What's new with finishing and mechanics?

Dr. Stuart Frost discusses advanced bracket and wire technology and sound treatment mechanics

This article reviews what's new in the art of finishing — tricks and tips from an educational workshop Dr. Frost will be conducting at the 2013 Damon Forum, Feb. 13-16, in Orlando, Florida.

Educational aims and objectives
The aim of this article is to discuss advanced bracket and wire technology and sound treatment mechanics

Expected outcomes
Correctly answering the questions on page XXX, worth 2 hours of CE, will demonstrate the reader can:
- Recognize the three key factors for advanced finishing.
- Realize the importance of bracket positioning.
- Discuss the significance of bracket torque.
- Be aware of the value of simultaneous mechanics.

An excellent finish is often thought to be orthodontic treatment's "holy grail." It's not just about having straight teeth — the right finish has an ideal occlusion, arch width, a smile arc, incisor display, full lips with vermillion curl, and properly torqued teeth. To achieve each of these characteristics, clinicians must have a treatment approach that keeps the end result top of mind — from the beginning — while also combining advanced technology with esthetic-driven techniques, such as paying close attention to the incisors' end positions, like torque. Why produce a quality finish? Our patients' primary concerns are facial and smile esthetics, and the stability of the orthodontic industry relies much on the results we as clinicians produce. Regardless of practice size, reevaluating finishing mechanics cannot only redefine treatment efficiency, it will help improve final results across a broad range of patients.

Three key factors for achieving an advanced finish

Advanced finishing goes beyond the lining up of buccal segments. Keep the profile as full as possible, with a strong chin, and plan for a mutually protected occlusion in centric relation to the marginal ridge. I also recommend striving for optimal soft and hard tissue response, and healthy TMJs.

There are three crucial elements to achieving an advanced finish: bracket positioning, bracket torque selection, and simultaneous mechanics. Most crucial of all three is bracket positioning. The most common cause of a poor or mediocre finish is incorrect bracket placement at initial bonding. Without proper placement, it is more difficult to close a case with a beautifully shaped finish. In the words of my esteemed colleague, Dr. Mike Steffen, "You can't straighten teeth with crooked braces." The sentence speaks to the importance of correct bracket placement and has become a motto in my practice. And while it may be an artistic challenge, once the concepts of precision bracket placement are grasped, your cases will finish beautifully every time.

Bracket positioning: the building block of finishing success

The importance of bracket positioning cannot be overemphasized — it can have a profound and definitive impact on patient results. As you may have read in other industry articles, now, more than ever, there is an emphasis on bracket positioning. It has become self-evident that the more precise the placement of brackets, the easier it is to settle the occlusion.

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To achieve ideal position, I reiterate the importance of taking into account the smile arc and symmetry. My specific bracket position will vary in the anterior, and every case depends on the smile arc and enamel display. When I bond, I focus on the mandibular arch first and then the maxillary arch: second molar to canine on half of the arch, the same sequence on the other half, and then finish lateral to lateral. I bond the maxillary arch in the same sequence. I focus on esthetics and smile arc protection for the maxillary

Stuart Frost, DDS, is a native of Arizona and comes from a family of dentists. In addition to being committed to excellent patient care and treatment, he is dedicated to educating his colleagues and patients, and to the advancement of orthodontic technology. He graduated with honors from the University of the Pacific School of Dentistry in 1992. He then practiced general dentistry in Phoenix and Mesa until 1997. In 1997, Dr. Frost completed a 1-year fellowship for Temporomandibular Joint Dysfunctions at the University of Rochester in New York. He continued his education there and completed a 2-year residency in Orthodontics and Dentofacial Orthopedics.

Dr. Frost is dedicated to the advancement of the orthodontic profession. He is a Damon System Mentor to many orthodontists around the country. He is an associate professor at the University of the Pacific School of Orthodontics where he educates and trains residents about the Damon System. He also oversees the treatment of all Damon orthodontic cases along with Dr. Tom Pitts of Reno, Nevada and Dr. John Graham of Phoenix, Arizona. He was invited to participate on a board of orthodontists who created the curriculum for Damon self-ligation that is used in dental and orthodontic programs nationwide. Dr. Frost is a member of the Ormco Insiders Group, Progressive Study Club, Damon Phoenix Study Club, AAO, PCSO, ADA, and AZDA.

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anterior and overbite, and overjet for the mandibular anterior, bonding all other teeth for ideal occlusion. In terms of the buccal segments, ensure your patient's marginal ridges are perfectly aligned, and rely on contact points for optimal references.

In addition, impressive technology is emerging from leading orthodontic manufacturers, such as Insignia™ Advanced Smile Design, which is designed to support your treatment plans and can provide precise bracket placement.

