKGROUND

The Accreditation journey can be a very rewarding process. The body of work you present is a combination of educational and clinical efforts that could ultimately culminate in success. In an effort to expand the educational opportunities for our members, the AACD now offers online courses to aid you in your search for the type of education that suits you best. The AACD's creden-



Figure 1: Preoperative smile; incisal wear and shade were primary issues.



Figure 2: Preoperative smile, left side; note rotations of central incisors.

tial process will challenge your abilities while training your esthetic eye, and the results may surprise you. The criteria used to evaluate Accreditation cases are based on sound, responsible treatment parameters designed to help the clinician create beautiful, functional, and lasting results.¹ Whether you achieve the credential or not becomes secondary to the changes that occur in your approach and execution of cosmetic cases. Even though Accreditation-level dentistry is not an everyday phenomenon, most that go through the process never look at a case the same way again. The bar is set higher and your dentistry will never be the same.

DISCUSSION

Conservative restoration of anterior teeth to correct rotations, symmetry, color, and wear is a common presentation in dental practices. In order to create natural contours and undetectable restorations, each case requires precise planning, accurate preparations, and detailed laboratory communication. Every effort must be made to offer the patient orthodontic repositioning as a pri-

mary alternative or in conjunction with restorative care. If a total restorative option is elected, it should be with the understanding that permanent changes will most likely have to be made to the natural teeth. While preparation-less options do exist, if the rotations are significant or the shade change is significant, it may not be possible to properly correct the problem without adding inappropriate thickness to the teeth. As restorative dentists, our goal should always be to conserve as much tooth structure as possible while still allowing the ceramist the proper amount of space required for porcelain.

OVERVIEW AND PATIENT HISTORY

This 45-year-old patient presented with a chief complaint of wanting her teeth lengthened, rotations repaired, and shade brightened (Figs 1-5). Orthodontic consultation was recommended; however, the patient already had received orthodontic treatment in the past and had now elected a restorative option. Clinical and radiographic examination revealed a relatively healthy dentition, some incisal

wear with minor abfractions, and obvious parafunctional habits that would need to be addressed.² It was agreed that in order to visualize the case properly and develop contours for provisional and permanent restorations, a composite mock-up was indicated. This is a valuable tool that helps the clinician and patient visualize the final results. The patient had a pre-existing crown on #12. It was agreed that the goal would be to place conservative porcelain indirect restorations on the upper front eight teeth, ##5-12.

RECORDS AND SMILE DESIGN

A complete AACD series of photographs was made, including additional photographs of the lips in repose (Fig 6) and shade tab calibration. Maxillary and mandibular preoperative models were taken along with a facebow using a SAM 3 articulator (Great Lakes Orthodontics; Tonawanda, NY). Study casts were mounted with a passively obtained open bite centric relation record using a deprogrammer. The intraoral mock-up was completed (Fig 7) using flowable composite without etch and following basic smile de-



Figure 3: Preoperative retracted view, acceptable gingival contours.



Figure 4: Preoperative close-up view of anterior four teeth; note enamel surface crazing.

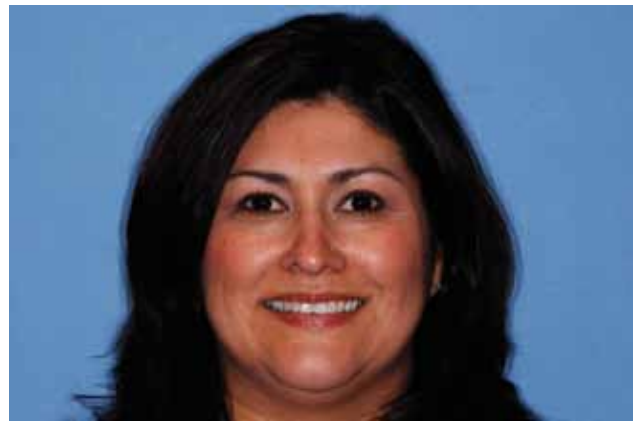


Figure 5: Preoperative portrait study.

