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Osteological Analysis of the Human Remains – Skriðuklaustur 2011

Skýrslur Skriðuklaustursrannsókna XXXI

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PART I: OSTEOLOGICAL ANALYSIS – METHODS AND GENERAL RESULTS

1 Introduction

During the 2011 excavation at Skriðuklaustur 49 graves were excavated. Due to poor preservation no bones could be recovered in the graves 210 and 216. Some graves were disturbed, and the bones were found in the fill of later burials. The total number of analysed skeletons from the 2011 excavation is 47, with the grave numbers 200-209, 211-215, 217-242, 269-272 and 282-283. Of the graves excavated during the years 2004-2010, 75 have not been analysed previously. Due to poor preservation no bones had been recovered from the graves 24, 35, 72, 76 and 118. The skeletons from previous excevations, included in this report, have the grave numbers 6-7, 14, 19, 21-22, 28, 31-32, 36-38, 40-41, 48, 50, 55-56, 58-60, 64, 69-71, 77-79, 81-82, 86, 89, 91, 93-94, 101, 107-108, 111-113, 117, 119, 120-122, 166-167, 172, 178, 186-187, 189, 190, 193, 197, 199, 273-279, 281, 284-285 and 296. The skeletons from the graves excavated during previous years were analysed in Reykjavik, at the National Museum and at the University of Iceland, while the skeletons from the excavation of 2011 were analysed at the field lab in Skriðuklaustur and at the University of Iceland in Reykjavik.

The skeletons were recorded in a database by Dr Anna Kjellström (Stockholm University) based on the recommendations in *Standards for Data Collection from Human Remains* (Buikstra & Ubelaker 1994). The recording included: representation and preservation of skeletal elements, estimation of age and biological sex, dental development and dental health, pathologies, cranial and postcranial measurements and non-metric traits. The first part of the report is a presentation of the general results, and the second part is a catalogue with short description of the individual skeletons.

The terminology in the report follows the international nomenclature. Abbrevations are used for the vertebrae: C – cervical vertebrae, T – thoracic vertebra, L – lumbar vertebra, S – sacral vertebra. For example T4 is the fourth thoracic vertebra and L1 is the first lumbar vertebra. The teeth are referred to according to the system of Fédération Dentaire Internationale (FDI), where the quadrants of the jaws are numbered 1) right maxilla, 2) left maxilla, 3) left mandible, 4) right mandible in permanent teeth, and 5) right maxilla, 6) left maxilla, 7) left mandible, 8) right mandible in deciduous teeth. The teeth are numbered 1-8 (central incisor-third molar) or 1-5 (deciduous central incisor-deciduous second molar) in each quadrant. For example 23 is the permanent canine of the left maxilla and 81 is the deciduous central incisor of the right mandible.

2 Representation and preservation

The presence of bones was registered as present/not present (sternum, ribs, bones of hands and feet) or as less than 25%, 25-50% or more than 75% present (other bones). The teeth were also registered as present/not present. Completeness of the skeleton was usually depending on the state of preservation, and in poorly preserved skeletons fewer elements were present. In some cases graves had been disturbed, and well preserved skeletons had poor representation of bones.

The preservation varied from almost complete skeletons, where even small and fragile bones were well preserved, to skeletons that were in such a bad state that nothing, or only the teeth, could be recovered. The presence of skeletal elements, regardless of state of preservation, is shown in table 1. Note that in the table no difference is made between right and left side, and presence can be anything from complete bones from both sides of the body to a single identified fragment.

In the catalogue the preservation is described as bad, medium or good.
Bad: The surface of the bone is damaged, fragile

Fig 1: Preservation of femora, from the left: bad, medium, good. Graves 224, 50 and 48.

Table 1: Representation - bones present. Cran - cranium, ve ce - cervical vertebra, ve th - thoracic vertebra, ve lu - lumbar vertebra, sac - sacrum, stern - sternum, clav - clavicle, scap - scapula, hum - humerus, rad - radius, uln - ulna, carp - carpal bone, mc - metacarpal bone, ph h - phalanx of the hand, fem - femur, pat - patella, tib - tibia, fib - fibula, tars - tarsal bone, mt - metatarsal bone, ph f - phalanx of the foot

grave	cran	teeth	ve ce	ve th	ve lu	sac	stern	rib	clav	scap	hum	rad	uln	carp	mc	ph h	hip	fem	pat	tib	fib	tars	mt	ph f
6	X	X	X					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
7	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
14	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
19	X	X	X	X	X			X	X	X	X		X		X	X		X		X	X			
21	X	X	X	X	X			X	X	X	X	X	X		X	X	X	X		X	X			
22	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
28	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
31								X	X	X	X	X	X				X	X		X	X			
32	X	X	X	X	X			X	X	X	X		X	X	X	X								
36	X	X	X	X	X		X				X	X	X	X	X	X		X	X	X	X	X	X	X
37	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
38	X							X			X	X	X				X	X		X				
40	X																							
41	X	X	X					X	X	X	X						X	X		X				
45	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
47	X	X	X	X	X			X	X	X	X	X	X		X	X	X	X		X				
48	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
50	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X						
55	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
56	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X
58	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
59	X	X																						
60	X														X									
64	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
69	X	X	X								X							X		X	X			
70	X	X																						
71	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
77	X	X						X																
78			X			X		X			X	X	X		X	X	X	X						
79	X	X	X	X	X			X	X	X	X	X	X		X	X						X	X	
81	X	X	X	X	X	X		X			X	X	X				X	X		X	X			
82	X	X						X										X						
86	X	X	X	X	X	X		X	X	X	X				X	X	X	X		X	X	X	X	X
89	X	X	X					X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	
91	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
93	X		X	X				X	X		X	X	X					X		X	X			
94	X	X						X	X	X	X	X	X				X	X		X				
101		X																						
107						X					X	X	X	X	X	X	X	X	X					
108	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

grave	cran	teeth	ve ce	ve th	ve lu	sac	stern	rib	clav	scap	hum	rad	uln	carp	mc	ph h	hip	fem	pat	tib	fib	tars	mt	ph f
111	X	X																						
112	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
113	X	X	X	X				X	X	X							X							
116	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X
117	X	X	X	X	X			X	X	X	X	X	X				X	X		X				
119	X	X	X	X			X	X	X	X	X	X	X	X	X	X								
120	X	X	X	X	X			X	X	X	X	X	X		X	X	X	X		X	X		X	X
121	X	X	X	X	X	X		X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X
122	X	X																						X
166	X	X	X					X		X	X	X	X					X		X				
172	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X
178	X																							
186	X	X						X			X	X						X		X	X			
187	X	X	X		X			X	X	X	X	X	X		X	X	X	X		X	X		X	
189	X	X	X	X				X	X	X	X	X	X	X	X	X		X		X	X		X	
190		X																						
193	X	X																						
197	X	X	X	X				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
199		X	X	X	X	X		X	X	X	X			X	X	X	X	X	X	X	X	X	X	
200	X	X	X	X				X			X	X	X		X			X		X	X	X	X	X
201	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
202		X																						
203	X	X	X					X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X
204	X	X	X	X	X	X		X	X	X	X	X	X		X	X	X	X		X	X	X	X	
205	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
206	X	X	X	X				X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X
207	X	X	X	X	X			X	X	X	X	X	X		X	X	X	X		X	X	X	X	
208	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X						
209	X	X	X	X	X		X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
211	X	X	X															X	X	X	X	X	X	
212	X	X	X							X	X		X		X			X		X		X	X	
213		X																						
214	X		X																					
215	X	X	X	X				X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X
217		X																						
218	X	X	X								X	X	X					X		X	X	X	X	X
219	X	X																						
220	X	X																X		X				
221	X	X	X								X	X	X			X	X	X		X	X			
222	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
223	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
224	X	X	X								X							X		X	X			
225		X																						

grave	cran	teeth	ve ce	ve th	ve lu	sac	stern	rib	clav	scap	hum	rad	uln	carp	mc	ph h	hip	fem	pat	tib	fib	tars	mt	ph f
226	X	X	X					X	X	X	X	X	X		X	X	X	X		X	X		X	
227	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
228	X	X	X					X		X	X	X	X		X	X		X		X	X	X	X	
229	X	X	X																					
230	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
231	X	X	X					X			X	X	X	X	X	X		X	X	X	X	X	X	X
232	X	X																X		X	X			
233	X	X	X					X			X	X	X	X	X	X		X		X	X	X	X	X
234	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
235	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
236	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
237	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
238	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
239	X	X	X					X			X	X	X			X	X	X		X	X		X	
240	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	
241	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
242	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
267											X	X	X				X	X		X				
269	X	X	X	X	X			X	X	X	X	X	X		X	X	X	X	X			X	X	X
270	X	X	X								X											X		
271	X	X		X													X	X		X				
272	X	X							X								X							
273	X	X						X			X						X	X		X		X		
274	X	X														X								
275																		X						
277													X					X		X	X			
278																		X			X			
279	X	X																						
281	X	X										X						X		X				
282	X	X	X	X				X		X	X	X	X				X	X		X			X	
283	X	X																						
284						X					X	X	X				X	X	X	X	X	X		
285						X						X	X				X	X		X	X	X		
295	X	X	X					X												X				

and falling apart. The bones are cracked, broken and sometimes deformed.
Medium: The surface of the bone might have some minor damage, but much of it is preserved. Fragile parts as vertebral bodies or the joint surfaces of the long bones are usually not complete.
Good: The surface of the bone is hard and solid. Even fragile bones/parts of bones are preserved.

3 Estimation of sex

The estimations of biological sex are based on hip bone morphology, cranial morphology (inculuding the mandible), and metric data from the femur and humerus. The following features have been recorded, when observable:

1) Hip bone: ventral arc, subpubic concavity, ischiopubic ramus ridge, greater sciatic notch, preauricular sulcus and arc composé.
2) Cranium and mandible: external occipital protuberance (nuchal crest), mastoid process, supraorbital border, superciliary arch, glabella, mental protuberance, angle of mandible
3) Femur: maximum head diameter, epicondylar breadth
4) Humerus: vertical diameter of head, horizontal diameter of head, epicondylar breadth

The morphological and metric characteristics are scored as female-inconclusive-male (1-3), or female-female?-inconclusive-male?-male (1-5). In the overall estimation of sex the number of observations is also considered, and the sex of a poorly preserved skeleton with few observable features is regarded as less certain. In the overall estimation of sex the general appearance of the cranium, hip bone and the rest of the skeleton is also considered.
In an analysis of other graves from Skriðuklaustur Elsa Pacciani observed a marked sexual dimorphism, which, combined with the good preservation, made "[…] the sex diagnosis
relatively easy […]". This observation of sexual dimorphism is also valid for the skeletons analyzed here. The preservation was, however, not always good. No estimation of sex has been attempted when not at least one of the above mentioned morphological characteristics could be observed, or when the individual was not adult or older adolescent.

At least one of the morphological features of the hip bone could be observed in 41 individuals. The best preserved part of the hip bone was usually the ilium, where the greater sciatic notch, the preauricular sulcus and the arc composé could be observed. According to Phenice (1969) an estimation of sex based the pubis is correct in c. 98% of the cases, but unfortunately this part of the hip bone is often damaged. In the present material from Skriðuklaustur at least one

Fig 2: Feminine cranium and hip bone, grave 222 (left) and masculine cranium and hip bone, graves 119 and 14 (right)

of the features of the pubis could be observed in 18 individuals.

The cranium is usually better preserved than the hip bone. At least one morphological feature of the cranium or mandible was observed in 61 individuals. In 6 individuals only one or two of the cranial charactaristics were observable.

Table 2: Estimation of sex

F	F?	?	M?	M	total
12	18	10	15	12	67

The diameter of the head and/or the breadth of the epicondyles of the femur could be measured in 33 individuals and the corresponding measurements of the humerus could be taken in 26 individuals. In three fragmented individuals the estimation of sex was based only on the measurements of the femur.

A total of 67 individuals have preserved features suitable for an estimation of sex. Of these 30 have female or possibly female features, 27 have male or possibly male features, and the sex of the remaining ten could not be determined. The individuals with unknown sex were not well preserved or had contradictory or inconclusive features.

4 Estimation of age

The estimation of age in children and adolescents is based on dental development, epiphyseal fusion, and measurements of bone size. In adults the estimation of age is based on closure of cranial sutures, dental wear of the molars and the stages of the pubic symphysis and auricular surface of the hip bone. The sternal end of the fourth rib was not used, as it was usually not preserved. Of the 117 individuals examined, 44 were less than twenty years old and 71 were older than twenty years of age. Two individuals were around twenty years of age.

The dental development was registered according to the Moorees, Fanning and Hunt code (Moorees et al 1963a; 1963b), and ages related to dental development follows Smith (1991). The eruption of teeth is aged after Ubelaker (1989). Teeth were present in 36 of the 44 non adult individuals.

The fusion of epiphyses is recorded as open, partly fused or completely fused (Buikstra and Ubelaker 1994:41) and aged according to Brothwell (1981), Owings (1981), Webb and Suchery (1985), Krogman and İşcan (1986), Bass (1987), Shani and colleges (1998) ans Scheuer and Black (2000).

The closure of cranial sutures was registered according to Buikstra and Ubelaker (1994:32-38). The sutures in the cranial vault and the lateral-anterior sutures could be observed in 30 individuals. Only the cranial vault sutures were observable in 2 individuals, and only the lateral-anterior sutures were observable in 4 individuals. As there is a great individual variation in the time of suture closure, the age intervals are big, using this method.

The dental wear of the molars was also used as an indication of age. The dental wear was compared to a pre-medieval British population (Brothwell 1981). In comparison to the other aging methods used, the dental wear often indicated a lower age, suggesting that the dental wear was not as heavy in the Skriðuklaustur population as in the reference population. Due to the poor preservation of some skeletons this method was sometimes the only one available. In 66 of the 71 adult individuals the occlusal wear of at least one molar could be observed. In 24 individuals the dental wear was the only one of the ageing methods used here that was applicable.

The pubic symphysis was scored (phase I-VI) according to the Suchery-Brooks system (Brooks and Suchery 1990; Suchery and Katz 1986). In most skeletons the pubis was damaged or not present. Only 6 individuals had one pubic symphysis preserved. The pubic symphyses from both sides were not available in any individual. In one individual a pubic symphysis was preserved, but no auricular surface, in the other 5 individuals with a pubic symphysis present at least one auricular surface was preserved.

The auricular surface was aged (phase 1-8) according to Lovejoy et al (1985) and Meindl and Lovejoy (1989). In 24 individuals at least one auricular surface was present. The left and right side was scored separately, and the sides were given different scores in 4 individuals.

The following age ranges, according to Buikstra and Ubelaker (1994:9), are used:
Fet – Fetal (<birth)
Inf – Infant (birth-3 years)
Chi – Child (3-12 years)
Ad – Adolescent (12-20 years)
YA – Young adult (20-35 years)
MA – Middle adult (35-50 years)
OA – Old adult (50+ years)
A – Adult (20+ years)

Table 3: Estimation of age

Fet	Inf	Chi	Ad	AdY	YA	YM	MA	MO	OA	A	total
1	26	5	12	2	20	5	15	4	6	21	117

Age ranges are also given in years, when possible. Sometimes the age rages are wider than the age groups, or overlapping two age groups (AdY – adolescent-young adult, YM – young-middle adult, MO – middle-old adult).The age categories were represented as follows:

5 Estimation of stature

The maximum length of long bones was measured according to Buikstra and Ubelaker (1994:79-84). The maximum length of the left femur is used for calculation of stature, if available. If the left femur is not complete, the right femur is used. The stature is calculated according to Trotter and Gleser (1952; 1958) (referred to as TG in the catalogue) and Sjøvold (1990) (referred to as S in the catalogue). The formulae by Trotter and Gleser are different for males and females, while Sjøvold's formulae are indifferent to the sex of the individual. When the sex is unknown, only Sjøvold's formulae are used.

Stature estimations have only been performed on adult individuals (or older adolescents, where the epiphyses of the long bones are fused). Both femora are preserved in 14 individuals, 4 have only a complete left femur, and 5 have only a complete right femur. The estimated mean stature, based on maximum length of the femur, was c.155-157 cm for females, and c. 171-173 cm for males (table 4).

Table 4: Stature in cm according to Trotter and Gleser and Sjøvold.

	Trotter and Gleser			Sjøvold		
	F	M	all	F	M	all
Mean	155.11	172.58	163.46	157.50	171.30	164.10
S D	4.64	8.03	10.94	4.93	9.09	9.97
N	12	11	23	12	11	23
High	161.8	194.75	194.75	164.6	196.45	196.457
Low	146.97	165.30	146.97	148.85	163.10	148.85

Using the formulae by Trotter and Gleser, all males had a higher stature than all females. Using the formulae by Sjøvold, there is also an overlap in stature between males and females in the range of 160-165 cm. When stature estimations based on other long bones than the femur are included one possible female (grave 206) is considerably taller than the average female, 170.31 cm (Sjøvold) to 172.96 cm (Trotter and Gleser). The stature estimation is based on the measurements of the radius, as no other long bones were available.

One of the males (grave 36) was referred to as "the giant" due to the size of his bones. Particularly the femora are very long, and the stature estimation based on the left femur is 194.8 cm (Trotter and Gleser) to 196.5 cm (Sjøvold). Other long bones, however, give shorter estimated stature, and the pro-

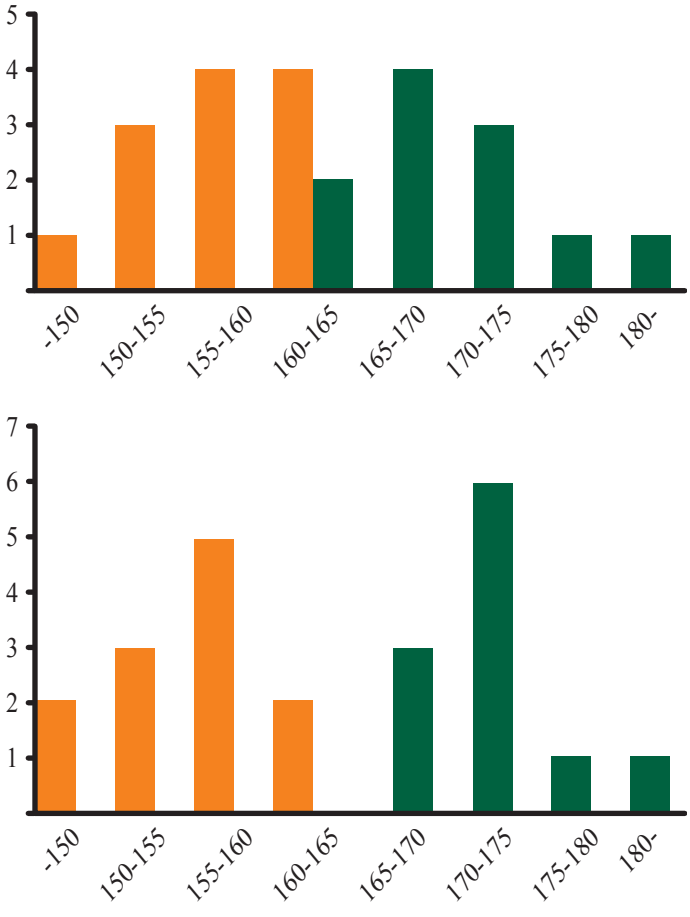

Fig 3: Stature in cm according to Sjøvold (top) and Trotter and Gleser (bottom). Orange - female, green - male.

Table 5: Maximal length of long bones, in cm.

grave	hum R	hum L	rad R	rad L	uln R	uln L	fem R	fem L	tib R	tib L	fib R	fib L
7	279	274	204	199	221	214	376	376	298	299	292	293
28	329	322	228	226	241	239	436	436	342	344	334	338
31				199								
36					281	285		557		390		
37	297	290	204	206		222	395	390	307	304		
45	344	334		248	274		476		365	362		
48	337	331	238	235		254	460	459	352	353	349	351
50	348		248									
55	327	326	245	247	269	269	422	430	356	360	356	354
58	328	325	230	230	246	241	427	431	351	354	340	341
71	317	310		224								
78			229									
79		319				257						
89								452				
91	348	342	236	233	261	258	450	454	329	340	320	337
108			224	224	237	239			347		335	340
113		283	201		227	231						
119		339		240		256						
121				225								
172				221								
197									298			
201	296			223								
206			249									
209			247	234	269		431		353			
215			199									
222			238	222			405	412	340	340	341	
223	303	300	213	208		223	400	396	313	318		
227	332	333	235	235	254	259	465	465	363	363	356	356
230			216				402					
234			219		238	235	390	387	303	309		305
235	316	321	227	226	244	245		422	345			
236	329	304	213	212	218	226	418	418	333	333		316
238	305	303	226	222	243	238	418	424	338	335		
240				210	228							
241	305	300	223				412	413	334	334	339	
242							453					
277					261		440					
284	331	331						458	350	352		

portions of this individual are not similar to that of the rest of the population.

