

Dental Modifications

- Unintentional: through repetitious motions related to occupation, accidental fractures, etc
- 2. Intentional: require forethought and desire to change the look or presence of teeth in the jaws

Move over pearly whites and golden grills!

Not a recent phenomenon but one that started several millennia ago



The earliest dental modification

7th century BC among the Etruscans



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- ❖ 2 teeth fixed within a gold band by 2 fastenings
- Both teeth have been shaped, filed down to the same size to create clean, square edges.
- ❖ The spaces on either side of the two fixed teeth suggest how the device might have been worn, with the gold bands fitted around living teeth.







- 20 devices have been found from Etruria
- All with pure gold bands
- The purity of the metal lends it a high malleability, enabling the wearer to mould the band in the mouth to secure its position

- ❖ Meant to be flashy & noticed → isolated to the labial teeth (incisors & canines)
- Different types (e.g., staining teeth)



tooth removal, inlays

cutting

incising



1. Incisor teeth inlaid with gold (Source: Ancient-Origins.net)



2. Dental Cutting/Filing (Source: University of Minnesota-Duluth)



3. Incised teeth (Source: Forsyth Gallery)

- * A variety of different patterns were used to cut and incise teeth, which varied culturally
- ❖ Teeth were drilled for gold, pyrite, & jade inlays, which were cut precisely to fit into the tooth/teeth

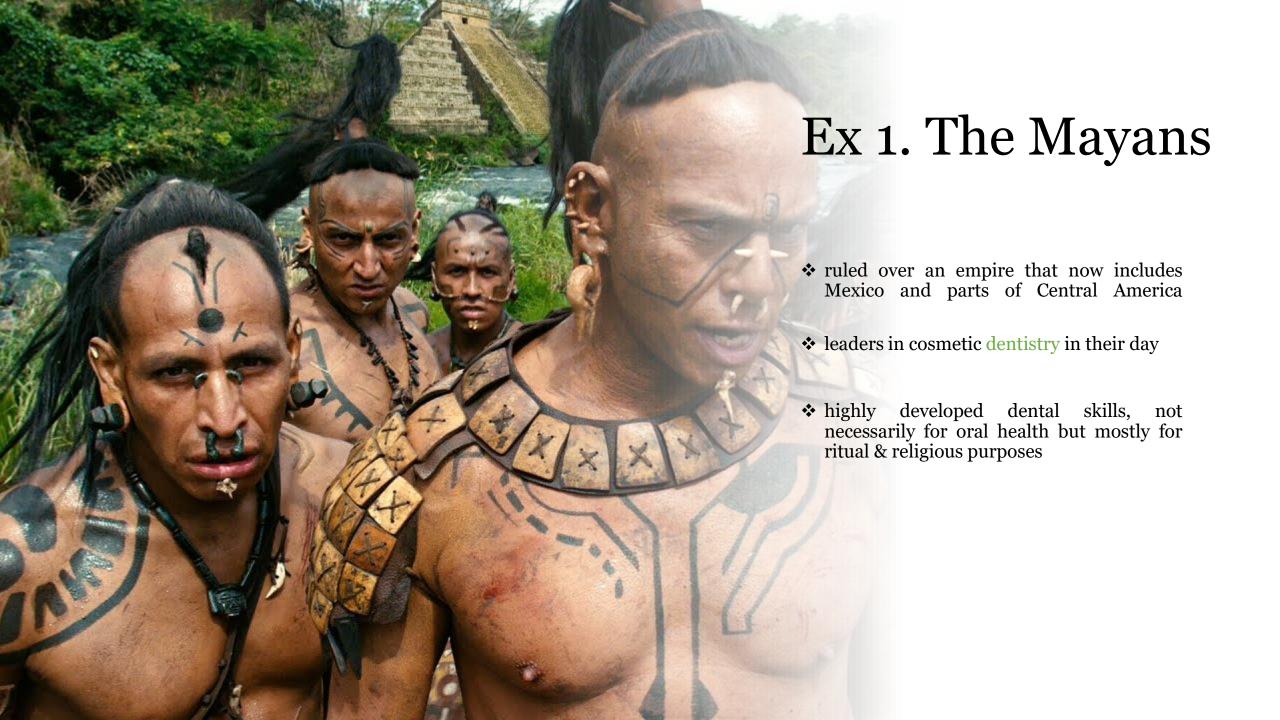


Where? Teotihuacan
When? 350 to 450 AD



<u>A woman</u>
<u>A jadeite tooth that was cemented or attached with fiber to her mandible</u>





