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A Forensic Anthropological Analysis of the Seventh-Century Lombard Warrior's Remains

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Introduction

The analysis is carried out on burial number 4 from the early medieval necropolis discovered in 1989 Lucca at via Finlungo, 140 in Lucca (Ciampoltrini, 1990); the inhumation, dated to the first half of the VII Century by the grave goods (iron *sax* and knife), has been selected for its best preservation status between the other remains.

Materials and Methods

The remains of Burial 4 were dry-brushed to remove the adhering soil, and then material was cleaned with distilled water to remove additional silt/clay. After a controlled drying to avoid warping and surface damages, a partial re-assembly of the samples showed only 46.30% of a complete skeleton was preserved.

For metric data recording, the "Protocol for the anthropometric measurements of human skeletal remains forensic purposes" developed at the University of "Tor Vergata"⁶ has been adopted (Borrini, 2011); the measurements have been processed by the forensic software FORDISC, which allows a statistical comparison between different populations. Craniometric values (maximum length, minimum frontal width, biasteric width, bizygomatic width, length and width of the nose, biorbital width, orbital width, interorbital width, frontal and parietal cord, chin height, thickness of the corpus mandibulae) were compared with the reference database for male and female from European, African and Asian populations.

Assessment of biological age was undertaken according to the cranial and pelvic methods of Derobert (Mallegni and Roberts 1994), and the dental wear methods of Brothwell (1981) and Lovejoy (1985). Also a more reliable forensic technique (Calce, 2011) for the evaluation of age related modifications on the acetabular area (osteophytic proliferation, morphological degeneration and surface texture) has been used.

For the reconstruction of the living stature, due to the fragmentation of the epiphysis, it was necessary to restore the original length of each bones by the Steele and Byers

method (Steele, 1970) before using the Trotter formula (1970) by FORDISC.

To complete the analysis of the remains, an evaluation of entheses (Donatelli and Scarsini, 1996), osteobiographic evidence and taphonomic profile have been performed.

Results and Discussion

In terms of traditional anthropometric indices, the individual has a well balanced neurocranium (only post-depositional plagiocephaly on the left side), with mesoconchia and strongly leptorrhine nose. The upper limbs are eurybrachial with a round shaft; the femur is erumeric with middle-values for the pilastric index, associated to eurycnemic tibiae without atero-posterior flattening. All of the limbs return a medium robusticity index.

The FORDISC statistical analysis allowed the estimation of how the subject is clearly closed to the morphological European group, and specifically to the male subgroup. Confirmation of sex estimation is obtained, as well as from grave goods, even by the evaluation (Bass, 1987) of some postcranial measurements of humerus (MS 1, MS 7), radius (MS 1), ulna (MS 3), acetabulum (MS 22), femur (MS 8, MS 19, MS 18) and tibia (MS 1). Also the V-shaped and very narrow great sciatic notch, combined with non-acute and large echin, has led to the conclusion that the remains belonged to a male.

For age estimation, the Dèrobert method would offer an unreliable range (25/35 y.o.) due to the poor preservation of the cranial surface; the Calce method, in unison with some osteobiographic data further analyzed, returns a probable age at death between 35 and 50 years, a range that can be reasonably restricted between 40 and 50 years in consideration of the Lovejoy (45-55 y.o.) and Brothwell (+45 y.o.) methods.

The stature obtained by the left femur and both tibiae is 90% between 169 and 177 cm, with a mean value of 172 cm; this result matches with the average of other Lombard populations such as the Centallo where the stature of males is between 170 to 175 cm (Bedini *et al.*, 1997).

The evaluation of entheses has highlighted a greater development on the left limbs: this asymmetry does not seem simply attributable to a left-handedness, but could most likely be ascribed to daily military training activities. The guard position, in fact, the most frequently held during

training occupations, provided for a more intense stress on the left side leg, flexed to ensure a firm position and a stronger resistance to attacks. In this posture the left upper limb was also greatly simulated as a result of the special Lombard socket shield, not simply attached to the forearm but gripped in the inner side of the central shield (umbone); this position allowed the use of the shield also during attacks by a burst forward to break the opponent's guard (Casarino, 2006). To the same military attitude the development of the interosseous membrane of the left tibia and the squatting facets on both ankles can be attributed as a result of a strong pressure during the movement of foot back-bending.

Pathological evidence of osteoarthritis is on the left side (general remodeling with development of arthritic lip on the acetabulum and peripheral alterations of *fovea capitis*): a one-sidedness alteration probably associated with the mentioned military activities, that has been properly weighted during age estimation by the Calce method.

Particularly interesting and actually under radiological review is the completely edentulous upper dentition, in contrast with the mandible where, associated with the regression of the alveolar bone, only the P2 and right M1 are missing. This clinical picture may be connected not only to age changes but also to a strong periodontal disease due to poor oral hygiene. Not particularly relevant evidence of hypoplastic defects is detected (Mallegni et al., 2009).

To complete the study, although the analysis was conducted 22 years after the excavation, a taphonomic analysis of the context has been conducted on archival photographs. The primary deposition is detectable by the maintenance of labile joint connections (patellae, hip and thoracic vertebrae). Contradictory elements seem to describe the type of burial: patellae in the original anatomical position suggest a full space decomposition, while the flattening of the chest, the opening coxales and dislocation of hand/feet phalanges suggest the presence of an open space. The verticalization of the clavicles give the solution of the apparent data ambiguity with the hypothesis of a shroud or burial garments, whose constriction is visible on the sternal-clavicle area and whose presence is inferred from the metal elements of the belt founded associated with the skeleton.

This scenario is compatible with what is known about the funeral customs of the Lombard (La Rocca, 1997).

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