

PROGRAM OF THE
**87TH ANNUAL MEETING OF THE
AMERICAN ASSOCIATION OF PHYSICAL
ANTHROPOLOGISTS**
APRIL 11 – 14, 2018

To be held at the

Hyatt Regency Austin

208 Barton Springs • Austin, Texas 78704

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ABSTRACTS

tract. Together, these findings are consistent with urine marking being an ancestral behavior that is particularly critical for nocturnal species.

Funding at Duke was provided by NSF grants BCS-0409367 and IOS-0719003. Funding at Hendrix College was provided by the Hendrix Odyssey Program and NSF CRUI.

Regional variability in diet between Northern and Mediterranean Neandertals: Evidence from dental microwear texture analysis

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This study employed dental microwear texture analysis (DMTA) to discern dietary differences between Neandertals from Northern Europe (n=8) and those from the Mediterranean region of Southern Europe and the Near East (n=9). The study followed standard DMTA procedures to observe phase II wear facets on molar occlusal surfaces of 17 individuals. Neandertals included in the study were: Arcy-sur-Cure 1, Engis 2, Kebara 2, Kùlna 1, La Quina 5, Hortus III, Hortus IV, Hortus V, Hortus VI, Hortus VIII, Hortus XI, Montmaurin, Pech de l'Azé 1, Spy 1, Švédův stůl 1, Tabùn E2, and Tabùn Series III. The three texture variables, calculated using scale-sensitive fractal analysis software (Sfrax[®] and Toothfrax[®]), included complexity (Asfc), anisotropy (epLsar), and textural fill volume (Tfv). Results indicate that anisotropy produced a significant difference between the groups ($p = 0.019$), with Mediterranean Neandertals showing significantly higher anisotropy values ($x\bar{d}=0.0035$) than their Northern European counterparts ($x\bar{d}=0.0019$). The Mediterranean values are consistent with previously published DMTA anisotropy values for the Krapina Neandertals ($x\bar{d}=0.0042$) and suggest that Neandertals in this region were exploiting fibrous, homogenous foods, such as underground storage organs, grasses, and sedges that required consistent jaw movements. Elevated anisotropy signatures observed in Mediterranean Neandertals across both time and space suggest similar subsistence strategies that coincide with the relative climatic stability of the region and increased amounts of edible plant resources.

Funding was provided by the National Science Foundation (BCS 0922930) to CWS and a grant via Fulbright-Belgium and the Commission for Educational Exchange between the US, Belgium and Luxembourg to FLW.

Pathological conditions of craniosynostosis in aboriginal populations from the Gran Chaco plains of northwestern Argentina. A case report

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The aim of this paper is to present a case report of craniosynostosis found in a pre-Columbian population from Argentina. Craniosynostosis refers to the prematural closure of the cranial sutures and is primarily caused by genetic conditions. Scaphocephaly is the most frequent craniosynostosis and implies the early closure of the sagittal suture of the cranium. The skull affected belongs to an individual exhumated in an archaeological site dated in the Late Period of the Pre-Columbian local ceramic sequence, located in the Gran Chaco plains of northwestern Argentina. Macroscopic examination and anthropometrical measurements were performed and X-ray images were taken. Osseous remains correspond to a young male adult. The calvarium is characterized by its abnormal length and narrowness and complete obliteration of the sagittal suture, conforming a typical case of scaphocephaly. Left and right parietals present complete fusion between them, both internally and externally. Cranial vault length and breadth are particularly affected by scaphocephalic conditions and as a result, the skull has a cephalic index lower than 70. No signs of intentional occipital flattening are visible in this case, which was a common cultural practice in ancient societies of this area. The study of congenital malformations such as this case of craniosynostosis is of major importance in the fields of bioanthropology and paleopathology, since it allows to extend the knowledge related to the variety and geographic dispersion of these anomalies in the past and may indicate the degree of susceptibility of a particular population in the suffering of such skeletal disorders.

