H10 Skeletal Markers of Parturition: Analysis of a Modern American Sample

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This presentation examines morphological markers of parturition on the bony pelvis. The research presented in this poster tested markers of parturition against known obstetric histories. Preliminary results indicate that workers should not infer parity status from the bony pelvis.

This presentation will impact the forensic community and/or humanity by describing preliminary results which indicate that physical anthropologists should not attempt to assess parity by scoring morphological markers of the bony pelvis.

The goal of this research was to examine the relationship between parturition and morphological changes exhibited in the bony pelvis.

Physical anthropologists and bioarchaeologists are often charged with the task of generating biological profiles from skeletal remains. A particular area of interest within skeletal biology has looked at the effects of parturition on the skeleton. Angel (1969) reported that the degree of pelvic scarring correlates with the number of offspring produced during fecund years. According to Krogman and Iscan (1986:248), "Angel initiated a new research avenue for skeletal anthropologists and indicated that parturition could be determined from skeletal remains."

A thorough literature review indicates that workers have maintained that both positive and negative correlations between parturition and morphological markers exist. Houghton (1974) scored the preauricular sulci of 119 pelves and was able to distinguish two distinct forms of the groove. Differentiated at GL or GP, Houghton remarked that the former designation was applied to innominates presenting a "narrow, short, straight-edged, and shallow groove at the antero-inferior margin of the joint." The latter description was applied to pelves with a coalescence of pits and craters. Houghton reasons that sulci scored GP are more likely associated with parturition than those scored GL. Moreover, the author contends that skeletal makers of parturition are more evident on the sacro-iliac joint than the pubic symphysis.

In an extensive study, Suchey et al. (1979), analyzed 486 pubic bones of modern American females. Suchey and colleagues studied dorsal pitting of the pubis in order to associate the number of full term pregnancies, interval since last pregnancy, and age of decedent with parturition condition. Adhering to methods defined in Stewart (1970), Suchey and colleagues were unable to statistically correlate parturition with specific skeletal markers. As a result, Suchey et al., assert "a rigid system of classification is of dubious value."

The William M. Bass Donated Skeletal Collection curated by the Forensic Anthropology Center at the University of Tennessee was utilized in this research. Female skeletons of known parity status (n=27) were scored for the degree of dorsal pitting of the pubis and morphological appearance of the preauricular sulcus. Pits on the dorsal pubis were scored as either absent, small to trace or well-marked (after Stewart 1970). Pubic bones scored as "absent" were unremarkable with regard to dorsal pitting while "trace to small" indicated the presence of poorly marked or shallow depressions. "Moderate to large" dorsal pits were a minimum of 5mm and noticeably deep. Preauricular sulci were scored similarly following Houghton (1974).

Statistical analyses tested the relationship between parity and scored morphological markers.Non-parametric chi-square analyses assessed the following associations: parity/dorsal pitting, parity/preauricular sulcus, age/dorsal pitting, age/preauricular sulcus and age/parity. Such analyses resulted in statistically insignificant results. Chi-square results were 2.03, 5.03, 39.6, 35.8 and 12.6, respectively. In all cases, $P>0.05$. *P* values ranged from .143 to .856 and clearly indicate an insignificant relationship between any suggested associations. These results indicate a poor correlation between parturition and skeletal change. Overall, this research further suggests that skeletal markers should not be used to assess parturition in paleodemographic or forensic contexts. While this notion may be counterintuitive, statistical analyses indicate an insignificant relationship.

Angel JL. The basis of paleodemography. *Am J Phys Anthropol* 1969; (30):425-438.

Houghton P. The relationship of the pre-auricular groove of the illium to pregnancy. *Am J Phys Anthropol* 1974; (41):381-390.

Krogman WM, Iscan MY. *The Human Skeleton in Forensic Medicine*. 2nd ed. Springfield: Charles C. Thomas, 1986.

Stewart, TD. Identification of the scars of parturition in skeletal remains of females. In: Stewart, TD editor. Personal Identification in Mass Disasters. National Museum of Natural History: 127-133.

Suchey, JM, Wiseley DV, Green RF, Noguchi TT. Analysis of dorsal pitting in the os pubis in an extensive sample of modern American females. *Am J Phys Anthropol* 1979; (51): 517-540.

Parturition, Physical Anthropology, Skeletal Biology

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