FDI POLICY STATEMENT

Tooth wear

Adopted by the FDI General Assembly: September 2023, Sydney, Australia

CONTEXT

Tooth wear can be the result of several mechanisms including dental erosion, dental attrition, dental abrasion and potentially dental abfraction occurring independently or in association with one another. These mechanisms may come from exposure to acids (of non-bacterial origin) and non-physiological mechanical forces from tooth brushing, malocclusion and parafunctional activity. Low salivary flow rate and buffering capacity can be important modifying factors. Erosive tooth wear (dental erosion) may also be the symptom of an underlying general pathology such as gastro-esophageal reflux disorder (GERD) or eating disorders such as bulimia nervosa. Prevalence of tooth wear has been reported to be geographically related and as high as 80%. Successful management is dependent on accurate diagnosis and understanding of aetiological factors.

SCOPE

This policy statement aims to provide guidance regarding loss of tooth surface structure from mechanisms that are non-carious. The ability of oral health providers to recognize these mechanisms, especially at early stages, could have a direct impact on the preservation of the natural dentition.

DEFINITIONS[5]

Tooth wear: The cumulative surface loss of mineralized tooth substance due to physical or chemo-physical processes not related to dental caries.
Dental abrasion: Physical loss of mineralized tooth substance caused by objects other than teeth. In the cervical area, it may present as tooth notching.
Dental attrition: Physical loss of mineralized tooth substance caused by tooth-to-tooth contact.
Dental abfraction: Cervical notching induced by chronic traumatic occlusal forces. (The use of this term has been questioned, considering the level of current supportive clinical evidence to consider it as a separate process).
Erosive tooth wear: Chemical-mechanical process resulting in a cumulative loss of hard dental tissue not caused by bacteria.

Extrinsic acid: Acid derived from dietary, environmental and/or drug sources.
Intrinsic acid: Acid derived from gastric fluids.

PRINCIPLES

Progression of tooth wear can be controlled or prevented if the aetiology is recognized and relevant measures are undertaken. Such preventive measures include focusing on the local situation in the oral cavity, changing behaviours (e.g., pattern of eating, drinking and toothbrushing habits) and cooperating with other medical specialists for treatment in cases of GERD or eating disorders that include frequent vomiting (e.g., bulimia nervosa). Eventually, after the underlying aetiology has been addressed, proper restorative intervention may be critical to the long-term preservation of tooth structure.

POLICY

FDI recommends:

- all patients should be monitored regularly by an oral health professional for signs of tooth wear which should be adequately documented, preferably including clinical imaging;
- patient education is critical in controlling the progression of ongoing tooth wear;
- preventive recommendations based on diagnosis include:
    - identification and management or elimination of the source of extrinsic or intrinsic acids including referral to appropriate specialists;
    - use of a non-aggressive tooth brushing technique with a low abrasive dentifrice[6];
    - use of a neutralizing/remineralizing/preventive agent before or after an acid challenge (e.g., milk, yoghurt, fluoride products or stannous fluoride/chloride based products);
    - stimulation of salivary flow;
    - assessment of occlusal function and provision of a custom inter-occlusal appliance when indicated;
- longitudinal clinical study models may be used to monitor lesion progression;
- restorative intervention may be considered to reduce or stop the progression of advanced lesions, dentine hypersensitivity and pain, or to restore aesthetics and function after the underlying aetiology has been addressed.

KEYWORDS

tooth wear, erosive tooth wear, dental abrasion, dental erosion, dental attrition, dental abfraction

DISCLAIMER

The information in this Policy Statement was based on the best scientific evidence available at the time. It may be interpreted to reflect prevailing cultural sensitivities and socio-economic constraints.

REFERENCES

1. Vieira AR: The Overlooked Individual: Susceptibility to Dental Caries, Erosive Tooth Wear and Amelogenesis *Monographs in Oral Science, Vol 30*. Basel, Karger, 2022. DOI: 10.1159/isbn.978-3-318-06913-6

2. Stefanac SJ & Nesbit SP *Diagnosis and Treatment Planning in Dentistry 3rd Edition* 2017 St. Louis, Missouri: Elsevier.

3. Carvalho TS, Colon P, Ganss C, Huysmans MC, Lussi A, Schlueter N, Schmalz G, Shellis RP, Tveit AB, Wiegand A. Consensus report of the European Federation of Conservative Dentistry: erosive tooth wear—diagnosis and management *Clin Oral Invest* 2015;19:1557-1561.

4. Okunseri C, Wong MC, Yau DT, McGrath C, Szabo A. The relationship between consumption of beverages and tooth wear among adults in the United States. *J Public Health Dent* 2015 Fall;75(4):274-81. doi: 10.1111/jphd.12096.

5. Schlueter N, Amaechi BT, Bartlett D, Buzalaf MAR, Carvalho TS, Ganss C, Hara AT, Huysmans MDNJM, Lussi A, Moazzez R, Vieira AR, West NX, Wiegand A, Young A, Lippert F. Terminology of Erosive Tooth Wear: Consensus Report of a Workshop Organized by the ORCA and the Cariology Research Group of the IADR. *Caries Res* 2020;54(1):2-6.

6. ISO 11609:2017 – Dentistry – Detrifrices – Requirements, test methods and marking. International Standards Organization, Geneva, Switzerland.