OPEN ACCESS Freely available online

ISSN: 2090-2697
Journal of
Forensic Biomechanics

Opinion Article

Evaluation of Occlusal Tooth Wear as a Reliable Indicator in Forensic Age Estimation

Parson Walther*

Department of Radiology, Medical University, Innsbruck, Austria

DESCRIPTION

Forensic age estimation is a crucial component of forensic anthropology, as it helps in determining the age of unknown individuals for medico-legal and identification purposes.

In recent years, occlusal tooth wear has gained recognition as a valuable indicator for age estimation due to its progressive nature and predictable patterns. This essay aims to explore the concept of forensic age estimation through evaluating occlusal tooth wear, discussing its reliability, limitations, and its potential applications in forensic investigations.

Understanding occlusal tooth wear

Occlusal tooth wear refers to the gradual loss of tooth structure that occurs as a result of functional or parafunctional activities such as chewing and grinding. The occlusal surfaces of teeth are subjected to various forces and stresses, leading to surface modifications over time. The process involves wear facets, attrition, and exposure of dentin, ultimately resulting in changes in tooth morphology.

Patterns of occlusal tooth wear

Tooth wear is a complex process influenced by multiple factors such as diet, oral habits, occupation, and genetics. Despite the individual variations, certain patterns of occlusal tooth wear have been identified and associated with specific age groups. These patterns include the formation of cup-shaped wear facets, loss of enamel ridges, exposure of dentin, and alterations in tooth morphology. By analyzing these patterns, forensic experts can make reasonable estimations regarding an individual's age.

Reliability of occlusal tooth wears for age estimation

The reliability of occlusal tooth wear as an age estimation method depends on several factors. Firstly, there is a need for a comprehensive dental database with age-related wear patterns to compare and analyze unknown individuals. These databases should include a diverse range of individuals from different populations and ethnic backgrounds. The availability of such databases would enhance the accuracy and reliability of age estimation through occlusal tooth wear.

Additionally, it is crucial to consider the individual variations in tooth wear patterns due to factors such as genetics, oral habits, and pathological conditions. These factors can affect the rate and intensity of tooth wear, potentially leading to deviations from the expected wear patterns. Therefore, forensic experts should exercise caution while interpreting the results and consider them as an adjunct to other age estimation methods.

Limitations and challenges

While occlusal tooth wear can provide valuable insights into age estimation, it is not without its limitations and challenges. Firstly, the accuracy of age estimation through occlusal tooth wear decreases as the individual ages beyond the middle-age range. This is because the rate of tooth wear tends to slow down or stabilize in older individuals, making it difficult to accurately determine their age solely based on occlusal tooth wear.

Moreover, tooth wear can be influenced by various extrinsic factors, such as occupation and dietary habits, which may differ across populations. Thus, using occlusal tooth wear as a universal age estimation tool may be limited by population-specific variations in tooth wear patterns. It is essential to consider these factors and rely on multiple age estimation methods to enhance accuracy in forensic investigations.

Applications in forensic investigations

Despite the limitations, occlusal tooth wear analysis has significant potential in forensic investigations. One of its primary applications is in cases involving mass disasters, where traditional identification methods may be challenging due to severe decomposition or trauma. Occlusal tooth wear analysis can provide valuable information in such cases, aiding in the identification and age estimation of victims.

Correspondence to: Parson Walther, Department of Radiology, Medical University, Innsbruck, Austria, E-mail: Parsonwalth@gmail.com

Received: 02-May-2023, Manuscript No. JFB-23-21629; **Editor assigned:** 05-May-2023, PreQC No. JFB-23-21629 (PQ); **Reviewed:** 19-May-2023, QC No. JFB-23-21629; **Revised:** 26-May-2023, Manuscript No. JFB-23-21629 (R); **Published:** 02-Jun-2023, DOI: 10.35248/2090-2697.23.14.436

Citation: Walther P (2023) Evaluation of Occlusal Tooth Wear as a Reliable Indicator in Forensic Age Estimation. J Forensic Biomech. 14:436.

Additionally, occlusal tooth wear analysis can be used as a complementary tool alongside other age estimation methods. Combining dental age estimation methods, such as dental development and dental eruption, with occlusal tooth wear analysis can improve accuracy and enhance the reliability of age estimations.

CONCLUSION

Forensic age estimation through evaluating occlusal tooth wear holds promise as a valuable tool in forensic anthropology. While it has its limitations and challenges, occlusal tooth wear analysis can provide important insights into age estimation, especially in cases involving mass disasters or when other age estimation methods are unavailable or inconclusive.

Continued research and the development of comprehensive dental databases can further enhance the accuracy and reliability of occlusal tooth wear analysis, ultimately contributing to the field of forensic age estimation.