Stature calculations based on the measurements of other long bones are included in the catalogue. In 38 individuals at least one long bone was measured. The maximum length of the measured long bones is shown in table 5.

6 Teeth

The following information on teeth was registered: presence, development, enamel defects, occlusal wear, fractures, caries, calculus, periodontitis and periapical lesions.

6.1 Presence

The presence of teeth were registered as follows
Present: 1) not in occlusion; 2) in occlusion; 7) damaged; 8) unobservable
Absent: 3) no alveolar bone; 4) lost ante mortem; 7) lost post mortem; 6) congenital absence

At least one tooth is present in 102 of 117 individuals. In 6 graves the teeth are the only human remains that could be recovered. Of the individuals with teeth, 14 have only deciduous teeth, 72 have only permanent teeth, and 16 have a mixed dentition. When the alveolar bone of the maxilla or mandible is missing it cannot be determined if the tooth has been lost ante or post mortem. In some cases it is also un-

Table 6: Precense of deciduous teeth

	1 right maxilla					2 left maxilla					3 left mandible					4 right mandible				
grave	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
14					X										X					
19	X	X	X	X	X	X	X		X		X	X		X	X	X	X	X	X	X
21			X	X		X			X	X	X	X		X	X	X	X	X	X	X
32	X	X		X	X	X			X		X			X	X	X	X		X	X
41	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
47	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
56	X	X		X		X				X	X	X	X	X	X	X	X		X	X
70	X		X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X
71								X												
77	X			X	X	X	X		X	X				X		X	X		X	X
81								X												
82				X																
89																				X
111									X	X				X	X					
117	X	X				X	X				X	X		X	X	X	X		X	X
120	X	X		X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X
166	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
200			X	X	X			X	X	X			X	X	X				X	X
201					X					X										
207	X	X	X			X	X	X			X			X		X			X	
208	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X
212	X	X	X	X	X	X	X	X	X	X	X	X			X	X	X		X	X
217			X		X			X	X	X				X	X				X	X
239								X												
270														X	X				X	X
271		X		X	X	X	X	X	X	X		X	X	X	X		X		X	X
282		X	X	X	X						X	X	X	X	X	X	X	X	X	X
283										X										
295					X			X												

Table 7: Precense of permanent teeth

	1 right maxilla								2 left maxilla								3 left mandible								4 right mandible							
gr	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8
6			X		X	X							X				X	X	X						X	X	X		X			
7	X	X	X	X	X	X			X	X	X	X	X							X	X	X				X	X	X	X	X	X	
14	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			X	X	X	X	X	X	X	X	X	X	X	X	X
22			X		X	X	X	X						X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
28	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
36				X															X	X	X	X	X	X			X	X	X		X	X
37	X		X	X	X	X	X		X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
41	X	X				X			X	X	X			X			X	X	X			X			X	X	X			X		
45		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
48	X	X	X	X	X	X			X	X	X	X	X				X	X	X	X					X	X	X	X	X	X	X	X
50			X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X
55	X	X	X		X	X	X		X	X	X	X		X		X	X	X	X	X	X	X	X		X	X	X	X		X	X	X
58	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
64	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
69			X	X			X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	
70		X				X			X	X				X			X	X	X			X			X	X	X			X		
71	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
79		X	X	X	X	X	X	X									X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
81	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	
86	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
89	X	X	X	X		X	X		X	X	X	X		X	X	X	X	X	X			X	X	X	X	X	X	X		X	X	X
91	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
101	X	X	X	X		X	X		X	X	X	X		X	X		X	X	X	X		X	X		X	X	X	X	X	X	X	
108	X		X	X	X	X	X	X	X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
112	X	X	X						X	X	X	X						X	X				X	X	X	X	X	X				
113		X	X	X	X	X		X		X	X		X					X	X		X		X	X			X	X			X	X
116			X				X										X	X	X		X	X	X		X	X	X	X	X	X	X	
119	X	X	X	X		X			X	X	X	X	X				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
121	X						X					X					X		X	X	X	X	X	X	X	X	X	X	X	X	X	
122	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
166	X					X			X								X	X				X			X	X				X		
172			X	X	X	X	X							X	X		X	X	X	X	X	X	X		X					X		
186	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
187		X			X	X	X	X					X	X	X	X				X		X	X	X				X	X	X	X	X
189	X	X	X	X	X	X	X		X	X	X	X		X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
190			X	X	X	X						X	X	X				X	X	X	X	X						X	X	X	X	X
193			X	X	X	X					X	X	X					X	X	X	X	X	X		X	X	X	X	X	X	X	
197					X	X		X					X	X							X	X	X	X				X	X	X	X	X
200	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
201	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	
202		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X		X	X	X	X							X	X	
203	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
204	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X		X		X	X	X	X	X	X	X	X
205		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
206	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X
208		X	X			X				X												X								X		

	1 right maxilla								2 left maxilla								3 left mandible								4 right mandible							
gr	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8
209	X	X	X	X		X	X	X	X	X	X	X	X	X	X		X	X	X	X		X	X	X	X	X	X	X		X	X	X
211			X	X		X						X	X	X												X		X				
213	X		X	X		X											X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
215	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X
217	X	X	X	X	X	X	X		X	X	X	X	X	X			X	X	X	X	X	X	X		X	X	X	X	X	X	X	
218	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X
219	X			X	X	X							X	X	X	X				X	X	X	X	X		X	X	X	X	X	X	X
220	X	X	X	X	X	X	X	X	X		X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
221	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
222	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X		X	X		X	X	X	X		X	X	
223		X	X	X	X	X	X	X	X			X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X
224			X	X	X		X	X							X	X	X	X	X	X	X	X	X		X	X					X	
225						X		X							X		X		X	X	X		X	X					X	X		
226	X			X	X	X	X	X		X		X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
227		X		X	X	X	X	X		X	X	X	X	X	X		X		X	X	X				X	X	X	X		X		
228																				X	X	X	X	X			X	X	X	X	X	X
229	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
230	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
231	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
232	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
233	X	X	X	X	X	X			X		X	X	X	X		X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	
234	X	X	X		X	X	X		X	X	X	X		X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
235	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
236							X				X		X	X	X						X	X	X	X			X	X	X	X	X	
237	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
238	X	X	X	X	X	X	X		X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
239	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
240	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
241	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X
242	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
269		X				X	X	X				X	X	X	X	X	X	X	X	X	X	X	X			X	X	X		X	X	
270																						X	X		X		X			X	X	
271	X					X			X																					X		
272			X	X	X	X	X						X	X	X																	
273			X	X	X	X	X	X	X	X		X	X	X		X	X	X	X	X	X	X	X		X	X	X			X	X	X
274						X	X	X						X	X	X																
279			X	X	X	X	X	X			X	X	X	X	X	X																
281																							X									
282																														X		
283		X								X	X	X	X	X	X						X	X	X				X		X	X	X	

certain if a tooth is congenitally absent, or has been lost.

The presence of deciduous teeth is shown in table 6 and the presence of permanent teeth is shown in table 7. For a more detailed account, see the list of graves in the catalogue.

6.2 Dental development

Dental development and the eruption of teeth was used as an indication of age in young individuals. In some occasions the development and/or eruption of teeth seem to have been delayed compared to other indications of age. This includes asymmetric tooth formation, remaining deciduous teeth and delayed eruption of permanent teeth.

Deciduous teeth in adolescents and adults are present in seven individuals (graves 14, 71, 81, 201, 222, 239 and 283). This often resulted in delayed eruption of the permanent teeth, though in some cases the permanent teeth erupted next to the deciduous teeth. A deciduous tooth was also present in the individual in grave 89, a middle adult of c. 30-50 years age. In this case congenital absence of the permanent second premolar is probably the reason. Delayed eruption of permanent teeth, without the presence of the corresponding deciduous teeth, is found in grave 14, an adolescent of about 15-16 years age, where the permanent canines are not in occlusion. In igrave 237, an individual of c. 15-19 years age, only about two thirds of the root of the lateral incisor of the left maxilla is formed, while the root of the right lateral incisor is fully formed.

6.3 Ante mortem tooth loss

Lost teeth are recorded as lost ante mortem when there is no alveolus present, or when the alveolus is partly resorbed. When the alveolus shows no signs of resorbtion the tooth is recorded as lost post mortem. In total 147 teeth are lost ante mortem. The tooth most often lost is 35, the second premolars of the left mandible (in 8 individuals). The central incisors of the maxilla, 11 and 12, are also lost often, as well as some of the molars, 18, 36, 38 (in 7 individuals). The canines are seldom lost. Not a single 13, the canine of the right maxilla, has been recorded as lost ante mortem. In 26 individuals at least one tooth has been lost ante mortem. The individual who lost most teeth ante mortem (grave 112) has lost 16 teeth, and another individual (grave 36) has lost 15 teeth. In the age group old adult all individuals suffer from ante mortem tooth loss, and also from periodontitis. Two adolescents have recorded ante mortem tooth loss (graves 14 and 45). In these teenage males anterior teeth have been lost, and trauma is a possible reason.

Fig 4: Mandible grave 14. Post mortem lost tooth (34) with alveolus present, and ante mortem lost teeth (42 and 43) with no alveoli present.

6.4 Congenitally absent teeth

Teeth are congenitally absent in 18 individuals, usually one or some of the third molars. Out of 229 observable third molars 33 are congenitally absent (c. 14.8%). In two individuals one (grave 209) or all (grave 89) of the second premolars are congenitally absent. In one individual (grave 108) the lateral incisors of the maxilla are congenitally absent.

Fig 5: Mandible grave 206. Congenitally absent third molar (38), compare to present third molar (48).

6.5 Enamel defects
Enamel defects are recorded according to Buikstra and Ubelaker (1994:56). No enamel opacities were observed, only enamel hypoplasias. Linear grooves are the most common defect, but pits are also present in the material. Enamel defects are present in 16 individuals. It is the only dental change observed in children and the frequency decreases with age. Possibly individuals with enamel hypoplasias were more likely to die at a young age, or the enamel defects could not be observed in older individuals, due to dental wear and large deposits of calculus. Enamel defects can be caused by systematic metabolic stress, hereditary anomalies or localized trauma during the formation of enamel (Roberts and Manchester 2007:75-77; Waldron 2009:244).

6.6 Wear
Most individuals have small to medium occlusal wear. In a few individuals the teeth are worn to the root. Estimations of age based on dental wear often suggest a younger age than the other methods used. In some individuals the dental wear is uneven, suggesting that the teeth have been used for other activities than mastication (see the list of graves in the catalogue).

6.7 Fractured teeth
Chipping and small fractures in the teeth are not uncommon, but only 6 individuals have fractured teeth where a large part of the crown is missing. All of them are adult, 4 females, 1 male, and 1 of indeterminate sex. The 9 fractured teeth are 4 incisors, 2 canines, 1 premolar and 2 molars.

6.8 Caries
Caries was uncommon in the population. In 4 individuals cervical caries or probable cervical caries is present. A clear cavity is only observed in one individual, grave 36, at the second molar of the right mandible. In the individuals in the graves 28, 50 and 91 erosion of the cervical area is present, and cervical caries is probably the reason.

Fig 6: Fractured tooth (15), grave 232.

6.9 Calculus
All individuals with preserved erupted permanent teeth have calculus deposits on at least one tooth. Presence of calculus deposits is recorded according to Buikstra and Ubelaker (1994). In some individuals the calculus is very fragile, and parts of it are falling off. Usually all or most of the teeth are affected. In some individuals the deposits are very large. In the catalogue calculus deposits are only reported when they are large (stage 3,), cover the occlusal surface, or in some other way are of particular interest. The largest deposits are found on the permanent dentition, but deciduous teeth also have calculus deposits.

Fig 7: Calculus deposits, from the left (1) small, (2) medium, (3) large. Graves 81, 272 and 234.

Of 1894 permanent teeth examined for calculus, 1236 have small deposits (1), 275 have medium deposits (2) and 65 have large deposits (3). There are only 318 teeth without calculus deposits, some of them still in the crypt. The largest deposits of calculus (3) are found mainly on the molars. Only two incisors have large deposits of calculus.

In 14 adult individuals, and no children or adolescents, the calculus deposits are large on at least one tooth. It is more common in females (33.3% affected) than in males (12.5% affected), and the frequency increases with increasing age.

6.10 Periodontitis
A reduction in alveolar bone and exposure of the roots of the teeth is interpreted as periodonitits. Sometimes supragingival calculus is also present on the roots of the teeth, showing that they were exposed. When no alveolar bone is present this is the only sign of periodontitis. In 35 of the 102 individuals with teeth (34.3%), periodontitis can be ob-

served. Counting only individuals with alveolar bone present 34 of 84 individuals (40.5%) show signs of periodontitis. Periodontitis can be caused by large calculus deposits (Roberts and Manchester 2007:73). Periodontitis is not observed in any children or adolescents, but it is common in the adult population. The frequency is increasing with increasing age, and all in the old adult age group are affected. In the Skriðuklaustur population individuals with large deposits of calculus present on the teeth have a higher frequency of periodontitis than those with only small calculus deposits.

Fig 8: Periodontitis, mandible from grave 203.

6.11 Periapical lesions
Periapical lesions are registered according to Buikstra and Ubelaker (1994:55). No difference is made between granulomas, abscesses and cysts, though a diagnosis is sometimes suggested (see the list of graves in the catalogue). Periapical lesions are found in 16 individuals, all adults. It is more common in females (33.3%) than in males (20.8%). The first molars are most commonly affected (11 of 26 teeth with periapical lesions).

7. Pathologies

Bone changes are registered and described when observed. The interpretation of pathological bone changes follows diagnostic criteria described by Waldron (2009). The types of changes observed are presented here, and a more detailed description follows in the list of graves in the catalogue.

7.1 Periostitis and osteomyelitis
Periosteal bone reactions were observed in several individuals, sometimes in one bone, sometimes in several different bones. It can be part of a specific disease, such as syphilis (infection) or scurvy (subperiosteal haemorrhage), or a primary disease. The most likely causes are infection or trauma (Ortner 207-208). In a few bones the medullar cavity also appears to be involved (osteomyelitis). In the Skriðuklaustur material 36 individuals are affected by periostitis and/or osteomyelitis. The tibia is the most often affected bone, followed by femur, cranium, fibula, radius and ulna. The distribution of periostitis and osteomyelitis is presented in table 8.

7.2 Porotic hyperostosis and cribra orbitalia
Porotic hyperostosis, pitting of the cranial bone surface, is usually interpreted as a sign of anemia, and expansion in haematopoietic bone marrow (Waldon 2009:136-137). The cause of the anemia is however not determined by the presence of porotic hyperostosis, it can for instance be caused by nutritional stress or parasites. Other explanations, for example inflammatory or haemorrhagic processes are also possible (Ortner 2003:89). The pitting can often be observed as on the superior wall of the orbits, cribra orbitalia. Studies have shown that cribra orbitalia is more common in children than in adults, and that there is an increased mortality in individuals with cribra orbitalia (Roberts and Manchester 2005: 231-232). The individuals in the following graves have pitting in one or both orbits: 37, 70, 197, 200, 205, 231, 232, 233, 238, 280, 295. They represent infants, children and adult males and females. Porotic hyperostosis of the cranial vault is only present in two individuals, in the graves 47 and 70, both infants.

Fig 9: Cribra orbitalia, grave 70.

7.3 Osteoarthritis
Osteoarthritis, or degenerative joint disease, affects synovial joints, and is common in skeletal materials. It can be caused by normal wear, but can also be secondary to trauma. Eburnation of the joint surface, where the cartilage of the joint has been lost, and bone meets bone, is a clear sign of osteoarthritis. Other indications are marginal osteophyte formation, new bone on the joint surface, pitting on the joint surface and changes to the contour of the joint. Ac-

Table 8: Distribution of periostitis (x) and osteomyelitis (X)

grave	cran	mand	vert	rib		clav		scap		hum		rad		uln		carp	mc	ph h	hip		fem		tib		fib			tars		mt
				L	R	L	R	L	R	L	R	L	R	L	R	R	R		L	R	L	R	L	R	L	R		L	R	L
7																					x	x						x	x	
48																		X												
50												x	x	x	x		x													
55																							x	x						
64	x	x	x	x	x			x	x										x	x										
69																					x	x	x	x			x			
81		X								X		X			X						X	X	X	X		X				
91					x																									
93	x																													
112																						x			x	x				
116				x	x	x				x		x	x							x			x	x						
121																							x	x		x		x	x	
187	x									x																				
189																					x	x	x	x	x	x				x
197																							x	x	x					
201		x					x							x									x	x						
203											x																			
204													x		x								x	x			x			
205	x												x																	
209												x	x	x	x	X							x		x					
221																					x									
222												x	x	x	x								x	x		x				
226																							x							
227				x														x												
230				x	x																x	x	x	x						
364				x	x																									
235																							x	x						
236		x																					x	x						
237	x																				x	x	x	x		x				
238				x																										
239	x									x	x	x	x	x	x						x	x	x	x	x	x				
240	x																						x	x						
269													x	x								x								
273		x																												
277															x							x	x	x	x	x				
282	x																		x	x			x							

Table 9: Distribution of joint changes. Osteoarthritis 1: Eburnation, 2: Two or more minor criteria. General joint changes 3: One minor criteria.

	tempo-mand		occip-atlas	atlas-axis	ve ce	ve th	ve lu	ve lu-sac	ve th-rib		clav-stern		clav-scap		shoulder		elbow		wrist		hand		hip		knee		ankle		foot	
grave	L	R							L	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R
6				1	2										3	2				1								3		
7	3	3		2	2				3	3													3	3	3	2				
22						3																								
36				2																										
37	3			2					3	2																				
48			2	2	2			2							2	2			1		1	1								
50							3											3	3			1								
55			1	3		1			2	2			3	3			1								1	1			3	
58									3	3																				
79																	3													
89				2																										
91									3	3																				
112				1	2					2						3	3		1						3	3				
113				2	2								3	3				3												
119				3	2	2			2																					
121						2	2								2															
172					2	2			3	3																				
206				1																										
209		2		1							3	3			3		3	2	3	2	3			3	3		3			
222					1				2	2									3							2				
223	3																		2									3		
226				3	2																									
227				3	3	3											1	3			1	1	3	3	1	1				
234				3	3				2	2							3		1			1			3	1	3	3		
235				3			3																							
236				3		3			3	3						3	3	3	2	2	2	2	2	2			2	2	2	2
238				2	1			2	2	2			2	2	1	1	3	3	2	1	1	1	2	1	1	3	3	3		1
240									2	2																				
241		3	2	2	2	3			2	2					2	2	2	2		2	3	2	2	3	2	2			2	2
242				3														1												
269		3																												
284							1																		1	1				

Fig 10: Joint changes; 1: Eburnation (on the capitulum), 2: Two minor criteria (pitting and osteophytes), 3: One minor criteria (pitting). Distal humerus from the graves, 227, 241 and 238.

cording to Waldron osteoarthritis can be said to be present if eburnation is present, or at least two of the minor criteria (Waldron 2009:26-34). In table 9 the presence of bone changes to the joints are presented. Joints with only one of the minor criteria are also shown. The interpretation of these minor changes is uncertain, and they are not described in the catalogue.
OA is common in the Skriðuklaustur material.

7.4 Vertebral osteophytosis

Degeneration of the intervertebral discs is associated with ageing and can be seen as pitting of the superior and inferior surfaces of the vertebral bodies, and marginal osteophytes. It is common in old individuals, particularly affecting the cervical and lumbar region (Waldron 2009:42-43). In the Skriðuklaustur material, vertebral osteophytosis is present in 15 adult individuals (graves 6, 7, 50, 55, 112, 113, 197, 206, 209, 227, 234, 236, 238, 240 and 241), 4 males and 11 females. In many individuals the poor preservation of the skeleton prevented investigation, as no vertebral bodies were present.