Funding support provided by FHCSys-UNSE, FACEN-UNCa and FCNyM-UNLP.

Comparative trabecular microarchitecture of the navicular across extant hominids

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One of the crucial adaptations related to bipedalism is the longitudinal arch of the foot. The navicular, which lies within the longitudinal arch, is subjected to forces during locomotion as it transfers weight from the talus to the forefoot. Trabecular bone is known to respond to forces by aligning with them and/or by increasing in bone volume. This study aims to provide a comparative dataset of navicular trabecular bone from which fossil hominin naviculars may be compared in order to provide insights into their relative loading patterns during locomotion.

Navicular microCT scans were obtained for *H. sapiens* (n=11), *Gorilla* (n=9), *Pan* (n=10), and *Pongo* (n=4). The bone volume fraction (BV/TV), degree of anisotropy (DA), and trabecular thickness (Tb.Th) were calculated from the segmented trabecular bone in four irregularly shaped regions of interest (ROIs) using BoneJ. These ROIs included trabeculae neighboring the cortical bone where the functional signal tends to be strongest.

The results indicate an increase in DA medially in *H. sapiens* with values greater than those of great apes. This corresponds with more uniform loading observed in *H. sapiens*. In comparison, great apes have a greater frequency of loading reflected in greater BV/TV and Tb.Th within each ROI. Within the navicular tuberosity, which contacts the ground in great apes but not in *H. sapiens*, great apes have a greater DA and BV/TV than *H. sapiens*. Because these results are congruent with known functional differences between these taxa, these results may serve as a useful comparative dataset for fossil hominins.

Craniometric shape similarity in three modern Mexican samples

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The identification of unknown human remains in the Southwest United States has an added complexity with the influx of individuals of Mexican and Central American descent crossing the US/Mexico border. Many of these individuals are dying after crossing the border, and present a unique case to the forensic anthropologist. Craniometric analysis for the estimation of ancestry requires a robust comparative sample for identification, and understanding the variance within comparative samples is vital.

In the present research, 3D cranial landmark data of three Mexican samples were collected using a Microscribe G2X digitizer (Zimapan, Hidalgo, Alfajayucan, Hidalgo, and Merida, Yucutan). Data were analyzed to test for the effects of group on shape. All individuals were scaled to unit centroid size using a generalized Procrustes analysis, and a principal components analysis was used

PATHOLOGICAL CONDITIONS OF CRANIOSYNOSTOSIS IN ABORIGINAL POPULATIONS FROM THE GRAN CHACO PLAINS OF NORTHWESTERN ARGENTINA. A CASE REPORT

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INTRODUCTION

The aim of this paper is to present a case report of craniosynostosis found in a pre-Columbian population from Argentina. Craniosynostosis refers to the premature closure of the cranial sutures and is primarily caused by genetic conditions. The premature fusion of the sutures (craniosynostoses) can cause different types of deformation of the skull (craniostenoses), depending on the sutures affected (Cohen, and MacLean, 2000). Scaphocephaly is the most frequent craniosynostoses and implies the early closure of the sagittal suture of the cranium. Scaphocephaly limits the growth of the skull in a transverse direction causing an abnormally long and narrow skull (Aufderheide and Rodriguez-Martin, 1997). Other variants of craniosynostosis and consequent craneostenoses include brachycephaly or turriccephaly (premature bilateral coronal synostosis) and plagiocephaly (unilateral synostosis of the lambdoid or coronal sutures), among others (Aufderheide and Rodriguez-Martin, 1997). In the present research, a case of scaphocephaly was identified in a young adult skeleton exhumated in a Pre-Columbian Late Period archaeological site (1000-1600 AD) located in the Gran Chaco plains in northwestern Argentina.

MATERIALS AND METHODS

The skeletal remains affected belong to an individual exhumated in the archaeological site named Cheej – San Félix, dated in the Late Period of the Pre-Columbian local ceramic sequence, located in the Gran Chaco plains of northwestern Argentina (Fig. 1). The chronological context of the archaeological site spans between the tenth century AD. and the time of contact in the sixteenth century AD. Unfortunately, only the skull was recovered during the excavations performed in the decade of 1950 by an archaeological team from the provincial Archaeological Museum of Santiago del Estero (Drube, 2009).

