FROM HUNTER-GATHERERS TO FARMERS
Human adaptations at the end of the Pleistocene and the first part of the Holocene

Papers in Honour of Clive Bonsall

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PATHOLOGICAL CONDITIONS OF THE HUMAN SKELETON FROM CLIMENTE II CAVE, ROMANIA

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Abstract: The archaeological excavation at Climente II Cave (Romania, Mehedinți County) from 1968 and 1969 uncovered beside lithic industry, bone and antler artefacts, and fauna, remains from at least two formal burials (M1 and M2) and several other disarticulated human remains. The radiocarbon date of burial M1 indicates a calibrated age of ca. 14000 BP while the stable isotopes suggest a predominantly aquatic diet. The anthropological analysis indicates a male younger than 30, with possible injuries caused by prolonged physical activity, and other minor pathological modifications.

Keywords: Final Epigravettian, Iron Gates, human bones, pathology, physical activities, aneurysm

Introduction

During the archaeological excavations at Climente II cave ca. 6000 chipped stone artefacts were found together with osseous objects, remains of small/large mammals and birds, as well as human remains (Boroneanț 1970). They derived from two formal burials and there were also several disarticulated bones (Bonsall et al. 2012. 321-325; Bonsall et al. 2016. 303-314).

Previous publications indicate (Boroneanț 1970) that the grave of M1 was found in 1968 and the skeleton was articulated, in a flexed position on the left side and sprinkled with red ochre. Radiocarbon results suggest the age of 14,266-13,853 cal BP (88.6% probability - Bonsall et al. 2012). Also, the stable isotopes of C and N indicate a significant component of aquatic resources in the diet.

Material and methods

For the sex determination was used a discriminant function applied to the superoinferior neck diameter of the left femur (using the formula for individuals of unknown ancestry) and the mental eminence (fourth degree) of the mandible. They both indicated a male. The age estimation was appreciated to 24-28 years, based on the sternal ends of the ribs. The stature was of 166.48 cm, calculated using Pearson’s method on the maximum length of the left femur.

The skeleton was very well preserved. For the identification of the bones and side assignation was used White et al. (2012) while for the anatomical features Grant’s Atlas of Anatomy was employed (Anderson 1983). Discriminant functions for the femoral neck (Seidemann et al. 1998. 305-313) and the mandibular features (Walker 2008. 41, fig. 1) were applied for sex determination. Evolution of the sternal ends of the ribs (Loth and Işcan 1989. 108-109, fig. 5.3) was used for age estimation and the stature was calculated based on the Pearson’s formula (Rösing 1988. 597). The pathological transformations were recorded according to Ortner (2003).

Inventory of the M1 human remains

Mandible and dentition

The cranium of the Climente II specimen is represented only by a fragmentary mandible. The right posterior half of the corpus is missing, along with the right ramus. A fragmentary area, the upper half that connects the M1 and M2 molars with the rest
of the body of the mandible is present. These fragments were detached quite recently, as indicated by the discoloration of the fractures. The left corpus is broken in two from the M₁ and lacks several fragments. Also, the left vertical ramus is missing, except for a small piece attached to the right of the extra-molar sulcus, which (based on the colour of the fracture) was removed post-mortem.

While the left mental foramen is aligned with the mesial edge of the second premolar, the right mental foramen is positioned rather more posteriorly than the second premolar. The shape of the mandible, in occlusal view, is rather oval and has a general robust aspect.

There is no sign of post-mortem damage to the alveolar sockets, mostly because the teeth have remained in their position; except for the right M₃ molar which was probably lost antemortem (the mesial facet of the root socket reveals stages of resorption and porosity). Some of the teeth present small fractures, most of them having occurred post-mortem: the right lower canine (split in half), the distal part of the right second molar crown; there are also a series of cracks on the right first molar crown. There is a slight colour change, a darker gradient, starting with the right lateral incisor throughout the entire right side of the mandible.