Fig 11: Osteophytes at the inferior margin of the body of C5, grave 238.

7.5 Ankylos

Fused joints (ankylos) can be congenital or caused by a fracture or disease. The most common site for ankylos in the Skriðuklaustur material is the joint between the second and third phalanges of the foot, where it occurs in 10 individuals (graves 22, 28, 48, 58, 64, 91, 121, 222, 227 and 238). This probably did not cause any discomfort. There is also one case of atlanto-occipital fusion (grave 224) one fusion of axis and C3 (grave 241) and one fusion of two vertebrae in the thoracic region (grave 227).

Fig 12: Fused second and third phalanges of the foot, compared to unfused in the center. Grave 64.

7.6 Schmorl's nodes

Schmorl's nodes can be seen as impressions in the superior and inferior surfaces of the vertebral bodies. They are common, particularly in the lower thoracic and lumbar region. There are many possible causes, including stress to the lower spine (Waldron 2009:45). In the Skriðuklaustur material 6 individuals have Schmorl's nodes (graves 14, 28, 55, 119, 223 and 236). The most often affected vertebrae are T5-T11. As with osteophytosis, the poor preservation of the skeleton in many individuals prevented investigation, as no vertebral bodies were present.

Fig 13: Schmorl's nodes, T9. Grave 119.

7.7 Sacralization, lumbalization

Sometimes the first sacral vertebra takes on the appearance of the fifth lumbar vertebra (lumbarization) or the fifth lumbar vertebra takes on the appearance of the first sacral vertebra (sacralization). This is a congenital condition, affecting c. 3-5% of the population today. The first segment of the coccyx can also be fused to the sacrum (sacralization) (Aufderheide and Rodríguez-Martín 1998:65-66). In Skriðuklaustur one individual has a lumbarized first segment of the sacrum (grave 222), and one has a sacralized first segment of the coccyx (grave 55).

7.8 Coxa valga, coxa vara
The angle of the neck of the femur is usually c. 120-135 degrees in adults. Coxa valga is a decreased neck angle, and coxa vara is an increased angle of the femoral neck. These conditions can have many different causes. In Skriðuklaustur one individual has a decreased angle of the femoral neck (grave 222) and one individual has an increased angle of the femoral neck (grave 36). In both individuals it is bilateral and symmetrical.

7.9 Bunion, hallux valgus
Medial deviation of the first metatarsal bone (bunion), and lateral deviation of the first phalanges of the big toe (hallux valgus) can be caused by wearing narrow shoes, but there also seem to be inherited factors. The angle of the bones cannot be reliably measured in a disarticulated skeleton. Other signs are the flattening of the inferior ridge on the metatarsal head, cystic lesions on the metatarsal head and sloping surfaces on the metatarsal and first phalanx (Waldron 2009:70-71). In two individuals in Skriðuklaustur the angle of the joints of the big toe suggests hallux valgus, but no cysts are present. Both individuals are adult females? (graves 223 and 234).

7.10 Trauma
Healed injuries and fractures were observed in 11 individuals. The mandible is the bone most commonly injured (graves 50, 187, 238 and possibly 215). Other injuries are found at the clavicle (grave 55), the elbow (grave 242) the lower arms (graves 50 and 197), the hands (graves 227 and 231) and the tibia (grave 22). All these injuries are healed. There is also one individual (grave 81) with cut marks on the cranium, which show no sign of healing. This indicates that the injury occurred close to the time of death, and possibly even was the cause of death. The individual in grave 48 has an iron object in the right shoulder. There are no signs of healing, and possibly it is a coffin nail, and that entered the bone post mortem.
One individual (grave 236) suffered from bilateral spondylolysis in the fourth and fifth lumbar vertebrae, a stress fracture of the vertebral arch (Waldron 2009:151-153).
Osteochondritis dissecans (OD), an osteochondral fracture most commonly found in the knee joint, was found in 3 individuals in Skriðuklaustur: Grave 36 (left knee), grave 121 (both knees) and grave 234 (right elbow and both knees). It can be caused by direct trauma or repetitive micro trauma, and osteoarthritis is a common long-term complication (Waldron 2009:153-154). In the first, necrotic, phase, the sequestrum is still attached to the articular surface, though with clear limits. In the middle, exposition, phase, the sequestrum is lost, and a crater in the bone is exposed. In the late, cicatrisation, phase, new bone is beginning to cover the surface of the crater (Aufderheide and Rodríguez-Martín 1998:83).

7.11 Osteoma
Osteomas are benign bone tumors. They affect all ages, but are more common in individuals over the age of 40. The frontal bone is the most common site, but other bones can also be affected. They are symptomless (Waldron 2009:171-172). In the Skriðuklaustur material button osteomas were identified in three old adults, one male and two females (graves 211, 227 and 236) and one middle adult female (grave 112).

7.12 Calcifications
Parasitic infection by Echinococcus granulosis, a tapeworm, is transmitted to humans from dogs, with sheep as intermediate hosts. It is found in areas where dogs are used for herding sheep. The parasites form cysts, and the dead cysts can calcify, and be recovered in archaeological contexts (Ortner 2003:337-340; Waldron 2009: 111-113). The largest cyst recovered at Skriðuklaustur was c. 17-20 cm in diameter, found in grave 126, and interpreted as a hyatid cyst caused by the parasite Echinococcus granulosis (Collins 2010:7). The calcified cysts are


Fig 14: Button osteoma on the left parietal bone, grave 211.

very fragile, and easily fall apart. Calcifications were found in the following graves: 6, 7, 14, 172, 189, 230, 236 and 241.The interpretation is uncertain. In some cases they are possibly hyatid cysts, but there is also calcified material found in the chest area that is possibly caused to tuberculosis or other lung diseases.

7.13 Rhinitis, sinusitis

A chronic sinus infection can lead to bone resorbtion and/or bone formation in the walls of the sinus cavity. The paranasal sinuses were only examined in individuals where the cranium had been damaged, and the interior of the sinuses was observable without invasive methods. This will only give the minimum number of affected individuals. It was mainly the maxillary sinuses that were available for examination. Sinusitis is an upper respiratory infection, usually preceded by rhinitis, but in maxillary sinusitis a dental origin of the infection is also a possibility. Without the presence of an oro-antral fistula the dental origin is, however, uncertain (Boocock et al 1995, Roberts and Manchester 2005:174-176). The individuals in the following graves show signs of chronic maxillary sinusitis: 69, 79, 112, 172, 187, 224 (dental origin), 226, 233, 238 and 269. The individual in grave 81 had similar bone changes in the nasal cavity, indicating chronic rhinitis.

7.14 Syphilis

Venereal syphilis is a treponemal disease, caused by bacteria of the genus Treponema. The disease is sexually transmitted, and can also infect the fetus in utero (congenital syphilis). Bone changes are usually not found until the tertiary stage of the disease, up to thirty years after the time of infection. Caries sicca, (usually on the frontal bone, but also found on other bones of the skull), with active lytic lesions, healing and scarring is typical of syphilis. Considerable periosteal new bone formation on the front of the tibia, sabre tibia, is also a sign. In congenital syphilis the sabre tibia has an anterior bending, and there are also changes in the teeth (Waldron 2009:102-108)

In previous analyses of the Skriðuklaustur graves several individuals with acquired and congenital syphilis have been identified. In the present material there is one individual with caries sicca of the cranial bones (grave 273), and four individuals (graves 22, 81, 91, 122) with cranial lesions possibly caused by syphilis. Cranial changes were also observed in two additional individuals (graves 201 and 222), but syphilis is only one possible suggestion. The individual in grave 22 was only about 15-16 years old at time of death, and possibly suffered from congenital syphilis, though the changes of the teeth and tibia are not present.

Fig 15: Caries sicca, grave 273, right parietal bone.

7.15 Scurvy

Scurvy is caused by a lack of vitamin C. Symptoms include subperiosteal bleeding, tooth loss and pain. In adults osteoporosis is a radiological sign, and in children the metaphyseal areas are affected. New bone, particularly on the skull, related to periosteal bleeding, is also a sign of scurvy (Waldron 2009:130-133). In the Skriðuklaustur material there are three possible cases (graves 64, 205 and 237),

Table 10: Suture bones.

suture bone	side	bone present	total
epipteric bone	R	6	39
	L	5	38
coronal ossicle	R	2	46
	L	3	44
bregmatic bone		0	49
sagittal ossicle		0	40
apical bone		3	40
lambdoid ossicle	R	18	39
	L	19	43
asterionic bone	R	0	43
	L	2	41
ossicle in occipito-mastoid suture	R	0	44
	L	0	43
parietal notch bone	R	3	45
	L	3	43

all adolescents, with cranial and postcranial areas of porosity and new bone formations. No radiological examinations have been preformed to further investigate the occurrence of scurvy.

8. Non metric traits

Primary non metric traits were recorded according to Buikstra and Ubelaker (1994). The preservation was good enough for observation of at least one non metric trait in 71 individuals. Suture bones are among the most common traits in the population. Of 57 individuals with observable sutures 38 individuals have at least one suture bone. The lambdoid suture is the most common location. The presence of suture bone is presented in table 10.

Fig 16: Suture bones, grave 45, apical bone and lambdoid ossicle.

Torus formation in the mandible is another common trait in the population, and in 24 of 60 with observable mandibles, torus mandibularis is present. In 18 individuals it is bilateral, while 3 have a torus only on the right side, and 3 individual have a torus only on the left side. The size of the torus is scored as 0) absent, 1) trace, 2) moderate (2-5 mm), 3) marked (>5 mm). The presence of torus mandibularis is presented in table 11.

Other non metric traits include metopic suture, present in 3 of 59 individuals, tympanic dihiscense, present in 4 of 65 individuals, and septal aperture, present in 3 of 41 individuals. Some traits were not observed in any of the individuals: Inca bone (0 of 49), foramen ovale incomplete (0 of 58) and auditory exostosis (0 of 66).

Table 11: Torus mandibularis.

score	R	L
0	39	35
1	5	4
2	14	13
3	2	4
total	60	56

Fig 17: Bilateral torus mandibularis (marked), grave 224.

Fig 18: Metopic suture, grave 108.

Fig 19: Tympanic dihiscense, grave 238.

Fig 20: Septal aperture, grave 7.

PART II: CATALOGUE

PART II: CATALOGUE

Grave 6

Bones present:
Cranium, teeth, cervical vertebrae, ribs, clavicle, scapula, humerus, radius, ulna, carpal bones, metacarpal bones, phalanges (hand), hip bone, femur, patella, tibia, fibula, tarsal bones, metatarsal bones, phalanges (foot)

Preservation: Medium
The cranium is well preserved, with a slightly eroded surface, and damage to the more fragile bones. The ribs, scapulae and hip bone are fragmented. The long bones of the arms and legs are generally well preserved, except the joints.

Age: Middle adult
The estimation of age is based on the closure of the cranial sutures and the dental wear. Due to massive ante mortem tooth loss in the posterior dentition few teeth were available for examination. One first molar indicate an age of 25-35 years.

Sex: Female?
The estimation of sex is based on the morphology of the cranium (female).

Stature: N/A
No complete long bones suitable for measurements and stature estimation were available.

Dental status:
Ante mortem tooth loss, congenitally absent teeth, large calculus deposits, periodontitis, periapical lesion
Teeth present: 13, 15, 16, 25, 31, 32, 33, 35, 41, 42, 43
Ante mortem lost teeth: 14, 26, 27, 34, 36, 37, 38, 44, 45, 46, 47, 48
Post mortem lost teeth: 17, 23
Congenitally absent teeth: 18, 28
Dental wear: Medium (molars 25-35 years)
The alveolar bone of the maxillae is damaged at the incisors. The crown of the canine of the right maxilla is worn down along the mesial side, exactly matching the shape of the right canine of the mandible, suggesting that the incisors were lost some time before death.
Large calculus deposits: 15, 16, 25, 42, 43
Periodontitis:
There is a reduction of alveolar bone, and the roots of the teeth are exposed. On the right first molar of the maxilla the calculus continues down the roots.
Periapical lesion: 42
The periapical lesion of the second molar of the right mandible has a lingual perforation. The enlarged al-

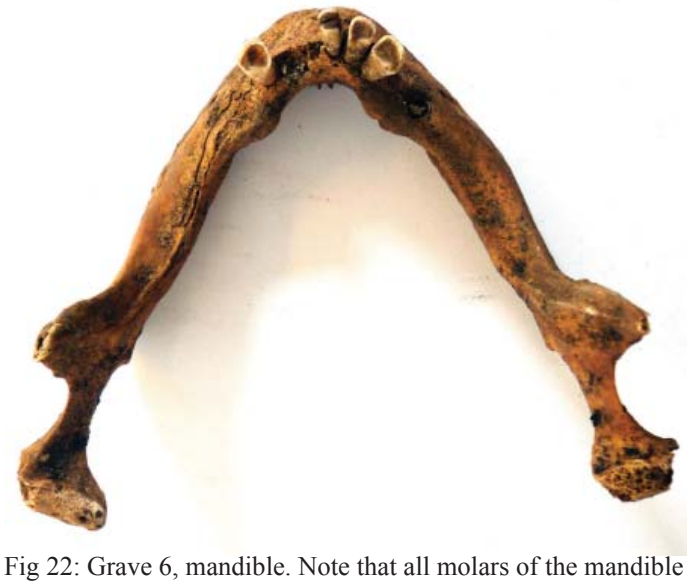

Fig 22: Grave 6, mandible. Note that all molars of the mandible have been lost ante mortem.

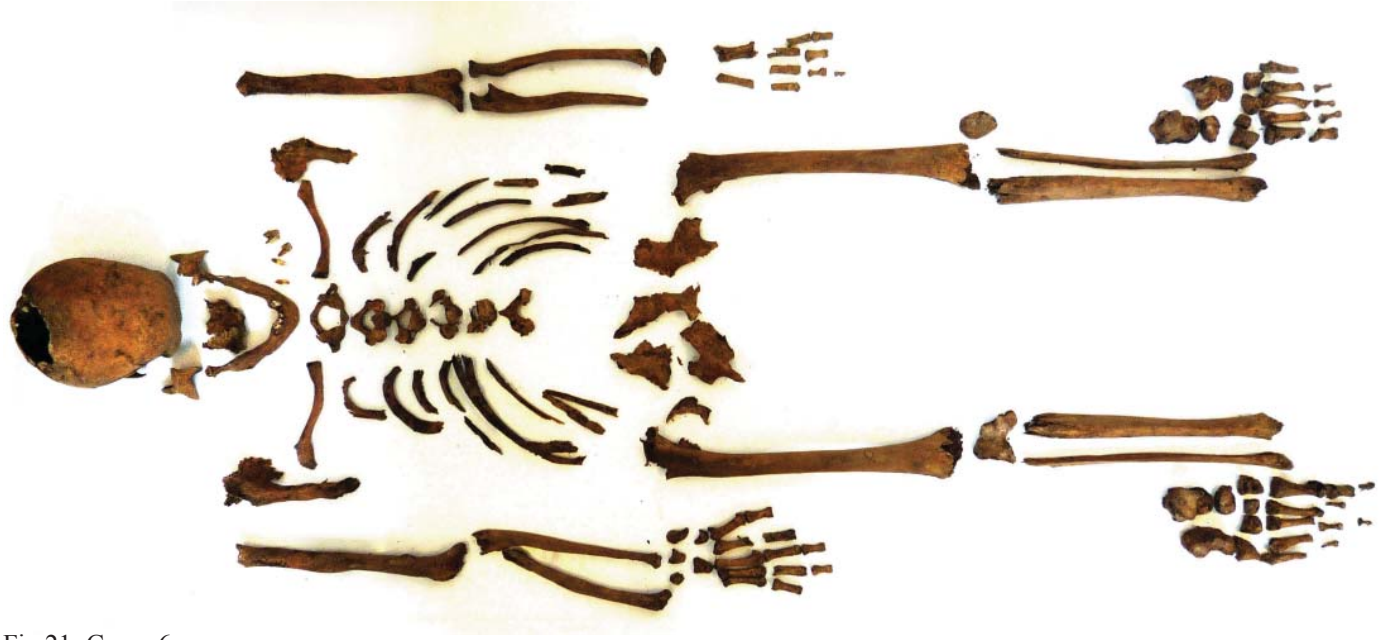

Fig 21: Grave 6

Fig 23: Grave 6, right scapula, with signs of osteoarthritis in the glenoid cavity.

veolus of the ante mortem lost right second premolar of the mandible is possibly the remains of a periapical lesion.

Pathologies and general observations:

Osteoarthritis, vertebral osteophytosis, calcifications

Osteoarthitis: Atlas-axis, cervical vertebrae, right shoulder, right wrist

The joints between the atlas and the axis have eburnation, pitting on the joint surface and marginal osteophytes. The joints of the other cervical vertebrae have pitting on the joint surfaces and marginal osteophytes.

There are osteophytes at the posterior margin and pitting at the posterior part of the joint surface of the glenoid cavity of the right scapula. The proximal humerus is not preserved.

In the right wrist there is eburnation in the joint between the scaphoid and the trapezoid bones.

Vertebral osteophytosis: Cervical vertebrae

The bodies of the cervical vertebrae have marginal osteophytes. The body of C6 is a bit compressed and porous anteriorly, but post mortem damage also contributes to the appearance.

Calcifications: Three calcifications, c. 20-50 mm in size and a few mm thick were recovered from below the pelvis.

Fig 24: Grave 6, C6, compressed and with some damage to the body.

Non metric traits:

Metopic suture, bilateral torus mandibularis (moderate), epipteric bone (right)

Grave 7

Bones present:

Cranium, teeth, cervical vertebrae, thoracic vertebrae, lumbar vertebrae, sacrum, sternum, ribs, clavicle, scapula, humerus, radius, ulna, carpal bones, metacarpal bones, phalanges (hand), hip bone, femur, patella, tibia, fibula, tarsal bones, metatarsal bones, phalanges (foot)

Preservation: Very good

Fig 25: Grave 7.

The skeleton is very well preserved, and almost complete. Only few bones of the hands and feet were missing.

Age: Middle adult, c. 30-50 years

The age estimation is based on the closure of cranial sutures, the dental wear, the auricular surface of the hip bone and the left pubic symphysis. As the ante mortem tooth loss was considerable and only a few molars were available for age estimation. The bodies of S1 and S2 are however not completely fused, indicating a younger age.

Sex: Female

The estimation of sex is based on the morphology of the cranium (female) and hip bone (female?), and metric traits of the femur (female) and the humerus (female).

Stature: c. 147 cm (TG), 149 cm (S)

The maximum length of the left femur is 376 mm, indicating a stature of approximately 147.0 cm (TG) or 148.9 cm (S). Stature estimations based on the measurements of other long bones range from 145.2 cm (TG) or 141.1 (S) (right fibula) to 152.1 cm (TG) (right ulna) or 152.2 cm (S) (right radius).

Dental status:

Ante mortem tooth loss, enamel hypoplasias, large calculus deposits, periodontitis

Fig 26: Grave 7, mandible, with ante mortem tooth loss and periodontitis.

Teeth present: 11, 12, 13, 14, 15, 16, 21, 22, 23, 24, 25, 32, 33, 34, 35, 36, 37, 44, 45, 46

Ante mortem lost teeth: 17, 18, 27, 28, 31, 38, 41, 42, 43, 48

The right mandible is particularly affected by ante mortem tooth loss. The alveoli are resorbed, and the bone has an uneven surface, possibly due to an infection related to the lost teeth.

Post mortem lost tooth: 26

Enamel hypoplasias: 12, 22

Calculus deposits prevent many surfaces from being examined.

Dental wear: Medium (molars 25-45 years)

Large calculus deposits: 13, 14, 15, 16, 23, 24, 36, 37, 45, 46

The large calculus deposits are very fragile, and some of it has fallen off. Possibly all present teeth were originally covered in large deposits of calculus.

Periodontitis:

There is a reduction of alveolar bone, and the roots of the teeth are exposed and supra gingival calculus extends along the roots.

Pathologies and general observations:

Periostitis, osteoarthritis, vertebral osteophytosis, calcification

Periostitis: Left and right femora, left and right calcaneus

Both femora have bilateral new bone formation at the epicondyles. There is also new bone formation at the lateral side of the corpus of both calcanei.