Macroscopic examination and anthropometrical measurements were performed and X-ray images were taken. Standard craniometrical measurements were registered with proper instruments, including spreading and sliding calipers, and flexible tape. Due to the complete obliteration of the sagittal suture, absent landmarks in the skull such as bregma and lambda, were located arbitrarily at the point of intersection of the coronal and lambdoid sutures with the median sagittal plane (Skrzat *et al.*, 2014)

Age and sex of the individual were determined using standard morphological criteria for the cranium (Buikstra and Ubelaker, 1994).

RESULTS

The cranium is well preserved although it lacks the mandibular bone, and parts of the basilar area around the foramen magnum are absent, which did not allow registering all the craniometric measurements generally taken in the human skull. Left side of the skull shows darker coloration and no traces of plant roots and rodent marks are observed.

Osseous remains correspond to a young male adult. Sex was inferred by evaluating the cranial morphology, which exhibits male morphological features such as prominent superciliary arches and a well-developed external occipital protuberance. Age was estimated by evaluating both the remaining cranial sutures, which are not fused like the sagittal suture, and the degree of dental wear. These morphological criteria suggest that this individual might have died approximately at the age range of 20–30 years.

The calvarium is characterized by its abnormal length and narrowness and complete obliteration of the sagittal suture, conforming a typical case of scaphocephaly. Left and right parietals present complete fusion between them, both internally and externally. Coronal and lambdoid sutures are not obliterated. In *norma verticalis*, the skull shows an elongated longitudinal diameter and a narrow transverse morphology (Fig. 2). Anterior view exhibits a long and narrow facial skeleton and a raised forehead (Fig. 3). Typical scaphocephaly or *boat-shaped* morphology can be observed on lateral views as well as a bulged occiput (Fig. 4 and 6). In *norma occipitalis*, morphology of the skull is narrow, and complete obliteration of the sagittal suture and non-fusion of the lambdoid suture can be observed (Fig. 5).

Cranial vault length and breadth are particularly affected by scaphocephalic conditions. As a result, measurements affected by this condition are those related to the vault length and breadth diameters, specifically *glabella-occipital length* and *maximum width*. The skull has a cephalic index of 67.9, which is lower than 70 and then considered hyperdolicocephalic (Aufderheide and Rodriguez-Martin, 1997). Cephalic index in this case indicates an abnormal elongation of the cranial vault in antero-posterior direction, with a narrow transverse diameter (Weber *et al.*, 2008). Selected craniofacial measurements that were taken are presented in Table 1.

It must be noted that no signs of intentional occipital flattening are visible in this case, which was a common cultural practice in ancient societies of this area.

CONCLUSIONS

The present case report of pathological conditions of craniosynostosis in aboriginal populations from the Gran Chaco plains of northwestern Argentina can contribute with valuable information about craniostenoses, particularly scaphocephaly, since the affected individual survived until early adulthood without the medical treatment that can be available nowadays for such congenital anomaly. Conditions of scaphocephaly altered cranial morphology in response to the premature sagittal synostosis that was not untreated surgically in ancient times, as in the present case.

The study of congenital malformations such as this condition of craniosynostosis is of major importance in the fields of anthropology and paleopathology, since it allows to extend the knowledge related to the variety and geographic dispersion of these anomalies in the past and may indicate the degree of susceptibility of a particular population in the suffering of such skeletal disorders. Findings presented in this paper are of local and regional importance since they add significant information about the biological and pathological history of the human groups of the Gran Chaco plains of South America.

ACKNOWLEDGEMENTS: FCM-UNSE; FACEN-UNCA; FCNYM-UNLP; CONICET.