The mandible presents signs of red ochre that starts from the left side of the mental protuberance and continues alongside to the right ramus. Also, the remaining part over the extra-molar sulcus is red coloured. The same red coloration was observed in the area of the angle of the mandible, suggesting that the red ochre had been sprinkled on the ground before the skeleton was placed. Also relating to the red colouring are the patches of darker bone tissue in front of the incisors and on the left extremity of the mental protuberance.

**Vertebral column**

From the vertebral column are missing most of the vertebrae. Several fragments are present though:

- the fourth cervical vertebra (C₄) with only a partially complete spinous process and a partially preserved side lamina (all fractures were recent);
- the fifth cervical vertebra (C₅) represented only by a partial vertebral body with the left costal fovea;
- the fifth thoracic vertebra (T₅) with a complete spinous process and early parts of both laminae;
- the fifth lumbar vertebra represented by the spinous process and the right inferior articular facet;
- an unidentified vertebral body fragment (probably thoracic);
- seven transverse processes (probably thoracic);
- an isolated articular surface and an isolated spinous process (probably thoracic).

**Sternum**

The sternum is almost complete. The manubrium and the body are not fused together and the xiphoid process is missing. From the body of the sternum are missing the superior and right-superior lateral parts. There is cortical bone loss from the inferior edge of the right first costal notch and from the right posterior-inferior portion of the manubrium. The last inferior morphology of the body of the sternum displays a freshly fused segment at the fifth costal notches with very deep gaps at each notch.

On the anterior view of the manubrium, as well as on the body of the sternum, there are signs of colour change due to the presence of red ochre. The same colouring can be observed laterally, on the right third sternebra and fifth costal notch, probably due to the fact that the individual was placed on the left side, with the right side exposed.

**Clavicles**

Both clavicles are in a good state of preservation. The entire left clavicle and the medial half of the right one is present. The posterior half of the acromial end of the left clavicle is missing. From the right clavicle is
missing the third distal part, the bone showing also signs of a recent fracture, with the diaphysis cortical bone and medullary cavity exposed on the ventral facet. Both clavicles show ochre colouring on the superior facet of their proximal ends.

The proximal end of the left clavicle is intact and shows an oval contour in the medial view with a pronounced dorsal-inferior beak (Trinkaus 2006a) oriented dorsal-inferior. The sternal end displays an almost concave shape with a small gap near the posterior margin of the epiphysis. The costoclavicular facet is displaying a concave shape with the attachment area of the rhomboid ligament as a gap, 11.23 mm long and 7.94 mm wide, at a distance of 10.19 mm from the sternal end. This gap represents a musculoskeletal stress marker in which the costoclavicular syndesmosis was put constantly under a specific kind of physical pressure, required probably by an archer or spear thrower. The diaphysis displays a generally smooth surface and a rather uniform curvature with a slightly angled posterior margin of the lateral half. Although the left clavicle is gracile, there are pronounced muscle insertions throughout its body. The attachment site for the pectoralis major muscle on the proximal half, as well as the attachment site for the trapezius and deltoid muscles on the distal half of the diaphysis, creates observable structures.

The right clavicle shows signs of asymmetrical development when compared to the left one. Although incomplete, preserving only the proximal half, the right side is clearly larger and has a bigger sternal end than the left one. The medial epiphysis has an irregular shape with a more pronounced concavity (than the left one) and a more pronounced ventral-inferior beak. The costoclavicular facet presents a rather deformed shape, an alteration to the bony contour, with a gap of 22.70 mm in length and 6.39 mm in width (at only 2.59 mm from the proximal end), representing the attachment place for the costoclavicular ligament. This musculoskeletal stress marker has affected the entire proximal metaphysis, modelling its shape and size into a more robust form. The overall contour and diameter of the diaphysis are relatively round and bigger when compared to the left clavicle. Regardless of its incomplete form, this right clavicle has a greater opened curvature at its proximal half (Mays et al. 1999).

