

OSTEOLOGICAL EVALUATION

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Product No. BC-277

**Human 9-year-old
Child Skull
(7.5 - 12.5 years)**



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OSTEOLOGICAL REPRODUCTIONS

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Human, Child (10 years +/- 2.5 years)

Product Number: BC-277

Specimen Evaluated: Natural bone specimen
One panoramic radiograph (Panorex)

Skeletal Inventory: 1 intact cranium
1 intact mandible

General observations:

The general configuration of the skull is within normal limits. The general morphology of the individual visible cranial bones is within normal limits. Sutural patterns are of expected configuration. The anterior and posterior intra-occipital sutures are fused. There are no sutural bones. The foramina are of expected configuration. The skull is atraumatic.

Dentition:

There are 12 teeth in the maxillary arcade and 11 teeth in the mandibular arcade.

The following teeth are present in the maxillae: 1.6 [#3], 5.5 [A], 5.4 [B], 5.3 [C], 1.2 [#7], 1.1 [#8], 2.1 [#9], 2.2 [#10], 6.3 [H], 2.4 [#12], 6.5 [J], and 2.6 [#14].

The following teeth are present in the mandible: 3.6 [#19], 7.5 [K], 7.4 [L], 7.3 [M], 3.2 [#23], 3.1 [#24], 4.1 [#25], 4.2 [#26], 8.4 [S], 8.5 [T], and 4.6 [#30].

The following maxillary tooth positions have resorption of overlying bone: 1.7 [#2], 1.4 [#5], 1.3 [#6], 2.3 [#11], and 2.7 [#15].

The following mandibular tooth positions have resorption of overlying bone: 3.5 [#20], 3.4 [#21], 3.3 [#22], 4.3 [#27], and 4.4 [#28].

The following empty gomphoses have features suggestive of early tooth calcification: 1.7 [2], 2.7 [#15], 3.7 [#18], and 4.7 [#31].

There are no dental restorations or prostheses. There is no significant attrition.

Panoramic Radiograph

The root apices of permanent incisors (1.2 [#7], 1.1 [#8], 2.1 [#9], 2.2 [#10], 3.2 [#23], 3.1 [#24], 4.1 [#15], 4.2 [#26]) and first molars (1.6 [#3], 2.6 [#14], 3.6 [#19], 4.6 [#30]) are almost completely formed.

Non-Dental Features of Age:

Fontanelles

The anterior, posterior, sphenoidal (anterolateral) and mastoidal (posterolateral) fontanelles are closed. The speno-occipital synchondrosis is open. The calvarial sutures are all open (there is no evidence of ossification).

SUMMARY:

1. Age

Dental

10 years +/- 2.5 years

Non-Dental

Anterior fontanelle closed.

Median 13.8 months[1]

Range 4 – 26 months[2]

Posterior fontanelle closed.

2 – 3 months[3]

Sphenoidal (anterolateral) fontanelle closed.

2-3 months[3]

Mastoidal (posterolateral) fontanelle closed.

1 year[3]

Spheno-occipital synchondrosis open.

10.5 – 16 years[4, 5]

Posterior intra-occipital suture closed.

Closure: 1 – 3 years.[6]

Anterior intra-occipital suture closed.

Closure: 5 – 7 years.[6]

EDUCATIONAL RESOURCES:

1. This is an excellent example of a young child's skull.
2. It may be appropriate to discuss the differences between primary and secondary dentition, eruption patterns, and controversies surrounding the timelines that 'typify' those eruption patterns.
3. Age assessment of skeletal remains is best done in the context of the entire skeleton. It is important for educators to emphasize that when limited to the skull, age assessment of subadult remains is best done through a coordinated evaluation of such features as dentition and fontanelle closure, as well as radiographs and/or computed tomography (CT) scans. This is particularly key for studies of tooth development (calcification, eruption). It is important to emphasize that the evaluation of a skull without these methods is artificial and not reflective of actual practice. However, the ability to analyze such remains from the strict perspective of osteology is fundamental, and students must feel comfortable analyzing subadult skulls and skeletons.
4. It is not currently possible to reliably differentiate amongst the major racial groups within subadults.[6]
5. It is not currently possible to reliably differentiate male and female infant and young child skeletal remains.[6]
6. In the evaluation of subadult skulls, particularly when studying 'typical' eruption patterns, students must be cautioned that statistical data is based on **populations**, and may not necessarily be reflective of reality in an **individual**.
7. It may be appropriate to discuss the concept of sutural (Wormian) bones and what role they may play in the forensic evaluation of cranial remains. It is most important that students understand sutural bones are normal variants that may be present with somewhat increased frequency in some racial groups; they must not be misdiagnosed as fractures.

***Bone Clones*® Osteological Evaluation Report**

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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. 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 additional plain film radiography, computed tomography (CT) studies, histology, etc. My opinions regarding this skull were made without access to the postcranial skeleton.

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