

## DENTAL METRIC AFFINITIES OF THE NAZLET KHATER SPECIMEN FROM EGYPT

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## Another Talon Cusp: What Does It Mean?

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Recently, Triona McNamara (1997) published in *DENTAL ANTHROPOLOGY* an interesting note on a rare feature she had found on the labial surface of a lower central incisor in a young Caucasian male. In her communication she also solicited comment on this feature, called talon cusp, which is the reason for the present note. I have seen several of these incisor labial structures during my on-going world survey of modern human crown and root morphological variation, but only rarely did I take the time to photograph any examples, nor have I systematically made observations on their occurrence and form. This note provides one of my very few such photographs, which I will discuss in a moment.

In McNamara's literature review of talon cusps, she found that they occur most often on the permanent upper lateral incisors, and based mainly on two articles, that they seem to be associated with incisor shoveling, peg-shaped lateral incisors, unerupted canines, three-rooted lower first molars, impacted mesiodens, and odontomes (McNamara, 1997:19).

Studies of worldwide human dental variation have shown that shoveling, three-rooted lower first molars, and odontomes are characteristically found in Asians and populations of relatively recent Asian-derivation such as Native Americans, Polynesians, and Micronesians (Scott and Turner, 1997). Peg-shaped incisors are probably more common in Western Eurasians than in other modern human groups. The frequencies of unerupted canines and impacted mesiodens around the world and in the past are largely unknown. Hence, the associations of incisor talon cusps would suggest they are perhaps more likely to be found in Sino-Americans and Sunda-Pacific populations than in other dentally-defined major human groups (Scott and Turner, 1997). As the dental pattern associated with Sino-Americans seems to have evolved by at least the time of the Chinese Choukoutien Upper Cave skeletons (ca. 30,000 B.P.), then incisor talon cusps might also be expected to be found in late Pleistocene examples of Sinodont teeth. As there are



Fig. 1. Talon cusp on the labial surface of the left upper permanent lateral incisor of a prehistoric Indian from Petrified Forest district, northeastern Arizona. Right lateral incisor has large tuberculum dentale. Smithsonian Institution, National Museum of Natural History 213333.

very few teeth of such antiquity from northeast Asia, and none exhibiting talon cusps, the only source of information on these interesting structures must come from observations of derived later populations.

Archaeology, dentition, most genetics, other physical anthropological characteristics of Native Americans, and natural history overwhelmingly point to far northeast Siberia as their proximate ancestral homeland. Artifact and biological similarities in northeast Siberia and Alaska demonstrate that their route to the Americas was across the now-submerged Bering land bridge. Inasmuch as no convincing evidence has been found for human occupation of Alaska before 12,000 years ago, and no earlier than 15,000 for northeast Siberia (West, 1996), then the following example of a prehistoric Sinodont American Indian with an incisor talon cusp would suggest that the trait and its morphogenetic development process is at least 12,000 years old, assuming that it was brought by the Paleo-Indian population that initially colonized the New World. This assumption is not unreasonable given that there is no known morphological feature in Native American dentitions that has not been found in greater or lesser frequencies in the Old World. Thus, it is unlikely that incisor talon cusps found in Native Americans are due solely or even mainly to post-colonization mutations.

Fig. 1 shows the upper permanent incisors of a prehistoric American Indian excavated in the first part of this century by Smithsonian Institution archaeologist Walter Hough in the Petrified Forest district, northeastern Arizona, as part of the Museum-Gates Expedition. The skeleton (213333) is curated in the National Museum of Natural History, Washington, D.C., and is that of a young adult female. The central incisors have only moderate shovelings, while the laterals have stronger expressions, although not symmetrical because the right one has a very large *tuberculum dentale*, whereas the left one has none. The left lateral incisor, however, has a pronounced talon cusp giving the tooth a decidedly triangular cross-section. This condition should not be confused with the T form or triform variants of the upper permanent lateral incisors (Bailey-Schmidt, 1995; Bailey, Turner, and Williams, 1997), which are forms that are found on the lingual surface in conjunction with *tuberculum dentale* expression. There is no talon cusp on the right lateral incisor.

