

# On the Edge of Esthetics and Function: *The Missing Link*



Guest Author  
**William E. Bruce II, DMD**  
*Private Practice*  
*Simpsonville, South Carolina*  
*Phone: 864.962.5522*  
*Email: lwb185@cs.com*  
*Website: www.upstatesmiles.com*

*Clinical Instructor*  
*Dawson Center for Advanced*  
*Dental Study*  
*Website: www.dawsoncenter.com*

**M**axillary and mandibular incisal edge harmony in all functional ranges can be the key determinants to success in anterior restorative treatment, but it often may be overlooked by the dentist. If ignored, fractured natural teeth, broken porcelain, mobile teeth, and parafunction may result. Clearly defining the anatomy of the incisal edges and incorporating concepts to produce occlusal harmony enable dentists to achieve beautiful and long-lasting restorations. This pres-

earned much attention within recent years; however, these advanced technologies do not make obsolete the much-needed understanding of fundamental theories—in particular, occlusal balance.

The degree of success achieved depends on the dentist's commitment to incorporating occlusal concepts to build a stable, predictable foundation for whatever restorative treatment is planned.<sup>1</sup> Satisfactory esthetics means little if it lacks harmony; the two must coexist in an environment pro-

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entation highlights a simple method to optimize predictably the balance between the two edges.

The era of “complete dentistry” allows dental professionals to accomplish remarkable tasks in their quest for optimal esthetics; from a simple composite restoration to a full-mouth reconstruction, today's technology is by far the most sophisticated. The evolution of dental implants, all-ceramic materials, and other advancements for restoring and improving the human dentition has

duced using proven techniques and refined procedures.

Despite the most attentive efforts to deliver highly esthetic restorations, a compromised occlusion can result in premature failure of the restorative treatment, leading to additional time and effort on the part of dentist and patient. If highly esthetic restorations do not provide the patient with long-term, problem-free function, they are not fulfilling their purpose.

A healthy temporomandibular joint (TMJ) and a stable masticatory

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system are the starting points for incorporating occlusal concepts into the treatment plan. The muscles of mastication must be relaxed and free from the tension and tenderness associated with dysfunction. Dentists should begin by examining physiologic joint positions such as centric relation or adaptic centric posture.<sup>2</sup> [QA. Edit okay?]

This article discusses incisal edge harmony—a seemingly simple aspect of anterior guidance that is sometimes overlooked during the treatment planning phase—as a means to help ensure proper occlusal balance and long-term function of esthetic restorations.<sup>3</sup> Its applications in daily practice include determining centric contacts, envelope of function, and

functional pathways from centric contacts.

### Significance of Incisal Edge Harmony

Occlusion remains a hot topic in dentistry; there are many respected schools of thought, each with their own philosophies and techniques. Regardless, it is generally agreed that the muscles of mastication and the TMJ are the foundation on which occlusal harmony and balance can be built.<sup>1</sup> Without astutely attending to occlusion during the treatment planning process, disharmony will occur.

Occlusal disharmony contributes to excessive wear, tooth mobility, chipping of the natural tooth structure or restoration, and other sequ-

lae that could arise from an unstable occlusion (Figures 1 through 5).<sup>4</sup> When a patient’s occlusion is balanced in centric relation, symptoms and complaints of TMJ disorders can be significantly reduced and/or eliminated.<sup>5</sup>

Incisal edge harmony in all functional ranges can be the missing links to a successful anterior restorative case. In general, occlusal theories provide that anterior guidance is a product of the patient’s envelope of function. The incisal edges of the mandibular and maxillary teeth contain three anatomical landmarks that relate to guidance: leading edge (blue); trailing edge (red); and slope/pitch (black) (Figures 6 through 8). Developing proper anterior guidance is achieved after determining static contacts in centric relation and incisal edge position. If an acceptable anterior guidance is identified, the chances that the patient will fracture or otherwise damage the planned restorations is minimal.<sup>3</sup>



**Figures 1 through 5**—Occlusal disharmony contributes to excessive wear, tooth mobility, chipping of the natural tooth structure or restoration, and other sequelae that could arise from an unstable occlusion.

When determining anterior guidance and overall harmony of the system, the goal is to start with the condyle disk assembly properly aligned—with complete muscle relaxation—so that the necessary adjustments can be made with predictability (Figure 9). When the centric contacts have been marked and proper incisal edge posi-

### Developing a Soft Bevel

Longevity is the ultimate goal of restorative cases. When anterior teeth are involved, it is especially important to incorporate a precise method for determining incisal edge harmony, functional pathways within the patient's envelope of function, and stable centric contacts to help achieve this

patient's maxillary central incisors relative to the lower lip.<sup>3,6</sup> If the patient's smile line reveals improper positioning, some correction may be necessary, in addition to further evaluation of the patient's neural zone. Too many times I have seen final restorative work that is not in the patient's mandibular lip closure path, therefore outside their neural zone.<sup>7</sup> In cases like this patients will often complain that their teeth always feel dry and that they need to wet them. After the restorations are delivered—assuming that we have achieved proper incisal edge position, centric contacts, and anterior guidance—the dentist must carefully evaluate incisal edge harmony and balance beyond canine guidance to determine that all of the hitches, glitches, and catches have been eliminated.