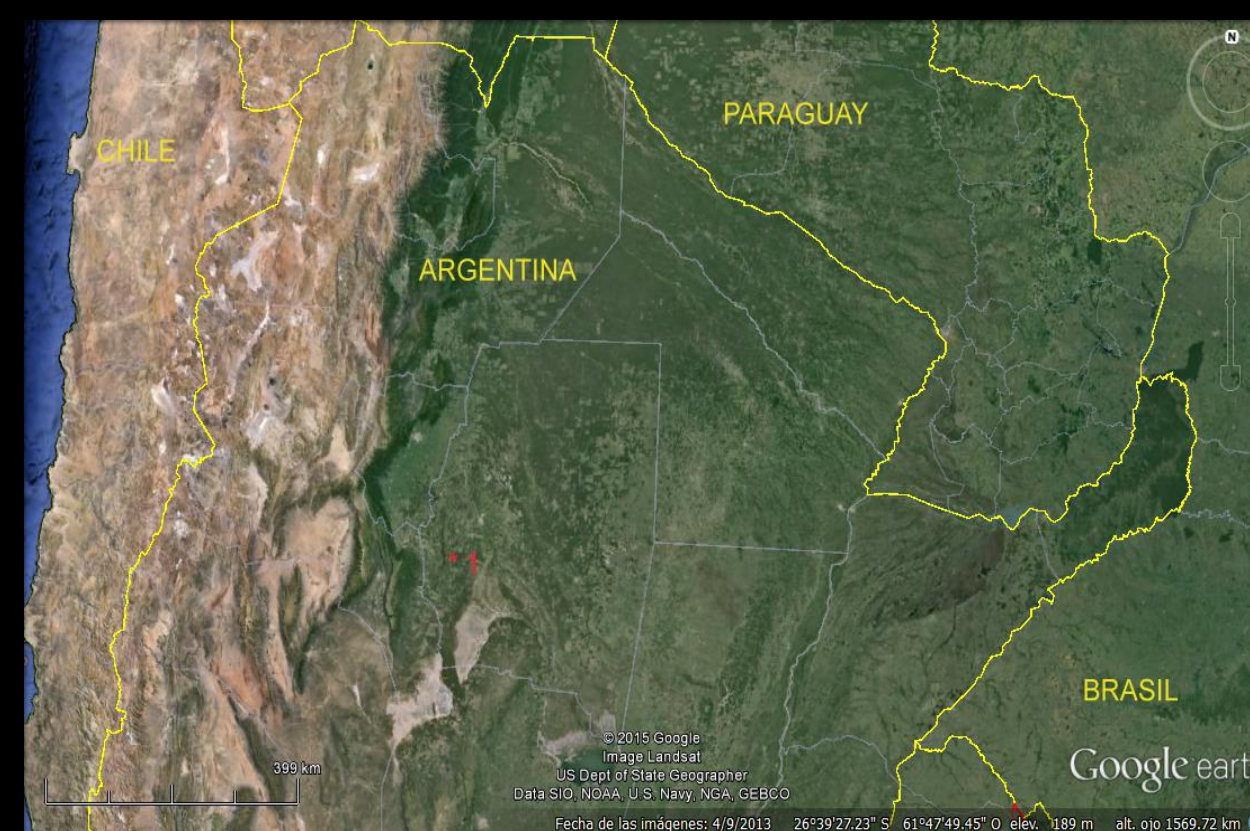


Fig. 1. Northern Argentina and location of the archaeological site in the Gran Chaco plains.



Fig. 2. Norma verticalis.



Fig. 3. Anterior view.



Fig. 4. Left lateral view.