• Between 250 - 900 CE Mayan royalty would decorate their teeth with pieces of Turquoise, Quartz, Pyrite, Jade and other precious stones



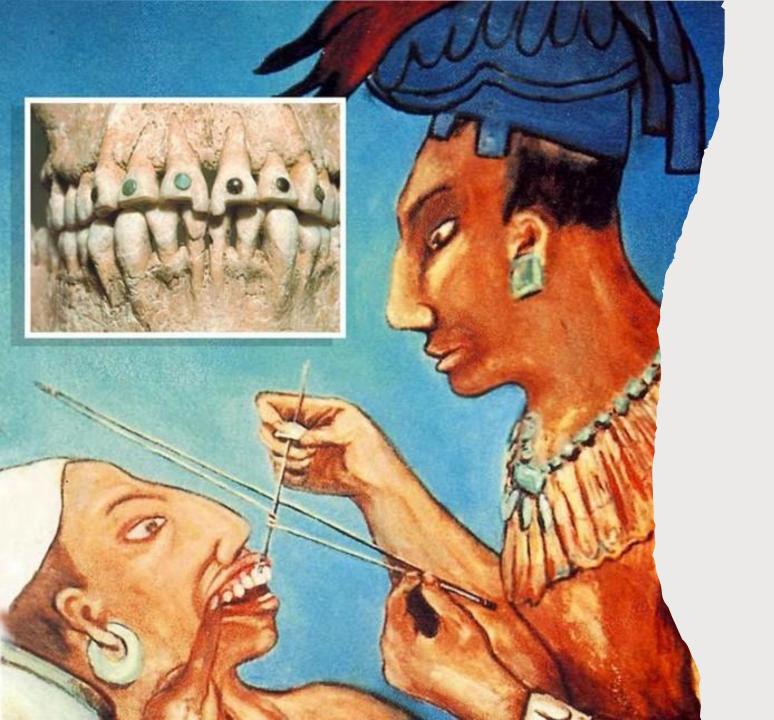






Jade was:

- 1. a very special stone to them
- 2. worn as a statement that they were responsible for life-giving rain, fertile crops, & ensuring their people were well fed and prosperous



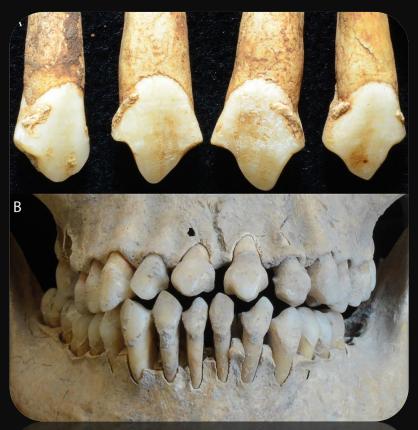
- 1. The gemstones were created as stone inlays then placed in man made cavities in the front teeth
- 2. A straw like tube usually made from copper was spun between the hand or in a bow/rope drill
- 3. an abrasive slurry of powdered quartz and water was used to cut a round hole through the enamel
- 4. Occasionally, a thin, sharpened animal bone hardened by fire may have been used
- 5. An adhesive made from plant sap and crushed bones was used to cement the gemstones in place

Ancestors of the Mayan living in South East Mexico, Belize, Honduras & Guatemala still carry on the tradition of tooth adornment





Social Identity and Dental Modification at the Postclassic Maya Urban Centre of Mayapan Serafin et al. 2021



