Managing Tooth Wear: Why Awareness and Pragmatism Matter

An interview with **Prof. Dr. Bas Loomans**, the Netherlands

Prof. Dr. Bas Loomans *obtained his PhD on the topic of restorative dentistry in 2007. In 2008 he was a visiting researcher at BIOMAT, KU Leuven, Belgium. In 2021, he was appointed full professor of Oral Function and Restorative Dentistry at the Radboud University Medical Center in Nijmegen, The Netherlands. He is involved in research, undergraduate and postgraduate education. His main research interests are the management and treatment of severe tooth wear, diagnostic criteria, development of smart dental materials, translational research, intra-oral censoring of gastric acid, and decision-making processes using artificial intelligence. He has become a nationally and internationally recognized expert in adhesive and restorative dentistry and is the project leader of the 'Radboud Tooth Wear Project'.*
Additionally, in 2019 he received the international Steve Bayne Mid-Career Award of the Dental Materials Group of the International Association of Dental Research. He has authored more than 120 international and national publications and is (co-)author and editor of several book chapters. In addition to his academic work, he is working one day a week in a general/referral dental practice in Nijmegen. His professional interests focus on reconstructive dentistry, with an emphasis on minimally invasive treatment approaches.
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Tooth wear is an increasingly common challenge in modern dentistry, requiring thoughtful, patient-centered approaches. We spoke with Prof. Dr. Bas Loomans, a leading expert in the field, who shared his insights on managing wear through pragmatic management strategies, with a strong emphasis on diagnosis, prevention, minimally invasive care, cost-effectiveness, collaborative learning and patient education. His philosophy centers on empowering patients and dental professionals through awareness, helping them take ownership of their oral health while ensuring treatments remain accessible and sustainable.

To begin with, based on your experience and expertise over the past 30 years, could you give us an overview of what we currently know about tooth wear, and how our understanding of it has evolved?

Over the past few decades, our understanding of tooth wear has evolved significantly. While it may seem that the prevalence of moderate to severe tooth wear is increasing, we should be cautious with that assumption. What has truly changed is the level of awareness among dental professionals.

Dentists today are better trained to recognize early signs of wear and understand its implications, whereas in the past, wear was often noticed but not managed until it became a serious issue.

Another major change is in treatment philosophy. Previously, invasive procedures like full crowns were common, even for young patients. But now, thanks to research and clinical experience, we know that minimally invasive approaches–especially using composites–can be effective, even in severe cases. This shift reflects a broader move toward more pragmatic, patient-friendly care that preserves tooth structure and adapts to the needs of younger patients.

In your opinion, what are the most important causative factors of tooth wear?

Fifteen years ago, I believed mechanical factors–like grinding, clenching, or biting on objects–were the main causes of tooth wear. And in prevention, we were also mainly focusing on these factors, often prescribing nightguards. But over time, and especially through data from our long-term monitoring group from the Radboud Tooth Wear Project, it's become clear that chemical factors play a much more significant role than originally anticipated.

Tooth wear is influenced by both mechanical and chemical processes, each with intrinsic and extrinsic sources. Intrinsic mechanical factors include clenching and grinding, while extrinsic ones involve habits like biting pens or nails. On the chemical side, intrinsic factors include reflux or vomiting, and extrinsic ones are linked to acidic foods and beverages.

What we now understand is that mechanical forces alone rarely cause severe wear. Acid exposure – whether from internal or external sources – softens the tooth surface, making it far more vulnerable to mechanical wear. So, in most cases, acid is a necessary component in the wear process. The combination of chemical softening and mechanical stress leads to the patterns we observe clinically.

If we shift the perspective from dentists to patients, would you say that patients themselves are generally aware of their tooth wear, or is it usually the dentist who identifies and communicates it?

In general, most patients are not very aware of their tooth wear. In our experience, many are referred to our clinic by their dentist and often say they don't really know why–they were simply told to come. This shows that the demand for treatment often doesn't come from the patient, but from the dentist's observation.

That said, when wear becomes extreme or starts affecting aesthetics – like discoloration or visible damage – some patients do begin to raise concerns themselves. Sensitivity can also be a trigger, but interestingly, the severity of wear is not always linked to pain. In fact, patients with less wear sometimes report more pain, especially when acid erosion is involved and dentinal tubules are exposed.