**Scapulae**

The scapular remains of the Climente specimen were preserved only fragmentary, but were identifiable, with fragments for each side. The left side is represented by a partially complete glenoid fossa, the infra-glenoid tubercle and a third superior part of the lateral border, and the middle part of the scapular spine and the inferior limit of the lateral border. The right side retains half of the glenoid fossa along with the infra-glenoid tubercle and a small superior part of the lateral border, the epiphysis of the coracoid process and a fragment of the scapular spine.

Most of the fragments broke recently and show the distinct white discoloration around the edges, with the exception of the left lateral border and its fracture from the sub-scapular fossa. There seems to be a distinct red ochre colouring on the right infra-glenoid tubercle and along the remaining axillary border, on the anterior margin of the glenoid fossa, as well as a small patch on the cortical bone of the fractured glenoid fossa. Also on the right side, there are patches of ochre on the scapular spine fragment, confirming the existence of a burial ritual and the position of the deceased.

The scapular remains display an overall robusticity seen on the right coracoid process and both glenoid fossae. The left glenoid fossa has an average concavity with an anterosuperior small concavity on its anterior margin, as well as strong muscle insertions under the infraglenoid process and along the axillary border. When compared to the left one, the right glenoid fragment has a flatter surface and seems to be larger and more robust with stronger ligament attachment areas and, generally, an almost deformed lateral margin. This assessment, along with the morphology.
of the right clavicle, follows a pattern of dominance to one side of the body, where the attachment areas of the ligaments are relatively greater when compared to opposite side.

**Humeri**

While the left humerus is partially complete (missing most of its humeral head and a fragment of the lesser tubercle), the right one retains only two distal thirds and a partial humeral head. Both humeri show small signs of ancient cortical bone loss on the capitulum and trochlea margins, as well as on the medial epicondyle. The proximal half of the left humerus has been broken into numerous fragments and has been glued together. All current fractures are recently executed, as indicated by the white discoloration around the margins, including a fragmentary gap on the proximal half of the posterior facet of the left humerus. Both humeri display patches of ochre, with the left humerus covered on the lateral-anterior facets and the posterior facet of the lateral epicondyle and the right humerus showing signs of red colouring on the posterior facet including the olecranon fossa and medial epicondyle, as well as on the middle shaft of the diaphysis on the anterior facet.

The olecranon fossa of the left humerus has been perforated, leaving a medial orientated septal aperture. The left humerus has a general concave anterior surface, a convex posterior surface and rather rounded edges. It does not show signs of lateral bowing and the deltoid tuberosity is rather modest. In regard to the distal epiphysis, the humeral head displays an odd angle, being posteriorly oriented rather than lateral-posterior.

Following the biomechanical changes that occurred on the right upper limbs, the right humerus is definitely larger in diameter and in general size than the left one, showing a clearly diaphysal asymmetry. Its deltoid tuberosity has an advanced orientation towards the lateral view and a very robust lateral supracondylar crest. Also, the capitulum is clearly greater in size than the left one. Both humeri have undergone small pathological changes due to osteoarthritis mainly visible on the anterior view of the distal epicondyle (near the coronoid fossa) and the remaining fragment of the left humeral head.

**Ribs**

The Climente individual retains all of its ribs, either complete or fragmentary, but identifiable.

The left side retains all twelve ribs, three unidentifiable sternal halves and two body fragments. Mostly all the ribs preserve their body either along with the sternal end or the head, or both. The first and second ribs are broken and preserve only their ventral half. Ribs 3, 4 and 5 are missing their sternal half and present only a portion of the vertebral end. The sixth rib has retained only the shaft with a pronounced costal groove. Ribs 7, 8 and 9 are the most complete keeping both of their proximal end (8 and 9) as well as the sternal end (7). While rib 10 keeps only the proximal half, the last two have only the sternal ends present. The five remaining fragments, of which three are sternal ends, could match the existing ribs from the left side. Most of the fragments were broken recently showing the distinct white discoloration and have been glued together. There are signs of red ochre colouring on the sternal end of the first rib, the medial-inferior facet of the third, the entire distal half of the fourth rib, the cranial and caudal edge of the proximal end of the fifth and seventh and on the lateral facet of the eighth rib.

