The Interface of Occlusion Revisited

In this issue we revisit the proceedings of an international conference, which were published in a supplement to *The International Journal of Prosthodontics* (IJP) in 2003 titled "On Biological and Social Interfaces in Prosthodontics." At the time of organizing the meeting, Michael MacEntee from the University of British Columbia, Jim Anderson from the University of Toronto, and I sought to focus on 4 identified Interfaces of Prosthodontic Scholarship that arguably underpinned our discipline's raison d'être: *(1)* the patient-prosthodontist interface, *(2)* the host-implant interface, *(3)* the prosthetic material–oral tissues interface, and *(4)* the occlusal interface. Each interface consisted of papers from leading international scholars and a study group report from the 2 co–chairs responsible for each topic. In each interface, the contributors and participants in the discussion sessions were asked to frame their remarks around the following 4 themes:

1. What we know that's important, and how we know it
2. What we don't know that would be important to know
3. What research strategies are best to get what we need to know
4. What needs highlighting in educational programs, and how will it be best delivered

The proceedings were very well received internationally. In fact, numerous colleagues suggested the expansion of each interface into a separate textbook, while others felt that the material could be used as a basis for additional clinical meetings. The key message here was that the package should be revisited and fine tuned so as to keep its provocative objectives clear and current. And this is what we are attempting to do with this issue's reassessment of the interface of occlusion.

The subject of occlusion remains an integral and important part of a dentist's education and practice. However, it is no longer the controversial topic it used to be. Stand-alone departments of occlusion (fashionable in the 1970s and 1980s) are now largely passé, and educational programs extolling the merits of technical expertise in "tripodizing" cusp-fossa relationships and hinge axis registrations continue to succumb to the pressures of scientific rigor. This change continues to reinforce the conviction that occlusion, as a focus of scholarship, has outgrown its legacy of empiricism. However, there is also a flip side to this change, a tendency to undervalue the merits of using normative data to direct treatment strategies.

Regrettably a war of words has raged in this area far too long. Articulators, occlusal morphology, and occlusion as a prime etiologic concern in temporomandibular disorders (TMD) have tended to dominate clinicians' thinking. Perhaps as clinical educators, we have failed to communicate the importance of biologic and behavioral diversity, the neurologic plasticity that occurs throughout growth and development of the masticatory system, and the resultant range of normative occlusions, which precludes rigid rules about so-called ideal descriptors of numbers and ways of teeth coming together. The goal of understanding the physiology of occlusion remains a reconciliation of a broad spectrum of time-related changes in normative values, with the clinical purpose of maintaining and restoring functional integrity.

On the other hand, the risk of putting a great deal of energy into denying the role of occlusion as the sole or most compelling concern in the etiology or management of different TMD must also be addressed. This is a negative pedagogic approach, one whose proponents seek to teach occlusion by default rather than teaching an understanding of its significance in a correct physiologic context. As clinical educators and practitioners, we owe clinicians rational strategies for both prosthodontic occlusal treatment and TMD patient management, even while we recognize our profession's limitations in dealing with such patients. A huge gap still exists between the scenarios studied in randomized clinical trials and actual clinical problems. Furthermore, there are no formal rules to test the validity of the extrapolation of findings from one TMD condition to another, and to date, literature searches continue to yield inadequate data; thus, many uncertainties remain. A conceptual framework that emphasizes concerns for patient safety as the overriding objective in the management of TMD or any form of occlusal therapy remains a crucial educational objective. This is a particular challenge, as well as a research opportunity, for the prosthodontist given traditional mechanical intervention mindsets.

Furthermore, any conceptual teaching framework must recognize the role of parafunction within the context of jaw movements and tooth wear. Hans Graf's prescient work from the 1960s was an early reminder of the inherent risks in multidirectional teeth contact movements of unpredictable magnitude, duration, and frequency. The consequences of such time-dependent and potentially damaging activity are expressed at diverse tissue levels, particularly in the dentition, where changes are so readily observed. Such changes then become a temptation for "treating what we see and seeing what we treat." In the process, without the necessary scientific inquiry to direct clinical decisions, the unresolved challenge of parafunction remains vulnerable to palliative or comprehensive interventions.

One particular dental scientist whose scholarly pursuits offer original and exciting perspectives in the field is Gilles Lavigne; hence, my decision to interview him as a committed clinical scientist whose body of research has a profound impact upon the study and understanding of occlusion. Our interview took place over a recent weekend in his research laboratory at the Faculté Dentaire, Université de Montréal. It was a delightful educational experience for me, as his answers covered a broad range of topics which he feels passionately about. Over the course of several hours, he held forth his views on the future of pain relief, sleep apnea, mild traumatic brain injury, and the fact that many prosthodontic patients have problems above or below the mouth. Gilles is a born educator and is eminently likeable; he is both charmingly talkative and a good listener. He is ready at all times to consider alternative points of view with scrupulous interest. Consider these comments about him from a couple of his colleagues: "Gilles is an enviable role model who always provides honest and constructive support and guidance; he unhesitatingly shares his success and acknowledges others" (Iven Klineberg, Sydney, Australia). "He has a remarkable capacity for immediately getting you on his wavelength with his curiosity and contagious desire for knowledge" (Guido Macaluso, Padova, Italy). A recent issue of the *Journal of Orofacial Pain* (Volume 18, Number 4, 2004) attests to Gilles' stature in clinical academia—the proceedings of a symposium titled "Nerve Damage and Neuropathic Trigeminal Pain," which he co-organized with Barry Sessle, the editor of JOP. The issue is highly recommended to our IJP readership.

Once upon a time, travelers navigated by the stars. So did many clinicians as they journeyed and indeed continued to journey through the complex world of making correct clinical decisions for their patients; except that their "stars" were and all to often remain circuit celebrities, unreliable guides whose lifespan as ubiquitous clinical educators tends to be short. After awhile they tend to fall off the continuing education horizon. The guiding lights chosen for this issue certainly reflect a longer and more credible lifespan and comprise an extraordinary group of scholars. They include the original 10 Toronto Interface Symposium presenters, the 2 co–chairs, Iven Klineberg and Christian Stohler, and 6 specially invited clinical professors from the international scholarship community who were not original participants. The latter group generously agreed to study the publication and offer their critiques. Their essays are a compelling reminder of the need to accept the scientific method's inevitable alteration of traditional clinical convictions.

I hope that IJP readers will enjoy this eclectic review of the topic via the selected presentation format. Above all, I hope that many of our readers will use this exposure to all these gifted authors to read more of their work, which continues to expand the scope of this fascinating topic.

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