Ultimately, one of the most important roles of the dentist is to create awareness. It starts with recognizing the signs of wear and then explaining them to the patient – what they see, what it might mean, and what could be causing it. Without that awareness, patients are unlikely to fully understand or accept the need for monitoring or treatment and are less likely to comply. So education and communication, both undergraduate and postgraduate, are key.

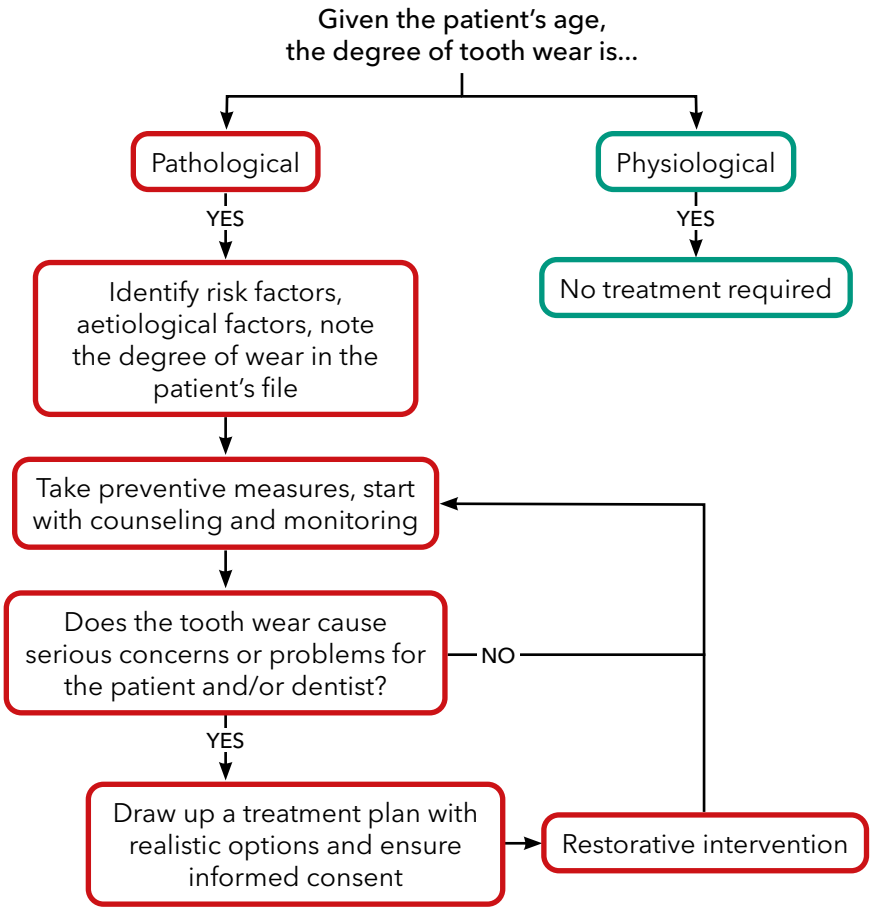

Fig. 1: Flowchart for treatment options for tooth wear. European Tooth Wear Consensus Meeting, 27th of October, 2016

And how do you determine when to simply monitor tooth wear and when to begin restorative treatment?

Restorative treatment is not always necessary when tooth wear is present **(Fig. 1)** –even in cases that appear severe at first glance. If there's no pain, no aesthetic concern, and no clear demand for treatment from the patient, the recommended approach is to

start with monitoring. This is also reflected in the European Consensus Statement and the new Dutch guidelines on tooth wear diagnostics and management.[1,2]

Monitoring allows us to assess the progression over time **(Fig. 2)**. Surprisingly, many cases that look extreme remain stable for years–even up to a decade.[3] If wear progresses slowly and the patient is comfortable, there's no need to intervene. However, if the patient experiences pain, aesthetic dissatisfaction, or functional issues, then treatment becomes necessary.