Osteoarthritis: Atlas-axis, cervical vertebrae, right femur

The left joint between atlas and axis has a changed contour, with new bone formation. The dens axis has pitting of the joint surface and new bone formation.

The joints of the cervical vertebra show signs of osteoarthritis, with pitting on the joint surfaces and marginal osteophytes.

The right femur has marginal osteofytes and porosity at the patellar surface.

Vertebral osteophytosis: Cervical vertebrae, thoracic vertebrae, lumbar vertebra

There are porosity and marginal osteophyte formations on the bodies of the C5-C7. There are also

Fig 27: Grave 7, axis (top) and atlas (bottom) with signs of osteoarthritis in the left joint.

marginal osteophyte formations at the bodies of the thoracic vertebrae and L5.
Calcifications: Small calcified fragments, up to c. 20 mm size, were recovered from the lower ribcage on the right side.
Non metric traits:
Coronal ossicles (right and left), lambdoid ossicle (right), parietal notch bone (right), septal aperture (small, right)

Grave 14

Bones present:
Cranium, teeth, cervical vertebrae, thoracic vertebrae, lumbar vertebrae, sacrum, sternum, ribs, clavicle, scapula, humerus, radius, ulna, carpal bones, metacarpal bones, phalanges (hand), hip bone, femur, patella, tibia, fibula, tarsal bones, metatarsal bones, phalanges (foot)
Preservation: Very good
The skeleton is very well preserved, and almost complete. Only a few phalanges of the hands and feet are missing.
Age: Adolescent, c. 15-16 years
The age estimation is based on dental development and the fusion of epiphyses. The fusion of epiphyses indicates an age of c. 15-16 years. The tooth eruption is not following standard development, with one third molar erupted and almost in occlusion, while two second molars of the deciduous dentition are still present, and preventing the normal eruption of the permanent premolars. The canines of the upper jaw are not yet erupted. The eruption and slight wear of the second permanent molars, however, is consistent with an age of about 15-16 years.

Sex: Male?
The estimation of sex is based on the morphology of the cranium (inconclusive) and hip bone (male), metric traits of the femur (female?).
Stature: N/A
No estimation of stature has been preformed, as this individual was not fully grown at the time of death.

Fig 29: Grave 14, teeth of the maxilla, with the deciduous tooth 75 still present, and the permanent tooth 25 erupting beside the dental arch.

Dental status:
Ante mortem tooth loss
Teeth present: 11, 13, 14, 15, 16, 17, 18, 21, 22, 23, 24, 25, 26, 27, 28, 31, 32, 33, 34, 35, 36, 37, 38, 41, 44, 45, 46, 47, 48, 55, 75
Teeth not in occlusion: 13, 15, 18, 23, 28, 34, 35, 38, 48
The deciduous second molar of the right upper jaw

Fig 28: Grave 14

and the left lower jaw are still present. In the upper jaw this has resulted in the permanent second premolar erupting at the lingual side of the dental arch. In the left lower jaw the premolars are not erupted. The permanent canines of the upper jaw are just beginning to emerge from their crypts. Three of the third permanent molars are still in the crypt, while the one in the right mandible is almost in occlusion.
Ante mortem lost teeth: 42, 43
Post mortem lost teeth: 12
Dental wear: Limited (molars 17-25 years)
Pathologies and general observations:
Schmorl's nodes, calcifications
Schmorl's nodes: Thoracic vertebrae
T5 and T6 have small Schmorl's nodes on the inferior side of the bodies.

Fig 30: Grave 14, fragments of a possible hyatide cyst.

Calcifications: Large fragments, up to c. 80 mm in size, of a calcification were recovered in grave 14. The fragments are only about 1 mm thick. It is possibly the calcified remains of a hyatid cyst.
Other observations:
There cranial vault has a porous external surface, particularly the parietal bones, but also on the frontal and occipital bones. It is uncertain if this is pathological.
Non metric traits:
Bilateral torus mandibularis (moderate), coronal ossicle (left), lambdoid ossicle (left)

Grave 19

Bones present:
Cranium, teeth, cervical vertebrae, thoracic vertebrae, lumbar vertebrae, ribs, clavicle, scapula, humerus, ulna, metacarpal bones, phalanges (hand), femur, tibia, fibula
Preservation: Medium/good
The bones are generally well preserved, though some elements are fragmented or missing. Even small and fragile bones, like vertebral bodies and phalanges (right hand) are present. Fragments of wood from the coffin are attached to some of the bones.
Age: Infant, c. 0-3 months
The age estimation is based on dental development, development of the temporal bone and measurements of bone size.
Sex: N/A
No estimation of sex has been performed.
Stature: N/A
No estimation of stature has been preformed.
Dental status:
Teeth present: 51, 52, 53, 54, 55, 61, 62, 64, 71, 72, 74, 75, 81, 82, 83, 84, 85
Teeth not in occlusion: 51, 52, 53, 54, 55, 61, 62, 64, 71, 72, 74, 75, 81, 82, 83, 84, 85
The deciduous teeth are still in the crypt.

Fig 31: Grave 19.

Teeth lost post mortem: 63, 65, 73
Pathologies and general observations:
No pathologies observed

Grave 21

Bones present:
Cranium, teeth, cervical vertebrae, thoracic vertebrae, lumbar vertebrae, ribs, clavicle, scapula, humerus, radius, ulna, metacarpal bones, phalanges (hand), hip bone, femur, tibia, fibula
Preservation: Medium
The skeleton is medium well preserved. The bones are fragile, and the ribs, scapula, clavicle, hip bone and tibia are fragmented. Small and fragile bones as vertebral bodies and phalanges (hands) are however present.
Age: Infant, neonatal
The age estimation is based on dental development, development of the temporal bone, and measurements of bone size.
Sex: N/A
No estimation of sex has been performed.
Stature: N/A
No estimation of stature has been preformed.
Dental status:
Teeth present: 53, 54, 61, 64, 65, 71, 72, 74, 75, 81, 82, 83, 84, 85
Teeth not in occlusion: 53, 54, 61, 64, 65, 71, 72, 74, 75, 81, 82, 83, 84, 85
The deciduous teeth are still in the crypt.
Pathologies and general observations:
No pathologies observed

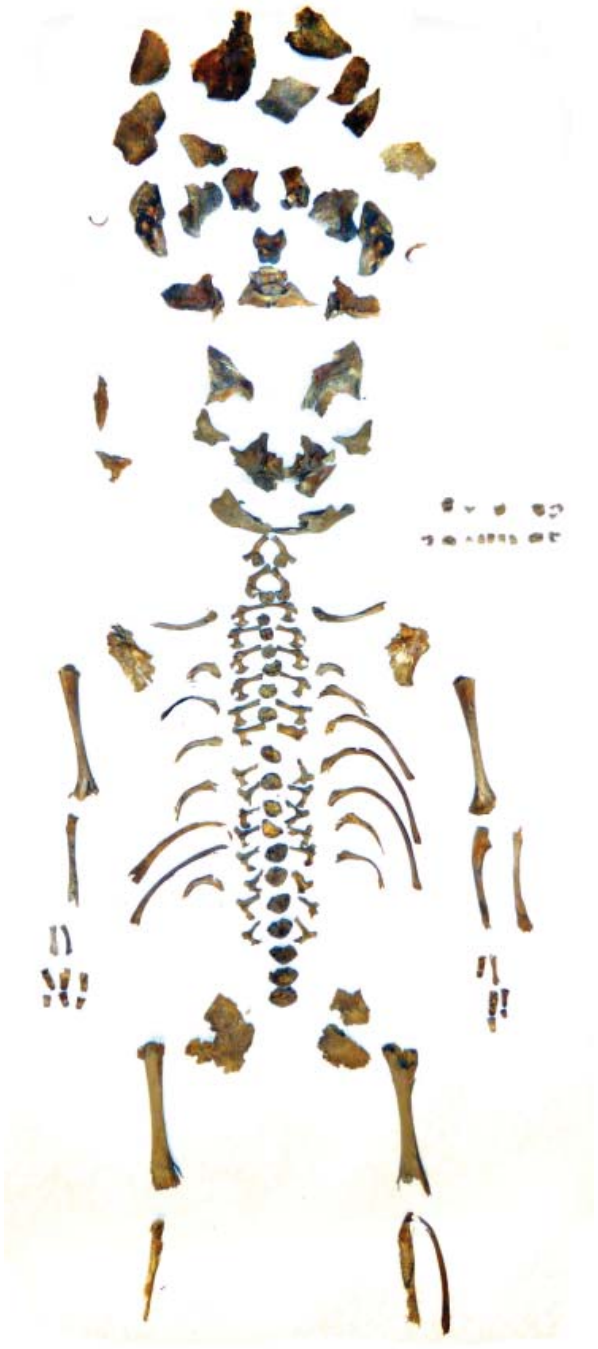

Fig 32: Grave 21.

Grave 22

Bones present:
Cranium, teeth, cervical vertebrae, thoracic vertebrae, lumbar vertebrae, sacrum, sternum, ribs, clavicle, scapula, humerus, radius, ulna, carpal bones, metacarpal bones, phalanges (hand), hip bone, femur, patella, tibia, fibula, tarsal bones, metatarsal bones, phalanges (foot)
Preservation: Good
The skeleton is well preserved. The bone surface of the cranium is peeling a bit, and there is some damage to the right side of the cranium. The right arm is poorly preserved, with no phalanges of the hand present, and the ribs of the right side are also missing.
Age: Adolescent, c. 15-16 years

Fig 33: Grave 22, mandible.

Fig 34: Grave 22.

The estimation of age is based on dental development and the fusion of epiphyses.

Sex: N/A

No estimation of sex has been performed.

Stature: N/A

No estimation of stature has been preformed.

Dental status:

Teeth present: 13, 15, 16, 17, 18, 26, 27, 28, 31, 32, 33, 34, 35, 36, 37, 38, 41, 42, 43, 44, 45, 46, 47, 48

Teeth not in occlusion: 18, 28, 38, 48, (43)

All permanent third molars are still in the crypt. The third molar of the left mandible is not visible, and it is uncertain if it is present. The canine of the right mandible has no visible occlusal wear, and the alveolus is slightly widened. The tooth seem however to be on the same level as the surrounding teeth, perhaps just reaching occlusion.

Teeth lost post mortem: 11, 12, 14, 21, 22, 23, 24, 25

Dental wear: Minimal, uneven wear of the molars

The first and second molars (except 37) have rounded pits in the occlusal surfaces, most of them small, but up to 7.5 mm size. The cause is unknown, perhaps unusual wear.

Pathologies and general observations:

Ankylos, trauma, cranial lesions (possible congenital syphilis or trauma?), cleft palate

Ankylos: Second and third phalanges of the foot

A second phalanx of the (left?) foot is fused with a third phalanx.

Trauma: Right tibia

There are traces of a healed trauma at the proximal diaphysis of the right tibia. There is a concave depression at the tuberosity and c. 60 mm long the anterior margin, with some new bone formation and a thin bone ridge at the lateral side. The tuberosity is enlarged. The proximal epiphysis has a pit with uneven, but smooth edges, c. 25 mm in diameter. The pit penetrates the lateral condyle, and continues into the diaphysis. There is also an opening (possible clo-

Fig 35: Grave 22. Right tibia with healed trauma at the tuberosity (top). The changes to the proximal epiphysis of the right tibia (bottom left) and distal diaphysis of the right femur (bottom right) could be signs of an infection spreading from the injured bone.

Fig 36: Grave 22, depression in the frontal bone.

aca) at the posterior surface of the diaphysis.
The right femur has an area of porosity in the distal joint. The bone changes continue into the diaphysis, with porosity and new bone formation at the metaphysis.
The right tibia seems to have been injured. The injury healed, but there was still an infection, spreading through the knee joint into the femur.
Cranial lesions: Frontal bone, right and left parietal bones, occipital bone
There are shallow depressions in the cranium, affecting the external table and reaching the diploë. The frontal bone has a depression of c. 10.5x16.5 mm size, on the right side in front of bregma. The right parietal bone has a depression of c. 10 mm diameter, by the medial side of the tuber. The left parietal bone has a depression of c. 10 mm diameter by the middle of the sagittal suture. The occipital bone has the largest depression, c. 15x20 mm in size, by the external occipital protuberance. The depressions are smoothe and have no clearly defined limits. They have not the typical appearance of caries sicca, but syphilis is still a possibility. Another possibility is head trauma, where the similar stage of healing indicates that all injuries are from the same occation.
Other changes:
Cleft palate: Maxilla, palatine bone
There is an oval opening in the palate, c. 27x15 mm,

Fig 37: Grave 22, cleft palate.

along the median palatine suture of the maxillae and palatine bones. The edges are sharp and even. There are no new bone formations or porosity. This is probably a congenital change.
The acromial end of the left clavicle is flattened and widened, with a shallow depression of c. 10 mm size at the cranial surface.
There is some porosity to the inferior side of the neck of the right and left femur, cribra femoris, a normal feature of growing bone.
Non metric traits:
Tympanic dihiscense (left), bilateral torus mandibularis (trace right, moderate left), epipteric bone (left), apical bone, lambdoid ossicles (right and left
Extra bones:
Human: Teeth: 11, 12, 13, 14, 17, 18, 21, 24, 25.

Grave 24

Bones present:
No bones recovered

Grave 28

Bones present:
Cranium, teeth, cervical vertebrae, thoracic vertebrae, lumbar vertebrae, sacrum, sternum, ribs, clavicle, scapula, humerus, radius, ulna, carpal bones, metacarpal bones, phalanges (hand), hip bone, femur, patella, tibia, fibula, tarsal bones, metatarsal bones, phalanges (foot)
Preservation: Very good
The skeleton is very well preserved, and almost complete. There is minor damage to a few lumbar vertebrae, and the pisiforme bone of the right hand and three third phalanges are missing. Fragments of wood from the coffin are attached to some of the bones.
Age: Young adult, c. 25-35 years
The estimation of age is based on the fusion of cranial sutures, dental wear and the auricular surfaces of the right and left hip bone.
Sex: Female?
The estimation of sex is based on the morphology of the cranium (female?) and hip bone (female?), and metric traits of the femur (inconclusive) and the hu-

Fig 38: Grave 28, mandible, with the third molar (48) tilted.

Fig 39: Grave 28.

merus (female?).

Stature: c. 162 cm (TG), 165 cm (S)

The maximum length of the left femur is 436 mm, indicating a stature of approximately 161.8 cm (TG) or 164.6 cm (S). Stature estimations based on the measurements of other long bones range from 157.5 cm (TG) or 156.2 cm (S) (right fibula) to 168.5 cm (TG) or 171.2 cm (S) (right humerus).

Dental status:

Cervical caries

Teeth present: 11, 12, 13, 14, 15, 16, 17, 18, 21, 22, 23, 24, 25, 26, 27, 28, 31, 32, 33, 34, 35, 36, 37, 38, 41, 42, 43, 44, 45, 46, 47, 48

Teeth not in occlusion: 18, 48

The third molar of the right maxilla is tilted a bit distally. The third molar of the right mandible is tilted a bit mesially, with the occlusal surface partly facing the second molar.

Dental wear: limited (molars 17-25 years)

Fig 40: Grave 28, mandible,cervical caries in the incisors.

Cervical caries: 31, 32, 41, 42

The cervical area of the incisors of the mandible, particularly on the left side, is eroded, but there are no large cavities.

Pathologies and general observations:

Ankylos, Schmorl's nodes, bipartite navicular bones

Ankylos: Second and third phalanges of the foot

A second phalanx of the foot is fused with a third phalanx.

Schmorl's nodes: T7-T12, L2

There are depressions, Schmorl's nodes, in the superior side of the bodies of T7-T11, and the inferior side of the bodies of T12 and L2. In T7-T9 the depressions are c. 5 mm wide furrows, in T10-12 and L2 the depressions are rounded and 5-9 mm in diameter.

Fig 41: Grave 28, T7, with Schmorl's node.

Other changes:

The navicular bones of the right and left foot are bipartite. The tuberosity is separated from the main

Fig 42: Grave 28, bipartite right navicular bone.

bone. This is probably caused by non union of separate centres of ossification rather than fractures.
Non metric traits:
Lambdoid ossicles (right and left), asterionic bone (left)

Grave 31

Context: Fill of grave 31
Bones present:
Rib, clavicle, scapula, humerus, radius, ulna, hip bone, femur, tibia, fibula
Preservation: Good
Age: Middle adult, c. 35-40 years
The age estimation is based on the auricular surfaces of the left hip bone.
Sex: Indeterminate sex
The estimation of sex is based on the morphology of the hip bone (male?).
Stature: c. 150 cm (S)
The only long bone available for measurement is the left radius, with a maximum length of 199 mm, indicating a stature of approximately 150.2 cm (S).
Dental status:
No teeth present
Pathologies and general observations:
No pathologies observed

Grave 32

Bones present:
Cranium, teeth, cervical vertebrae, thoracic vertebrae, lumbar vertebrae, ribs, clavicle, scapula, humerus, ulna, carpal bones, metacarpal bones, phalanges (hand)
Preservation: Medium
The skeleton is medium well preserved. The cranium is fragmented, with pieces missing. Small and fragile bones as vertebral bodies and phalanges are present. There are fragmented long bones present, with the bones of the right arm identifiable but not complete. Phalanges of both hands are present.
Age: Infant, c. 1-6 months
The estimation of age is based on dental development, the development of the temporal bone and the measurement of bone size.

Fig 43: Grave 31.

Fig 44: Grave 32.

Sex: N/A
No estimation of sex has been performed.
Stature: N/A
No estimation of stature has been preformed.
Dental status:
Teeth present: 51, 52, 54, 55, 61, 64, 71, 74, 75, 81, 82, 84, 85
Teeth not in occlusion: 51, 52, 54, 55, 61, 64, 71, 74, 75, 81, 82, 84, 85
The deciduous teeth are still in the crypt.
Teeth lost post mortem: 53, 62, 63, 65, 72, 73
Pathologies and general observations:
No pathologies observed

Grave 35

Bones present:
No bones recovered

Grave 36

Bones present: Cranium, teeth, cervical vertebrae, thoracic vertebrae, lumbar vertebrae, sternum, humerus, radius, ulna, carpal bones, metacarpal bones, phalanges (hand), femur, patella, tibia, fibula, tarsal bones, metatarsal bones, phalanges (foot)
Preservation: Medium
The bones are fragile and have damaged joint surfaces. Apart from the fibulae the long bones are well preserved. A few bones of the hands and feet, mainly phalanges, are missing.
Age: Young-middle adult, c. 25-43 years
The age estimation is based on the closure of cranial sutures and dental wear. All but one molar in the maxilla had been lost ante mortem, possibly contributing to the limited occlusal wear of the molars of the mandible, and making the estimated age less certain.

Sex: male?
The estimation of sex is based on the morphology of the cranium (inconclusive) and metric traits of the femur (male). The size of the bones was considerably larger than the average of the population.
Stature: c. 195 cm? (TG), 197 cm? (S)
The maximum length of the left femur is 557 mm, indicating a stature of approximately 194.8 cm (TG) or 196.5 cm (S). The femora of this individual seem however to be unusually long compared to other long bones, and the angle of the femoral neck is increased (coxa valga). Stature estimations based on the measurements of other long bones suggested a lower stature, ranging from 176.3 cm (TG) or 176.7 cm (S) (left tibia) to 182.7cm (TG) or 180.5 cm (S) (left ulna). The proportions of this individual are clearly different from that of the reference populations. The actual stature might not have been 195 cm, but this individual was at least considerably taller than the rest of the Skriðuklaustur population.

Fig 46: Grave 36, mandible, with cervical caries in the second and third molars (47, 48) and periodontitis.

Fig 45: Grave 36.

Dental status:
Ante mortem tooth loss, cervical caries, periodontitis
Present teeth: 14, 33, 34, 35, 37, 38, 43, 44, 45, 46, 47, 48
Ante mortem lost teeth: 11, 12, 15, 16, 17, 18, 21, 22, 24, 26, 27, 28, 31, 32, 41, 42
Post mortem lost teeth: 23, 25, 28
Dental wear: Medium (molars 17-35 years)
Cervical caries: 47, 48
There is a large cavity by the cervix on the buccal side of the second molar of the right mandible. There is possibly a smaller similar lesion at the same location on the third molar of the right mandible.
Periodontitis:
There is a reduction of alveolar bone. The present teeth were probably loose and mainly hanging from the gums.

