

Annalise Valdivia

Professor Dr. Jordan Hanson

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Dental Work in Ancient Mayan Culture

In today's society teeth are the most important thing regarding appearance and health, like the rest of humanity, the Mayan civilization also acknowledges that their teeth meant more than just bones growing out from their gums. Ancient Mayans believed their breaths were intertwined with the divine, allowing them a sense of closeness to their God. Holding such religious values, Mayans believed that by modifying the appearance of their teeth through decorative dental procedures, they were representing their religious culture. Mayan dental modification practices provide evidence of some of the earliest forms of modern dentistry, highlighting their significance in the evolution of dental care.

In different Regions of Mexico, scientists have uncovered an array of skeletal artifacts including an assortment of teeth providing dental records dating back from the Middle Preclassic period, from [1000 to 400 BC](#). While examining these dental artifacts, scholars follow a modification/mutilation classification called Romero's tooth mutilation types,

“Romero (1970: 50; 52) identified three modes of modification which include: (a) alteration of the contour of the dental crown, (b) alteration of the labial surface, and (c) alteration of both the contour of the crown and the labial surface” (Journal of Archaeological Science, Volume 115).

It is from these records and Romoro's classifications that archaeologists, dentists, and scientists have been able to confirm and document such historic dental practices. It is also from these dental records that many believe that these practices occurred for religious beliefs, appearance, and rite of passage. Furthermore, it is also believed that dental procedures among the Mayans served as a way to determine one's social standing, "The most persistent hypotheses focus on its use as a social status indicator, for defining local family affiliation, or indicating lineage ties" (Journal of Archaeological Science, Volume 115). While using their teeth to represent social status, they used their teeth to join a kinship with their God through fashions and styles.

In having a deep respect and admiration for lineage and religion, Mayans had the most respect for their god and culture. As a way to show respect to their God, women and men would perform various procedures to modify and decorate their teeth, As Samuel Fastlight states,

"Three kinds of mutilation are known: filing, inlay, and a third, which is a combination of both. By these methods, the natural denture acquired complicated and beautiful designs of religious significance, which were undoubtedly the pride of their owners. We note that the work was purely ornamental and was never done for restorative dental purposes" (Fastlicht, 394 - 305).

It is from the skeletal remains that dentists and archaeologists were able to see these dental mutilations in person. Mayans whose mutilations were determined as a religious practice were those who had stone carved inlays that played a hole in the tooth's enamel that was filled with various materials. As the Fresh Dental & Implant Clinic describes,

"These inlays were made of minerals such as; turquoise, quartz, cinnabar, serpentine and jadeite. Two different types of adhesives were used to secure the inlays including liquid amber and the other from the maguey plant. Archaeologists have found that due to the

gems used, the inlays were mainly confined for the upper classes” (Fresh Dental & Implant Clinic).

As previously mentioned, other than utilizing their teeth to reach the connection with their god, Mayans did utilize their teeth as a social ranking just like what people from the 21st do with cars. Serving as a fashion statement, Women would dye their teeth a red or black color to enhance the appearance of their smile. Ingredients used to create these dyes were “ derived from insects and were named cochineal” (Fresh Dental & Implant Clinic). It is known that archaeologists have discovered a wide array of patterns, reaching more than fifty. With such a variety of patterns, many procedures were made popular among the Mayans to fit in the social crowd.

As discussed earlier, Mayans would gravitate to many forms of mutilation, but one of the first techniques used for teeth procedures was dental fillings. Teeth would be filled with cement and water which lasted longer, making it possible for later discoveries and research. It is important to note, “for technical as well as aesthetic reasons, mutilation was done preferably on the six anterior teeth of the maxilla” (Fastlicht, 395). This was done so that intricate designs could be better seen by others. As a way to determine whether these procedures were done during the subjects' life, researchers would conduct extensive X-ray studies. As Fastlicht writes,

“In one of these lowers there is an abscess, resulting from a lesion probably produced during the preparation of the cavity which was to receive the inlay. Another fine complete specimen has six anterior teeth with five inlays, one lost, four of hematite, and one which appears to have been replaced with a jade inlay during the individual's life. There is an abscess in the upper lateral incisor, with the green inlay (Figs. 3 and 4). These lesions prove the inlays were made during life, a point we have checked by X-ray studies in earlier reports in 1947” (Fastlicht, 395).

From this, we can infer that they acknowledge that most and all of these mutilations were done during their lifespan, as Flashlight proves proof that an abscess was found in correlation with the jade inlay.

In having such carefully thought out and intricate dental procedures, the Mayans would make sure that those who could operate were knowledgeable of the dental anatomy and skilled at their craft. As Scott E. Burnett and Joel D. Irish mention,

“Practitioners used different techniques to obtain the desired morphological changes and visual effects. Microscopic analysis of the striations in freshly filed teeth suggest that hard stones, such as chert or obsidian blades, must have been the tool of choice. This finding confirms local ethnohistorical sources that report that elderly women would use “stones” to cut or grind down teeth” (Scott E. Burnett, Joel D. Irish 274).

Such tools were handy when dealing with intricate designs that dealt with precise precision. Since these procedures were done before modern medicine Mayans had to invent and craft tools that allowed for easier and exceptional prepositions that executed less tooth damage, as a result, the bow drill was utilized. As Fresh Dental & Implant Clinic explains,

“Ancient Mayan dentists used a bow drill to perform procedures. The drill was made from metal, mounted on a shaft and was then rotated by the bow. It was the main tool that the Mayans used to carry out various dental procedures. They were so skilled with this tool, that they could carefully carve into a tooth without generating an infection, break a tooth or provoke the loss of a tooth” (Fresh Dental & Implant Clinic).