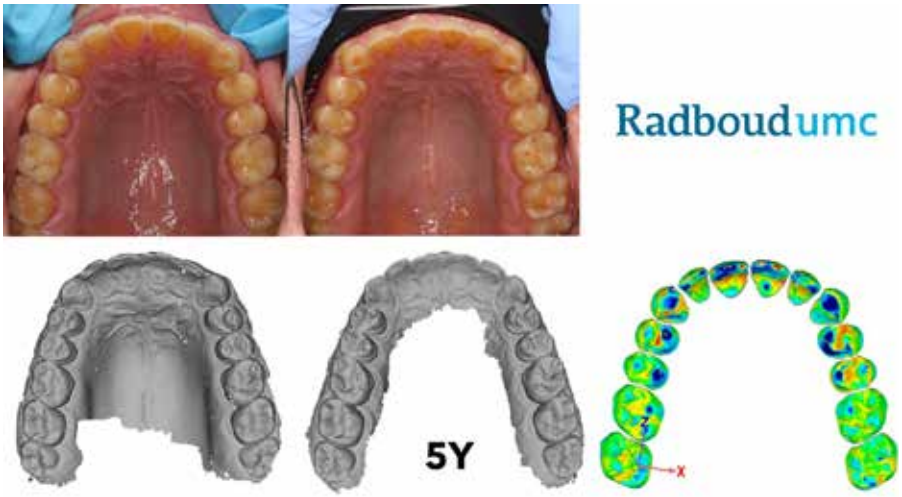

Fig. 2: Monitoring using digital scans. Subtraction of both scans indicates the progression of wear. Green shows no relevant differences, and blue areas represent locations of wear.

Patient involvement is key. When patients understand the condition and its implications, they're more likely to engage with the treatment process and accept its limitations.

How do you implement preventive strategies?

It's rarely possible to pinpoint a single cause of wear, so I avoid taking an overly authoritative approach. Instead, I focus on helping patients understand the potential contributing factors and encouraging reflection on their own habits. I don't know what happens in their daily routines at home, but by drawing attention to certain behaviors – like diet, brushing technique, or parafunctional habits – patients often begin to recognize patterns themselves. When they understand why something matters, they're far more likely to take ownership and make meaningful changes.

So my approach is to inform, advise, and give space. Let the information sink in, allow the patient to think about it, and support them in taking responsibility for their own oral health. That's where true prevention begins – not just with instructions, but with insight and empowerment.

How do you approach material selection when restorative treatment is needed?

When restorative treatment is needed, I prioritize minimally invasive solutions – often starting with direct composite restorations. These can be highly effective when applied with the right protocol, and they offer the dual advantage of being the least invasive and the most cost-effective option. I usually use hybrid composites, but if the main causative factor is chemical erosion, injectable composite might also work **(Fig. 3)**. And it needs to be kept in mind that composites require sufficient thickness to maintain their mechanical strength.

For me, tooth survival is more important than restoration survival, especially considering that many of our patients are relatively young. No restoration lasts forever – not even indirect ones – so preserving as much natural tooth structure as possible is key. That also implies thinking ahead: anticipating what might follow. What options will remain after this procedure?

We recently published a systematic review[2] comparing direct and indirect restorative options for managing tooth wear. While indirect restorations showed lower failure rates, they tend to be more invasive and require more operator time. Moreover, when failure does occur, repairs are often simpler and more conservative when composites have been used.

Ultimately, I aim for pragmatic solutions that serve the majority of patients. Given the relatively young age of our patient population, cost is a significant factor, and it cannot be ignored. That's why direct composite restorations often become the preferred choice – they strike a balance between clinical success, patient accessibility, and long-term maintainability.

How important is it to restore a correct occlusion?

There are two schools of thought – the "occlusionists" who believe everything stems from occlusion, and the more pragmatic view, which I follow. While occlusal support is important, there's no strong evidence that achieving textbook-perfect contacts, like cusp-fossa or canine guidance, leads to better outcomes or fewer failures.

Fig. 3: Restorative treatment with direct composite (injection moulding technique)

Instead, I aim for functional and stable occlusion, avoiding contact on weak areas like marginal ridges. If canine guidance is achievable, that's fine – but if not, group guidance works just as well. Ultimately, teeth aren't always perfectly aligned, and restorations should adapt to the patient's reality, not an idealized model. A successful treatment lies not in achieving perfection, but in understanding and respecting the patient's needs and meeting those.

This has been an enlightening discussion on the nuances of occlusion and tooth wear. Thank you for your time and expertise.

References

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