Pathologies and general observations:
Osteoarthritis, coxa valga, osteochondritis dissecans
Osteoarthritis: Atlas-axis
There are signs of osteoarthritis on the joint between atlas and the dens of axis. The atlas has marginal osteophytes at the joint and axis has pitting of the joint surface and marginal osteophytes.
Coxa valga: The angle of the femoral neck is increased in both femora.
Osteochondritis dissecans: Left femur
The left femur has a pit, c. 10 mm in diameter, at the medial condyle. The edges are rounded and it has a smooth surface, surrounded by some porous new bone formation. The osteochondritis dissecans is in a late phase, where new bone is beginning to cover the surface of the crater.
Other observations:
The distal phalanges of the first digits of the feet have enthesophytes on the medial side.

Fig 47: Grave 36, femora, with increased angle of the neck.

Non metric traits:
Apical bone, lambdoid ossicle (left)

Extra bones:
Human: Two clavicles and fragments of ribs, a radius, an ulna, a metacarpal bone, hip bone, a tarsal bone and a metatarsal bone was found in the fill of grave 36. The clavicles are not similar, and probably the extra bones belong to more than one individual.

Fig 48: Grave 36, left femur, with osteochondritis dissecans at the medial condyle.

Grave 37

Bones present:
Cranium, teeth, cervical vertebrae, thoracic vertebrae, lumbar vertebrae, sacrum, sternum, ribs, clavicle, scapula, humerus, radius, ulna, carpal bones, metacarpal bones, phalanges (hand), hip bone, femur, patella, tibia, fibula, tarsal bones, metatarsal bones, phalanges (foot)

Fig 49: Grave 37.

Preservation: Very good
The skeleton is very well preserved, and almost complete. Only a few phalanges of the hands and feet are missing. There is some damage to the ribs, lumbar vertebrae and hip bone. There is still some

Fig 50: Grave 37, cranium, with some hair preserved on the occipitale bone.

hair present on the occipital bone.
Age: Middle adult, c. 30-45 years
The age estimation is based on the closure of cranial sutures, the dental wear, and the auricular surfaces of the hip bone.
Sex: Female
The estimation of sex is based on the morphology of the cranium (female?) and hip bone (female) and metric traits of the femur (female) and humerus (female).
Stature: c. 150 cm (TG), 152 cm (S)
The maximum length of the left femur is 390 mm, indicating a stature of approximately 150.4 cm (TG) or 152.4 cm (S). Stature estimations based on the measurements of other long bones range from 149.7 cm (TG) or 150.8 cm (S) (left tibia) to 157.8 cm (TG) or 156.0 cm (S) (right humerus).
Dental status:
Periapical lesion
Teeth present: 11, 13, 14, 15, 16, 17, 21, 23, 24, 25, 26, 27, 28, 31, 32, 33, 34, 35, 36, 37, 38, 41, 42, 43, 44, 45, 46, 47, 48
Post mortem lost teeth: 12, 18, 22
Dental wear: medium (molars 17-35 years)
The canine of the left maxilla has a shallow grove in the occlusal rim, in bucco-lingual direction. It is also slightly chipped at the grove, probably ante mortem, as the surface is smooth. On the occlusal surface of the left mandibular canine there is a similar, but less clear, groove matching the superior one. Together they form a small hole, of about 2 mm in the bite, probably formed by some repeated activity. There is also a rounded hole in the occlusal surface of the central incisor of the right mandible, about 2 mm in diameter. The hole is smooth and rounded.
Periapical lesion: 24

Fig 51: Grave 37, periapical lesion (24, tooth removed), and groves in the occlusal surfaces of the canines.

There is a possible periapical lesion at the first premolar of the left maxilla, with remains of an opening to the buccal side. The tooth was broken post mortem. It has a healthy appearance, and gives no explanation for the cavity in the alveolar bone.
Pathologies and general observations:
Cribra orbitalia, osteoarthritis
Cribra orbitalia: There is an area of c. 5 mm with small perforations in the superior wall of the left orbit. There are no perforations in the right orbit.
Osteoarthritis: Atlas-axis, right ribs
There are marginal osteophytes and pitting of the joint surface of the dens of axis, and osteophytes at the margins of the dental fovea of the atlas.
The joints between ribs and vertebrae have small marginal osteophyte formations, and the first two ribs of the right side have pitting of the joint surfaces.
Non metric traits:
Bilateral torus mandibularis (moderate right, marked left), parietal notch bone (left)

Grave 38

Context: The skeletons grave 38 and grave 267 (originally 38A and 38B) were found in the same grave.

Bones present:
Cranium, ribs, humerus, radius, ulna, hip bone, femur, tibia
Preservation: Bad
The bones are in a very fragile and fragmented state. It is not possible to determine to which individual some of the bones belong. The bones of uncertain origins include unidentified fragments, cranial fragments and metapodial bones.
Age: Infant, neonatal
The age estimation is based on the size of the bones.

Fig 52: Grave 38.

Sex: N/A
No estimation of sex has been performed.
Stature: N/A
No estimation of stature has been performed.
Dental status:
No teeth present
Pathologies and general observations:
No pathologies observed.

Grave 40

Bones present:
Cranium
Preservation: Very poor
The skeleton is very poorly preserved. Only the pars petrosa of the right and left temporal bones were identified. There were also a fragment of a tympanic ring and unidentified long bones present.
Age: Fetal
The age estimation is based on development and size of the temporal bones.
Sex: N/A
No estimation of sex has been performed.
Stature: N/A

Fig 53: Grave 40.

No estimation of stature has been preformed.
Dental status:
No teeth present
Pathologies and general observations:
No pathologies observed

Grave 41

Bones present:
Cranium, teeth, cervical vertebrae, ribs, clavicle, scapula, humerus, hip bone, femur, tibia
Preservation: Bad
The skeleton is in a fragile and fragmented state. The cranial bones and the teeth are fairy well preserved, while vertebrae, ribs and long bones are very fragile.
Age: Infant, c. 1.5-2 years
The age estimation is based on the formation and eruption of the deciduous and permanent dentition.
Sex: N/A

Fig 54: Grave 41.

No estimation of sex has been performed.
Stature: N/A
No estimation of stature has been performed.
Dental status:
Teeth present: 11, 12, 16, 21, 22, 23, 26, 31, 32, 33, 36, 41, 42, 43, 46, 51, 52, 53, 54, 55, 61, 62, 63, 64, 65, 71, 72, 73, 74, 75, 81, 82, 83, 84, 85
Teeth not in occlusion: 11, 12, 16, 21, 22, 23, 26, 31, 32, 33, 36, 41, 42, 43, 46, 55, 65, 75, 85
The permanent teeth and the deciduous second molars are still in the crypt.
Dental wear: Minimal.
Pathologies and general observations:
No pathologies observed.

Grave 45

Bones present:
Cranium, teeth, cervical vertebrae, thoracic vertebrae, lumbar vertebrae, sacrum, sternum, ribs, clavicle, scapula, humerus, radius, ulna, carpal bones, metacarpal bones, phalanges (hand), hip bone, femur, patella, tibia, fibula, tarsal bones, metatarsal bones
Preservation: Good
The skeleton is well preserved. The bones are in good condition. The surface of the cranium is peeling flaking a bit. The cervical vertebrae are well preserved, while only the arches and a few bodies remain of the lower vertebrae. The long bones are well preserved, with some minor damage to the joints. Many bones of the feet are missing.
Age: Adolescent, c. 19-20 years
The estimation of age is based on dental development and the fusion of epiphyses.
Sex: Male?
The estimation of sex is based on the morphology of the cranium (female) and hip bone (male), and metric traits of the femur (male) and the humerus (inconclusive). Considering the young age at death the appearance of the cranium is probably juvenile rather than being an indication of female sex.
Stature: c. 176 cm (TG), 175 cm (S)
The maximum length of the right femur is 476 mm, indicating a stature of approximately 176.0 cm (TG) or 175.1 cm (S). Stature estimations based on the measurements of other long bones range from 169.5 cm (TG) or 168.3 cm (S) (left tibia) to 178.6 cm (TG) (right ulna) or 178.3 cm (S) (right humerus).
Dental status:
Ante mortem tooth loss
Teeth present: 12, 13, 14, 15, 16, 17, 18, 21, 22, 23, 24, 25, 26, 27, 28, 31, 32, 33, 34, 35, 36, 37, 38, 41, 42, 43, 44, 45, 46, 47, 48

Fig 55: Grave 45, maxilla, with the the alveolus of the right central incisor (11) resorbing.

Fig 56: Grave 45.

Teeth lost ante mortem: 11

The tooth was lost not to long before death, as the alveolus is still present, but the resorbtion is in progress. There is also some post mortem damage to the alveolar bone.

Dental wear: Limited (molars 17-25 years)

Pathologies and general observations:

Asymmetric bone length: Humerus

The left humerus is 10 mm shorter than the right humerus.

Other changes: There is an area, c. 80x100 mm in size, of surface porosity at the posterior part of the

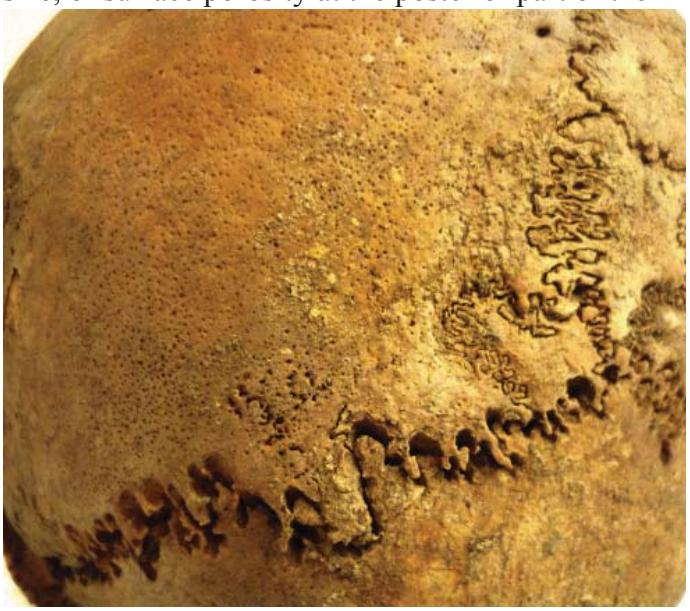

Fig 57: Grave 45, cranium with areas of surface porosity, and suture bones.

right and left parietal bones and the superior part of the occipital bone. In a c. 10x10 area in the left parietal bone, by the lambdoid suture, there is a concentration of larger perforations.

Non metric traits:

Apical bone, lambdoid ossicle (left)

Grave 47

Bones present:

Cranium, teeth, cervical vertebrae, thoracic vertebrae, lumbar vertebrae, ribs, clavicle, scapula, humerus, radius, ulna, metacarpal bones, phalanges (hand), hip bone, femur, tibia

Preservation: Medium/good

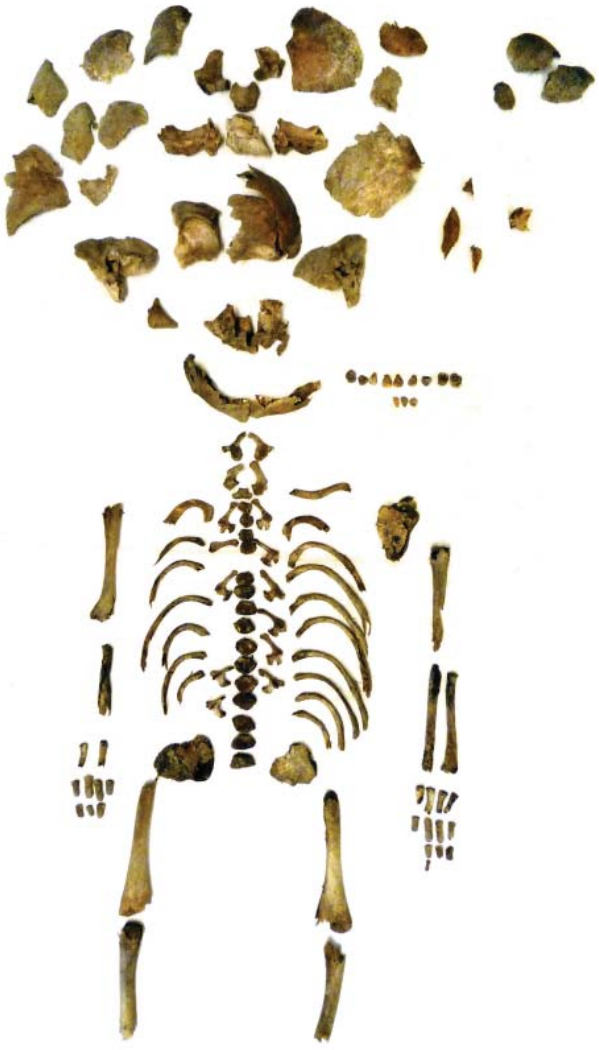

Fig 58: Grave 47.

Fig 59: Grave 47, fragments of the cranium with porotic hyperostosis. .

The skeleton is medium well to well preserved. The cranium is fragmented, but fairly well preserved. Even small and fragile bones as vertebral bodies and phalanges (hands) are present. The long bones are not complete.

Age: Infant, c. 6-10 months

The estimation of age is based on dental development, the development of the temporal bone, the fusion of epiphyses and the measurement of bone size.

Sex: N/A

No estimation of sex has been performed.

Stature: N/A

No estimation of stature has been preformed.

Dental status:

Teeth present: 51, 52, 53, 54, 55, 61, 62, 63, 64, 65, 71, 72, 73, 74, 75, 81, 82, 83, 84, 85

Teeth not in occlusion: 51, 52, 53, 54, 55, 61, 62, 63, 64, 65, 71, 72, 73, 74, 75, 81, 82, 83, 84, 85

The deciduous teeth are still in the crypt. The central incisors of the mandible are beginning to erupt.

Pathologies and general observations:

Porotic hyperostosis:

Three fragments of the cranial vault exhibits areas of surface porosity. The affected area is at least 25 mm in diameter. No perforations in the orbits can be observed.

Grave 48

Bones present:

Cranium, teeth, cervical vertebrae, thoracic vertebrae, lumbar vertebrae, sacrum, ribs, clavicle, scapula, humerus, radius, ulna, carpal bones, metacarpal bones, phalanges (hand), hip bone, femur, patella, tibia, fibula, tarsal bones, metatarsal bones, phalanges (foot)

Preservation: Good

The skeleton is generally well preserved. The vertebrae, sacrum, pubic bone and many of the ribs are however more or less fragmented.

Age: Old adult, c. 45-60 years

The age estimation is based on the closure of cranial sutures, the dental wear, the auricular surfaces of the hip bone and the pubic symphysis. The occlusal wear of the preserved molars is medium, but several molars have been lost ante mortem. The auricular surfaces and the pubic symphysis suggest an advanced age.

Sex: Male

The estimation of sex is based on the morphology of the cranium (male?) and hip bone (male) and metric traits of the femur (male) and humerus (inconclusive).

Stature: c. 172 cm (TG), 171 cm (S)

The maximum length of the left femur is 459 mm, indicating a stature of approximately 172.0 cm (TG)

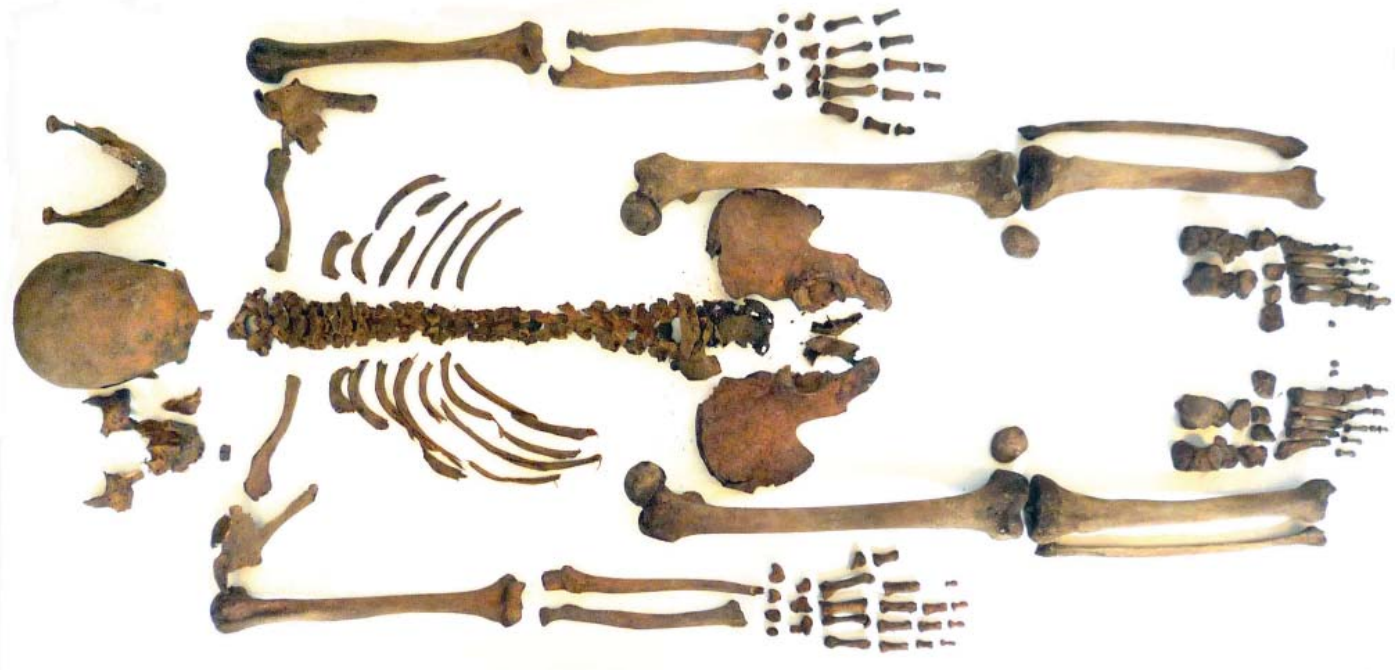

Fig 60: Grave 48.

or 170.7 cm (S). Stature estimations based on the measurements of other long bones range from 166.2 cm (TG) 161.6 cm (S) (right fibula) to 175.5 cm (TG) or 175.0 cm (S) (right humerus).

Dental status:

Ante mortem tooth loss, periodontitis

Teeth present: 11, 12, 13, 14, 15, 16, 21, 22, 23, 24, 25, 31, 32, 33, 34, 35, 36, 37, 38, 41, 42, 43, 44, 45

Ante mortem lost teeth: 18, 26, 27, 28, 45, 46, 47, 48

This individual had to rely on the premolars and anterior teeth for chewing, as the molars were lost in opposite sides in the maxilla and the mandible.

Fig 61: Grave 48, mandible, with ante mortem tooth loss and periodontitis.

Post mortem lost teeth: 17

Dental wear: Medium-heavy (molars 25-45 years)

Periodontitis:

There is a reduction of alveolar bone, and the roots of the teeth are exposed.

Pathologies and general observations:

Osteomyelitis, osteoarthritis, vertebral osteophytosis,

Fig 62: Grave 48, first phalanx of the hand with osteomyelitis.

ankylos, iron object in shoulder

Osteomyelitis: First phalanx of the hand

One first phalanx of the hand had a swollen appearance, and porous structure, suggesting an infection of the bone, osteomyelitis (dactylitis).

Osteoarthritis: atlanto-occipital joint, atlas-axis, cervical vertebrae, lumbar vertebrae-sacrum, right and left shoulder, left wrist, hand, left hip

The right condyle of the occipital bone, and the right superior joint of the atlas are enlarged, with new bone formation and pitting of the surface. Pitting and marginal osteophyte formations are also found on the dens of axis, and the articular surfaces of the axis, the third and the fourth cervical vertebrae.

Fig 63: Grave 48, first phalanx of the hand, with eburnation at the distal joint.

There is pitting of the joint surface and marginal osteophytes in the joint between L5 and sacrum.

Both scapulae have pitting of the glenoid cavity and osteophyte formation at the anterior margin. The left scapula is a bit damaged post mortem.

The radius has an area of eburnation, c. 10 mm in diameter, with some surface pitting, at the distal joint. A similar area of eburnation is found on the left scaphoid bone, articulating with the radius.