The right-side ribs are more fragmentary and present extensive red ochre colouring, especially on the lateral facet. While the first rib is missing, the second one is broken in half and missing both of its sternal and vertebral ends. The third and fifth ribs retain only the distal third quarters of the body as well as the sternal end. The fourth and sixth ribs are broken in two pieces with their proximal ends not aligning with the middle shaft. Ribs 7, 8 and 9 are probably the most complete of the right side. The seventh is broken into three
fragments: the proximal end, the shaft and the sternal end. While the eighth retains only the shaft and sternal end, rib 9 and 11 are almost complete, missing a small part of the cortical bone from the cranial and caudal edge of the sternal end. Rib 12 keeps only its proximal and sternal end. As stated before, the right-side ribs show extensive red ochre colouring, marking almost every rib on their lateral facet. Rib 9 and 11 lack ochre colouring on their shaft, but there still are small signs on the vertebral end of the ninth and on the head of the eleventh, as well as on both of the sternal ends. Also, there are two ribs, the fourth and eighth rib, that have patches of red ochre on the inferior facet of the proximal end and on the medial facet of the sternal end. The sternal end of the last rib does not show signs of red ochre colouring on either facet.

**Ulnae and Radii**

The antebrachial bones of both ulnae and radii in a good state of preservation. All four long bones have sustained post-mortem fractures mostly on the diaphysis, which have been glued. There are small areas of cortical bone loss on both posterolateral edges of the radii head, as well as on both lateral and medial margins of the trochlear notches.

The left forearm exhibits signs of red ochre colouring on the lateral-distal facet of the radius, especially on the styloid process, and on the anterolateral facet of the ulna, as well as on the lateral margin of the radial articulation. They show a general gracility and a smooth surface with almost modest insertions. The interosseous crest of the left radial shaft has a very thin edge and a rather curved line towards the proximal half. In the anteroposterior view, the left radius has a concavity towards the proximal end with the neck projecting laterally. Also, there is a small concavity on the posterior facet of the radial interosseous crest along the shaft and opposite, on the lateral facet of the midshaft, there is very modest ridged surface for the pronator teres muscle. The styloid process is relatively small, but sharp and has a vertical inferior projection. The proximal epiphysis of the left ulna shows signs of morphological change. On the mid-trochlear notch, there is a small bony process, also on the lateral facet of trochlear margin, there is a deep fossa superior-inferior orientated. The supinator crest exhibits a relatively large lateral projecting bony protuberance which runs distally from the inferior margin of the radial notch. The nutrient foramen is positioned rather distally, almost on the interosseous crest. The left ulnar pronator ridge shows a rather strong robusticity with pronounced muscle attachment for the pronator quadratus. In anterior view, the distal epiphysis is laterally angled, relative to the diaphyseal axis.

The right forearm also exhibits signs of red ochre colouring on the entire posterior facet of the ulna and radius with patches on the anterior margin of the supra-styloid crest and on the bicipital tuberosity, as well as on the superior-posterior facet of the olecranon process. As opposed to the lateral side, the right forearm exhibits a more pronounced robusticity, especially the ulna, and a general greater size. The lateral facet of the radial head exhibits a rather smoothen edge with a very small bony ridge projecting laterally. The right radial neck is shorter and thinner with a greater, rounder bicipital tuberosity than the left one. The interosseous crest is relatively thicker, especially towards the proximal half of the shaft. The radial diaphysis is visibly bowed in the medial-lateral view and has a general rounder diameter. The anterior surface of the distal radial epiphysis exhibits a greater concavity with a blunt and short styloid process. The interosseous crest extends distally, towards the ulnar notch, with a long rugose and a surface.

