Odontography

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INTRODUCTION

The curious combination of the contrasting hardest and softest tissues in the human body incorporated into teeth requires introspection. The vastly varying modalities of different tissue types, from soft dental pulp and periodontal ligament through cementum into dentine and enamel incorporated in human teeth is astonishing. The durability of human dentitions correlates with their longevity. Moreover, teeth are the longest lasting organs after death, defying postmortem decay, yet contrastingly so susceptible to caries during life.

The complex morphology of teeth reveals an historical background of food acquisition from palaeontological evidence.[1] The amount of detailed historical information that can be gleaned from a meticulous examination of teeth is incomparable. The molecular mechanisms of dental enamel formation are revealed in it being a unique acellular highly mineralized tissue.[2]

Apart from the immediate evidence provided by surface examination of the dentition, revealing attritional wear, indicative of abrasive dietary comestibles or habitual tooth grinding. The intrinsic composition of the tissues comprising teeth can be revelatory. Dietary intake of elements such as lead can integrate into the elemental components of enamel and dentine. The very shapes of teeth are determined by evolutionary inheritances that are designed for stress resistance and mitigation of strains.[3]

The various morphologies of teeth are optimal for stress resistance, but a trade-off for maximal crush efficiency and bite ability is achieved through their different dental shapes. Hence, incision by incisiform teeth anteriorly, caniniform punchability by canines intermediately and crushing by molars posteriorly indicate the division of masticatory functions among teeth.Maximum degradation efficiency with the least kinetic energy required is attained by the various tooth shapes during mastication.

Differential Diagnostics.

Detailed dental wear analysis can reveal much about the dietary constituents of the subjects investigated. Herein, the detailed isotopic analysis of enamel can reveal meat or plant-based diets ingested, both currently and paleo-environmentally.[4]

Moreover, enamel growth revealed by incremental additions during morphogenesis can provide evidence of environmental variations during development. Evidence adduced from ancient Roman dentitions developed during 70-400 AD indicate rapid enamel growth, that slowed in medieval times to modern day rates.[4]

Deciduous teeth composition can reveal the dietary intake of mother's milk contrasting with cow's milk or pablum ingestion. The occurrence of surface wear on deciduous teeth can indicate the age of weaning and the acquisition of masticatory ability in infants and the age of transition to comestibles.

The variation in enamel thickness among Primates is indicative of their habitual diets. Human dental enamel is thickest over molar cusps, up to 2.5 mm thick.[5] Orangutan dental enamel thickness and periodicities of development results in longer crown formation times.[6] Orangutan dental enamel in molars ranges from 0.75 to 2.18 mm, and is thicker than that of Chimpanzees.[7] This discrepancy reflects the harder fruits of Orangutan diets contrasting with the softer, riper fruits preferred by Chimpanzees.

CONCLUSION

The amount of lifestyle information that can be extracted from teeth is phenomenal. The diet, climate of existence, metabolic status and approximate age at death can be elicited from the dentition. Any deviation of the genetically determined pathway of odontogenesis is permanently imprinted on the teeth. Teeth can tell postmortem tales like no other organ. The dentition is the ultimate lexicographer of lives lived.

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