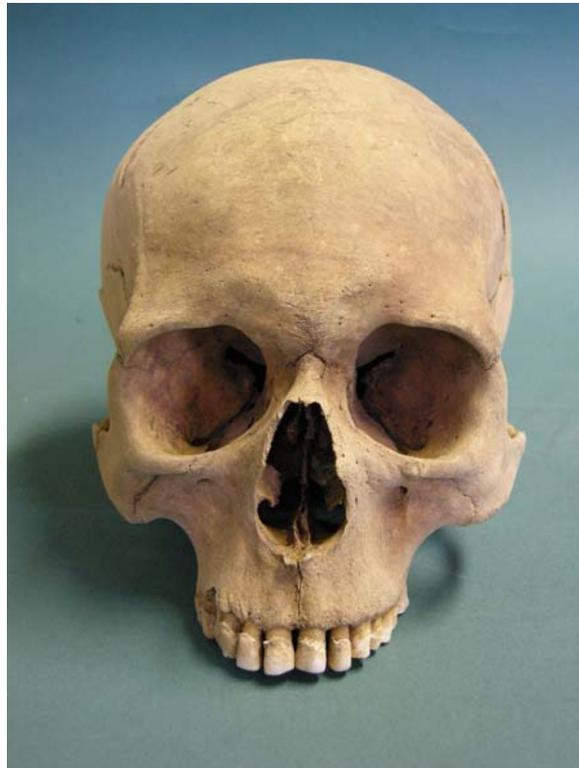


Elsa Pacciani

Anthropological description
of skeletons from graves no. 5, 17, 27, 34,
54, 74 and 75 at Skriðuklaustur Monastery



Skýrslur Skriðuklaustursrannsókna XVIII

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Vala Gunnarsdóttir bjó til prentunar

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Introduction

This description was made “on the field”, soon after the excavation, preliminary cleaning and restoration. Thus, its aim is mostly to record the identificative data and the relevant observations, thereby offering cues, research lines and suggestions for widening of particular aspects.

So there is no pretence of exhaustiveness, as the anthropological study requires more time and the simultaneous disposability of the whole sample, for screening and comparisons about the various characters. Moreover many features need to be examined by lab specific tools and equipping. However some generalities, observations and statements can be related here:

A marked sexual dimorphism characterizes this sample and makes the sex diagnosis relatively easy, together with the good state of preservation; very few cases raised some uncertainty. So a morphological diagnosis was performed, on the basis of the most discriminant hip bone and skull features, and taking into account also the other bones. No sex diagnosis was attempted on subadults.

About the age-at-death diagnosis I decided to avoid a subdivision of adult individuals in small age classes, because of the weakness of all the aging indicators due to the high individual and population variability. For this reason I adopted a gross subdivision in three classes: young adult (conventionally beginning from the spheno-occipital suture closure or the third molars eruption), mature adult and old adult, on the basis of a complex of traits appearance, such as pubic symphysis, auricular surface, dental wear and pathology, cranial suture closure, joint degeneration, spongy bone rarefaction etc.. A more precise diagnosis will be possible when the whole sample will be examined in order to detect the “population” aging rate, or /and other traits will be examined, such as dental cement anulation, pulp/tooth ratio etc.

For dental wear quantification I used the Lovejoy 1985 graphic scheme which represents phases of maxilla and mandible wear, but without attributing the specimens to the associated age classes, because I have found, in my previous methodological research, a huge divergence with the real age.

As aging methods I adopted:

- for the pubic symphysis, Brooks and Suchey 1990 scale
- for the auricular surface, Lovejoy et al. 1985 scale
- for the sternal end of the ribs, Iscan et al. 1984 scale

Subadult age-at-death diagnosis was made according the Ubelaker (1989) dental development standard.

A restricted selection of measurements was made with a purely identificative aim regarding the skull, and with the purpose of underscoring some stress indicators and anthropological conditions (stature, robusticity, platymeria, platicnemia) regarding the postcranial bones. Of course it will be possible and advisable to take a much larger amount of measurements in the anthropology laboratory, where having the availability of all the necessary anthropometric tools, and above all having specific finalities in an organic research project.