Even without the metrical data, one could assess the general asymmetry between the right and left ulna. The right ulna is greater in shape as well as in its general size than the left one. The proximal epiphysis is relatively robust with pronounced insertions. The olecranon, radial and coronoid facets have sharp edges, with the
coronoid process being especially sharp and pointed. As opposed to the left ulna, where the supinator crest was running parallel to the interosseous crest, the right ulnar supinator crest tends to unite with the interosseous crest creating a rather blunt surface on the anterior-lateral proximal edge. The ulnar tuberosity and the supinator crest have both undergone small morphological changes due to brachialis and supinator attachments, creating a pronounced rugose area on both surfaces. Just posterior of the supinator crest there is a long concavity that disappears at midshaft. The nutrient foramen is situated anteromedially along the midshaft (rather than anterolaterally on the left ulna) and it displays a greater size and opening. The pronator ridge shows relatively modest insertions than the left one. In medial view, the right ulna displays a relative anterior bowing of the proximal half and in anterior view, the distal one-fourth has a lateral angle as seen especially at the lateral margin of the distal epiphysis.

**Hand bones**

The Climente tetrapod’s distal limb segment display a number of identifiable bones in a good state of preservation. The left-hand remains keep the following: scaphoid, lunate and hamate, the first four metacarpals, proximal pollical phalanx and proximal phalanges 2, 3 and 5, distal pollical phalanx and intermediate phalanges 2, 4 and 5, distal phalanx 5. All of the metacarpals and the remaining phalanges exhibit signs of red ochre colouring on their dorsal facet, on the palmar facet of the proximal and intermediate phalanges as well as on the proximal face of the left hamate. There are small signs of cortical bone loss on the proximal-medial margin of the hamate, the proximal margins of the second and third metacarpal. Also, the distal head of the second left metacarpal is missing, displaying a recent, with a discoloured fracture. The proximal end of the second metacarpal presents a rather pronounced robusticity, with two projecting tubercles on the palmar and anterior-ulnar facets and a distinct foramen between the trapezium and capitate processes. The left pollex (first metacarpal) bears the marking of a shallow concavity on its palmar-ulnar margin that runs towards the midshaft. The metacarpals and phalanges of the ulnar side bear minor morphological changes, like sharp, projecting edges, to their palmar margins due to the activity levels.

The right-hand remains are represented by the scaphoid, pisiform, trapezoid, capitate, trapezium and hamate, the last four metacarpals, the first two proximal phalanges, intermediate phalanges 2, 3 and 4, distal phalanges 2 and 3. As on the left side, the right-hand remains exhibit signs of red ochre colouring on their dorsal facets, especially on the radial side of the wrist, on the dorsal facet and margin of the trapezoid and scaphoid and on the lateral facet of the capitate. There are very small signs of cortical bone loss, especially on the edges, on the medial facet of the trapezium and hamate, the distal facet of the trapezoid and on the dorsal margin of the second metacarpal proximal head. All the bones are intact with the exception of the fifth metacarpal which lacks the distal half.

**The pelvic remains**

There are present three fragments of the right pelvic remains, all identifiable: the ischiopubic ramus, a fragment of the medial facet of the pubic symphysis and a fragment of the iliac crest from above the iliac tuberosity. All fractures are recent, except for the posteroinferior fracture on the ischiopubic ramus. There are signs of red ochre colouring on the medial-posterior surface of the iliac fragment and on the medial facet of the pubic symphysis fragment. The pubic symphysis fragment retains a portion of a cortical bone of the inferior-lateral facet as well as a thin line of the symphysial surface. The iliac crest fragment displays on its medial edge small ridged surface that have a rather medially-posterior orientation. The ischiopubic ramus displays a rather visible angle with a pronounced and sharp anterior-inferior edge. Also on its lateral-inferior facet, the ramus displays a small but wide groove as well as on
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the posterior-inferior margin which retains two pronounced rugose lines that run posteroanterior.

Femora

Both femora are present in a very good state of preservation. While the left femur was broken in two pieces from the third part of the distal diaphysis with the fracture running diagonally along the shaft, the right one had its distal diaphysis and epiphysis displaced probably during excavation, but it has been glued together. At the superior fracture of the right distal diaphysis, there is a portion of missing bone with cortical and medullary cavity exposure. Also above the epiphyseal fracture in the anterior view, there is a thin crack which runs mediolaterally. It is worth mentioning that at the left femoral midshaft there is a bone segment taken for absolute age analysis.