Late Postclassic Mayapan burials exhibiting C pattern of tooth filing: (A) Maxillary incisors of young adult female burial 09-01; (B) Middle adult female burial 21



Late Postclassic artistic depictions of personages with pointed teeth: (A) female Chen Mul Modeled effigy censer from Zacbo, Yucatan (courtesy Alfredo Barrera Rubio); (B) female Matillas Fine Orange ceramic figurine from Aguacatal (redrawn by Wilbert Cruz Alvarado after Matheny Reference Matheny1970, fig. 52a); (C, D) male Chen Mul Modeled effigy censers from Mayapan.

Ex 2. Southeast Asia

14th- 16th century: Tooth adornment was common practice among pre-colonial Filipinos

According to Ancient Filipino mythology the creator of the world, Melu had solid gold teeth The Filipino tribes followed in his footsteps:

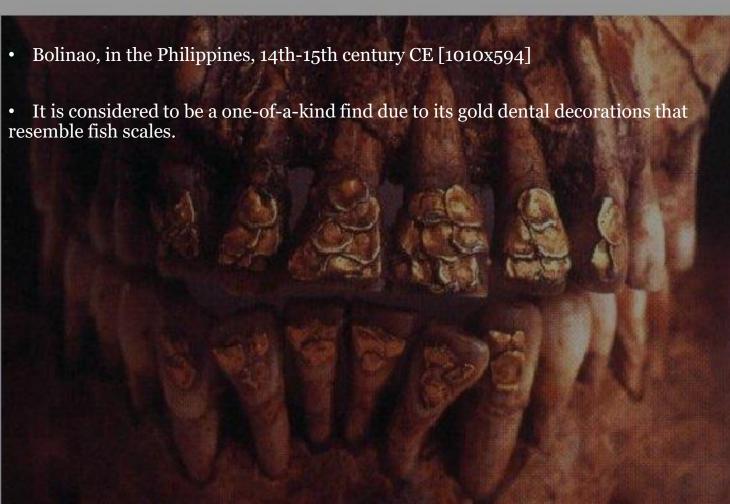
- 1. Fill down & decorate their teeth with gold
- 2. Cover their front teeth with fitted gold bands
- ❖ The bands made it impossible to speak but were removed to eat
- ❖ They were worn for rituals & passed down for generations
- ❖ The oldest examples date back to 1300AD







The Bolinao Skull



Tooth staining occurred through the habitual chewing of specific plants: Tobacco Betel leaves





ethnicity



 Some scholars have debated if gender was a motivating factor in completing dental modifications, but this does not seem to be the case

•

• The most common motivation cited in the literature is social status, though, which is not too far off from modern motivations for intentional dental modifications



aesthetics





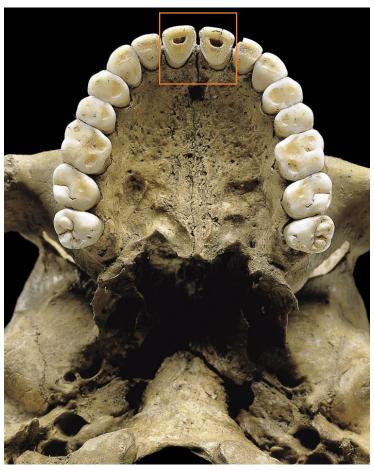


fighting off evil spirits

appear fearsome in battle



Eastern Germany 9,000 years ago A shaman's front teeth filed down to the pulp early in life



Photograph Juraj Lipták

Since no other European culture exhibited this practice and Vikings travel quite a lot, anthropologists believe they learned these techniques from other places — it's unlikely that they developed the technique themselves, researchers believe



Image via British Museum

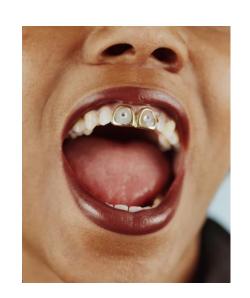
Social Anthropology for more data?