The dental formula is presented for each individual in a table, whose legend is the following:

P = present

AM = lost ante mortem

PM = lost postmortem

-- = not detectable

The stature was calculated by the formulas of Olivier et al. 1978, based on the physiologic lenght of the femur (n. 2 according Martin and Saller).

Degree of resorption of alveolar bone at tooth roots, due to periodontal disease is attributed according to the simple scale of Brothwell 1981 (No alveolar destruction; Slight, Medium, Considerable)

The same author was followed for the degree of calculus formation (Slight, Medium, Considerable)

Diastema is a gap or space between two teeth. It happens when there is an unequal relationship between the size of the teeth and the jaw.

Anthropological description 2007

Grave 5

Age at death: Newborn.

Very fragmentary remains. The skull and most of the postcranial bones are represented but hardly identifiable. The presence of some tooth crowns (deciduous central and lateral incisors, canine, molars) allows us to determinate the age at death, coincident with the birth (Fig.5.2).



Fig: 5.1



Fig: 5.2

Grave 17

Sex: female (morphological diagnosis, on the basis of the most discriminant hip bone features).

Age at death: adult: it appears young on the basis of the pubic symphysis and auricular surface, but not so young on the basis of the degenerate aspects of the rib sternal ends, as well as the shoulder, elbow and hip joints.



Fig: 17.1

Stature: cm 164, calculated by the formula of Olivier et al. 1978, based on the physiologic length of the femur (n. 2 according Martin and Saller).

Occupational stress indicators and pathological aspects:

Pregnancy evidences are detectable: the sulcus preauricularis (Fig.17.2) and the pits on the inner surface of the pubis (Fig.17.3).



Fig: 17.2

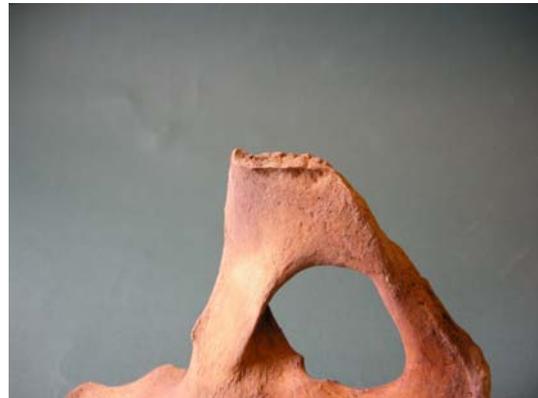


Fig: 17.3

On the left femoral neck the “anterior cervical imprint” can be observed, as a fossa surrounded by a ring of reactive bone (Fig.17.4). It is considered by some authors the trace of a hyperextension of the femur, as during walking on mountains, while some other authors attribute it to a hyperflexion of the femur, as when squatting.

Muscle insertions are generally well expressed and mould the bones, whereas they are not enthesopathic, indicating an active living style, but without strain. The only exception is a severe degeneration of the insertion area of the infraspinatus and teres minor muscles (rotator cuff) on the left humerus (Fig.17.5), suggesting an acute and pathological stress episode rather than a habitual effort on the shoulder.



Fig: 17.4



Fig: 17.5



Fig: 17.6

Signs of arthritis can be observed at the shoulder, elbow and hip joints, as marginal lipping, and on the 3rd, 4th and 5th thoracic vertebrae, as sclerosis of the plates, deformation of the intervertebral facets, marginal lipping, lowering of the bodies.

Other observations: The grave contained one articulate individual and some scattered bones (left scapula, 1 right clavicle, 1 cervical vertebra, 1 right rib, 5 metatarsals, 1 cuboid, 3 phalanges) (Fig.17.6), which probably belong to the same individual, as they are complementary and absolutely compatible. For example the vertebra is the 7th cervical, which fits perfectly to the 1st thoracic one of the individual. Moreover, the clavicle is contralateral and presents some very similar anatomical characters.

Besides, the 4 long bones plus rib found in the filling of Grave 74 (Fig.74.13) are certainly belonging to this individual, as they have identical morphological and metric characters, as we can see in the comparative photo Fig.17.7. Moreover the femur fits perfectly to the acetabulum of 17, showing also the same kind of pathology (Fig.17.8).