The Ancient Mayan bow drill exemplifies the ingenuity of the Mayan Civilization, from its ability to perform intricate procedures with precision while minimizing infection. This not only

reflects their advanced understanding of dental care but also highlights the sophisticated medical practices that laid the groundwork for modern dentistry.

As the archaeologist continued to uncover many dental artifacts they noticed that a large portion of the specimens had no sign of tooth decay, or infections, and had mostly all their teeth intact. Archeologists and dentists liked to contribute to the Mayans' consistent dental hygiene as a factor from chew sticks that were used as toothbrushes to copper instruments used to remove tartar, but one practice that dentists believe is the main contributor to Mayans' dental hygiene would be the adhesives used to glue tooth gems. As Scientific journalist Richard Kemeny explained,

“Most samples included ingredients found in pine trees, which other research suggests can fight bacteria that cause tooth decay. Two teeth showed evidence of sclareolide, a compound found in *Salvia* plants that has antibacterial and antifungal properties, and is currently used as an aroma fixative in the perfume industry. Sealants from the remote outer Copán region, near the border of modern Honduras and Guatemala, included essential oils from mint plants whose components potentially have anti-inflammatory effects. This ingredient wasn’t found elsewhere, possibly reflecting connections with other Maya groups or traditions” (Kemeny).

The use of local materials such as plants and herbs as tooth adhesive shows the ingenuity of the Mayan people and their ability to practice modern medicine without modern supplies. Kemeny also brings into conversation the importance of dental hygiene not only as a practice but as a learning point of Mayan Couture when he cites,

“Oral hygiene was important to the Maya, says co-author Vera Tiesler, a bioarchaeologist at the Autonomous University of Yucatán. She points to Janaab’ Pakal, the Maya king of

Palenque, who died in 683 C.E. at the age of 80 with nearly all his teeth and no signs of decay in those that remained—a tribute to the remarkable dental skills of his people” (Kemeny).

In mentioning the state of the Late Mayan king, journalists bring into conversation the validity of the Mayan dental practice and their ability to be a direct reflection of modern dentistry.

What many may question is how the Mayans were able to withstand such invasive and painful procedures, but from studies, scholars have provided context to our curiosities. Since Mayans were pioneers in utilizing their natural resources, they used herbs and plants to help numb the pain from such invasive dental procedures. As the National Library of Medicine states, “For the treatment of the dental pain, they used the root of Chicalote (*Argemone Mexicana* L. [Papaveraceae]) as a reliable anesthetic” (Martínez, Gómez and Sook Oh). Not only did the Mayans practice a form of advanced dentistry, they combined their research and procedures with the study of botany. In utilizing various herbs to cope with pain, Mayans practice dentistry with a modern mindset that helps further the understanding and anatomy of teeth and nerves. As the National Library of Medicine mentions,

“Herbal medicine is not a fad; rather, it reflects a wide and varied range of therapeutic resources, including homeopathy, acupuncture, and various forms of psychotherapy, as well as therapeutic agents derived from plants. Plants have been proposed as an alternative treatment for buco-dental diseases, a domain in which long-term reliability is an important aspect of treatment” (Martínez, Gómez and Sook Oh).

The use of herbal remedies for dental pain underscores the enduring value of herbal medicine, emphasizing its integration with diverse therapeutic practices and its potential to offer sustainable, plant-based solutions for long-term health challenges, particularly in the realm of oral care. Thus illuminating how detrimental the Mayan dental practice was to the development of the dental industry as a whole.

The rich history of dental practices reveals a remarkable continuity in techniques that have shaped modern dentistry. Without the curiosity of the Mayan civilization, much of the medical knowledge we possess today would have not been possible without their scientific mindset. In recent years, the procedure for dental inlays and onlays remained similar to the Mayan technique. As Jean-Francois Roulet and Michael Noack explain,

“The use of posterior composites as an amalgam substitute does not seem very promising. There are still many unsolved problems related primarily to polymerization shrinkage. Furthermore, their use requires a perfect technique, which is difficult and time-consuming. Inlays that are cemented with composites and adhesive techniques are a good alternative because the mass of the composite polymerized in the oral cavity is very small” (Roulet and Noack, 42).

To this day, the most favored and successful dental technique has its roots in Mayan dentistry. Mayans were able to create and procedure a dental technique that not only saved patients from tooth decay but also provided validity to the structure of the dental industry as a whole. Their innovative approaches laid the groundwork for many contemporary practices, emphasizing the importance of both functionality and aesthetics in dental care.

The dental practices of the Mayan civilization reveal a sophisticated understanding of oral health and the cultural significance of dental aesthetics. Mayans not only practiced exceptional

dental hygiene but also utilized their teeth as a way to display intricate modifications for religious and social purposes, this was accomplished by their ability to utilize natural materials from their land. The evidence gathered from skeletal remains and archaeological findings illustrates the Mayans' advanced techniques and tools, which parallel modern dental practices. Their integration of herbal medicine for pain management further illustrates their innovative approach to healthcare. Ultimately, the legacy of Mayan dentistry is profound, highlighting a rich tradition that contributed to the evolution of dental care that has influenced contemporary dentistry today.

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