sign principles, setting the incisal edges of #8 and #9 first.³ Areas that required tissue alteration could simply be overlaid with composite to simulate the effect. This case did not require any gingival height changes. Basic contouring of the mock-up was completed with a fine diamond and photographs were taken to compare with the preoperative condition. After checking phonetics, minor corrections, and approval by the patient, incisal and facial reduction guides were made using Blu-Mousse (Parkell; Farmingdale, NY)

and then a detailed over-impression was made using clear bite. These steps need to be completed prior to removing any of the mock-up.⁴

CLINICAL SESSION

Constant referral to reduction guides was made throughout the preparation phase to ensure the teeth were properly but not over-reduced. Typically, 1.5 mm is needed from the incisal edge and a minimum of .2 to .5 mm facial is acceptable.⁵ Electric headpieces help create a smooth uniform surface and all

sharp edges must be softened. It is imperative to carry your margin interproximally and into the contact areas to avoid seeing the veneer margins at the proximal gingival areas. I also recommend placing a red perforated diamond strip interproximally between all preparations to create a very subtle space between teeth so the ceramist will be able to separate the die and build a more precise margin. Every effort was made to treat the soft tissue as delicately as possible throughout the procedure; this facilitates final impression mak-



Figure 6: Lips in repose; note lack of proper display.



Figure 7: Intraoral composite mock-up.

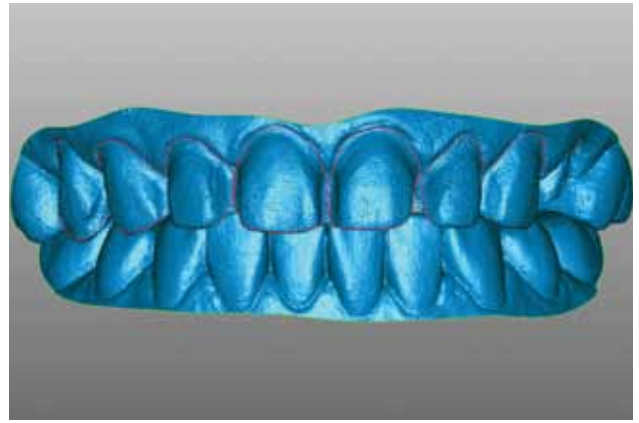


Figure 8: COS digital bite scan of preparations and opposing occlusion.

ing and reduces the potential for changes in gingival contour.

The preparations were coated with crown and bridge lubricant and provisionals were fabricated using Protemp (3M ESPE; St. Paul, MN) inside the over-impression of the mock-up. The provisional was teased off carefully and trimmed outside the mouth. Any voids can be repaired with flowable composite.

Final impressions were made with the 3M Lava chairside oral scanner (COS) (Figs 8-10). This digital technology is unique in the industry and is not a point-and-click

system. By using three-dimensional high-resolution video, we were able to capture the preparations, opposing, and centric occlusion bite in just a few minutes. This unique digital impression system provides an extremely accurate stereo lithography apparatus (SLA) model that is received by the laboratory in three days. This system allows the clinician to choose any restorative material they desire, including porcelain-fused-to-metal, pressed, feldspathic, zirconia, and milled CAD/CAM materials.

DISCUSSION

It is important to obtain an accurate stump shade, and photographs of the moist preparations were made with a shade guide in the view (Fig 11). Provisionals were then tried in and final trimming completed intraorally using a flame diamond and light pressure. Instead of polishing, the provisionals were micro-abraded and coated with BisCover sealer (Bisco; Schaumburg, IL). The preparations were then disinfected with Consepsis (Ultradent; South Jordan, UT), spot-etched, and rehydrated with Gluma (Heraeus; South Bend, IN), after which Single Bond

