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OSTEOLOGICAL REPRODUCTIONS

Human Elderly European Male Skull
BC-204

Osteological Evaluation Report

Prepared by

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Human, Male, Elderly White

Product Number: BC-204

Specimen Evaluated: Bone Clones® replica

Skeletal Inventory: 1 intact cranium
1 intact mandible

General observations:

In general, the molding process has preserved significant details necessary for evaluation. The general shape and configuration of the skull is within normal limits. The ectocranial morphology of the individual cranial bones is within normal limits. The sutural patterns are of expected configuration. There are no sutural bones (Wormian ossicles). The foramina are of expected configuration. The skull is atraumatic.

A small leaf-like bony excrescence is along the anterior aspect of the left temporal line, just anterior to the coronal suture. This excrescence is smooth anteriorly and projects posteriorly. A second flap-like bony excrescence is along the posterior aspect of the left temporal line. This second excrescence is smooth posteriorly and projects anteriorly.

Dentition

The skull is edentulous (healed bony maxillary and mandibular ridges).

Features of Race:

The interocular distance is not prominently widened. The nasal root is prominent and the nasal angle is acute. The zygomatic bones retreat posteriorly from the plane of the face. The nasal aperture is narrow both superiorly and inferiorly. The anterior nasal spine is prominent, and the inferior margin of the nasal aperture has a sharp (nasal) sill. The maxillary dental arcade is somewhat V-shaped. There is no obvious alveolar prognathism. There is no post-bregmatic depression. Although difficult to assess due to the marked degree of sutural ossification, there is no suggestion of sutural complexity. The calvarial sutures are predominantly simple.

The totality of features is most in keeping with those of a White individual.

Features of Sex:

There is mild prominence of the cranial sites for musculofascial attachment including especially:

- the mastoid processes of the temporal bones
- the supraorbital tori
- the masseteric tuberosities of the mandible
- the occipital condyles
- the supramastoidal crest (prominent)

There is a narrow ascending mandibular ramus. The nasion is markedly rough, and the supraorbital margins are blunted. The inferior border of the mandible is square.

The totality of features is most in keeping with male sex.

Features of Age:

There are no identifiable fontanelles. The spheno-occipital synchondrosis is fused.

Ten ectocranial osteologic landmarks are evaluated for degree of suture closure according to the Meindl and Lovejoy method*.[1] Scores are assigned as follows:

1	3
2	2
3	3
4	3
5	2
6	3
7	3
8	3
9	3
10	3

* As is always the case with casting, there is a tendency towards overscoring.

The sum of scores for the cranial vault (landmarks 1 through 7) is 19. This corresponds to an estimated age of 51.5 +/- 12.6 years.

The sum of scores for the anterior cranium (landmarks 6 through 10) is 15. This corresponds to an estimated age of likely greater than 50 years.

SUMMARY:

1. White.
2. Male.
3. Likely greater than 50 years of age.
4. No evidence of acute trauma.
5. Two benign-appearing bony excrescences of left lateral calvarium.
6. No evidence of significant osteologic variations.

EDUCATIONAL RESOURCES:

1. This is an excellent example of an elderly White male.
    a. The concept of race assessment is controversial. It may be worthwhile to review the varying schools of thought on this issue. Short summaries from the perspective of the forensic anthropologist[2] and forensic pathologist[3] are readily available.
    b. In many circumstances, the skull alone will allow an investigator to correctly determine sex.[4] However, the findings in the skull should never be treated in isolation; rather, they should be incorporated into your 'whole case' database. This database should include information obtained from all other aspects of the case. From an osteologic perspective, this includes (importantly) the bones of the pelvis.
    c. Age assessment of skeletal remains is best done in the context of the entire skeleton. Assessment of the degree of suture closure can be used with some degree of success[1]; however, there is tremendous variability in the degree of closure process. Students must be cautioned that statistical data is based on **populations**, and may not necessarily be reflective of reality in an **individual**.
2. This specimen may serve as a useful discussion piece for the concept that 'not all edentulous individuals are elderly'.
    a. It should be noted that after extraction or loss of adult dentition, due to the loss of mechanical stimulation of bone, there is usually profound atrophy of the ridge in question; this gets worse over time and may increase one's susceptibility to fracture with blunt trauma to the face/jaws.
3. The location of the bony excrescences at the anterior and posterior borders of the line of attachment for the temporalis muscle, their orientation, and their hook-like nature would be consistent with dystrophic calcification from inflammation, injury, or other pathological process along the periphery of the muscle. One should consider a diagnosis of myositis ossificans.