The phylogeny of upper lateral incisor variation, especially *tuberculum dentale* and its highly variable expression, remains as baffling as any other crown or root trait that I know of. Now, does the talon cusp need to be considered as part of that evolution? At times I have thought that *tuberculum dentale* represented some manner of the ancestral mammalian third incisor, but always in the end the idea was abandoned because the lower incisors lack comparable lingual surface morphology. McNamara's finding of a lower incisor talon cusp suggests that it might be useful to reconsider the third incisor-*tuberculum dentale* idea. This possible link might be enhanced if it could be shown in a quantitative fashion that lower incisor talon cusps occur significantly more often on the central than on the lateral incisor—the reverse of *tuberculum dentale* following the fact that lower central incisors are congenitally absent more often than are the laterals. Is the lower incisor talon cusp the counterpart of the upper incisor *tuberculum dentale*, and

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are both some manner of reversed residual expression of the ancestral mammalian third incisor? Like McNamara, I too would appreciate comments on the talon cusp, particularly as they might bear on the notion of "atavistic" third incisor expression.

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- West FH (editor)(1996) *American Beginnings: The Prehistory and Paleoecology of Beringia*. Chicago: University of Chicago Press. very few teeth of such antiquity from northeast Asia, and none exhibiting talon cusps, the only source of information on these interesting structures must come from observations of derived later populations.

## DENTAL ANTHROPOLOGY AT THE UNIVERSITY OF CALIFORNIA, SANTA BARBARA

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Researchers in the bioarchaeological lab directed by Phil Walker at the University of California, Santa Barbara are involved in many interesting dental anthropological projects. Currently, the lab is home to five graduate students and one post-doctoral researcher. Ongoing projects include dental studies of skeletal collections from the Santa Barbara Channel area, Peru, and Chile, forensic work on modern homicide cases, and the creation of instructional CD-ROMs on human evolution and dental anatomy.

Susan Kerr Siefkin's master's degree thesis centered on the association between dental trauma and diet in prehistoric hunter-gatherers. She compared dental trauma between two societies, one that focused on marine resources and one that focused on terrestrial resources. Susan found no significant differences in the rates of dental trauma between these two groups, which suggests that the relationship between diet and dental trauma is more complex than previously assumed. However, the difficulty she found in comparing these two populations with other published studies on dental trauma led to her creation of an exacting method for scoring dental trauma. This method divides the tooth crown into segments and places emphasis on the exact location of chips or fractures in order to define dental trauma with more precision.

Susan is currently finishing up the data collection phase of her dissertation research on the population history of the prehistoric population of San Nicolas island, one of the southern Channel Islands. She is studying the health status of the Native Americans who lived on the northern and southern Channel Islands with financial support from the U.S. Navy. She is comparing the health, diet, and activity patterns of the San Nicolas Islanders with data that Walker and his coworkers have previously collected on material from the Northern Channel Islands and mainland. Her goal is to place temporal variation in the health of this marginal island population within a broader geographical context. Dental anthropological aspects of this research include the reconstruction of diet through studies of dental pathology and the analysis of population affinities through the analysis of non-metric dental traits. Two additional graduate students are doing master's thesis research as part of the San Nicolas Island project.

Georganna Hawley is using data on non-metric traits and Geographical Information System techniques to test hypotheses about relatedness, burial proximity, and activity patterns. She also plans to take radiographs of all of the San Nicholas specimens to obtain data on tooth development and congenitally missing teeth.

Bonnie Yoshida is focusing her master's thesis research on the dental pathology and dental morphology of the San Nicolas population. By comparing these people with the inhabitants of the other Santa Barbara Channel Islands, she will test a series of hypotheses about diet, gender roles, and status differentiation. This summer, Bonnie plans to begin working on her Ph.D. dissertation, which will be concerned with Peruvian skeletal collections from Moche archaeological sites.

Corina Kellner has just completed her master's degree work on an historic period (1780s-1830s) Chumash Indian skeletal collection from an inland site near Ojai, California. She used dental pathology to study the effects that Spanish