Two of the first phalanges, probably one from the right hand and one from the left hand, have signs of osteoarthritis. One has an eburnated area, c. 7x8 mm in size, on the distal joint, with striations in the direction of the joint movement. There is also pitting of the joint surface and marginal osteophyte formation. The other one has an area of eburnation in the proximal joint, with pitting of the joint surface and new bone formation. This bone was partly damaged

Fig 64: Grave 48, right humerus, with an iron object penetrating the head.

post mortem.
The acetabulum of the left hip bone is surrounded by porous new bone formation, pitting and cavities in the bone.
Vertebral osteophytosis: Cervical vertebrae
C5 and C6 have surface porosity of the bodies, and marginal osteophyte formations.
Ankylos: Second and third phalanges of the foot
A second phalanx of the foot is fused with a third phalanx.
Other changes:
There is an iron object, c. 3 mm in diameter, penetrating the anterior side of the head of the right humerus. It has corroded and broken at the bone surface, and there is no sign of healing. It could possibly be a coffin nail entering the shoulder post mortem. The size of the coffin however suggests that the nails of the lid were never close to the shoulders. Another possibility is a peri mortem injury with a small, sharp iron object.
Non metric traits:
Bilateral torus mandibularis (marked)
Extra bones:
Human: The following lose bones were found in the west and northwest section of grave 48: fragments of ribs, two scapulae, a clavicle, proximal joints of a humerus? and a femur, a patella and the diaphysis of a fibula. There were also two mandibles with teeth found in the grave 48.

Mandible 1:
Age: Adult
Sex: Male?
Teeth present: 34, 35, 36, 37, 38, 42, 43, 44, 45, 46, 47, 48
Post mortem lost teeth: 31, 32, 33, 41
Dental wear: Medium (molars 17-35 years)
Periodontitis:
There is a reduction of alveolar bone, and the roots of the teeth are exposed and have deposits of calculus. The molars on the left side are most affected.

Fig 65: Grave 48, extra mandible 1.

Fig 66: Grave 48, extra mandible 2.

Mandible 2:
Age: Adult
Sex: Indetermined sex
Teeth present: 32, 33, 34, 35, 36, 37, 38, 42, 43, 44, 45, 46, 47
Post mortem lost teeth: 31, 41, 48
Dental wear: Limited (molars 17-25 years)

Grave 50

Bones present:
Cranium, teeth, cervical vertebrae, thoracic vertebrae, lumbar vertebrae, sacrum, sternum, ribs, clavicle, scapula, humerus, radius, ulna, carpal bones, metacarpal bones, phalanges (hand), hip bone, femur, patella
Preservation: Medium
The skeleton is medium well preserved. The cranium and mandible are in good condition. The long bones have well preserved diaphyses, but there is some damage to the joint surfaces. The vertebrae, ribs, sternum, scapula and hip bone, and are fragmented. The hands are well preserved, with a few phalanges missing.
Age: Middle-old adult, 30-60 years
The age estimation is based on the closure of cranial sutures, the dental wear, the auricular surfaces of the hip bone and the pubic symphysis. Different indica-

Fig 67: Grave 50.

tions give different indications of age. This individual apparently did not wear the teeth heavily, but suffered from joint disease, that might have advanced the deterioration of the auricular surfaces.

Sex: Male

The estimation of sex is based on the morphology of the cranium (male?) and hip bone (male) and metric traits of the humerus (male).

Stature: c. 179 cm (TG), 180 cm (S)

The femora were not complete, and the estimation of stature is based on the bones of the right arm. The maximum length of the humerus is 348 mm, indicating a stature of approximately 178.7 cm (TG) or 180.2 cm (S), and the maximum length of the radius is 248 mm, indicating a stature of approximately 173.4 cm (TG) or 169.9 cm (S).

Dental status:

Ante mortem tooth loss, cervical caries, periapical

Fig 68: Grave 50, maxilla, with incisors lost ante mortem, and mandible.

lesion?

Teeth present: 13, 14, 15, 16, 17, 18, 22, 23, 24, 25, 26, 27, 28, 31, 32, 33, 34, 35, 36, 37, 38, 41, 42, 53, 44, 45, 46, 47

Ante mortem lost teeth: 11, 12, 21

Congenitally absent tooth: 48

Dental wear: Medium, uneven (molars 17-45 years)

On the right side of the maxilla there is a grove at the cervical margin on the distal side of the second premolar and the mesial side of the first molar, creating a round hole of about 2 mm diameter between the teeth.

Fig 69: Grave 50, incisors with cervical caries.

Cervical caries: 31, 32, 33, 35, 36, 41, 45, 46

The cervical area is eroded in several teeth of the mandible, probably due to cervical caries. The first molars are most affected, but there are no large cavities.

Possible periapical lesion: 46

The alveolus of the first molar of the right mandible has been remodelled into a wide cavity. There is no cloaca, but there are openings both on the lingual side, by the cervix, and all along the roots on the buccal side. The tooth appears healthy.

Pathologies and general observations:

Periostitis, osteoarthritis, vertebral osteophytosis, trauma

Periostitis: Right fifth metacarpal bone

On the fifth metacarpal bone there is new bone for-

Fig 70: Grave 50, right fifth metacarpal bone with signs of osteoarthritis at the distal joint.

mation, extending along c. 17 mm of the lateral side of the diaphysis.

Osteoarthritis: Right hand

In the right hand the third metacarpal bone has lumps of new bone formation around the distal joint, in combination with pitting of the joint surface. The joint has been damaged post mortem, but eburnation is still observable in an area of c. 7 mm. A similar patch of eburnation is found on the proximal joint surface of a first phalanx.

Vertebral osteophytosis: Cervical vertebrae, lumbar

Fig 71: Grave 50, mandible, with possible periapical lesion at the first molar (46). Also note the grove at the inferior side.

vertebrae

The cervical vertebrae have porosity of the surface of the bodies, and marginal osteophyte formations. L4 and L5 have c. 5-8 mm long osteophytes along the margin of the bodies.

Trauma: Mandible, left and right radius, left and right ulna

There is a transversal groove on the inferior side of the mandible, at the mental protuberance, about 3 mm wide, with a rounded, U-shaped profile. This was probably caused by an injury to the mandible, which has healed well.

The distal parts of the diaphyses of the right and left radii and ulnae are swollen and have porous new bone formations. On the left side the swollen area

Fig 72: Grave 50, radius and ulna of the right and left arm, with swellings at the distal diaphyses, probably caused by healing fractures.

extended along c. 50-55 mm of the diaphysis. On the right side the swelling is not as extensive. These bone formations are probably caused by healing fractures, possibly from when the individual tried to break a fall with both arms.

Other observations:

There is a bone spicule, c. 8x3 mm in size on the medial side of the distal right humerus.

Non metric traits:

Lambdoid ossicles (right and left)

Extra bones:

Human: Additional human bones were found in the fill of the grave. It is unknown how many individuals they represent. The following bones were identified, all from adult individuals: The basilar part of an occipital bone, a heavily worn premolar with medium calculus deposits, a heavily worn central incisor of the right maxilla (11), a spinous process of a cervical vertebrae, fragments of at least six thoracic vertebrae of which two have porosity and marginal osteophytes around the body, additional fragments of vertebrae, about ten fragments of ribs, a fragment of a left scapula with signs of osteoarthritis at the glenoid cavity (surface porosity, marginal lipping and eburnation), a right clavicle, the distal part of a left radius, the proximal part of a left ulna, a first phalanx and three second phalanges of the hand, one

damaged metacarpal bone, and some unidentified bonefragments.
Animal: A complete talus of a caprine and a fragment of a rib from an animal of horse/cow size.

Grave 55

Bones present:
Cranium, teeth, cervical vertebrae, thoracic vertebrae, lumbar vertebrae, sacrum, sternum, ribs, clavicle, scapula, humerus, radius, ulna, carpal bones, metacarpal bones, phalanges (hand), hip bone, femur, patella, tibia, fibula, tarsal bones, metatarsal bones, phalanges (foot)
Preservation: Very good
The skeleton is very well preserved and almost complete. All present bones are well preserved, with some minor damage to ribs, sternum, scapula, hip bone and the bodies of some of the vertebrae. The surface of the bone is flaking a bit on the radii and ulnae. Only three third phalanges are missing.
Age: Middle-old adult, c. 40-60 years
The estimation of age is based on the closure of cranial sutures, dental wear and the the auricular surface of the hip bone.
Sex: Male
The estimation of sex is based on the morphology of the cranium (inconclusive) and hip bone (male), and metric traits of the femur (female?) and the humerus (inconclusive).
Stature: c. 165 cm (TG), 163 cm (S)
The maximum length of the left femur is 430 mm, indicating a stature of approximately 165.3 cm (TG) or 163.1 cm (S). Stature estimations based on the measurements of other long bones range from 163.4 cm (TG) or 160.9 cm (S) (right femur) to 176.7 cm (TG) or 173.0 cm (S) (right and left ulna).

Dental status:
Congenitally absent tooth, fractured tooth, periodontitis, periapical lesions
Teeth present: 11, 12, 13, 14, 15, 16, 17, 21, 22, 23, 24, 26, 28, 31, 32, 33, 34, 35, 36, 37, 41, 42, 43, 44, 46, 47, 48
Teeth lost post mortem: 18, 25, 27, 45
Congenitally absent tooth: 38

Fig 74: Grave 55, mandible, with fractured tooth (31) and heavilly worn teeth. Also note torus mandibularis.

The opposing third molar in the left maxilla has no occlusal wear, and some calculus in the fissures.
Dental wear: Heavy (molars 17-45+ years)
The first molar of the right maxilla is worn down to the root, and there is an opening to the pulp chamber.
Fractured tooth: 31
The distal part of the crown is missing. The rounded surface of the break indicates that the tooth was fractured ante mortem.
Periodontitis:
There is a reduction of alveolar bone in the man-

Fig 73: Grave 55.

dible, particularly affecting the molars. The roots of the teeth are exposed, and partly covered in calculus.
Periapical lesions: 16, 26
The first molar of the right maxilla has periapical lesions, with fistulae opening on the buccal (mesial

Fig 75: Grave 55, right maxilla, with periapical lesions at the roots of the first molar (16) and exposed pulp chamber due to occlusal wear. Top lateral wiev, bottom medial wiev.

root) and lingual sides. The opening on the lingual side is c. 4 mm in diameter, with sharp even edges (granuloma?), while the buccal opening is c. 6 mm in diameter, and the edges are uneven and surrounded by surface porosity (abscess?). The first molar of the left maxilla has periapical lesions, with fistulae opening on the buccal (both roots) and lingual sides. Both openings are c. 6 mm in diameter, with sharp, even edges.

Fig 76: Grave 55, left tibia, with periosteal new bone formations. Complete bone (bottom) and detail of the diaphysis (top).

Pathologies and general observations:
Periostitis, osteoarthritis, vertebral osteophytosis, Schmorl's nodes, sacralization, trauma
Periostitis: Right and left tibia
The right tibia has new bone formations with some pitting and striations along c. 180 mm of the diaphysis, at the anterior side, middiaphysis. There are similar, but larger, formations at the left tibia. Particularly the medial side is more affected.
Osteoarthritis: Atlanto-occipital joint, thoracic vertebrae, right and left ribs, left wrist, right and left knee
The left condyle of the occipital bone has a c. 5 mm large area of eburnation, surface porosity and marginal osteophytes of up to 5 mm. The left cranial joint of the atlas has a similar area of eburnation, surface porosity and marginal osteophytes of c. 3-4 mm size. The occipital bone and atlas both have cavities (subchondral cysts?) of up to 5 mm diameter under the joint surface.
In the lower thoracic vertebrae several joints have marginal osteophytes. T9-T11 also have eburnation of the joint surfaces, and T10-T11 have porosity of the joint surfaces.

Fig 77: Grave 55, left tibia, with eburnation at the lateral condyle of the proximal joint.

The joints between the thoracic vertebrae and ribs have surface porosity and/or marginal osteophyte formations in T4 and T8-T12. In T9-T10 there are also areas of eburntion at the joint surfaces. Porosity and marginal osteophytes are present at the joints of the heads of the ribs, but no eburnation.
The right femur has marginal osteophytes around the distal joint, particularly affecting the lateral side of the joint with patella, where osteophytes reach c. 6 mm size. An area of c. 11x19 mm of eburnation is present at the lateral part of the joint. The right patella has an eburnated area of c. 12x17 mm at the lateral joint, and osteophytes of c. 3 mm at the lateral

and inferior margin.
The left femur has osteophytes around the distal joint, reaching c. 4 mm on the lateral margin. There is a c. 5 mm uneven and porous area at the patellar surface. The lateral condyle has an eburnated area at the distal joint articulating with the tibia. The area is c. 20x25 mm in size, shaped as an inverted L, and has striation in the direction of movement. The left tibia has a similar area of eburnation at the posterior part of the lateral condyl, also exhibiting striations. There are osteophytes of c. 3 mm at the lateral and anterior margin.
The joint between the scaphoid and trapezoid bones of the left wrist has an area of eburnation, c. 2.5 mm in size.
Vertebral osteophytosis: Cervical vertebrae, thoracic vertebrae, lumbar vertebrae
C3-C6 have porosity at the superior and/or inferior sides of the bodies. There are marginal osteophytes of c. 2-3.5 mm at the C3 and C4. T8 and T9 also have marginal osteophytes of c. 3.5 mm size. L1 and L2 have surface porosity at the bodies and marginal osteophytes, reaching 10 mm size in L2.

Fig 78: Grave 55, sacrum and the sacralized first segment of the coccyx.

Schmorl's nodes: Thoracic vertebrae
There are depressions (Schmorl's nodes) in the superior and/or inferior surfaces of the bodies of T6-T7 and T10-T11. The depressions are c. 4-10 mm in size and oval in shape.
Sacralization: Coccyx
The first segment of the coccyx has fused with the sacrum, with an opening between the bodies still present at the anterior side.

Fig 79: Grave 55, clavicles. The left clavicle (top) is normal, the right clavicle (bottom) is shortened due to a misaligned healed fracture.

Trauma: Right clavicle
Due to a misaligned healed fracture the right clavicle is shorter and wider than the left one. The clavicle was fractured at the middle, and the medial part overlaps the lateral part.
Other observations:
An extra joint, c. 11x20 mm in size, between the sacrum and the ilium of the hip bone is present bilaterally.
There is a bone spicule, c. 8.5x9 mm in size, at the lateral side of the left patella, pointing in distal direction.

Fig 80: Grave 55, third phalanges of the big toes of booth feet (top) and the right foot (right), possibly broken ante mortem.

There are also entesophytes, up to c. 5 mm size, at the third phalanges of the first digits of the feet. The distal end of the right third phalanx is broken off. This possibly occurred ante mortem, but it is uncertain.
Non metric traits:
Bilateral torus mandibularis (moderate), lambdoid ossicle (left)

Fig 81: Grave 56.

Grave 56

Bones present:
Cranium, teeth, cervical vertebrae, thoracic vertebrae, lumbar vertebrae, sacrum, ribs, clavicle, scapula, humerus, radius, ulna, carpal bones, metacarpal bones, phalanges (hand), hip bone, femur, tibia, fibula, tarsal bones, metatarsal bones, phalanges (foot)
Preservation: Very good
The skeleton is very well preserved and almost complete. The left clavicle, scapula and humerus are missing, and so are some small bones as phalanges. The long bones are complete. The cranium is very well preserved, but some elements are missing,

Fig 82: Grave 56, left parietal bone.

among them the pars petrosa of both temporal bones.
Age: Infant, c. 1-3 months
The estimation of age is based on dental development, the fusion of epiphyses and the measurement of bone size.
Sex: N/A
No estimation of sex has been performed.
Stature: N/A
No estimation of stature has been preformed.
Dental status:
Teeth present: 51, 52, 54, 61, 65, 71, 72, 73, 74, 75, 81, 82, 84, 85
Teeth not in occlusion: 51, 52, 54, 61, 65, 71, 72, 73, 74, 75, 81, 82, 84, 85
The deciduous teeth are still in the crypt.
Teeth lost post mortem: 53, 55, 62, 63, 64, 83
Pathologies and general observations:
Periostitis: There are areas of surface porosity at the cranial and postcranial bones, throughout the skeleton.

Grave 58

Bones present:
Cranium, teeth, cervical vertebrae, thoracic vertebrae, lumbar vertebrae, sacrum, sternum, ribs, clavicle, scapula, humerus, radius, ulna, carpal bones, metacarpal bones, phalanges (hand), hip bone, femur, patella, tibia, fibula, tarsal bones, metatarsal bones, phalanges (foot)
Preservation: Very good
The skeleton is very well preserved and almost complete. All bones are in very good condition and most of them are complete. There is some minor damage to the sternum, the scapula, the hip bone and the bodies of a few vertebrae.
Age: Adolescent-young adult, c. 18-23 years
The estimation of age is based on dental develop-

Fig 83: Grave 58.

ment and fusion of epiphyses.

Sex: Female?

The estimation of sex is based on the morphology of the cranium (female?) and hip bone (inconclusive), and metric traits of the femur (inconclusive) and the humerus (inconclusive).

Stature: c. 161 cm (TG), 163 cm (S)

The maximum length of the right femur is 431 mm, indicating a stature of approximately 160.6 cm (TG) or 163.3 cm (S). Stature estimations based on the measurements of other long bones range from 159.2 cm (TG) or 158.4 cm (S) (right fibula) to 168.2 cm (TG) or 170.7 cm (S) (right humerus).

Fig 84: Grave 58, right hip bone, with bone spicules in the obturator foramen .

Dental status:

Teeth present: 11, 12, 13, 14, 15, 16, 17, 18, 21, 22, 23, 24, 25, 26, 27, 28, 31, 32, 33, 34, 35, 36, 37, 38

Dental wear: limited

The incisors and canines of the maxilla and mandible are a bit crowded.

Pathologies and general observations:

Ankylos: Second and third phalanges of the foot

A second phalanx of the foot is fused with a third phalanx.

Other changes:

There is an extra joint surface between T5 and T6, at the spinous process.

Fig 85: Grave 58, T5-T6, with an extra joint between the spinous processes.

The right and left pubis have bone spicules pointing to the obturator foramen. On the right side there are two spicules of 1.5-2 mm size, on the left side one spicule of c. 4 mm size.

Non metric traits:

Epipteric bone (left)

Grave 59

Bones present:

Cranium, teeth

Preservation: Very poor

The skeleton is very poorly preserved. Only fragments of the jaws and teeth were recovered. Bone and teeth are fragmented and very fragile.

Age: Middle-old adult, 35+ years

The estimation of age is based on dental wear.

Sex: N/A

Fig 86: Grave 59.

No bones suitable for sex estimation were available.
Stature: N/A
No complete long bones suitable for measurements and stature estimation were available.
Dental status:
Periodontitis
Teeth present: 26, 27, 28, 48
The identification of the teeth is uncertain due to fragmentation. Additional roots of anterior teeth and molars are also present. Some are fragmented, others are worn to the root.
Dental wear: Heavy (molars 33-45 years)
Periodontitis:
There is some calculus on the root of the third molar of the right mandible, indicating periodontal disease. Only fragments of the alveolar bone are present, and the extent of the periodontitis is unknown.
Pathologies and general observations:
No pathologies observed.

Fig 87: Grave 60.

Grave 60

Bones present:
Cranium, metacarpal bones
Preservation: Very poor
The skeleton is very poorly preserved. Only bone fragments were recovered. They are paper thin and easily break. The only identified bones are a fragment of the petrous part of the right temporal bone, and fragmented metacarpal bones.
Age: Infant, neonatal
The estimation of age is based on the size of the bones.
Sex: N/A
No estimation of sex has been performed.
Stature: N/A
No estimation of stature has been preformed.
Dental status:
No teeth present
Pathologies and general observations:
No pathologies observed

Grave 64

Bones present:
Cranium, teeth, cervical vertebrae, thoracic vertebrae, lumbar vertebrae, sacrum, sternum, ribs, clavicle, scapula, humerus, radius, ulna, carpal bones, metacarpal bones, phalanges (hand), hip bone, femur, patella, tibia, fibula, tarsal bones, metatarsal bones, phalanges (foot)
Preservation: Very good
The skeleton is very well preserved and almost complete. All bones are in very good condition, and only have minor damage. A few phalanges are missing.
Age: Adolescent, c. 15-16 years
The estimation of age is based on dental development and the fusion of epiphyses.
Sex: Indeterminate sex
The cranium is feminine, while the observable characteristics of the hip bone are possibly masculine. Considering the young age at death the appearance of the cranium is possibly juvenile rather than being an indication of female sex. The indications of the hip bone are however also uncertain as the pubic bone is damaged.
Stature: N/A
No estimation of stature has been preformed.
Dental status:
Enamel hypoplasias
Teeth present: 11, 12, 13, 14, 15, 16, 17, 18, 21, 22, 23, 24, 25, 26, 27, 28, 31, 32, 33, 34, 35, 36, 37, 38, 41, 42, 43, 44, 45, 46, 47, 48

Fig 88: Grave 64.