REFERENCES:

1. Meindl, R.S. and Lovejoy, C.O. (1985). Ectocranial suture closure: a revised method for the determination of skeletal age at death based on the lateral-anterior sutures. *American Journal of Physical Anthropology,* 68(1): 57-66.
2. Gill, G. (1998). Craniofacial criteria in the skeletal attribution of race. In *Forensic Osteology: Advances in the Identification of Human Remains*, K. Reichs, Editor. Springfield, IL: Charles C. Thomas.
3. Matshes, E. and Lew, E. (2006). Forensic osteology. In *Forensic Pathology: Principles and Practice*, D. Dolinak, E. Matshes, and E. Lew, Editors. San Diego, CA: Elsevier (Academic Press).
4. Krogman, W. and Iscan, M. (1986). *The Human Skeleton in Forensic Medicine*. 2 ed. Springfield, IL: Charles C. Thomas.

DISCLAIMERS:

This report is meant only as a teaching tool for introductory level students of the anatomical, anthropology or forensic sciences who might be using this specimen to learn human and forensic osteology. Evaluation of osteologic material is best done with original specimens. My evaluation was based solely upon studies of a Bone Clones® replica. My opinions are based solely upon the material presented to me. This is somewhat artificial as in real forensic investigations additional studies would be undertaken prior to the formulation of diagnoses, and the production of a report. These studies might include plain film radiography, computed tomography (CT) studies, histology, etc. My opinions regarding race and sex are based only upon non-metric analyses. Evaluation of cranial suture closure is most accurately assessed endocranially as the sutures are known to close from the endocranial table towards the ectocranium. My opinions regarding this skull were made without access to the postcranial skeleton.

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Bone Clones Disclaimer on Ancestry Assessment

The assessment of ancestry from human skeletal remains, particularly the skull, is a component historically included in the creation of a biological profile for forensic purposes. This practice involves the analysis of morphoscopic traits and metric variables that may exhibit population-specific patterns of variation. However, it is important to recognize the significant scientific and ethical limitations of this practice.

Race is not a biologically valid concept. Contemporary biological anthropology holds that race is a social construct with no discrete biological basis. Human variation exists on a continuum, shaped by complex interactions between genetics, environment, and culture—not distinct "racial" categories. Therefore, the identification of "race" or "ancestry" based solely on skeletal features is scientifically problematic and cannot be performed with high accuracy or precision.

Although some morphological traits of the cranium may reflect broad population-level patterns due to shared evolutionary history, these traits do not map neatly onto socially defined racial categories. Furthermore, categories such as "Asian," "European," or "African" are socially constructed labels that do not fully capture genetic or phenotypic diversity, and they should not be interpreted as exact or absolute identifiers. As such, ancestry estimation based on skeletal features should not be interpreted as the identification of race, and results should be presented with appropriate caution and clear communication of limitations.

Historically, law enforcement agencies have requested ancestry estimations as part of forensic reports. However, many biological anthropologists today are increasingly hesitant to include this component, as doing so may inadvertently reinforce outdated and harmful typological thinking—the idea that humans can be classified into discrete biological "types" based on physical features. Such typologies have a long and problematic history and are not supported by modern science.

In cases where ancestry estimation is included, it is done with the understanding that it is a probabilistic assessment—not a definitive classification—and it must be contextualized within a broader ethical framework that prioritizes scientific integrity, individual dignity, and the avoidance of reinforcing racial stereotypes.