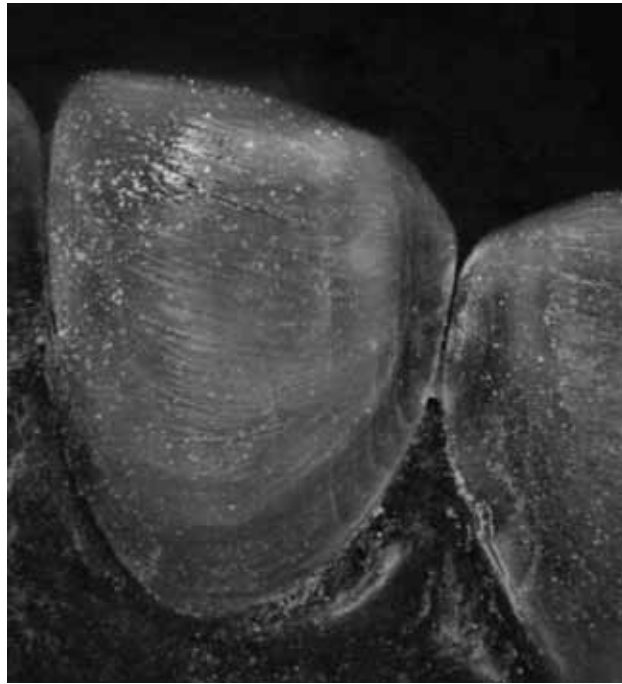


Figure 9: COS three-dimensional video image margin verification.

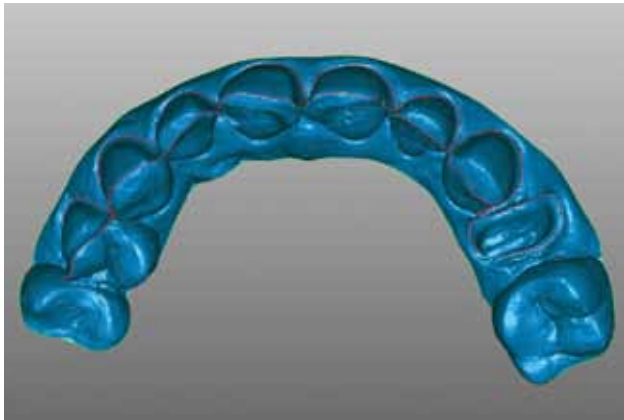


Figure 10: COS digital occlusal scan showing preparations.



Figure 11: Preparations with stump shade tab for laboratory communication.

(3M) was placed. The provisionals were seated with flowable composite, cleaned, and light-cured. After occlusion was verified and contours refined, an impression was made of the provisionals for the ceramist. Detailed written postoperative instructions were given to the patient.

I believe that the style of the preparations is determined clinically, and the restorative materials are

determined in the laboratory. I also feel it is important to have an idea as to what style of restoration suits the case best prior to touching any tooth with a bur.

In a case like this it is obvious that minimal reduction is desired, so a feldspathic restoration or thin pressed material is indicated. When properly fabricated and seated, feldspathic veneers can be very lifelike

and durable. To automatically prepare a tooth in order to fit the parameters of a restorative material regardless of the situation is simply unjustified. It is imperative that the ceramist receive all the information needed to properly build the case to the contours established during the clinical mock-up. All details are worked out in the mock-up and provisionals so there are no "surprises" at delivery. With proper interocclu-



Figure 12: SLA models are durable, clean, and delivered to the laboratory articulated with ditched and pinned dies.



Figure 13: Solid model is included for proximal contact verification of etched restorations.



Figure 14: Verification of marginal fit prior to insertion.

sal records, the ceramist has the ability to cross mount the preoperative, mock-up, provisionals, and preparation casts for excellent comparison while building the case. A comprehensive laboratory prescription is included to establish goals for many items, including shade, texture, amounts of translucency, changes required from the provisionals, and specific patient desires (Figs 12-14).

DELIVERY

Provided the patient follows instructions for hygiene, tissues should be in excellent condition and ready

for insertion. We always dispense a small bottle of chlorhexidine to the patient and give instructions to dip and brush gingival/interproximal areas.