Teeth not in occlusion: 18, 28, 38, 48
The third molars are still in the crypt. The third molar of the right mandible is not visible, and it is uncertain if it is present.
Enamel hypoplasias: 24, (11), (12)
The linear enamel hypoplasias on the central incisors of the maxilla are uncertain.
Dental wear: Minimal
The canines are slightly rotated disto-lingually. This is most clearly seen in the canine of the right maxilla, which is rotated c. 45 degrees.

Pathologies and general observations:

Periostitis, ankylos, scurvy?
Periostitis: Cranium, mandible, right and left scapula, vertebrae, right and left ribs, right and left hip bone

Fig 89 : Grave 64, cranium, right sphenoid and temporal bones, with new bone formation.

There are areas of pale, very fine porous new bone at the cranium. On the occipital bone the squamous part is affected, between the superior nuchal line and the temporal bones. The right temporal bone is also affected, by the mastoid processes and at the anterior part of the squamous part. The right, and to a lesser extent the left, greater wing of the sphenoid bone also have porous new bone.

Fig 90 : Grave 64, L1-L5, with new bone formation.

The mandible has similar areas of very fine porous new bone at the medial and lateral sides of the right and left ramus.
Postcranial bones with porous new bone include the scapulae, vertebrae, ribs and hip bone. In the scapulae the spine and the acromion are affected.

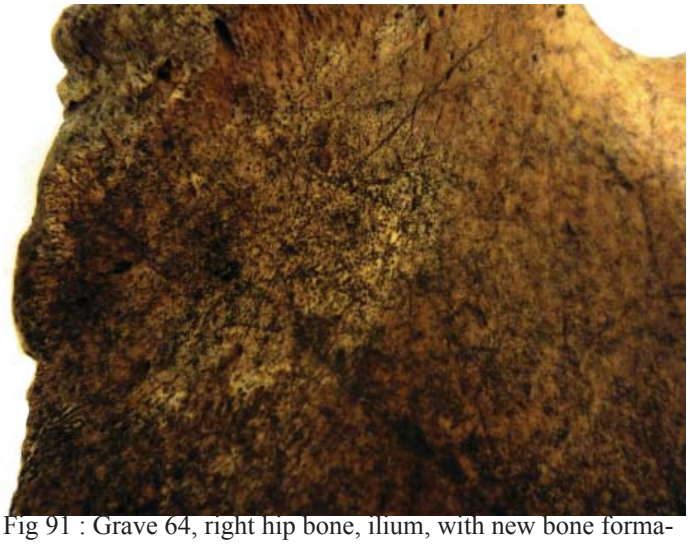

Fig 91 : Grave 64, right hip bone, ilium, with new bone formation.

The vertebrae have pale porous bone on the anterior side of the bodies, from T4 to L5. Most of the ribs are not affected, but there is some porous new bone on the right and left second ribs, by the superior side of the angle. On the hip bone there are areas, c. 20 mm in size, of porous new bone on the ilium by the acetabulum.
The periosteal new bone formations on the cranial and postcranial bones are possibly caused by scurvy. The greater wings of the sphenoid and the mandible are often affected in scurvy. The vertebrae and ribs are however not usually involved.
Ankylos: Second and third phalanges of the foot
Two second phalanges of the foot are fused with third phalanges.

Fig 92: Grave 69.

Non metric traits:
Coronal ossicle (right), lambdoid ossicle (right)

Grave 69

Bones present:
Cranium, teeth, cervical vertebrae, humerus, femur, tibia, fibula
Preservation: Poor
The skeleton is poorly preserved. The cranium and mandible are medium well preserved, and a bit fragmented and with surface damage. Cervical vertebrae are present, mainly represented by vertebral arches. The long bones are poorly preserved, cracked and with the joints missing.
Age: Middle adult, c. 30-45 years
The estimation of age is based on the closure of cranial sutures and dental wear.
Sex: Male?
The estimation of sex is based on the morphology of the cranium (male?).
Stature: N/A
No complete long bones suitable for measurements and stature estimation were available.
Dental status:
Congenitally absent tooth, enamel hypoplasia
Teeth present: 13, 14, 17, 18, 21, 22, 23, 24, 25, 27, 28, 31, 32, 33, 34, 35, 36, 37, 38, 41, 43, 44, 45, 46, 47
Post mortem lost teeth: 16, 26
Congenitally absent tooth: 48
Enamel hypoplasia: 14, 23, 24
Severeal teeth seem to have two linear enamel hypoplasias, c. 1 mm apart. The number of affected teeth is uncertain due to calculus deposits and loss of enamel.

Fig 93: Grave 69, right and left tibia and fibula.

Dental wear: Uneven (molars 17-45 years)
Pathologies and general observations:
Periostitis, sinusitis
Periostitis: Right and left femur, right and left tibia,

fibula
The right femur has an area, c. 12 mm in size, of porous new bone at the lateral side of the distal diaphysis. The left femur has an area, c. 16x43 mm in size, of striated and porous new bone at the anterior side of the distal diaphysis.
The right tibia has porous new bone at the medial, and particularly on the lateral side of the diaphysis. The left tibia has porous and striated new bone around the diaphyses. Both tibiae have been damaged post mortem. There are fragments of diaphyses from one, or probably both fibulae, with small areas, c. 10 mm in size, of porous new bone. There are also

Fig 94: Grave 69, right temporal bone, with a narrow external acoustic meatus.

unidentified fragments of long bones with periosteal new bone.
Sinusitis: Right and left maxilla
There are small bone spicules at the base of the right and left maxillary sinuses. The right sinus also has surface porosity. This indicates bilateral chronic sinus infection.
Other changes:
The external acoustic meatus of the right and left temporal bone are unusually small.
The linea aspera of the right and left femur are marked, and have exostoses.
Non metric traits:
Bilateral torus mandibularis (moderate)

Grave 70

Bones present:
Cranium, teeth
Preservation: Poor
The skeleton is poorly preserved. Permanent and deciduous teeth are present and in good condition. The cranium is fragmented. The long bones are fragmented and not identifiable. There are also a few fragments of vertebral bodies present.
Age: Infant, c. 1.5-2 years

Fig 95: Grave 70.

The estimation of age is based on dental development.
Sex: N/A
No estimation of sex has been performed.
Stature: N/A
No estimation of stature has been preformed.
Dental status:
Teeth present: 12, 16, 21, 22, 26, 31, 32, 33, 36, 41, 42, 43, 46, 51, 53, 54, 55, 61, 62, 63, 64, 65, 72, 73, 74, 75, 81, 82, 83, 84, 85
Teeth not in occlusion: 12, 16, 21, 22, 26, 31, 32, 33, 36, 41, 42, 43, 46
The permanent teeth are still in the crypt.
Pathologies and general observations:
Cribra orbitalia, porotic hyperostosis
Cribra orbitalia:

Fig 96: Grave 70, cranial fragment with porotic hyperostosis.

There is an area of c. 10 mm with small perforations in the superior wall of the left orbit.
Porotic hyperostosis:
The cranial vault is fragmented, and almost half of the fragments have large areas of perforations at the external surface. The only identified fragment is part of the frontal bone, where an area of c. 17x25 mm at the posterior left side has surface porosity.

Grave 71

Bones present:
Cranium, teeth, cervical vertebrae, thoracic vertebrae, lumbar vertebrae, sacrum, ribs, clavicle, scapula, humerus, radius, ulna, carpal bones, metacarpal bones, phalanges (hand), hip bone, femur, patella, tibia, fibula, tarsal bones, metatarsal bones, phalanges (foot)

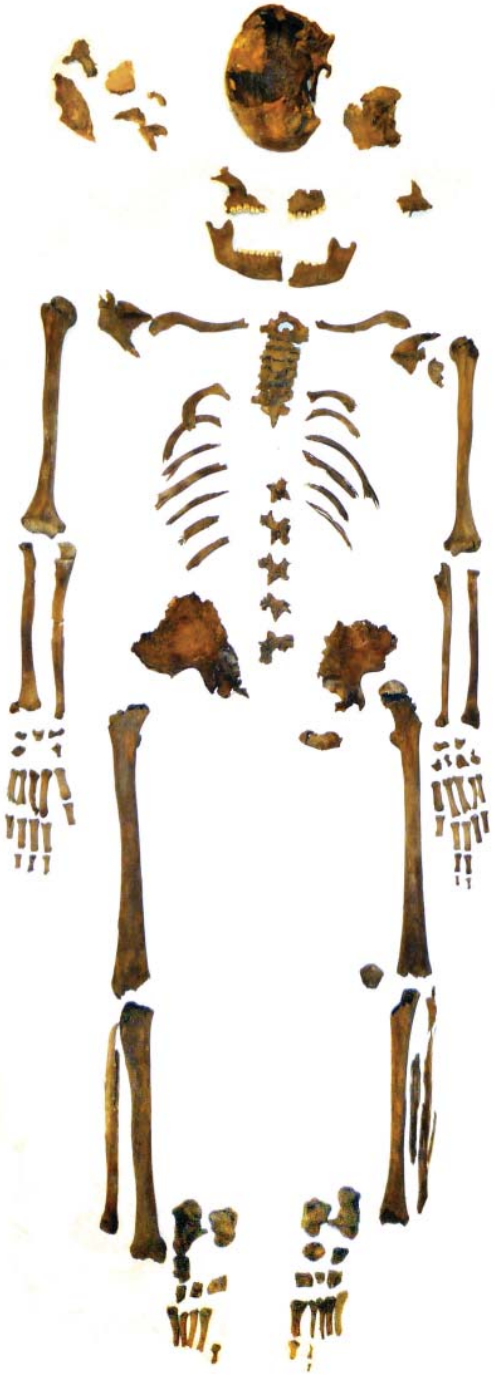

Fig 97: Grave 71.

Preservation: Medium
The skeleton is medium well preserved. The cranium is fragmented with poor preservation of the bone surface. The mandible and teeth are well preserved. The cervical vertebrae are well preserved, and there are also some arches of the lower vertebrae present. The ribs, scapula and sacrum are fragmented. The long bones are a bit cracked and partly damaged, with some of the joint missing. The upper limbs are better preserved than the lower limbs.
Age: Young adult, c. 20-30 years
The age estimation is based on the closure of the cranial sutures and dental wear.
Sex: Female?
The estimation of sex is based on the morphology of the cranium (female?) and hip bone (female), and metric traits of the femur (inconclusive) and the humerus (female?).
Stature: c. 162 cm (TG), 162 cm (S)
The femora are not complete, and the estimation of stature is based on the bones of the arms. The maximum length of the left humerus is 310 mm, indicating a stature of approximately 162.1 cm (TG) or 162.2 cm (S). Stature estimations based on the measurements of other long bones range from 161.1 cm (TG) or 160.2 cm (S) (right radius) to 164.5cm (TG) or 165.5 cm (S) (right humerus).

Fig 98: Grave 71, left maxilla, with remaining deciduous canine (63).

Dental status:
Remaining deciduous tooth
Teeth present: 11, 12, 13, 14, 15, 16, 17, 18, 21, 22, 23, 24, 25, 26, 27, 31, 32, 33, 34, 35, 36, 37, 38, 41, 42, 43, 44, 45, 46, 47, 48, 63
Teeth not in occlusion: 13
The canine of the right maxilla is just about to erupt, but it is partly under the lateral incisor. The lateral incisor is placed slightly labially of the dental arch

and is tilted a bit distally.
Remaining deciduous tooth: 63
The deciduous canine of the left maxilla is still present. The alveolus is shallow and a lot of the root is exposed. The root is a bit hollowed by the permanent canine, but does not seem to be resorbing. There are also root fragments in the alveolar bone, probably from the second deciduous molar of the right maxilla.

Fig 99: Grave 71, left maxilla, with bone spicules in the sinus cavity.

Tooth lost post mortem: 53
There is a small alveolus distally of the canine in the right maxilla, probably from the deciduous canine.
Dental wear: Limited (molars 17-25 years)
Pathologies and general observations:
Sinusitis: Left maxilla
There are networks of new bone spicules in the base and the medial and posterior walls of the left maxillary sinus, indicating chronic sinusitis maxillaris.

Grave 72

Bones present:
No bones recovered

Grave 76

Bones present:
No bones recovered

Grave 77

Bones present:
Cranium, teeth, ribs

Fig 100: Grave 77.

Preservation: Bad
The bones are fragile and fragmented. There are a lot of small unidentified fragments, and parts of diaphyses of unidentified long bones.
Age: Infant, neonatal
The age estimation is based on the formation of the deciduous dentition and the size of the bones.
Sex: N/A
No estimation of sex has been performed.
Stature: N/A
No estimation of stature has been performed.
Dental status:
Teeth present: 51, 54, 55, 61, 62, 64, 65, 74, 81, 82, 84, 85
Teeth not in occlusion: 51, 54, 55, 61, 62, 64, 65, 74, 81, 82, 84, 85
All present teeth are still in the crypt.
Pathologies and general observations:
No pathologies observed.

Grave 78

Bones present:
Cervical vertebrae, sacrum, ribs, humerus, radius, ulna, metacarpal bones, phalanges (hand), hip bone, femur
Preservation: Medium
The skeleton is medium well preserved. The bones are a bit cracked and damaged, but otherwise in good condition. According to the photos from the excavation a cranium was present, but it has not been avail-

Fig 101: Grave 78.

able for analysis.

Age: Adult

All observable epiphyses were fused, but no bones suitable for a more precise estimation of age were available.

Sex: N/A

No bones suitable for sex estimation were available.

Stature: c. 162 cm (S)

The only long bone complete enough for maximum length measurement is the right radius. The maximum length is 229 mm, indicating a stature of approximately 162.2 cm (S).

Dental status:

No teeth present

Pathologies and general observations:

No pathologies observed

Grave 79

Bones present:

Cranium, teeth, cervical vertebrae, thoracic vertebrae, lumbar vertebrae, ribs, clavicle, scapula, humerus, radius, ulna, metacarpal bones, phalanges (hand), tarsal bones, metatarsal bones

Preservation: Good

The skeleton is relatively well preserved. The cranial vault is preserved, but the viscerocranium is partly missing. Ribs and vertebrae are fragmented.

Age: Young-middle adult, c. 25-45 years

The age estimation is based on the closure of cranial sutures and dental wear.

Sex: Male?

The estimation of sex is based on the morphology of the cranium (male?) and metric traits of the humerus (inconclusive).

Stature: c. 170 cm (TG), 167 cm (S)

The femora were not complete, and the estimation of stature is based on the bones of the left arm. The maximum length of the humerus is 319 mm, indicating a stature of approximately 170.3 cm (TG) or 166.5 cm (S), and the maximum length of the ulna is 257 mm, indicating a stature of approximately 172.2 cm (TG) or 167.5 cm (S).

Fig 102: Grave 79.

Fig 103: Grave 79, mandible, with periodontitis.

Dental status:
Periodontitis
Teeth present: 12, 13, 14, 15, 16, 17, 18, 31, 32, 33, 34, 35, 36, 37, 38, 41, 42, 43, 44, 45, 46, 47, 48
Post mortem lost tooth: 11
No left maxilla present.
Dental wear: Medium (molars 17-35 years)
Periodontitis:
There is a reduction of alveolar bone, and the roots of the teeth are exposed. The calculus on the first molar in the maxilla and the molars of the mandible continues down the roots.

Pathologies and general observations:
Sinusitis: Right maxilla
There are small spicules of new bone on the anterior wall of the right maxillary sinus, indicating chronic maxillary sinusitis.

Non metric traits:
Torus mandibularis (left, moderate), lambdoid ossicles (right and left)

Extra bones:
Human: Two complete right clavicles are preserved, and it is unknown which one belongs to the main burial. There is also an additional third molar of the right mandible (48) present.

Grave 81

Bones present:
Cranium, teeth, cervical vertebrae, thoracic vertebrae, lumbar vertebrae, sacrum, ribs, humerus, radius, ulna, hip bone, femur, tibia, fibula

Preservation: Poor
The skeleton is poorly preserved. The right side of the cranium and mandible are fairly well preserved, while the left side is more damaged. The bones are generally very fragile, paper like and easily fall apart. The long bones are flattened, and most of the epiphyses are missing.

Age: Young adult, c. 20-40 years
The estimation of age is based on the fusion of cranial sutures and the dental wear.

Sex: Female
The estimation of sex is based on the morphology of the cranium (female) and hip bone (female).

Stature: N/A
No complete long bones suitable for measurements and stature estimation were available.

Dental status:
Congenitally absent teeth, remaining deciduous tooth
Teeth present: 11, 12, 13, 14, 15, 16, 17, 18, 21, 22, 23, 24, 25, 26, 27, 28, 31, 32, 33, 34, 35, 36, 37, 41, 42, 43, 44, 45, 46, 63
Teeth not in occlusion: 23
The canine of the left maxilla has no occlusal wear, and is not quite on level with the surrounding teeth.
Congenitally absent teeth: 38, 48

Fig 104: Grave 81.

Remaining deciduous tooth: 63
The deciduous canine of the left maxilla is heavily worn, and located on the buccal-distal side of the permanent canine. The root is slightly hollowed by the permanent tooth. There are also roots in the alveolar bone that probably are the remains of the deciduous second molar of the right maxilla.
Dental wear: Limited (molars 17-25 years)

Pathologies and general observations:

Periostitis/osteomyelitis, trauma, cranial lesions (syphilis?)

Fig 105: Grave 81, mandible, with swollen base.

Periostitis/osteomyelitis: Mandible, left humerus, left radius, right ulna, right and left femur, right and left tibia, right fibula

The mandible and the long bones are swollen and fragile. The cortex is very thin, and the medullar cavity is more or less filled with woven bone. The bones are however poorly preserved, and the impact

Fig 106: Grave 81, left humerus, with swollen distal diaphysis.

of taphonomy makes the pathological changes harder to distinguish. The vertebrae, ribs and hip bone do not appear to be affected.

The base of the right mandible is swollen, particularly the buccal side by the molars. The left side of the bone is very fragile and fragmented, but probably had similar changes.

The left humerus is swollen on the lateral side, along c. 100 mm of the distal diaphysis. The surface is smooth, and a bit cracked.

The left radius has porosity and new bone formation along the interosseous margin and along c. 40 of the posterior side of the distal diaphysis.

The proximal part of the diaphysis of the right ulna is swollen.

The right femur is swollen along c. 120 mm of the anterior side of the distal diaphysis, with a layer of new bone. The left femur is less swollen than the right one in the distal diaphysis. There is also some surface porosity at the posterior side.

The right tibia has new bone formations along the anterior side of the entire diaphysis. The new bone is smooth, with a swollen appearance, and porosity and stirations at the margins. The left tibia is poorly preserved, but preserved parts of the surface exhibit porosity and striations.

Fig 108: Grave 81, cranium, with cut marks in the frontal bone.

Fig 107: Grave 81, left femur, at the break the thin cortex and bone filled medullar cavity is visible.

Fig 109: Grave 81, right parietal bone, with curved mark.