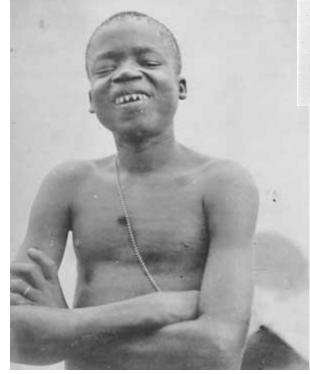
Through participant observation, perhaps a dental modification ceremony can be witnessed so that the process can be fully documented

❖ Also, interviews with people who have had their dentition modified could help shed light onto reasons

why filing and ablation are still occurring







<u>Ota Benga</u>, a famous Congolese pygmy, shows off his sharpened teeth

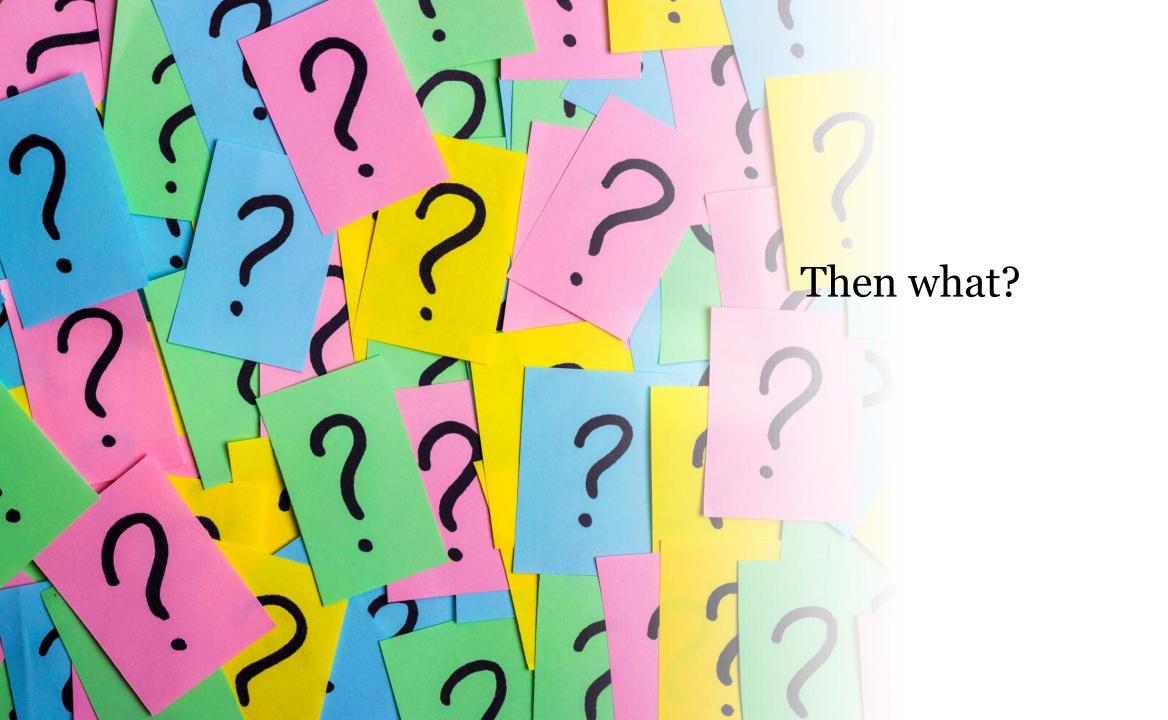


A man with filed teeth (probably Mentawai) smokes in a photograph by Dutch photographer Christiaan Benjamin Nieuwenhuis who worked in Sumatra