Aside from their good state of preservation, both femurs show signs of bone erosion on their epiphyseal margins. The left femur displays cortical bone loss on the medial-anterior and lateral-posterior facet of the femoral head, with a small ovoid depression on the lateral facet due to post-mortem damage, on a considerable portion of the superior margin of the great trochanter, which runs along the intertrochanteric crest on the posterior facet and on both sides of the patellar margin, along the entire margin of the lateral condyle. The medial epicondyle and condyle have gone through serious post-mortem bone alteration, missing a considerable amount of trabecular bone as well. Both femora are missing their quadrate tubercle due to cortical bone loss. The right femur shows the same pattern of bone erosion with smaller affected portions of the greater trochanter and medial and lateral condyles.

Both femora exhibit different amounts of red ochre colouring. While the right is in generally affected on the anteromedial facet of the proximal half, the left one presents signs of colouring on its entire anterior facet, as well as on the medial epicondyle and the posterior facet of the greater trochanter and femoral head.

The left femur does not show signs of abnormal curvature, just the typical modest anterior concavity at the proximal metaphysis. The femoral head and neck display a typical slight superior-medially orientation. Apart from the missing margin of cortical bone, the greater trochanter is very blunt and does not show the typical curved superior edge with a rather shallow trochanteric fossa. The two insertions for the *gluteus minimus* and *medius* muscles present a rather smooth surface. The intertrochanteric line has a rough surface and it is mediol-distally orientated towards the lesser trochanter, which has a rather unpronounced bulge. The proximal lateral half displays a visible gluteal tuberosity, which in anterior view creates a small concavity superiorly and a considerable convexity distally. This gluteal ridge forms along with the *linea aspera* a small, roughened groove for the gluteal maximus insertion. The spiral line exhibits signs of robusticity with a rather discoloration. The *linea aspera* is strongly marked proximally and broadly as it goes distally, especially posterior of the gluteal tuberosity and at midshaft, the medial supracondylar line is interrupted from its primary course and it is visible only above adductor tubercle and the lateral supracondylar line runs laterally fading at the metaphysis. The popliteal surface is slightly concave and rather porous at the intercondylar line with a modest bony excrescence, representing the attachment for the medial head of the gastrocnemius, growing laterally from the medial supracondylar line. The adductor tubercle retains a rather projecting but still blunt surface for the *adductor magnus* muscle. The intercondylar fossa is almost smooth posteriorly with an abrupt groove inferiorly forming sharp and outward condylar edges for the posterior cruciate ligament. The inferior articular surface of the lateral condyle displays a smooth groove forming a negative on the bony surface.
While the left femur was generally robust proximally and exhibited gracility distally, the right femur is rather gracile but with the same pronounced insertions and no abnormal curvature. The femoral neck seems smaller in diameter than the left one. The greater trochanter exhibits an irregular surface with pronounced muscle insertions, especially for the *gluteus minimus*, *medius* and *pisiformis* muscles. Both intertrochanteric line and spiral lines are more pronounced on the right femur with greater insertions for the *vastus lateralis* and *medialis* muscles. The latter is running medially-distally under the lesser trochanter to unite with the *linea aspera*. The right femur also exhibits a more pronounced gluteal ridge, forming a posterior-lateral depression, smoother than the left side. The *linea aspera* is rather featureless proximally with pronounced bony ridges at the entire midshaft. Also, the supracondylar lines exhibit the same morphological pattern with the lateral line running lateral-distally above the lateral condyle and the medial supracondylar line fading distally to appear as a clear ridge above the adductor tubercle which is pointed and slightly greater in size than the left one. The inner margins of the lateral and medial condyles have deeper and sharper edges as a result of the anterior and posterior cruciate ligament. As in the left femur, the lateral condyle retains a small depression orientated posteriorly on the condylar articular surface.