Fig: 74.13



Fig: 17.7



Fig: 17.8

Grave 27

Sex: female (morphological diagnosis, on the basis of the most discriminant features)

Age at death: young adult: low dental wear (phase E according to the scale of Lovejoy, 1985); open cranial sutures; juvenile appearance of the left auricular surface (but the right one has undergone degeneration).



Fig: 27.1

Stature: not valuable

Dental characteristics:

- Agenesis of all the third molars. The other teeth are present.
- Shovel-shaped incisors.
- Absence of caries.

- Low wear, not only on molars but also on the anterior teeth.
- Advanced stage of periodontitis, associated with a huge amount of calculus covering even the roots of most teeth (Fig.27.2, 27.3 a and 27.3 b).



Fig: 27.2



Fig: 27.3a



Fig: 27.3b

Occupational stress indicators and pathological aspects:

- Pregnancy evidence is represented by the the sulcus preauricularis (Fig.27.4).
- Despite of the bone incompleteness, we can deduce a weak constitution, from the small diaphyseal diameters, hyperplatimeric femurs, slight muscle insertions.
- The only present cervical vertebra body shows arthritis traces.



Fig: 27.4

Grave 34



Fig: 34.1 and 34.2

Sex: male (morphological diagnosis, on the basis of the most discriminant features).

Age at death: young adult: still visible traces of the closure line at many epiphyses; very low dental wear (phase B1 according to the scale of Lovejoy, 1985); open cranial sutures; juvenile appearance of the auricular surface.

Stature: cm 183, calculated by the formula of Olivier et al. 1978, based on the physiologic length of the right femur (n. 2 according Martin and Saller).

Dental characteristics: all the teeth are present. There are a number of “genetic” peculiarities: the maxillary third molars are reduced; maxillary incisors are shovel-shaped; there is a small supranumerary tooth between the maxillary left second premolar and the first molar (Fig.34.3); the permanence of the deciduous second molar on the mandibular left side induced the second premolar to grow dislocated toward the lingual side (Fig.34.4); on the right side a diastema is located between the canine and the first premolar.

Molars are almost wearless, while the anterior teeth are rather worn, moreover the maxillary right first incisor has an oblique wear, probably because of an extramasticatory use. One large hypoplasia stria acrosses the apical surface of the incisors, revealing a long nutritional or pathological stress episode. No caries are detectable. Abundant calculus covers most of the teeth. An abscess fistula opens on the buccal side in correspondance of the maxillary right first incisor, indicating a periodontitis disease (Fig.34.5).



Fig: 34.3



Fig: 34.4



Fig: 34.5

Occupational stress indicators and pathological aspects:

- The muscle insertions are generally very evident, indicating a mighty and balanced muscle development, without any enthesopathy.

- Besides we can observe the absolute absence of osteoarthritis, a very rare condition in this population.

- The first metatarsal of both feet shows an extension of the distal articular surface onto the superior surface of the bone (Fig.34.6), due to a routinary hyperdorsiflexion position of the metatarsal-phalangeal joints. Such a position, which results in pressure on the opposite articular surfaces between metatarsus and phalanx, is an indicator of squatting or kneeling posture and was observed in other individuals of this population (see). Also the forward extension of the trochlear surface of the talus (Fig.34.7) can be attributed to the same posture.

- A pathological sign could be the “swollen” aspect of some epiphysis: the distal left radius (the right one is not detectable), the distal ulnae (Fig.34.8 a), the proximal and distal tibiae (Fig.34.8 b), the distal right first metacarpus. Besides an occasional *post-mortem* fracture of the right ulna diaphysis, at about the limit between its medium and inferior third, let us see the complete filling of the channel by spongy bone (Fig.34.8 c and 34.9). These aspects are indicative of an initial condition of osteomyelitis, but some radiographs of other bones are necessary to make a diagnosis.

-Asimmetry was found in the length of upper and lower limb bones: the right side is markedly longer (the difference is for humerus 8 mm; for ulna 6 mm; for femur 5 mm).



