

Primljen / Received on: 02. 01. 2025.
Revidiran / Revised on: 29. 08. 2025.
Prihvaćen / Accepted on: 05. 09. 2025.

KRATKO SAOPŠTENJE
SHORT COMMUNICATION
doi: 10.5937/asn41-55799

NEOBIČNO TROŠENJE SEKUTIĆA: DIJAGNOSTIČKI ZNAK DIJETALNIH NAVIKA

UNUSUAL INCISOR TOOTH WEAR: A DIAGNOSTIC SIGN OF DIETARY HABITS

Vanishree H. S., Anand S Teggimamani

UNIVERZITET SEGI, STOMATOLOŠKI FAKULTET, KOTA DAMANSARA, MALEZIJA

SEGI UNIVERSITY, FACULTY OF DENTISTRY, KOTA DAMANSARA, MALAYSIA

Sažetak

Uvod: Nekarijesni gubitak tvrdih zubnih tkiva predstavlja čest klinički nalaz u stomatološkoj praksi. Može nastati kao posledica kombinovanog dejstva različitih faktora, uključujući hemijsku eroziju, mehaničku atriciju i abraziju usled kontakta sa stranim objektima. Abrazija nastaje dejstvom egzogenih mehaničkih faktora na površinu zuba; njenu pojavu mogu izazvati brojni činioci povezani sa profesijom i načinom ishrane.

Cilj: Cilj ovog rada bio je da predstavi osam slučajeva nekarijesnog gubitka tvrdih zubnih tkiva povezanog sa navikama u ishrani.

Zaključak: Faktori povezani sa načinom ishrane predstavljaju značajan ali često zanemaren uzrok nekarijesnog gubitka tvrdih zubnih tkiva. Mada su semenke, poput semenki suncokreta i semenki lubenice, nutritivno korisne, način na koji se konzumiraju može doprineti nastanku nekarijesnog gubitka tvrdih zubnih tkiva. Niz slučajeva prikazan u ovom radu ukazuje na specifičan etiološki faktor, koji se ne prepoznaje u dovoljnoj meri, i naglašava potrebu za edukacijom pacijenata usmerenu na očuvanje oralnog zdravlja.

Cljučne reči: abrazija, atricija, nekarijesni gubitak tvrdih zubnih tkiva, jestive semenke, semenke suncokreta, semenke lubenice

Abstract

Introduction: Dentists frequently encounter cases of tooth wear, which can be caused by a variety of reasons, such as food erosion, physical attrition, and abrasion due to contact with foreign objects. Abrasion is caused by exogenous material rubbing against tooth surfaces; it is multifactorial linked to occupational or dietary habits.

Aim: The aim was to present a series of eight cases of tooth wear caused by dietary habits.

Conclusion: Food is the most prevalent cause of tooth wear, yet it is also the most disregarded. Seeds such as sunflower and watermelon can be beneficial to one's health, but the public needs to be educated on several other ways to eat these seeds and keep their teeth healthy.

Key words: abrasion, attrition, edible seeds, sunflower seeds, tooth wear, watermelon seeds

Corresponding author:

Anand S Teggimamani
No 9, Jalan Teknologi, Kota Damansara PJU 5, 47810
Petaling Jaya, Selangor, Malaysia
E-mail: anandsiddappa@segi.edu.my

2025 Faculty of Medicine in Niš. Clinic of Dental Medicine Niš.
All rights reserved / © 2025. Medicinski fakultet Niš. Klinika za
dentalnu medicinu Niš. Sva prava zadržana.

Introduction

Tooth surface loss, or tooth wear (TW), is the permanent loss of dental hard tissue caused by non-cariogenic factors that typically interact to cause damage. Tooth wear can be classified as either physiological or pathological. It is considered multifactorial. Attrition, erosion, abrasion, and abfraction are the four types of tooth wear. Generally, the extent of tooth wear correlates with age. Tooth wear in a young person may be perceived as pathological, whereas the same amount in an older individual might be normal or physiological. Abrasion results from abnormal mechanical processes where friction from external material being forced over tooth surfaces causes wear. Patients consuming a coarse, abrasive vegetarian diet may experience significant tooth wear¹⁻⁶.

Case reports

The study included a total of eight patients who had the habit of peeling sunflower seeds. Their age ranged from three to six decades. A detailed social and occupational history was elicited, and occupational and pica tooth wear were the exclusion criteria for the study.