**Patellae**

Both of the patellae are present in a good state of preservation. They both exhibit signs of red ochre colouring: on the medial-lateral margin of the left patella base and small patches above the left patella apex; also on the entire anterior right patella surface, especially on the anterior margin of the base. Apart from their good state of preservation, the patellae display cortical bone loss on their posterior margins, as well as on the posterior aspect of the apex. Following the growth pattern of this individual, one could easily assess the asymmetry between these sesamoid bones. The right patella is clearly greater in size and more robust than the left one.

The left patella, although smaller in size, does show signs of pronounced insertions as well as two non-metric traits. On the superior-lateral margin, there is a distinct, rather closed, vastus notch with a very modest concavity. Also on the superior-lateral margin of the anterior surface there is a rather smooth *vastus fossa* with little concavity. The base is irregular and exhibits a relatively wide attachment area for *vastus intermedius*, as well as a pronounced rugose ridge on the superior-anterior facet for *rectus femoris*, both parts of the quadriceps tendon. While the posteromedial margin is rather flat, the posterolateral edge exhibits a small anterior concavity. The central ridge retains a medial displacement with both lateral and medial articular facets dominated by shallow concavities.

The right patella, as the left one, retains two non-metric traits: a wider and greater *vastus* notch with an adjacent *vastus* fossa delimitated anterior-laterally by a small bony ex crescence. The base is much wider than the left one, with the same level of robusticity at the *vastus intermedius* and *rectus femoris* attachment areas. In addition, the right patella shows visible concavities, especially on its medio-inferior margin. Also on the anterior-lateral facet there is a distinct groove which bears the mark of a strong *vastus medialis* insertion. The vertical ridge, in this case, is rather central positioned on the posterior facet, with a small portion inferior-medially orientated, dividing the facets into portions of approximately the same size. Apart from its greater size, the right apex has a sharper and longer point.

**Tibiae**

The lower limb bones preserve both of the tibiae but in a modest state of preservation. Although they exhibit the epiphyseal and diaphyseal remains, they are partially complete, with large missing long bone fragments.
The right tibia exhibits cortical and medullary bone loss from the anterolateral facet of the proximal epiphysis, the anterior crest of the proximal, distal and midshaft is missing along with a portion of the proximal medial surface and small patches of cortical bone loss on the medial condyle margin and on the lateral epiphysis. The right tibial tuberosity is detached, broken in two pieces and it cannot be glued to the tibial body, also the superior fibular articular facet is missing due to bone loss. The left tibia retains more portions of its shaft and its proximal anterior crest, missing mostly its lateral mid and distal anterior surface. Also, it presents an anterior crest fragment which cannot be attached to the tibial body. Both tibias have been restored with numerous fragments attached and almost all of their fractures are recent with the distinct white discoloration. In contrast to the rest of the bones, the tibial remains show very small signs of red ochre colouring on the posteromedial facet of the left and right distal epiphysis, on the posterolateral facet of the left proximal diaphysis and the medial facet of the proximal metaphysis.

Even in their incomplete state, one could assess the deformity level and robusticity of the tibial remains. The right medial condyle is rather concave, whereas the lateral one has a flatter surface. The intercondylar eminence is small but outward projecting with a pointed and an anteroposterior orientated medial intercondylar tubercle and a rather blunt but robust lateral intercondylar tubercle. The two intercondylar tubercles are closely positioned and retain a small fossa in between. The posterior intercondylar area is short and delimited by the condylar margins. The incomplete state of the right tibial shaft does not allow a correct assessment of the shape and size of the anterior crest. The tibial shaft is dominated by the posterior and interosseous surfaces. The popliteal line is much roughened with an outward bony ridge inferior-medially and pronounced muscle insertions for the soleus. The vertical line is very sharp and raised from the posterior surface, its units with the soleal line superiorly, creates a visible convexity in lateral view and fades at midshaft. The interosseous crest creates deep concavities on each of its sides; it fades distally at midshaft and appears above the metaphysis as a pronounced and broader margin. The fibular notch is rather pointed superiorly and clearly marked by the interosseous crest laterally and a modest bony ridge posteriorly. The medial malleolus is rather short and blunt with an excavated inter-collicular groove and a thick and short anterior colliculus.