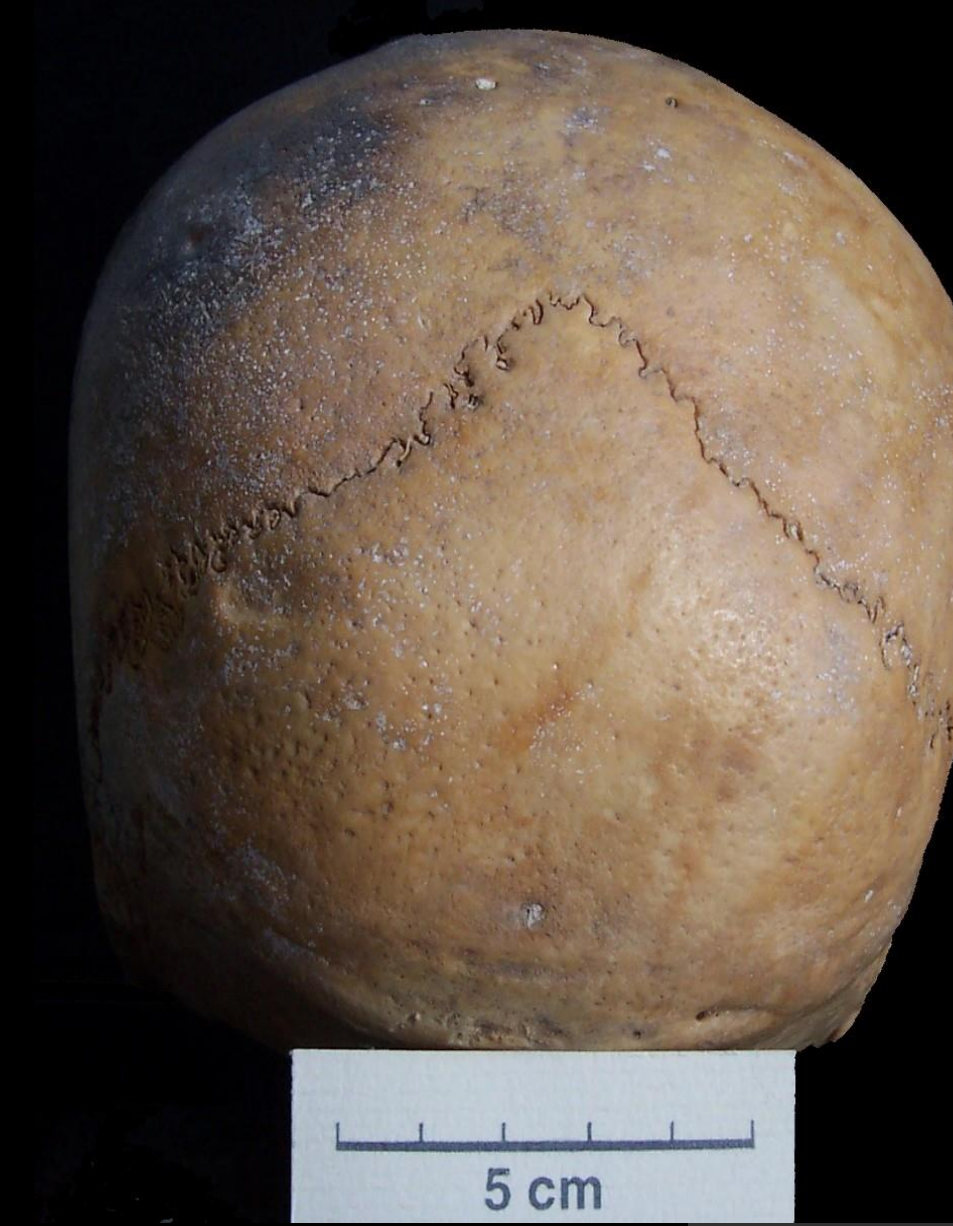


Fig. 5. Norma occipitalis.



Fig. 6. Right lateral view.

Cranial measurements	mm
Glabello-occipital length	187
Maximum width	127
Minimum frontal diameter	86
Maximum frontal diameter	98
Maximum bizygomatic diameter	123
Prosthion-nasion height	67
Nasal height	50
Nasal breadth	23
Orbits-height, left	32
Orbits-breadth, left	37
Interorbital breadth	20
Biorbital breadth	90

Table 1. Cranial measurements.

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