Limited and Phased Treatment of Worn Anterior Teeth

It is common for patients with worn anterior teeth to decide that they want to improve the appearance of their smiles. Frequently a broken tooth, failing fillings, or a significant event such as a wedding precipitates this decision. This may be a new patient or one who may have been in your practice for years, and he wants you to fix his front teeth now.

First, a complete and thorough treatment plan must be developed and presented to the patient. Unfortunately, the number of teeth that the doctor restores is often determined by what the patient is willing to invest for dental care at the present time. Phased treatment of the worn dentition requires more time and energy per tooth than does a full-arch restoration, and dentist fees must reflect this. It does, however, allow the patient to proceed with treatment incrementally to meet his psychological or financial needs.

The number of teeth that the doctor restores is often determined by what the patient is willing to invest for dental care at the present time.

In many cases ideal treatment can be prioritized and performed incrementally without sacrificing the final optimal result. Before treatment can begin, the patient must have a comfortable TMJ and an acceptable centric occlusion. The restorations may alter the anterior guidance, incisal edge position, and lip and cheek support, but with phased treatment, the centric occlusion that you begin with must be maintained throughout the treatment.

Often the dentist can produce immediate and significant aesthetic improvements by restoring as few as four upper incisors. Predictability and success in these cases depends on meticulous attention both on the part of the dentist and the laboratory. There are no shortcuts. Restorations requiring alteration of incisal edge position and tooth shape may require 4 to 6 months to complete, especially because most of these patients exhibit parafunctional activity.
Basically I used variations of techniques that have been taught by Dr. Peter Dawson since the 1980s, which are easier and more effective than ever with today’s materials and equipment. Treatment planning begins with radiographs, study models, and photographs. Digital photography is a huge time saver and is great for case presentations.

Modern face bows and articulators make model mounting incredibly accurate and easy.

**FACE BOW TECHNIQUE**

It is generally easier to do the face bow positioning before the teeth are prepared or after the temporary crowns are cemented. A flat caliper-like face bow with a detachable mounting assembly should be used, in this case a SAM face bow and articulator.

Fast-set vinylpolysiloxane is injected onto the upper surface of the bite fork. The patient is instructed to bite and hold the fork in place. The dentist then places the face bow in the patient’s ears, and the patient grasps the face bow and snugs the ear pieces. The dentist secures the face bow width with one screw. The bite fork is then attached to the face bow and leveled with the patient still seated.

The patient now stands, the bite fork is loosened to allow final leveling of the face bow both left to right and anterior to posterior, and it is also centered. The bite fork is tightly secured, and with a single screw the face bow is released from the patient’s ears (Figures 1 through 3).

The face bow relates the teeth to the condyles, and orients the models to the horizon on the lab bench. This enables the lab technician to visualize the case from the correct orientation as he is fabricating the restorations.

**CASE 1**

A 56-year-old male patient presents with four maxillary incisors that are considerably worn from parafunctional activity, with numerous failing restorations. His teeth barely show with a full smile, and he would like to have longer front teeth. The patient consents to restore only these four teeth (Figures 4 and 5).

The occlusion and function of the posterior teeth and cuspsids are acceptable. Clearly aesthetics can be improved with longer teeth, but will the patient tolerate altered anterior guidance and incisal edge position? That depends upon what is triggering his parafunctional activity. The patient will wear temporary crowns with the new anterior guidance and crown length for a period of 3 to 4 months. If he breaks or severely wares the temporary, they will have to be altered to a point that can be tolerated by the patient.

If the patient will restore only four teeth, the new crowns may ultimately be the same length as the teeth were at the beginning of treatment. This point must be made clear to the patient before treatment is begun. Only by wearing long-term temporary crowns can the long-term success of treatment be predicted. There will be a charge for the long temporization, and no guarantee can be given as to what the results might be. The patient clearly understood the risk and elected to proceed with treatment.

The four upper incisors were waxed to an ideal occlusion, a night guard was made, and after 3 months the occlusion or incisal edge position are to be made, they must be approved by the dentist before the provisional are fabricated. Determining the incisal edge location and anterior guidance is the dentist’s responsibility. This task cannot be delegated to the lab technician without specific instructions from the dentist. After approval of the wax-ups the laboratory fabricated processed provisional restorations (Figures 6 and 7).

The teeth were prepared and provisional crowns were delivered. The incisal guidance was refined with the provisional restorations in the patient’s mouth. The patient was given a vacuum-formed night guard to wear during sleep.

In this case the provisional crowns showed only minor lingual wear after 3 months. The patient was very pleased with his appearance and quite comfortable with the new anterior guidance and incisal edge position. He also reported that his jaws now felt relaxed in the morning, and he did not think that he was still grinding his teeth at night.

Impressions of the provisional restorations were made. The final preparation, impression, and bite registration were completed. This information along with photographs and a preoperative model were
Limited and Phased Treatment... continued from page 83

sent to the laboratory. The model of the temporary restorations was related to the lower model that had been mounted on the articulator with a face bow months earlier. This mounted model of the temporary restorations was then used to:
indicate incisal edge position, indicate facial contour, and create a custom incisal guide table on the articulator for fabrication of the final restorations. (A precision articulator made from milled aluminum allows the lab to develop occlusion and incisal guidance that will transfer accurately to the mouth.)