Excellence is in the details: selecting proper bracket torque

Torque selection is imperative for finishing correctly and must be analyzed during the treatment planning process. Proper bracket torque is not automatic, nor is it universal. In other words, every patient is different, and individual, customized treatment plans will ensure optimum esthetics. With that said, I have found customized appliances to be great, practice-enhancing tools. Variable torque brackets work well for finishing, as the brackets minimize the guesswork of adding torque to wires later in treatment. These types of brackets and appliances afford orthodontists increased efficiency and reduced treatment time by easing the finishing process and correcting torque of the finished case.

Bracket selections can be customized, when using digital orthodontic systems, to produce a torque prescription that considers each patient's individual tooth anatomy and the occlusogingival positioning of the bracket to best achieve the patient's final result. And while sophisticated appliances can make treatment easier, the technique can't be lost. I've included three tips below that I recommend when selecting the correct torque:

1) Plan around the maxillary incisors, keeping in mind sagittal position for enhanced soft tissue esthetics, vertical-frontal smile, and rest position
2) Don't over-torque centrals, laterals, or cuspids. Many orthodontists have a tendency to over-torque upper anteriors and under-torque upper canines
3) When choosing anterior bracket torques, if you are going to err, err towards selecting a low torque

Moving beyond traditional treatment: simultaneous mechanics increase efficiency

Possibly one of the greatest advancements in the past 10 years is the evolution and implementation of simultaneous mechanics. This new treatment approach has helped me reevaluate my treatment mechanics and refine my efficiency as an orthodontist.

Traditional treatment used to be a step-by-step process; clinicians would begin by leveling and aligning, and then focus on arch width, and finally, the patient's anterior and posterior teeth. The detailing and finishing would wait for the end of the case. This meant one step had to be complete before the next step was executed. It also resulted in all the heavy mechanics to begin 6 to 12 months into treatment, creating added patient discomfort and frustration.

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Today, with implementation of simultaneous mechanics, we use passive self-ligation appliances (such as the Damon® System), disarticulation, and initial elastics in conjunction with each other to level, and align and correct the transverse and A-P of the case simultaneously — we work on all three planes of occlusion,

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from the very beginning of treatment. For example, for a Class II patient with moderate overjet, with traditional treatment, we would usually wait 8 months to 1 year to correct the Class II with heavy elastics. Now, with simultaneous mechanics, we use early light elastics to start correcting the Class II from the moment brackets are placed.

Simultaneous mechanics is an individualized and highly efficient method of managing cases; it also forces the orthodontist to focus on finishing the smile and making the occlusion better from the beginning of treatment.

Work is not finished when the brackets come off: final touches and preparing for the finish

While there are specific protocols I execute in the final stages of a case, remember that finishing methods, such as contouring and tooth shaping, should be done throughout the course of treatment, not just at the end. For example, if you save all of your contouring work for the debonding day, you may not be able to get the correct smile symmetry and tooth shapes that you would like.

Sometimes the finer elements of finishing are overlooked, but it is very important when in final finishing stages to not be afraid to equilibrate the occlusion. Two weeks before debonding the case, I will use articulating paper to check for any occlusal discrepancies that may be preventing the occlusion from settling together. On occasion, we'll use finishing elastics as an end-of-case detailing technique, where we'll cut or clip the archwire in the posterior segment, and run finishing elastics to get a better occlusion.

After the brackets are removed, I run through a sequence of polishing burrs to address any uneven edges and recontouring needed. I also keep a diamond bur, a handpiece, articulating paper, and Shofu sandpaper discs on hand to recontour cuspids and reshape any teeth that need to be refined further.

The difference a decade makes: technology and procedure innovation

In the past, orthodontists compromised facial and dental esthetics for functional occlusion. Today, with access to high-technology treatment appliances and support tools, we plan our cases to ensure facial and dental esthetics are optimal in the end result.

We are now doing things we could not imagine years ago. We never thought that we would be opening spaces, creating arch width, and beautiful smiles without extractions. We have been fortunate to witness innovations in orthodontic technology, which continues to produce optimal results in less time than traditional braces.

Contemporary orthodontic treatment has changed. Now with advanced bracket and wire technology, and sound treatment mechanics, we not only pursue beautiful functioning occlusions, but more beautiful smiles and finishes than ever before. I consider this to be the "holy grail" of orthodontics.

If you're interested in learning more about the above treatment methods, please consider attending this year's 12th Annual Damon Forum hosted by Ormco Corporation where I'll be presenting an in-depth clinical workshop on finishing techniques and mechanics. As the largest privately-sponsored orthodontic event in the world, the Damon Forum offers more than 30 lectures, educational discussions, and workshops presented by world-renowned clinicians on a variety of orthodontic topics, designed specifically for orthodontists, clinical staff, treatment coordinators, office managers, and front office staff. OP

Visit www.damonforum.com to review the workshops and register.