Bibliography

- 1. Barnes, D.M. 2010. "Dental Modification: An Anthropological Perspective." University of Tennessee Honor Thesis.
- 2. Haour, A. and J.A. Pearson. 2005. "An Instance of Dental Modification on a Human Skeleton from Niger, West Africa." *Oxford Journal of Archaeology* **24**: 427-433.
- 3. Mayes, A.; A. Joyce; S. Barber; C. Morgan. 2015. "Intra and Inter Regional Variation of Dental Modification and Social Complexity: A Test from the Lower Río Verde Valley, Oaxaca." Presented at The 80th Annual Meeting of the Society for American Archaeology, San Francisco, California. 2015 (tDAR id: 395458)
- 4. Mower, J. P. 1999. "Deliberate Ante-mortem Dental Modification and Its Implications in Archaeology, Ethnography, and Anthropology." *Papers from the Institute of Archaeology* **10**: 37-53.
- 5. Pacey, L. 2014. "Viking Teeth Offer Insight into Cultural Status." British Dental Journal 216: 445.
- 6. Pritchard, B. 2011. "Maya Cranial and Dental Modifications." *Totem: The University of Western Ontario Journal of Anthropology* **14**: 57-77.
- 7. Roksandic, M.; K. Alarie; R.R. Suárez; E. Huebner; I. Roksandic. 2016. "Not of African Descent: Dental Modification among Indigenous Caribbean People from Canímar Abajo, Cuba." *PLOS One* 11: 1-15.
- 8. Ullinger, J. No Date. "It's the Tooth: Dental Remains & Archaeology." Asor Blog. http://asorblog.org/2009/04/12/its-the-tooth-dental-remains-archaeology/
- 9. Wasterlain, S.N.; M.J. Neves; M.T. Ferreira. 2015. "Dental Modifications in a Skeletal Sample of Enslaved Africans Found at Lagos (Portugal)." *International Journal of Osteoarchaeology* **26**: 621-632.





Successful Enrichment and Recovery of Whole Mitochondrial Genomes From Ancient Human Dental Calculus

Andrew T. Ozga, Maria A. Neves-Colón, Tarwi P. Honap, Krithivasan Sankarananyanan, Courtney A. Hofman, George R. Milner, Cecil M. Lewis Jr., Anne C. Stone, 23 and

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KEY WORDS assistat DNA; dental calculus; mitigements; mitochondrial genome; next-generation sequencing; in-solution capture snextiment; NAGPRA; othor; Mississippion culture.

Grant spenser: National Science Foundation, Grant numbers; ECS-3905929; ECS-1115515 (to. A.C.S.; ECS-150693) (to. C.W.; Grant spenser; National Institutes of Health; Grant number; Bit GSS-98966 (to. C.M.); Grant sponser; Illinois State Massers.

DOI: 30.3005/sjan.22900 Published order 10 Morch 2018 in Wiley Chiline Library orthopoliseddywyconn

Sexual Dimorphism in Modern Human Permanent Teeth

Gary T. Schwartz, 14 and M. Christopher Dean²

KEY WORDS enamel thickness; dentine; dimorphism; tooth weight; growth and devolutions of

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Publications

AMERICAN JOURNAL OF PHYSICAL ANTHROPOLOGY 113:135-139 (2000)

Brief Communication: The Timing of Linear Hypoplasias on Human Anterior Teeth

D.J. REID^{1*} AND M.C. DEAN² Department of Oral Biology, Dental School, Newcastle upon Tyne NE2 4BW, UK **2Evolutionary Anatomy Unit, Department of Anatomy and Developmental Biology, University College London, London WC1E 6BT, UK

KEY WORDS enamel hypoplasia; incremental markings; cross

ABSTRACT One hundred and fifteen unworn anterior teeth were sectioned longitudinally with a diamond saw and prepared for histological examination by polarized light microscopy. Incremental markings in the enamel of each tooth were used to estimate the average total crown formation times of each tooth type. The total time taken to form the crowns of each tooth type was apportioned by 1) cuspal enamel formation and 2) each tenth percentile of total tooth height. Based on these data, and on histological estimates for the time of initiation of mineralization in each anterior tooth, the following conclusions can be drawn. Little if any visible surface enamel is likely to form before the end of the first year after birth in any anterior tooth type. No relation exists between tooth crown height and the total time taken to form enamel. Anterior crown formation is nonlinear and slows towards the cervix in all teeth. The estimated mean chronological age at crown completion ranged in this study from between around 4 years for lower central incisors to around 6 years for lower canines. We suggest that these combined findings will be useful for devising more reliable ways to estimate the timing of linear enamel hypoplasias than some methods currently in use. Am J Phys Anthropol 113:135-139, 2000. © 2000 Wiley-Liss, Inc.