The patients' occupational history revealed no significant associations with the incisal edge notches. None of the patients had worked in occupations such as tailoring, shoemaking/cobbling, or other occupations where it is common for individuals to hold objects (pins, clamps, or nails) between their teeth. They did not have a habit of removing bottle tops, pen-chewing, or smoking a tobacco pipe. The one thing they all had in common was a dietary history of cracking or peeling sunflower seeds between their upper and lower teeth.

Results

A total of eight patients, of whom one was Iranian, were included with an equal distribution among the genders (4 males and 4 females). In total, 22 teeth exhibited notching of the incisal edges attributed to the seed-eating habit: 6 out of 22 notches were found on tooth number 11 (27.27%), 5 out of 22 on tooth number 21 (22.73%), 2 out of 22 on tooth number 32 (9.09%), 3 out of 22 on tooth number 31 (13.64%), 3 out of 22 on tooth number 41 (13.64%), and 3 out of 22 on tooth number 42 (13.64%) (Figures 1a-d, 2a-d).

The maxillary permanent right central incisor was the most affected, and the

mandibular left central incisor was the least affected in the study.

Discussion

Abrasion occurs due to abnormal mechanical processes wherein the friction of exogenous material being forced over tooth surfaces results in the wearing of tooth substance^{3,5,6}. Less common forms of abrasion may be associated with the occupation or habits of the patient. Notching the incisal edges of the central incisors often indicates habitual holding of objects such as nails, tacks, and bobby pins between the teeth³. Similarly, the use of teeth as tools in patients with abnormal eating habits may also result in notching. Although a variety of foreign substances, including toothbrushes, can cause abrasion, food is the most common yet the most neglected. The action on a tooth surface is non-anatomically specific, meaning that it happens along the entire occlusal surface, resulting in a wear area⁶.

In general, the sunflower is valued for its nutritional and therapeutic properties. Sunflower seeds have been recognized as a functional food or nutraceutical due to their good health impacts, but their full potential has yet to be realized. Sunflower seeds are high in antioxidants, flavonoids, phenolic acids, procyanidins, phytosterols, amino acids, dietary fiber, potassium, and arginine, monounsaturated and polyunsaturated fatty acids, all of which contribute to the enhancement of human health⁷. Jordan, Syria, Iraq, Saudi Arabia, Lebanon, and Egypt are among the Middle Eastern countries that consume dried, roasted edible seeds such as watermelon, pumpkin, and sunflower seeds⁸. Tooth wear can also be caused by the consumption of vegetables that have not been properly washed⁹. In a review of literature by Warreth A. et al., abrasion lesions due to the consumption of dry sunflower seeds are shown¹⁰. The seeds are placed between the incisal edges of the upper and lower anterior teeth, and sufficient biting force is exerted to open the seed so the inside core can be eaten. The splitting or compressive force of the seed, its hardness, and the abrasiveness of the seed's shell are directly related to the degree of incisal abrasion. The lesion appears as a notch extending over the incisal edge of the anterior tooth. The occurrence of the notching is bilateral and is normally restricted to anterior teeth, indicating that the patient distributes the seeds' eating in the anterior region.



Figure 1. Affected incisors in 4 cases.

- 1a.** Case 1—Incisal edge notching on teeth number 11, 21, 31, 32, 41, and 42
1b. Case 2—Incisal edge notching on teeth number 11, 21, 31, 32, 41, and 42
1c. Case 3—Incisal edge notching on tooth number 11
1d. Case 4—Incisal edge notching on tooth number 21

Figure2. Affected incisors in 4 cases

- 2a.** Case 5—Incisal edge notching on teeth number 11, 31, and 41
2b. Case 6—Incisal edge notching on teeth number 11, 21
2c. Case 7—Incisal edge notching on teeth number 11 and 42
2d. Case 8—Incisal edge notching on tooth number 21

The placement of seeds between incisor teeth and the incisal edges results in variable amounts of abrasion in the form of notching of those edges^{8,11}.

Consumption of dried roasted seeds results in significant tooth surface loss on incisal edges/tips of central incisors and canines. There has been little work in the literature to describe the adverse dental effects of consumption of dried roasted seeds^{8,12-14}.

Epidemiological studies on the prevalence of tooth wear have demonstrated a wide range of findings. It was found that the prevalence of general tooth wear among individuals with at least one lesion was 99.8%, but, the study was limited to adolescents in Kuantan, and the results could not be generalized to adolescents in Malaysia¹⁵. Tooth wear can affect any tooth surface. It is caused by changes to the tooth caused by attrition, erosion, and abrasion. Although each type of tooth wear has its own distinct clinical appearance when present alone, the four types may occur together and interact to form a mixed lesion, which can complicate diagnosis. Tooth wear often remains asymptomatic, so that patients may be unaware of it, and it is only detected during a clinical examination. Accurate prevalence data for each classification are unavailable because indices often only measure a single etiology, or the

study populations are too heterogeneous in terms of age and features.