Fig: 34.6



Fig: 34.7



Fig: 34.8a



Fig: 34.8b



Fig: 34.8c

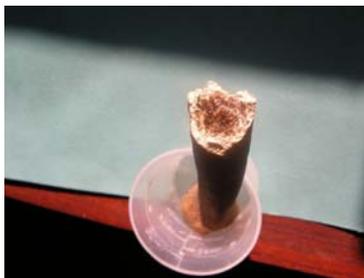


Fig: 34.9



Fig: 34.10



Fig: 34.11

- The proximal epiphysis of the right tibia has anomalous shape (reduced extension of the medial condyle) (Fig.34.10). The meaning is not clear, but it caused an asymmetric deambulation, as showed by the signs of compensative stress on the contralateral femur: greater development of the soleus muscle insertion and greater platymeric index.

- Osteochondritis is detectable at the proximal joint surface of the right first metatarsus (Fig.34.11).

Grave 54



Fig: 54.1



Fig: 54.2

Sex: male (morphological diagnosis, on the basis of the most discriminant features).

Age at death: young adult: still visible traces of the closure line at many epiphyses; low dental wear (phase D according to the scale of Lovejoy, 1985); open cranial sutures; juvenile appearance of the auricular surface and pubis.

Stature: cm 165, calculated by the formula of Olivier et al. 1978, based on the physiologic length of the right femur (n. 2 according Martin and Saller)

Dental characteristics:

- Agenesis of the maxillary right third molar and reduction of the contralateral one. All the other teeth are present (Fig.54.3).

- Shovel-shaped incisors (Fig.54.3).

- Diastema between the maxillary right canine and first premolar.

- Unerupted the lower left canine; reduced the right one (Fig. 54.4 and 54.5).

- Low wear but the maxillary central incisors are chipped, as if used in biting into hard stuff (Fig.54.3) We can observe the case of “anterior chewing” ,very common in this sample.

- numerous hypoplasia striae are visible on the incisors and canines.

- Abundant calculus on the lower incisors and posterior teeth.
- Absence of caries.
- Early alveolus resorption precluding periodontitis.



Fig: 54.3



Fig: 54.4



Fig: 54.5

Occupational stress indicators and pathological aspects:

The right scapula shows the *bipartite acromion* and an enthesopathy at the insertion of the triceps muscle (Fig.54.6).

The right clavicle shows an enthesopathy at the insertions of the deltoid muscle and the conoid /trapezoid ligaments; this marked difference respect to the left one is probably related to the effect of bipartite acromion (Fig.54.7).



Fig: 54.6



Fig: 54.7



Fig: 54.8

On the humerus, mostly the right one, we can observe erosive enthesopathy of the pectoralis major, teres major and subscapularis muscles, indicating a huge stress on the shoulder (Fig.54.8).

Ulnae muscles are generally regular and well developed (i.e.see the brachialis, the pronator quadratus, the flexors, the extensors, the supinator). Instead, the elbow radio-ulnar joints have sclerosis and marginal lipping, indicating arthritis, like the knee joints (Fig.54.9).

A remarkable pathological aspect is periostitis and osteitis on a number of long bone diaphyses and on tarsal and metatarsal bones of both feet:

- Ulnae, mostly the right one, and radii have a bulging appearance (half diaphysis circumference, but the cortical bone looks thick and compact (Fig 54.10 and 54.11).



Fig: 54.9



Fig: 54.10



Fig: 54.11

- Radii also have a bulging appearance; moreover they show many parallel oblique grooves, mostly the right one, on the posterior-superior and the anterior-inferior face of the diaphysis (Fig.54.12 and 54.13). The meaning is that of vascular imprints, indicating an intense inflammatory process.

- Tibiae and fibulae show the typical periostitic aspect (canaliculi and small holes) on the surface, and some swollen areas. (Fig.54.14)

- Tarsal and metatarsal bones show a porous and irregular surface (Fig.54.15).

Radiographs can be very important in order to check the extent of inside modifications and so to make a diagnosis.

Skull shows *cribra cranii* on occipital and parietal bones (Fig.54.16). Besides, a small bony protuberance is detectable at the inferior nuchal line, probably with an enthesopathic meaning.

