



GUEST EDITORIAL

Current status of tooth wear

An update on diagnosis and treatment protocols

The incidence and prevalence of tooth wear (TW) has unfortunately grown markedly in all age groups and regions, with the presence of moderate wear lesions affecting up to 30% of teenagers and young adults.¹⁻⁸ Numerous risk factors account for this situation, and we can expect that our modern lifestyle might trigger further progression of this pathology.^{9,10}

This brings us to consider a first crucial approach to mitigating the aforementioned, undesired development through earlier detection of TW and the application of preventive measures. To this purpose, both erosion and attrition-abrasion risk factors should systematically be investigated and controlled. The profession should also invest significant efforts in educating patients about the long-term impact of TW on function, esthetics, the lifespan of restorations and, finally, the deleterious biomechanical effect of erosion and parafunctional forces on the integrity of their teeth (Fig 1). When they are uncontrolled, erosion and bruxism can not only affect patients' dental health but also their quality of life, creating additional pressure on social health systems and/or personal finances.^{9,10} In short, TW is a global issue affecting all populations, and it definitely requires greater attention in light of the current knowledge of risk factors and availability of preventive and interceptive

protocols, which, with more systematic use, could reverse or at least efficiently mitigate this growing trend.¹¹⁻¹⁴

Figure 2 illustrates a comprehensive view of TW management, with the progressive implementation of preventive, interceptive, and prosthetic measures, bearing in mind that prevention should remain active throughout the various treatment phases.

A proper treatment strategy also needs to embrace the significant interplay of individual risk factors and the evolution of the severity over the frame of a lifetime; Figure 3 conceptualizes this model, showing that the relative prevalence of erosion and attrition-abrasion is susceptible to variation, often greatly, together with the will and capacity of patients to comply with preventive measures.^{12,14} The latter point is of significance when it comes to choosing the clinical protocol and restorative material when a treatment is deemed necessary. We have therefore invited experts in the field of TW to explore in depth its most important aspects and guide us toward the selection of the ideal treatment approach to help our many types of TW patients.

Dr Francesca Vailati will explore the various aspects of TW diagnosis and help us to understand the intricacies of functional and dysfunctional parameters that play a major



Didier Dietschi
DMD, PD, PhD
Senior Lecturer,
University of Geneva;
Geneva Smile
Center, Switzerland
Issue Coordinator



Fig 1a to f When left untreated (without the implementation of preventive or interpretive protocols), mechanical (upper serial) or erosive (lower serial) tooth wear (TW) is likely to evolve toward a significant increase of tooth structure loss, with an obvious impact on function, esthetics, and comfort. Then, alongside the increase in potential treatment complexity, it may place many patients in a very difficult situation, which could have been avoided through earlier diagnosis.

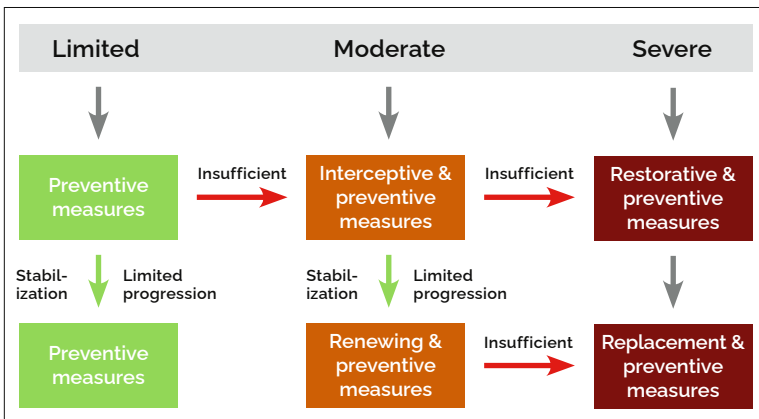


Fig 2 This diagram introduces the notion of individualized clinical protocols and how they are adapted to the progression of TW. Treatment strategy then evolves according to the development and changes of risk factors, together with the adherence of patients to erosion, abrasion, and attrition preventive measures (from Dietschi, Saratti, and Erpen, 2023;¹² reprinted with permission of the author and editor).