Identifying the characteristics associated with each etiology will influence how teeth are treated in each categorization. Some situations may necessitate restorative methods, while others may not^{10,16}.

Preventive assessments and regular follow-up will assist in monitoring and avoiding future destruction in mild to moderate tooth wear without functional or cosmetic issues. Management considerations are multidimensional. The choice of materials and the economic differences among various options are factors that significantly influence both patients and clinicians, depending on the severity and impact of wear, along with the patient's preferences. Both professionals and patients care about aesthetic lifespan and the necessity for cosmetic corrections. Restorative intervention is usually best postponed for as long as possible. When such intervention is warranted and agreed upon with the patient, a conservative, minimally invasive approach is advised, supplemented by supportive preventive measures¹⁷⁻²³.

The morphology of the affected tooth may change. It could, however, be asymptomatic, which suggests the patient is unaware of it¹⁰. As seen in the current cases, notching of the incisal margins of the central/lateral incisors is not always connected

with the patient's work or pica habits, and a full food history may aid in the appropriate diagnosis of tooth wear.

Patients were instructed to avoid peeling seeds with their teeth but to continue consuming seeds in other ways, such as choosing unshelled/hulled seeds to peel with a fingernail or using a nut opener. (Sunflowerseed peeling machine manual and battery-operated, which are lightweight and portable, and a manual nut opener are available).

The detection of abnormal tooth wear is critical. Normal levels of attrition necessitate no therapy, with intervention reserved for cases of a pathological degree of tooth loss or when the patient expresses significant aesthetic concerns. Early identification and treatment may help to preserve the permanent dentition. Identifying the causes of tooth structure loss and preserving the remaining dentition are also significant objectives. Restorative methods that do not need major removal of remaining tooth structure are desirable for patients with extensive tooth wear. Intervention should focus on precise diagnosis, preventive actions, and long-term monitoring. Patients should be

advised on how to effectively maintain their oral health. Dietary recommendations may be part of this^{10,24-30}.

Conclusion

Although many tooth wear mechanisms have been identified, most reports in the literature focus on cases where erosion and attrition are the main causes. This article describes a case series of abrasive tooth wear. The consumption of sunflower seeds may be beneficial and protein-rich, but it can also cause irreversible tooth wear. Food history may aid in the appropriate diagnosis of this kind of tooth wear. A greater awareness should be raised among patients about various ways to eat these seeds to maintain their dental health.

Financial Support and Sponsorship:

Nil.

Conflicts of Interest: There are no Conflicts of Interest.