Atlas shows a congenital malformation, the lacking of the right part of the arch (Fig.54.17).

Epistropheus and the third cervical vertebra have osteochondritis pits on intervertebral facets (Fig.54.18).

Diffuse arthritis can be found on the thoracic vertebrae; the eleventh shows Schmorl's ernia (Fig.54.19); the third and fourth lumbar vertebrae are affected by a severe discopathy (Fig.54.20).



Fig: 54.12



Fig: 54.13



Fig: 54.14



Fig: 54.15



Fig: 54.16



Fig: 54.17



Fig: 54.18



Fig: 54.19



Fig: 54.20

Grave 74

Sex: female (morphological diagnosis, on the basis of the most discriminant hip bone and skull features).

Age at death: mature adult, resulting from a balancing of some discordant indicators: the costal sternal ends are moderately concave, sclerous and with irregular edges. The auricular surface and pubic symphysis are moderately degenerated. Arthritis scars are present



Fig: 74.1

at some joints. Dental wear is very low (phase B1 according to the scale of Lovejoy, 1985). Sutures are partially closed (the coronal at the lateral ends; the sagittal almost completely).

Stature: cm 155, calculated by the formula of Olivier et al. 1978, based on the physiologic length of the femur (n. 2 according Martin and Saller).

Dental characteristics: Dental wear is slight: only enamel small facets are present on molars and premolars, but also on anterior teeth the wear degree is low.

An interesting condition is the loss *ante mortem* of 3 teeth (upper left lateral incisor, lower left first premolar and lower right second molar) together with the presence of a huge abscess cavity and fistula under the upper left first molar (Fig.74.2), in complete absence of caries. Here loss and abscess can be due only to a serious periodontitis, with alveolus resorption. The plentiful calculus covering crowns and roots caused the disease.

Agenesis of all the third molars.

Diastema between the upper left canine and first premolar.



Fig: 74.2



Fig: 74.3



Fig: 74.4

Occupational stress indicators and pathological aspects:

On the hip bones, a slight preauricular sulcus represents a parturition scar. On the tibia, bilaterally, a bony beak is visible on the superior part of the medial face, but at different levels (Fig.74.3). The downward direction of the spine on the left bone and the position of the one on the right bone let us exclude that it represents the ossification of a ligament and rather diagnose bilateral osteochondroma, a common benign bone tumor that occurs during the growing period (see also Grave 87).

Still on the tibia, bilaterally, at the anterior surface of the distal end, a facet is observable (Fig.74.4), due to the hyperflexion of the ankle, which is usually considered squatting or kneeling indicator (Capasso et al. 1999). A corresponding forward extension of the trochlear joint is detectable bilaterally on the talus.

Many evident muscular insertions or even enthesopathies are distributed on different bones, suggesting an intense activity during life: on the clavicae the deltoid and pectoralis major; on the radii the biceps; on the ulnae the brachialis and the pronator quadratus; on the femurs the very prominent *linea aspera* and the enthesopathy of the gluteus maximus and the adductor magnus (Fig.74.5); on the tibiae the enthesopathy of the soleus.



Fig: 74.5



Fig: 74.6



Fig: 74.7

On the right humerus, a gross porosity area is visible at the insertion of the muscle supraspinatus (Fig.74.6) indicating a stress on the shoulder; the clavicle of the same side shows an accessory facet on its inferior face medially, due to the anomalous contact with the first rib, perhaps in carrying heavy loads.

Moreover osteoarthritis of the left elbow (Fig.74.7) and the carpal-metacarpal joints bilaterally (Fig.74.8), the sharp edges of the metacarpals and the marked insertions of flexor muscles on the phalanges indicate a vigorous manual activity.

The vertebral column shows at 3 different levels serious arthritis signs: the 6th and the 7th cervical vertebrae show porous plates, marginal lipping and diarthrodial

osteophytosis (Fig.74.9); the 9th and the 10th thoracic vertebrae also show a wide marginal lipping and initial bulging due to discopathy (Fig.74.10); the 5th lumbar bulging and diarthrodial degeneration (Fig.74.11). As the woman was not old, the



Fig: 74.8



Fig: 74.9



Fig: 74.10



Fig: 74.11



Fig: 74.12



Fig: 74.13

disease could be attributed to heavy efforts sustained by these districts.