This technique eliminates all guess work on the part of the lab technician and the dentist. It guarantees that the new restorations will look and feel natural to the patient and the occlusion will be as close to ideal as is possible. For crown fabrication, d.Sign (Ivoclar Vivadent) porcelain-fused-to-high-karat yellow gold crowns with 270° porcelain margins were selected for maximum durability and aesthetics. The permanent crowns were delivered and a processed acrylic night guard was fabricated for the patient (Figure 8).

CASE 2

A 52-year-old female patient presents with significant amounts of enamel missing from both the facial and lingual surfaces of the upper anterior teeth and the bicuspids.

There appears to have been three contributing factors to this significant loss of enamel: a lemon eating habit, gastrointestinal acid erosion, and bruxism. The first two factors have now been eliminated.

The patient does not feel comfortable restoring all of the involved teeth at one time, and elects to restore the four incisors first and follow with restoration of the cuspids and premolars one side at a time.

Radiographs and a periodontal evaluation indicate healthy periodontal tissue with stable teeth and adequate root length. Observation shows that the two 15-year-old PFM crowns on the central incisors have not broken or separated, and the severely eroded lateral incisors still have significant gingival to incisal length. This indicates a high probability of success with a phase approach to treatment.

In preparation for temporization, the lateral incisors were waxed up in the office, and a vacuum-formed stent was prepared. Incisal guidance would be harmonized on the temporary crowns in the mouth (Figure 9). The four maxillary incisors were prepared for pressed ceramic restorations and final impressions were made. The temporary crowns were fabricated with bis-acrylic. The bite was harmonized in the mouth and impressions were made of the cemented temporaries. In this case, the face bow transfer was made after the temporary crowns were cemented.

The laboratory now uses the mounted model of the finalized temporary restorations to establish incisal edge position and facial contour, and to fabricate a custom incisal guide table. If any alterations are made to the temporary restoration, a new impression must be made and sent to the laboratory to replace the original model, as the long-term success of the final restorations depends upon developing successful temporary restorations (Figure 10).

The patient was very pleased with the appearance of the temporary crowns, and 4 weeks later, four Empress (Ivoclar Vivadent) crowns were delivered. Because of the extreme care taken in developing the temporary crowns and in providing complete information to the laboratory, adjustments to the final restorations at the time of delivery are generally very minimal (Figure 11).

If any alterations are made to the temporary restoration, a new impression must be made and sent to the laboratory to replace the original model.

the patient returned to restore teeth Nos. 4 through 6. The teeth were prepared for porcelain-fused-to-gold crowns. Impressions and occlusal registration were made. The working model was mounted to the previously articulated lower cast (Figure 12). The same custom incisal guide table was used as the laboratory established a lateral group function with teeth Nos. 5 and 6. Tooth No. 4 had been in cross bite, and was restored to an end-to-end position. The three porcelain-fused-to-high-karat yellow gold crowns (d.Sign) were delivered (Figures 13 and 14).

The same procedural techniques were performed for teeth Nos. 11 and 12, and the case was completed with two porcelain-to-high-karat yellow gold crowns (d.Sign) (Figure 15). After the final restorations were delivered, a processed acrylic night guard was fabricated for the patient.

CONCLUSION

Limited restoration of the worn anterior dentition most often produces outstanding results. However, some patients cannot tolerate “longer” anterior teeth, and this point must be made very clear before proceeding with limited treatment. The dentist must establish and evaluate incisal guidance and incisal edge position in the temporization process; this process frequently takes 3 to 4

Is there too much Word of Mouth in your practice?

Let the ME-15 do the talking for you!

Are you spending too much time giving explanations to your patients and not enough time working on them? The ME-15 Wireless Intraoral Camera provides a simple, efficient, visual explanation to patients. Cut down chair time and increase patient satisfaction in one simple move. What's there to think about?

only $1,995.00

30-Day Money Back Guarantee

Featuring:
- Focus
- Zoom - from one tooth to full face
- View on TV or PC Monitor
- Freeze Image
- Split screen capabilities
- Automatic On/Off switch
- Software included

ME-15 Wireless Intraoral Camera

DENT CORP

7-11 South Broadway
White Plains, NY 10601
1-800-454-9244
Fax: 914-948-1711
www.dentcorp.com
Accurate information must be presented to the lab. Models of the refined provisional restorations show the laboratory how to restore the case.

Acknowledgment
The author would like to acknowledge Ken Rockwell of Rockwell Labs for the high-quality Empress and d.Sign crowns described in this article.

References

CALSET™
Thermal Assisted Light Polymerization

AdDent introduces a major breakthrough in thermal assisted light polymerization that shortens the curing time of restorative materials by over 80%. The CALSET™ composite curable heater increases flowability, decreases film thickness, and improves monomer conversion compared to standard procedures. With similar or less light intensity than usual, CALSET™ pretreatment yields stronger restorations as well as deeper and faster curing of all composite materials.

Figure 1 shows that Calset™ provides an over 80% reduction in curing time when compared to room temperature cure for most lights and light cured materials.

Figure 2 shows that film thickness decreases as composite temperature increases. CALSET™ yields an almost 30% improvement in flowability by increasing composite temperature from room temperature to 130°F (54°C).

Dr. DeLopez maintains a private practice in Tallahassee, Fla., with an emphasis on restorative and cosmetic dentistry. He is the former president of the Leon County Dental Association. He can be reached at drtomd@comcast.net.