LITERATURA/REFERENCES

1. Kontaxopoulou I, Alam S. Risk Assessment for Tooth Wear. *Prim. Dent. J.* 2015;4(3):25-29.
2. Bassiouny, M.A. Effect of sweetening agents in acidic beverages on associated erosion lesions. *Gen Dent* 2012;60: 322-30.
3. Mehta S, Banerji S, Millar B, Suarez-Feito J. Current concepts on the management of tooth wear: part I. Assessment, treatment planning and strategies for the prevention and the passive management of tooth wear. *Br. Dent. J.* 2012;212(1):17-27.
4. Ogunyinka A, Dosumu OO, Otuyemi OD. The pattern of tooth wear amongst 12-18-year-old students in a Nigerian population. *J Oral Rehabil* 2001;28(6):601-05
5. Shafer A, Hine M, Levy B, Rajendran R, Sivapathasundharam B. *Shafer's textbook of oral pathology.* 7th ed. 2014 pp. 573.
6. Kaidonis J. Tooth wear: the view of the anthropologist. *Clin. Oral Investig.* 2007;12(S1):21-26.
7. Adeleke BS, Babalola OO. Oilseed crop sunflower (*Helianthus annuus*) as a source of food: Nutritional and health benefits. *Food Sci Nutr.* 2020;8(9):4666-84.
8. Hababbeh R, Beyari M, Jutaily S, Odeh N, Hammad O. Effect of dried roasted seeds on tooth surface loss. *Pak Oral Dental J* 2011;31(2):439-42.
9. Levrini L, Di Benedetto G, Raspanti M. Dental wear: a scanning electron microscope study. *Biomed Res Int.* 2014;2014:340425.
10. Warreth A, Abuhijleh E, Almaghribi MA, Mahwal G, Ashawish A. Tooth surface loss: A review of literature. *Saudi Dent J.* 2020;32(2):53-60.
11. El-Mowafy OM. Characteristic abrasion of permanent incisors in Jordanians caused by a bad eating habit. *Quintessence Int.* 1988;19(10):739-44.
12. Ruprecht A, Al-Shawaf MD, Gerard P. The nut notch – a diagnostic sign of an oral habit. *Ann Dent.* 1985;44(2):32-33.
13. El-Nesr NM, Mahmoud H. Notches in incisor teeth. *Alex Dent J.* 1977;2(3):163-71. 14. Rusu Olaru A, Popescu MR, Dragomir LP, Popescu DM, Arsenie CC, Rauten AM. Identifying the Etiological Factors Involved in the Occurrence of Non-Carious Lesions. *Curr Health Sci J.* 2019;45(2):227-234.
15. Ab Halim, N., Esa, R. & Chew, H.P. General and erosive tooth wear of 16-year-old adolescents in Kuantan, Malaysia: prevalence and association with dental caries. *BMC Oral Health* 2018; 18(11): 2-8
16. Litonjua, L. A., Andreana, S., Bush, P. J., & Cohen, R. E. Tooth wear: attrition, erosion, and abrasion. *Quintessence Int.* 2003; 34(6): 435-446.
17. Loomans, B., Opdam, N., Attin, T., Bartlett, D., Edelhoff, D., Frankenberger, R., Benic, G., Ramseyer, S., Wetselaar, P., Sterenborg, B., Hickel, R., Pallesen, U., Mehta, S., Banerji, S., Lussi, A., & Wilson, N. Severe Tooth Wear: European Consensus Statement on Management Guidelines. *J Adhes Dent.* 2017; 19(2): 111-19.
18. Algadhi AA, Tooth Surface Loss: Definitions, Prevention and Diagnosis. *Saudi J. Oral. Dent. Res* 2021; 6(3): 129-33.
19. Djemal S., Darbar U. R., & Hemmings K. W. Case report: tooth wear associated with an unusual habit. *Eur J Prosthodont Restor Dent.* 1998;6(1): 29-32.
20. Murchie B, Jiwan N, Edwards D. What are the success rates of anterior restorations used in localised wear cases? *Evid Based Dent.* 2025;26(1):54-56.
21. Rusyan E, Grabowska E, Struzycka I. The association between erosive tooth wear and diet, hygiene habits and health awareness in adolescents aged 15 in Poland. *Eur Arch Paediatr Dent.* 2022 ;23(2):271-279.
22. Chantler JGM, Pirc M, Strauss FJ, Rohr N, Thoma DS, Ioannidis A. Rehabilitation of the Worn Dentition with Direct and Indirect Minimally Invasive Concepts-A Systematic Review and Meta-Analysis. *J Esthet Restor Dent.* 2025;37(3):690-70.
23. Alani A, Mehta S, Koning I, Loomans B, Pereira-Cenci T. Restorative options for moderate and severe tooth wear: A systematic review. *J Dent.* 2025;156:105711.
24. Lim SN, Tay KJ, Li H, Tan KBC, Tan K. Prevalence and risk factors of erosive tooth wear among young adults in the Singapore military. *Clin Oral Investig.* 2022;26(10):6129-6137.
25. Chantler JGM, Pirc M, Strauss FJ, Rohr N, Thoma DS, Ioannidis A. Rehabilitation of the worn dentition with Direct and Indirect Minimally Invasive Concepts-A Systematic Review and Meta-Analysis. *J Esthet Restor Dent.* 2025;37(3):690-701.
26. VHS, AS Tegginamani. Enamel hypoplasia: a concise review of its factors & pathogenesis. *Am J Oral Med Radiol.* 2016;3(1):48-51.
27. Shanthala BM. McDonald and Avery's Dentistry for the Child and Adolescent: Jeffrey A Dean. Second South Asia Edition 2019. pp. 289-379.
28. Robinson, Max, Soames' & Southam's Oral Pathology, 5th Edition, Oxford University Press 2018, pp.118-119.
29. Chantler JGM, Pirc M, Strauss FJ, Rohr N, Thoma DS, Ioannidis A. Rehabilitation of the worn dentition with Direct and Indirect Minimally Invasive Concepts-A Systematic Review and Meta-Analysis. *J Esthet Restor Dent.* 2025;37(3):690-701.
30. Neville, B.W., Damm, D.D., Allen, C.M., Chi, A.C. Abnormalities of Teeth. *Oral & Maxillofacial Pathology.* 5th Edition, WB Saunders, Elsevier, Missouri, 2024. pp. pp.58-6