Scattered bones in the filling of Grave 74

First group (Fig.74.12): 1 atlas, 1 rib, 2 metacarpals, 2 carpal bones (capitate and scaphoid), 1 mandibular molar. They belong to at least 1 individual.

Second group (Fig.74.13): 1 first rib, 1 humerus, 1 radius, 1 ulna, 1 femur. All of them is of the right side.

They belong very probably to a single individual, in fact the bones of the upper limb are perfectly fitting one another in joints; the femur is compatible with the arm for dimensions and proportions. All belong to a female mature adult individual; the age indicators are the moderately concave and irregular sternal end of the rib, the coxo-femoral arthritis signs on the femur head, the osteophytic border of the humerus head.

They have been attributed by me to the individual Grave 17, as they have identical morphological and metric characters.

Grave 75

Age at death: subadult. Dental age: 9 years (Ubelaker, 1978).

Sex: undetermined (only the mandible shape is a weak indicator of female sex)

Dental characteristics:

- All the erupted permanent teeth are present except the upper right lateral incisor, lost *post mortem*.

The second molars are unerupted and visible under the alveolar holes. All deciduous canines and molars are still present.

- Malocclusion (displacement and rotation) is observable in the upper left lateral incisor and in lower canines.

- Numerous enamel hypoplasia striae are evident on the cervical half of all the incisor crowns.

- The upper lateral incisor has *shovel shape*.

- Caries is absent

- Wear is advanced on deciduous teeth

- Scale is present on all the teeth

Maximum diaphyseal length of the limb bones:

Humerus	221 right	221 left
Radius	160 “	158 “
Ulna	175 “	173 “
Femur	308 “	310 “
Tibia	240 “	244 “

These lengths correspond to an age of about 8 years (Maresh, 1970)

Pathology:

- *Cribra orbitalia* in an advanced stage (porosity and newborn bone) (Fig.75.2), together with the porosity of the diaphyseal ends, particularly noticeable on the femoral neck bilaterally (Fig.75.3), as a sieve area of about 1 cm², and finally the



Fig: 75.1

enlarged and cribrose sternum body (Fig.75.4), indicate a serious condition of anaemia.



Fig: 75.2



Fig: 75.3



Fig: 75.4

- The enamel hypoplasia indicates repeated nutritional or pathological stresses beginning from the age of 3-4 years i.e. the period of formation of the cervical part of the incisors.

Note: the skull, mandible, 7 cervical vertebrae and 1 thoracic vertebra labelled “SKR 2006 Grave 17” have been attributed to this individual by me (and relabelled) on the basis of the following observations:

a – the dental age is compatible with the maximum diaphyseal length of the limb bones.

b – the vertebrae associated to the skull are complementary to the ones associated to this individual.

c – the common pathology of serious anaemia (*cribra orbitalia* and porosity areas on the femoral neck).

Scattered bones in the filling of Grave 75

One skull and some postcranial segments (indeed this group was later relabelled as Grave 80).

A complete skull plus mandible (Fig.80.1; 80.3). It belongs to a young adult male individual. The sex can be easily diagnosed on the basis of all the most discriminant morphological features. The age-at death is determined by the completely opened sutures and the initial dental wear (phase C according to the scale of Lovejoy, 1985).



Fig: 80.1



Fig: 80.3

Dental characteristics:

Dental wear rate is very low on molars and high on anterior teeth, indicating an anterior mastication. The lower left first incisor was lost *ante mortem* because of a fracture. Besides, fractures are present in the first upper and lower premolars and in the lower canine on the left side, suggesting a crushing activity by that district. Also the masticatory activity is stronger in the left side.

-A diastema is located in the right side of the mandible between the second premolar and the first molar.

-Abundant calculus covers all the teeth.

-Alveolus resorption due to periodontitis affects both arches.

-Caries is absent.

-A *torus maxillaris* (non-metric trait) is present.