After local anesthesia was placed, slices were made to proximal areas and buccal surfaces of the provisionals. Using a spoon excavator, the provisionals were removed in sections. Spot-etched areas required a slight dusting with a medium diamond to remove any bonded composite. The preparations were then aggressively scrubbed with chlorhexidine and pumice, being careful to clear the interproximal areas of cement and de-

bris. A single restoration was tried in with glycerin to verify that the selected shade was achieved. Rubber dam isolation was accomplished using the slot technique, and the preparations were cleaned and rinsed again.

A complete dry try-in was then accomplished to verify marginal integrity and proximal contacts. The intaglio surfaces of the veneers were then re-acidified with 35% phosphoric acid etch, silane-primed, and coated with adhesive.⁶ All preparations were total-etched and rehydrated with Gluma, primed, and then adhesive was placed (Scotch-bond Multipurpose, 3M).



Figure 15: Postoperative smile showing harmonious restorations.



Figure 16: Postoperative left smile; note proper progression of incisal embrasures.



Figure 17: Postoperative retracted view.



Figure 18: Postoperative close-up view of anterior four teeth.



Figure 19: Preoperative occlusal view showing rotations and wear.



Figure 20: Occlusal view; note proper facial embrasures.



Figure 21: Final portrait, taken at in-office studio.

All veneers were seated at the same time, starting from the midline and working distally. Facial surfaces were initially cleaned and veneers were tack-cured at the gingival zenith for two seconds. The remainder of the cement was then cleaned using a camel hair brush and final curing was accomplished with an oxygen barrier. Interproximal separation was completed with Ceri Strips (CeriSaw, Den-Mat; Santa Maria, CA) and finished with a perforated narrow yellow diamond strip (3M). Gingival cement was removed using a #12 Bard-Parker blade (Becton Dickinson; Franklin Lakes, NJ). No burs were used on the facial margins. Occlusion was then verified and lingual surfaces polished with a fine football-shaped diamond and rubber points (Shofu; San Marcos, CA).

CONCLUSION

Bonding porcelain to tooth structure using modern adhesives has allowed clinicians to create some of the most beautiful restorations ever seen. I believe that cases should

always be designed to accomplish desired restorative corrections by altering the fewest number of teeth possible and removing the least amount of tooth structure possible. When proper planning and laboratory communication are combined with skill and excellent patient communication, the results can be dramatic, yet blend naturally with the original dentition (Figs 15-21). Educating our patients about what constitutes "esthetics" is an important factor, remembering that subtle randomness in shape and contours of hard and soft tissue can help to create balance and harmony of the restorations.⁷ There are times when golden proportions are not the best choice and may contribute to an artificial or contrived smile.⁸ The outcome of this case represents all that we strive to accomplish with modern materials and techniques, while meeting our goal of conservative yet reliable and functional cosmetic correction of minor dental anomalies.

As an Accreditation and Fellowship Examiner, I have a unique perspective and tend to be very critical of my cases. This case is not a "slam-

dunk" pass and there are some deficiencies, but that is the reality of clinical dentistry. It is probably a borderline case. I do feel it is important to understand that often there are cases that pass Accreditation by a narrow margin. They often have subtle criteria violations but the overall results show that the clinician has superior knowledge, skill, and a level of understanding that puts the case in the "zone of excellence." In the end, I believe that case selection is one of the most critical areas that can help determine a successful Accreditation case. This case is an example of what to look for when approaching Case Type I.

For more information, readers are directed to Dr. Weston's interview in the July/August 2009 issue of Academy Connection, or the online course at www.aacd.com.

The American Academy of Cosmetic Dentistry eLearning Program is an easy-to-use tool—all you need is a computer and internet access. To continue your education, please visit www.aacd.com to watch Dr. John Weston complete an indirect veneer case through his

eLearning course. Remember to use promotion code eGift to receive your free course.

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AACD Acknowledgment

The AACD recognizes Dr. John Weston as an AACD Accredited Fellow Member (FAACD), member of the American Board of Cosmetic Dentistry (ABCD), and Accreditation Examiner.



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