Serious childhood diseases disrupt enamel Hillson and Bond (1998) and others have and dentine formation. The resulting hypo- gone to some lengths to establish the fact plastic lesions (of which there are several that teeth do not grow in a simple linear types; Hillson and Bond, 1998) may appear manner from cusp tip to root apex. They on the surface of both tooth crowns and demonstrate clearly that a variable amount roots in positions that reflect the timing of of cuspal enamel formation occurs after inithe illness during childhood. In a recent re-tial mineralization. This cuspal enamel view, Goodman and Song (1999) note there never appears on the surface of a fully are now around 1,000 publications on dental grown tooth, and so, hypoplastic defects enamel defects, of which the aim of many caused by illness during the time cuspal has been to estimate the incidence of child-enamel is forming remain hidden from view. hood morbidity in past and present popula- Despite this, Santos and Coimbra (1999) tions. Increasingly, there is recognition in and others continue to use standards to age this literature that the initial timing of mineralization as well as the time it takes to form the enamel of individual tooth types is not as usefully documented as it might be [-mail: D.J.Reid) Newcastle Upon Tyne, NE2 4BW, UK.

Newcastle Upon Tyne, NE2 4BW, UK. for these kinds of studies.

o 2000 WILEY-LISS INC

Received 8 December 1999; accepted 13 March 2000.

Brief Communication: Enamel Thickness Trends in the Dental Arcade of Humans and Chimpanzees

Tanya M. Smith, 1st Anthony J. Olejniczak, 1 Stefan Reh, 1 Donald J. Reid, 2 and Jean-Jacques Hublin

Department of Human Evolution, Max Planck Institute for Evolutionary Anthropology, D-04103 Leipzig, Germany Department of Oral Biology, School of Dextal Sciences, Neucostie University, Neucostie upon Plan NE2 4838, UK

 $K\!E\!Y$ WORDS haminin evolution; hominoid; teeth; average enamed thickness; relative enamed thickness

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Variation in Crown and Root Formation and Eruption of **Human Deciduous Teeth**

H.M. Liversidge1" and T. Molleson2

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Associations & Forums



Dental Anthropology Association

The Dental Anthropology Association (DAA) supports the exchange of knowledge and strives to stimulate interest in dental anthropology. We also publish the journal, "Dental Anthropology."

Expeditions

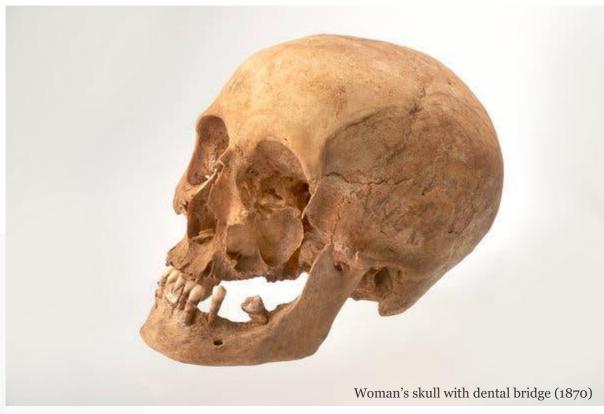


The Wellcome Collection, a London museum that explores the crossover between medicine and the arts, looks at the history of dentistry in a new exhibition. Credit...Wellcome Collection; Utrecht University Museum Collection; Museum of London



Mayan tooth inlaid with jade





Carved ivory upper and lower dentures (18th century)



A caza de dientes.





In 1960s...

British Dental Association says that the figure is now around one ton

There's still room for improvement

And more to do about research on human teeth!

Thank you