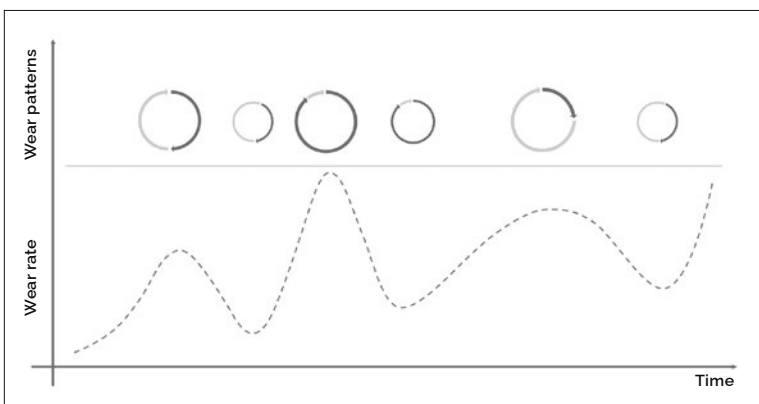


Fig 3 This graph suggests that the respective contributions of both wear mechanisms (wear rate and wear patterns) can vary significantly and are frequently integrated; clinical observations confirm that this more recent TW model is prevailing over that of a single contributing mechanism. Moreover, risk factors are likely to vary over time, while the prevalence of wear mechanism and intensity are likely to alternate. Note that the dark and light gray colors represent erosive and mechanical wear mechanisms or risk factors (from Dietschi, Saratti, and Erpen, 2023;¹² reprinted with permission of the author and editor).

role in managing attrition cases. She will also provide insightful information about erosion pathology and its major implications in rapid and severe wear progression.

As far as I am concerned, we will explore together the potential of interceptive and hybrid protocols with full or partial use of composite resins following a no-prep, fully additive approach. Depending on the wear level and progression, different protocols can be applied, ranging from a freehand to a full-molding approach, mostly using restorative composite resins and not flowable ones.

Prof Amélie Mainjot will discuss the use of polymer-infiltrated ceramic network (PICN), a new class of restorative material for the CAD/CAM approach to treating wear that follows only classical prosthetic concepts. This product is probably less known than others, and we hope it will be of great interest to the reader to learn more about the pros and cons of this new class of material.

Dr Massimo Saratti and his team will overview the indications, outcome, and clinical data pertinent to the use of CAD/CAM composite blocks to treat moderate to severe wear cases. This "relatively new" alternative to ceramics merits an update; specifically, attempting to evaluate whether its "simplicity/success rate" status makes it a valuable choice in wear management and, in particular, for moderate to severe bruxism management.

Prof Daniel Edelhoff will present the results of his long-term experience with glass-ceramics for treating wear cases. His review on the subject highlights the advantages of such ceramic systems and specifies their minimal thicknesses for providing an optimal lifespan, given the functional and occlusal environment.

Finally, the Vilaboa team will cover strategies for a multidisciplinary approach of complex cases, where interceptive and "simple" restorative-prosthetic treatments alone are insufficient to address the complexity and extent of wear lesions, often associated with other pathologies.

Conclusive statement

Tooth wear is a complex pathology in terms of its etiology, evolution, extent, and location; its specific and individual characteristics require a highly detailed and differentiated treatment approach that no longer follows classical prosthetic concepts. This special issue of the IJED aims, then, to provide updated information about the diagnosis and various treatment options and protocols that can meet the needs of an increasing proportion of patients showing moderate to severe wear lesions. We have had the immense privilege of working together with some of the very best authors, who will convey the extremely important message of treating TW with a proportionate and highly specific strategy, using both materials and protocols that address patients' risk factors, age, compliance, and socioeconomic conditions. We live in a time where medical progress is intertwined with the personalization of treatments; dentistry should be no different.

I wish you stimulating reading.



Didier Dietschi



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