-The mandibular fossa is bilaterally flattened and extended, but this appearance does not seem correlated to a particularly vigorous mastication.

The great weight of the skull suggests an exceptional thickness of the vault; this is validated also by the irregular and porous appearance of the parietal surface, in a large area between the parietal eminence and the sagittal suture, bilaterally (hyperostosis) (Fig. 80.2). It is advisable to take a radiograph, in order to verify and make a diagnosis.

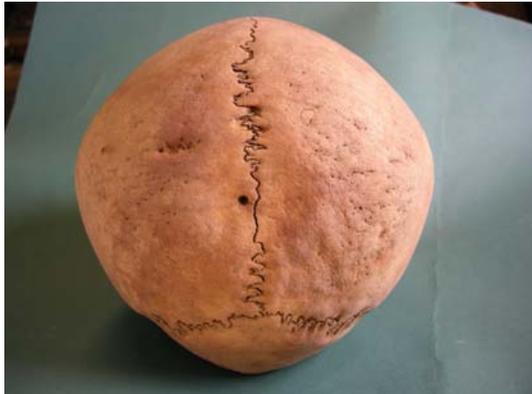


Fig: 80.2



Fig: 80.4

-The postcranial segments (Fig. 80.3) belong to at least 2 adult individuals, of different size (perhaps male and female): 1 atlas; 2 cervical vertebrae; 3 carpal bones (1 semilunar, 1 trapezium, 1 trapezoid); 3 metacarpals; 2 foot phalanges; 1 rib; 1 scapula; 1 talus; 1 metatarsal; 1 cuneiform.

The scapula (right side) shows the bipartite acromion (Fig.80.4).

Scattered skull in the filling of Grave 75

A complete skull without mandible (Fig.75.5). It belongs to a mature adult male individual. The sex can easily be diagnosed on the basis of all the most discriminant morphological features. The age-at death is determined by the sutures, all open except a posterior segment of the sagittal one (obelion region), and by the advanced dental wear (exceeding the last phase - H – in the scale of Lovejoy, 1985; corresponding to the last phase in the scale of Brothwell, 1981 (Fig.75.6).

Dental characteristics:

Shovel-shaped incisors.

Agenesis of the third molars.

Presence of *torus maxillaris*.

Absence of caries.

Abundant calculus on the right side (less worn side).

Abscess cavities at the roots of the right first premolar and second molar, due to periodontitis (Fig.75.7) .

Alveolus resorption and porous appearance of the alveolar bone, due to periodontitis.

A large hypoplasia stria on the apical segment of the incisors, recording a serious stress episode occurred in the early childhood.



Fig: 75.5



Fig: 75.6



Fig: 75.7

Some anthropometric measurements in mm (code numbers according Martin and Saller):

	Gr 17	Gr 27	Gr 34	Gr 54	Gr 74	Gr 75 (adult skull)	Gr 80 (adult skull)
	F	F	M	M	F	M	M
1- maximum cranial length	-	-	201	189	179	184,5	189
8- maximum cranial breadth	-	-	152	148	133	142	147
17- basion/bregma height	-	-	145	144,5	134	138	132
1- maximum humerus length	323	-	344	319	294	-	-
2- total humerus length	321	-	338	314	293	-	-
7- minimum hum. circumference	58	-	79	83,5	67	-	-
1- maximum radius length	244	-	236	230	218	-	-
3- minimum radius circumference	48	-	53,5	59	38	-	-
1- maximum ulna length	259	-	264	249	235	-	-
3- minimum ulna circumference	45	-	52	56	39	-	-
1- maximum femur length	420	-	518	442	407	-	-
2- physiological femur length	417	-	516	440	405	-	-
6- sagittal diameter in the middle	25,5	23	31	30	29	-	-
7- transv. diameter in the middle	23	28	31	28	26	-	-
9- superior transv. diameter	26,5	32	32	33	33	-	-
10- superior sagittal diameter	23	22	30	27	27	-	-
1- total tibia length	350	-	385	348	330	-	-
8 a - sagittal diameter for nutr	27	29	37	36	33,5	-	-
9 a - transv. diameter for nutr	20,5	21	29	27	27	-	-

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