



A50 A Grading System to Assess the Sex and Parity Status for the Preauricular Sulcus: A Step Forward

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After attending this presentation, attendees will better understand the sexual dimorphic variability of the preauricular sulcus in the human adult os coxae.

This presentation will impact the forensic science community by providing additional tests on a new grading system for the preauricular sulcus (p.s.) as a sexually dimorphic trait.

During the 68th AAFS Annual Scientific in Las Vegas, a new grading system for the p.s. to assess sex and parity status was presented. This scoring system provides grades from zero (no p.s. present) to four (large, well-defined p.s.) and was developed on two British Medieval populations. Even though the samples used were archaeological, the collections have been previously seriated (aged and sexed) by using multiple established methods and compared through inter-observer error with the estimations produced by other forensic anthropologists.

In the present research, the proposed scoring system was tested on a modern documented British collection. The samples ($n=353$) are from the St Bride's Church and curated through the Museum of London. For the entire collection, the sex (170 females; 183 males) and age at death of each individual was known. The parity status of 35 females was established by archive research and coffin plates data.

The results confirmed the findings of the previous study, exhibiting a significant difference in the occurrence rates of p.s. in males and females. A p.s. is present in 98% of females and not present in only 2%, while for males, p.s. is only present in 51.4% of cases and is absent in 48.6% of the samples. When the sulcus is detected in males, the grade is very low: 73% have grade one and 27% show grade two. No grade three or four sulcus have been found in males, supporting the hypothesis that the aspect and modifications related to these grades are reliable sexual dimorphic traits. The results also demonstrated that parity status had a significant correlation with the grades of the p.s. and an association with the highest grades (three and four) in the scale provided.

As an additional step forward in the analysis, the effect of pelvic shape on the p.s. morphology was observed. A selection of 68 pairs of coxae that was possible to anatomically articulate with the sacrum was made from the same documented collection. The diameters that describe both the greater and lesser pelvis as well as the measurements that describe the sacrum shape have been recorded with sliding callipers and analysed.

The results reveal that there is a significant correlation between some of the measurements and the morphology of the sulcus. In particular, the transverse diameter, the bispinous diameter in the pelvis, and the maximum sacral width seems to affect the development of a well-defined preauricular sulcus. An interesting finding indicates the direct correlation in females between the increasing of the transverse diameter and the increasing of the p.s. grade. This suggests the needs of future investigations on the link between the p.s. and the process of giving birth.



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Considering that pelvic morphometric characteristics are related to both sex and parturition, this study suggests the validity of the new system proposed to describe the p.s. as a tool for the objective description of a trait that is not only a sex-indicator but also a possible parity marker.

With the new test performed on the preauricular sulcus grading system, this study demonstrates the reliability of this instrument as a useful tool for establishing a biological profile of unidentified skeletal remains.

Forensic Anthropology, Preauricular Sulcus, Sexual Dimorphism