

EDITORIAL

The uniqueness of the human dentition revisited: a logical approach to the current impasse

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Over the past four decades several authors have tried to prove the uniqueness of the human dentition. The scientific method and its reliability have all been questioned and in general rejected by the broader forensic community. Studies to prove or disprove the uniqueness of the human dentition have been carried out by: Sognnaes et al¹, Rawson et al², Kieser et al³, Bush et al⁴, and several others. The mere fact that no one has proved the uniqueness of the human dentition by 2023, confirms that the hypothesis is problematic. Most of the referenced research studies were carried out on study models which disregarded the fact that the dentition is dynamic, ever changing and exposed to outside forces.

To understand the real problem related to the uniqueness of the human dentition several basic principles need to be explained and understood: uniqueness, attrition, Locard's exchange principle and infinity. Uniqueness is defined as the quality of being the only one of its kind and is a state or condition wherein someone or something is unlike anything else in comparison, or is remarkable, or unusual.⁵ Dental attrition is the loss of tooth structure or tissue caused by tooth-on-tooth contact during mastication.⁶ The signs and symptoms of attrition can include: loss of tooth anatomy resulting in loss of tooth characteristics, including rounding or sharpening of incisal edges, loss of cusps and fracturing of teeth. By implication this means that every time the teeth touch, some form of tooth damage will occur, albeit on a molecular level. Locard's exchange principle states that every contact leaves a trace, and this applies on a macroscopic and microscopic level.⁷ By implication every time the teeth touch there is a change in form, albeit on a molecular level. The extent of transfer depends on three variables, namely the intensity of contact, the duration of contact and the nature of the material. Infinity is a mathematical concept which defines a number greater than any assignable quantity or countable number and is designated the symbol ∞ .⁸

If one takes all the above principles into context, it becomes clear that the dynamic/living dentition is subject to visual, microscopic and molecular changes every time the upper and lower teeth make contact, creating infinite changes, an infinite number of times. **The human dentition is thus unique for a split second every time the teeth touch.** After every contact we have a unique dentition, different to any on this planet at a molecular level. This uniqueness will only last until the next tooth contact. This process will then be repeated

J Forensic Odontostomatol

2023. Dec;(41): 3-2:3

ISSN :2219-6749

every time the teeth make contact. This process will take place an infinite number of times throughout the individual's life time. The irrelevance of uniqueness is highlighted in an article entitled "Forensics without uniqueness, conclusions without individualization: the new epistemology of forensic identification" written by Cole⁹ in which he states "broad consensus in the forensic literature holds that individualization

is unachievable and uniqueness is largely irrelevant to supporting claims of individualization."

The time has come to accept the above and adapt the science of forensic odontology to address the challenges of human identification and bite mark analysis in an environment where the uniqueness of the human dentition will remain a theoretical concept.

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