The left tibia, apart from the metrical data and incomplete form, does show signs of asymmetry in regard to the right one. The intercondylar eminence shows the same pattern of tubercle growth. The medial intercondylar tubercle is rather thin and raised form the articular surface, whereas the lateral intercondylar tubercle is greater in size and extends posteriorly. The medial condylar articular surface is concave anteriorly and the lateral articular surface is mostly horizontal. The entire proximal epiphysis seems to be posterolateral orientated in regard to the diaphyseal axis. The left tibial tuberosity, although incomplete, has a rather small, circular shape. The missing tibial tuberosity distal part still keeps the outline for the anterior crest, which shows a great laterally curved crest under the tuberosity, with strong bony ridges. The existing part of the anterior crest shows a clear and sharp edge. The interosseous facet is dominantly wide and has a rather rugose surface. The entire anterior crest creates a prominent ala which is slightly shifted medially. Between the two crests, the anterior and interosseous, there would have been a deep concavity which starts at the proximal midshaft end and would have ended at midshaft. The interosseous crest begins under the epiphysis with a rugose, thick line and adjacent to the rugose area of the tibialis anterior muscle attachments. As opposed to the right tibia, the portion posterior of the interosseous crest is irregular and rather flat with a long and thick-walled groove proximally.
insertion with visible rugose alterations on the bone morphology. The proximal half seems to be slightly laterally bowed. The anterior border is very sharp and presents a strong sulcal formation at midshaft towards the lateral facet. Also, it tends to curve laterally, only to fade distally, above the metaphysis. The interosseous border tends to unite with the anterior crest and distally it creates a pronounced and opened concavity above the metaphysis and a shallow concavity on the medial surface. Distally, it ends with a very rugose and porous irregular line, a mark for the interosseous ligament attachment. The medial border fuses with the abnormal bony growth proximally and curves laterally at the proximal half with a blunt but thick bulge projecting. The posterior border is a thin, rather irregular ridge proximally that widens as it goes distally and with a small roughened sulcus on its proximal medial facet. The lateral malleolus has rather robust and thick edges with a narrow malleolar fossa.

The right fibula although it lacks its proximal epiphysis, it shows the same sulcal formation, with strongly crested and grooved edges. From the small neck fragment, one could possibly assess that the fibular head retained the same bony growth posterior of the styloid process as on the left fibula. The anterior crest is rather straight and does not show a lateral curving. The sulcus created is shallower than the left one. The interosseous crest is less pronounced and displays a rather sharp but short edge. The medial border is rather blunt proximally with a wide edge at the upper part of the midshaft and growing sharper as it goes distally, Distally at the interosseous ligament attachment, there is a pronounced rugose area running towards the articular surface of the lateral malleolus. The posterior border follows the same growth pattern as the other crests do. It presents a rather sharp edge proximally and it widens as it goes distally. At midshaft, it has a blunt and round edge, whereas the distal part ends in a rather straight angle margin. The distal

Fibulae

Both of its fibulae are present in a relatively good state of preservation. The left fibula displays cortical bone loss on the lateral facet of the fibular head as well as on the posteromedial facet of the lateral malleolus. Also at midshaft, on the medial surface, there is a gap at the restored fractures. The right fibula is missing the proximal epiphysis but preserves a small fragment of the fibular neck and small patches of cortical bone on the medial facet of the distal metaphysis and on the inferior facet of the lateral malleolus. Both fibular remains exhibit signs of red ochre on the proximal posterior and lateral facets of the right fibula and on the proximal and distal posterior facet of the left fibula.

The left fibula is strongly crested and grooved. The fibular head exhibits morphological alterations in which the apex is a thin, blade-like projecting with a medial-posterior orientated thin bony growth which widens as it goes towards the apex. This bony growth could possibly reflect a soleus strong muscle

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