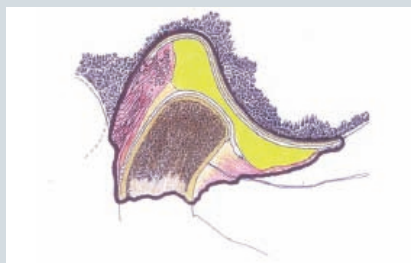
**“Too many times I have seen final restorative work that is not in the patient's mandibular lip closure path, therefore outside their neural zone.”**

tion has been determined, the dentist can begin the process of developing functional pathways (Figure 10). Any restorative case must begin with stable muscles and condyle disc assembly.

goal. Significant consideration should also be given to the restoration's width-to-height proportion or ratio, the phonetics, the relationship with the buccal cusps of the maxillary posterior teeth, and the position of the



**Figures 6 through 8**—The incisal edges of the mandibular and maxillary teeth contain three anatomical landmarks that relate to guidance: leading edge (blue); trailing edge (red); and slope/pitch (black).



**Figure 9**—When determining anterior guidance and overall harmony of the system, the goal is to start with the condyle disk assembly properly aligned.



**Figure 10**—When the centric contacts have been marked, the dentist can begin the process of developing functional pathways.



**Figure 11**—To create the soft bevel, rubber polishing wheels, polishing pastes, polishing points, and finishing discs can be used.

When esthetic, functional, and phonetic parameters have been evaluated, occlusal harmony beyond the canines can be guided by creating a soft bevel on the incisal edges of opposing maxillary and mandibular teeth. As the patient's teeth move from the outside to the inside and vice versa during function, the soft bevel establishes a perfectly smooth transition. This is important in that all people will chew in lateral outside to inside chewing strokes.<sup>8</sup> To create the soft bevel, rubber polishing wheels, polishing pastes, polishing points, and finishing disks can be used, depending on the type of restoration that warrants contouring (Figure 11).

### Will Beauty Follow Function?

In this case, a 37-year-old wo-

man had been a nail biter most of her life. She had worn down her maxillary incisors causing a reverse smile (Figures 12 through 14). She was no longer biting her nails and desired a better smile. She also complained of her jaw being tired sometimes when she ate. After a complete examination, it was determined that her teeth could be restored with four maxillary veneers and a balancing of her bite in centric relation. Using composite, I determined her incisal edge length and position by reestablishing balance and harmony in all functional ranges and the lip closure path (Figure 15 and 16). This information

“Daily evidence of occlusal dysfunction provides dentists with opportunities for both education and restoration.”

can be precisely communicated to your laboratory technician and ultimately deliver beauty and functional restoration (Figure 17). In my opinion, this is a great example of how to achieve conservative and predictable results (Figure 18).

### Conclusion

Daily evidence of occlusal dysfunction provides dentists with opportunities for both education and restoration. Improper incisal edge harmony, as it relates to long-term success and functional predictability, is often overlooked as an underlying cause of fractures, excessive wear,



**Figures 12 through 14**—The patient had worn down her maxillary incisors causing a reverse smile.



**Figures 15 and 16**—Using composite, I determined her incisal edge length and position by reestablishing balance and harmony in all functional ranges and the lip closure path.



**Figure 17**—This information can be precisely communicated to your laboratory technician and ultimately deliver beauty and functional restoration.



**Figure 18**—In the author's opinion, this is a great example of how to achieve conservative and predictable results.

and other problems. However, when this aspect of anterior guidance and occlusal schemes is incorporated into treatment planning with an exceptional attention to detail and using

time-honored methods and modern materials, the dentist can deliver restorations that satisfy esthetic and occlusal requirements.<sup>9</sup>

This article has identified incisal edge harmony as one of the missing links in successful anterior cases so that disharmony between these edges can be more easily recognized and corrected. If we give our patients a bumpy road to ride on, how can we expect them to be comfortable and not break something?

At a time when patients are seeking elective procedures more than ever before, it is essential to recognize potential obstacles in the functional arena that could affect long-term success. Choosing to be precise and thorough will earn patient respect and trust, which are the basics for the care we deliver. Engineering the case for quality will deliver the predictable, functionally sound results necessary to meet the ever-increasing demands of today's esthetic practices.

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