The right fibula is very poorly preserved, but has a swollen diaphysis, with a thin cortex and a lot of woven bone in the medullar cavity.
Trauma: Cranium
There are cut marks in the right side of the frontal bone. A double cut mark is directed diagonally anterior/laterally-posterior/medially. The two cuts are parallel, almost on top of each other, with the lateral cut slightly shallower and shorter (c. 22 mm) than the medial one (c. 32 mm). The cuts are c. 6 mm wide together, and c. 1.5 mm deep, with a wide, shallow V-shaped profile. Possibly two cuts were aimed at the same site, or the cut slipped and made two parallel marks. Just above the right orbit there are two parallel cuts, c. 10 mm apart and almost sagittal in direction. These marks are less sharp and

Fig 110: Grave 81, cranium, with lesions at the frontal bone.

have a rounded U-shaped profile and somewhat irregular shaped profiles. The medial cut is c. 22 mm long and the lateral cut is c. 12 mm long. Both are about 2.5 mm wide and c. 1 mm deep. It is uncertain if these are cut marks or some other damage to the bone.
There is also a mark at the tuber of the right parietal

Fig 111: Grave 81, right maxilla, with bone spicules in the nasal cavity.

bone. This mark has a curved shape, c. 30 mm long, and c. 1 mm deep and wide, with a U-shaped profile. It is probably not a cut.
Cranial lesions: Frontal bone
There is an area of surface porosity above the left orbit, and sharp edged oval depression, c. 20 mm long. The surface of the cranium is poorly preserved and the extent and nature of the bone changes is only partly observable. The wide spread pathological changes indicates a systemic disease. The cranial lesions suggest this could be syphilis. The poor preservation of the bone surface of the cranial vault makes the diagnosis uncertain.
Other changes:
There are new bone spicules in the floor of the nasal cavity, affecting the palatine process of the right and left maxilla. This indicates chronic rhinitis.
Non metric traits:
Lambdoid ossicle (left)

Grave 82

Bones present:
Cranium, teeth, ribs, femur

Fig 112: Grave 82.

Preservation: Bad
The bones are fragile and fragmented. There are many small unidentified fragments.
Age: Infant, neonatal
The age estimation is based on the formation of the deciduous dentition and the size of the bones.
Sex: N/A
No estimation of sex has been performed.
Stature: N/A
No estimation of stature has been performed.

Dental status:
Tooth present: 54
Tooth not in occlusion: 54
The deciduous molar is still in the crypt, and about half the crown is formed.
Pathologies and general observations:
No pathologies observed.

Grave 86

Bones present:
Cranium, teeth, cervical vertebrae, thoracic vertebrae, lumbar vertebrae, sacrum, ribs, clavicle, scapula, humerus, metacarpal bones, phalanges (hand), hip bone, femur, tibia, fibula, tarsal bones, metatarsal bones, phalanges (foot)

Fig 113: Grave 86.

Preservation: Poor/medium
The skeleton is poorly to medium well preserved. The cranium, mandible and teeth are well preserved. The vertebrae are a bit damaged, but arches and bodies of all vertebrae are present. The long bones are partly damaged, and the bone surface not always preserved. Fragments of the scapula and hip bone from the right side of the body are present. The bones of the lower arms are not present, but there are some bones of the hands. The bones of the feet are fairly well preserved, but many elements are missing.
Age: Adolescent, c. 13-15 years
The estimation of age is based on dental development and the fusion of epiphyses.

Fig 114: Grave 86, in situ, with a curved spine.

Fig 115: Grave 86, vertebras.

Sex: N/A
No estimation of sex has been performed.
Stature: N/A
No estimation of stature has been preformed.
Dental status:
Enamel hypoplasias
Teeth present: 11, 12, 13, 14, 15, 16, 17, 18, 21, 22, 23, 24, 25, 26, 27, 28, 31, 32, 33, 34, 35, 36, 37, 38, 41, 42, 43, 44, 45, 46, 47, 48
Teeth not in occlusion: 18, 28, 38, 48
The third molar of the left maxilla is visible in the crypt. The other third molars are not visible, and are possibly absent.
Enamel hypoplasias: 33
Dental wear: Minimal
Pathologies and general observations:
At the time of excavation the spine of the individual had an unusual curvature. At the present examination of the vertebrae, however, no pathological changes were observed. The curvature could have been caused by post mortem disturbance of the grave, also indicated by other bones not in anatomical position. Another possibility is that pathological changes to the vertebrae were present originally, but are not observable due to bad preservation.
Non metric traits:
Metopic suture, lambdoid ossicle (right)
Extra bones:
Human: Ribs, possibly from the main burial, c. 15 fragments. Bones from an adult: An axis, a lumbar vertebra, fragments of a vertebra, a first phalanx of the hand.
Animal: A proximal ulna (cow/horse size), a distal first phalanx (caprine), a fragment of a long bone.

Grave 89

Bones present:
Cranium, teeth, cervical vertebrae, thoracic vertebrae, lumbar vertebrae, sacrum, sternum, ribs, clavicle, scapula, humerus, radius, ulna, carpal bones, metacarpal bones, phalanges (hand), hip bone, femur, patella, tibia, fibula, tarsal bones, metatarsal bones, phalanges (foot)
Preservation: Medium
The skeleton is medium well preserved. The bones of the cranial vault are well preserved, but the vis-

Fig 116: Grave 89, mandible with missing teeth.

cerocranium is more fragmented. The ribs, scapulae and hip bone are fragmented. The long bones are present, with some damage to the joints.
Age: Middle adult, c. 30-50 years
The age estimation is based on the closure of cranial sutures, dental wear and the auricular surfaces of the left hip bone.
Sex: Male
The estimation of sex is based on the morphology of the cranium (male) and the hip bone (male) and metric traits of the femur (male).
Stature: c. 170 cm? (TG), 169 cm? (S)
The maximum length of the left femur is 452 mm, indicating a stature of approximately 170.4 cm (TG) or 168.8 cm (S). This bone was however slightly damaged, and perhaps a few mm of the original maximum length is missing.
Dental status:
Ante mortem tooth loss, congenitally absent teeth, enamel hypoplasias, periodontitis
Teeth present: 11, 12, 13, 14, 16, 17, 21, 22, 23, 24, 26, 27, 28, 31, 32, 33, 36, 37, 38, 41, 42, 43, 44, 46, 47, 48, 85
Ante mortem lost tooth: 34
Congenitally absent teeth: 18, (15, 25, 35, 45)
The second premolars can have been ante post mortem, but the fact that all four of them are missing, and the remaining deciduous molar suggests that they are congenitally absent.
Enamel hypoplasias: 23, 33
Dental wear: Medium (molars 17-35 years)
Periodontitis:
In the left mandible there is a reduction of alveolar bone around the alveoli of the first and second molar. The cavities of the bone suggest an inflammation, and that the molars were mainly hold in place by soft tissue.

Fig 117: Grave 89.

Fig 118: Grave 89, cranium, with an uneven surface.

Pathologies and general observations:
Osteoarthritis: Atlas-axis
The axis has pitting and new bone formations around the joint of the dens. There is also post mortem damage to the bone.
Other observations:
The cranium has an uneven surface, with shallow depressions and bumps all over the neurocranium.
Non metric traits:
Lambdoid ossicle (left), parietal notch bone (left).

Grave 91

Bones present:
Cranium, teeth, cervical vertebrae, thoracic verte-

Fig 119: Grave 91.

brae, lumbar vertebrae, sacrum, sternum, ribs, clavicle, scapula, humerus, radius, ulna, carpal bones, metacarpal bones, phalanges (hand), hip bone, femur, patella, tibia, fibula, tarsal bones, metatarsal bones, phalanges (foot)

Preservation: Very good

The skeleton is very well preserved and almost complete. All present bones are very well preserved. There is some minor damage to the scapula, hip bone and the vertebral bodies of the lumbar vertebrae and sacrum.

Age: Young adult, c. 20-25 years

The indications of age are somewhat contradictory. The closure of cranial sutures and dental wear indicates an age of c. 20-40 years, while the appearance of the auricular surfaces indicates an age of 30-40 years. The bodies of the sacrum are however not fused yet, which usually happens before the age of 20.

Sex: Male

The estimation of sex is based on the morphology of the cranium (female?) and hip bone (male), and metric traits of the femur (male) and the humerus (inconclusive).

Fig 120: Grave 91, right maxilla, with periodontitis and cervical caries (here visible in 13 and 14)

Stature: c. 171 cm (TG), 169 cm (S)

The maximum length of the left femur is 454 mm, indicating a stature of approximately 170.9 cm (TG) or 169.4 cm (S). Stature estimations based on the measurements of other long bones range from 158.7 cm (TG) or 151.2 cm (S) (right fibula) to 178.7 cm (TG) or 180.2 cm (S) (right humerus).

Dental status:

Cervical caries, periodontitis

Teeth present: 11, 12, 13, 14, 15, 16, 17, 18, 21, 22, 23, 24, 25, 26, 27, 28, 31, 32, 33, 34, 35, 36, 37, 38, 41, 42, 43, 44, 45, 46, 47, 48

Dental wear: Limited-medium (molars 17-35 years)

The central incisors of the maxilla are slightly rotated meso-lingually, and the lateral incisors are rotated disto-lingually. The lateral incisor of the right maxilla is rotated almost 90 degrees.

Fig 121: Grave 91, cranium, with a healed lesion at glabella.

Cervical caries: 11, 12, 13, 14, 21, 22, 23, 24, 25, 26, 31, 32, 33, 34, 35, 41, 42, 43, 44

There is erosion of the cervical area in many of the

teeth, probably due to cervical caries. No large cavities are present.
Periodontitis:
There is a reduction of alveolar bone, the roots of the teeth are exposed, and there are calculus deposits continuing down the roots. Particularly the molars are affected.

Fig 122: Grave 91, cranium, with bumps and depressions at the frontal bone.

Pathologies and general observations:
Periostitis, ankylos, cranial lesions (syphilis?), asymmetric bone length
Periostitis: Right rib
There is porous new bone formation along 40 mm of the inferior margin at the angle of the tenth right rib.
Ankylos: Second and third phalanges of the foot
A second phalanx of the foot is fused with a third phalanx.
Cranial lesion: Frontal bone, right and left parietal bone
The frontal bone has an uneven surface. There is a rather flat bump above the left orbit, c. 25 mm in diameter. The superior margin of the left orbit is flattened along c. 15 mm. At the glabella there is a faint line, possibly a healed lesion. There are two shallow depressions by the coronal suture, c. 8-9 mm in diameter. There are two shallow depressions in the right parietal bone, and the anterior part of the bone has an uneven surface. The left parietal bone has one deeper rounded depression by the sagittal suture, c. 12 mm in diameter, and two similar depressions, c. 6 mm in diameter, on the posterior/lateral part. These cranial lesions are possibly caused by syphilis, but they have not the typical appearance of caries sicca.
Asymmetric bone length: Tibia, fibula
The right tibia is 11 mm shorter than the left tibia and the right fibula is 17 mm shorter than the left fibula. The bones of the right side are thicker than those of the left side. The entire diaphysis of the right tibia is thickened, while the only c. 70 mm of the proximal diaphysis of the right fibula is affected.
Other changes:
There are bilateral costo-clavicular joints.
There is a hole through the acromion of the left scapula. On the superior side there is an oval, rounded pit, c. 11x17 mm in size, with a c. 4x8 mm hole through the bone. There is also a pit of similar size

Fig 123: Grave 91, left scapula, with a hole through the acromion.

Fig 124: Grave 91, right femur, with a depression at the distal diaphysis.

and appearance at the inferior side of the acromion. There is a shallow depression on the lateral side of the distal diaphysis of the right femur. The depression is oval, and c. 10x20 mm in size. The sides are smooth, indicating a healed injury, possibly a fracture or a soft tissue trauma. Another possibility is a healed syphilitic lesion.

Non metric traits:

Lambdoid ossicle (left)

Grave 93

Bones present:

Cranium, cervical vertebrae, thoracic vertebrae, ribs, clavicle, humerus, radius, ulna, femur, tibia, fibula

Preservation: Medium

The skeleton is medium well preserved. The cranium is fragmented and the pars pertosa of the temporal bones are best preserved. The mandible and teeth are not present. There are vertebral arches, but no bodies, present. The long bones and some ribs are present.

Age: Infant, c. 0-6 months

The estimation of age is based on the development of the temporal bone and the measurement of bone size.

Sex: N/A

No estimation of sex has been performed.

Stature: N/A

No estimation of stature has been preformed.

Dental status:

No teeth present

Pathologies and general observations:

Periostitis: Cranium

There are areas of pale porous new bone on the external surface of the cranial vault. Due to the fragmentation of the cranium the extent of the bone changes is unknown. At least three patches of c. 20x20-25 mm are present.

Grave 94

Bones present:

Cranium, teeth, ribs, clavicle, scapula, humerus, ra-

Fig 125: Grave 93.

Fig 126: Grave 94.

dius, ulna, hip bone, femur, tibia
Preservation: Poor
The skeleton is poorly preserved. The cranium is fragmented, with the fragments of the cranial vault in good condition, while the base of the cranium is very fragile. There are also fragments of ribs, scapula, hip bone and long bones.
Age: Infant, neonatal
The estimation of age is based on dental development and bone size.
Sex: N/A
No estimation of sex has been performed.
Stature: N/A
No estimation of stature has been preformed.
Dental status:
Teeth present:
Three joined tips of cusps of a deciduous molar are present.
Pathologies and general observations:
No pathologies observed.

Grave 101

Bones present:
Teeth
Preservation: Very poor
The skeleton is very poorly preserved, and only the teeth were recovered. These are in good condition, but the roots are more or less fragmented.
Age: Adult
The age estimation is based on dental wear. No third molars are present, but wear of the first and second molars indicate an age of c. 17-35 years.
Sex: N/A
No bones suitable for sex estimation were available.
Stature: N/A
No complete long bones suitable for measurements and stature estimation were available.
Dental status:
Teeth present: 11, 12, 13, 14, 16, 17, 21, 22, 23, 24, 26, 27, 31, 32, 33, 34, 36, 37, 41, 42, 43, 44, 45, 46, 47
Only fragments of the alveolar bone are preserved. The second molars of the maxilla and mandible have no wear facets on their distal sides, and the sides are covered in calculus, suggesting that the third molars either were not present, or at least not in occlusion.
Dental wear: Limited-medium (molars 17-35 years).
Pathologies and general observations:
No pathologies observed.

Fig 127: Grave 101.

Grave 107

Bones present:
Sacrum, humerus, radius, ulna, carpal bones, metacarpal bones, phalanges (hand), hip bone, femur, patella

Fig 128: Grave 107.

Preservation: Bad
The skeleton is poorly preserved. The hip bone is very fragile and fragmented and only the diaphyses of the long bones remain.
Age: Adult
All observable epiphyses were fused, but no bones suitable for a more precise estimation of age were available.
Sex: N/A
No bones suitable for sex estimation were available.
Stature: N/A
No complete long bones suitable for measurements and stature estimation were available.
Pathologies and general observations:
No pathologies observed.

Fig 129: Grave 108.

Grave 108

Bones present:
Cranium, teeth, cervical vertebrae, thoracic vertebrae, lumbar vertebrae, sacrum, sternum, ribs, clavicle, scapula, humerus, radius, ulna, carpal bones, metacarpal bones, phalanges (hand), hip bone, femur, patella, tibia, fibula, tarsal bones, metatarsal bones, phalanges (foot)
Preservation: Medium
The skeleton is medium well preserved. The bones are a bit fragile and cracked, and the smaller bones are paper like and a bit warped. The cranium is well preserved, but a bit cracked and the surface is flaking. The cervical vertebrae are well preserved, while the lower vertebrae are represented by the arches and some fragments of bodies. The long bones are a bit cracked, and there is damage to the joints. There are bronze fragments at the sternum and the seventh cervical vertebra. The radii and ulnae are a bit green in the distal part of the diaphyses.
Age: Young adult, c. 25-40 years
The estimation of age is based on the closure of the anterior-lateral cranial sutures, dental wear, and the appearance of the auricular surface of the right and left hip bone.
Sex: Female
The estimation of sex is based on the morphology of the cranium (female?) and hip bone (female).
Stature: c. 162 cm (TG), 164 cm (S)
The femora are not complete, and the estimation of stature is based on the right tibia. The maximum length of the right tibia is 347 mm, indicating a stature of approximately 162.2 cm (TG) or 163.7 cm (S). Stature estimations based on the measurements of other long bones range from 157.8 cm (TG) or 156.6 cm (S) (right fibula) to 161.1 cm (TG) or 160.2 cm (S) (right and left radius).
Dental status:
Congenitally absent teeth
Teeth present: 11, 13, 14, 15, 16, 17, 18, 21, 23, 24, 25, 26, 27, 28, 31, 32, 33, 34, 35, 36, 37, 38, 41, 42, 43, 44, 45, 46, 47, 48
Congenitally absent teeth: 12, 22
There is no room for the lateral incisors of the maxilla. In the right maxilla there is a gap between the canine and the first premolar, possibly because the canine has moved mesially.

Fig 130: Grave 108, maxilla, with lateral incisors (12, 22) congenitally absent, and torus palatinus.

Dental wear: Limited (molars 17-25 years)
Pathologies and general observations:
No pathologies observed.
Non metric traits:
Septal aperture (left), torus mandibularis (right, trace), lambdoid ossicle (left)

Grave 111

Bones present:
Cranium, teeth

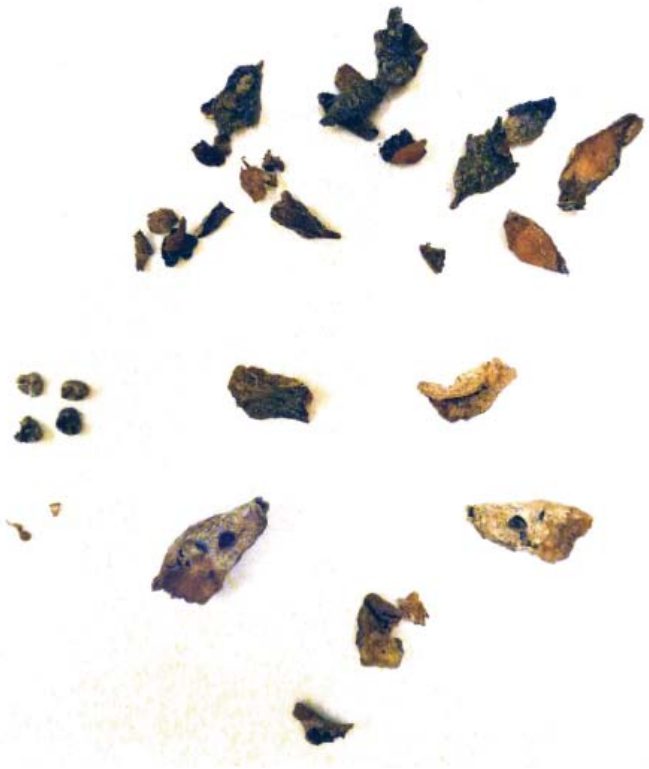

Fig 131: Grave 111.

Preservation: Very poor
The skeleton is very poorly preserved. Some cranial fragments could be identified, and the petrous parts of both temporal bones are fairly well preserved. A couple of auditory ossicles and tooth buds for deciduous teeth are also present.
Age: Infant, c. 0-6 months
The estimation of age is based on dental development, the development of the temporal bone and the closure of epiphyses.
Sex: N/A
No estimation of sex has been performed.
Stature: N/A
No estimation of stature has been preformed.
Dental status:
Teeth present: 64, 65, 74, 75
Teeth not in occlusion: 64, 65, 74, 75
Identification of 75 uncertain, as only the tips of three cusps are formed.
Pathologies and general observations:
No pathologies observed.

Grave 112

Context: The right humerus was found in the cut of grave 115.
Bones present:
Cranium, teeth, cervical vertebrae, thoracic vertebrae, lumbar vertebrae, sacrum, sternum, ribs, clavicle, scapula, humerus, radius, ulna, carpal bones, metacarpal bones, phalanges (hand), hip bone, femur, patella, tibia, fibula, tarsal bones, metatarsal bones, phalanges (foot)
Preservation: Poor
The skeleton is poorly preserved. The bones are fragile and broken. The cranium, mandible and teeth are fairly well preserved. The vertebrae, sacrum and sternum were taken as samples at the excavation. Due to their fragile state no further excavation or cleaning of them was attempted. There are also fragments of scapula, clavicle and the right hip bone present. The long bones are fragmented and deformed.
Age: Middle adult
The dental wear indicates and age of c. 17-35 years. Suture closure on cranial fragments and the appearance of fragments of the auricular surface suggests however a more advanced age.
Sex: Female?
The estimation of sex is based on the morphology of the cranium (female?) and hip bone (female?), and metric traits of the femur (male).
Stature: N/A
No long bones were complete and no maximal length could be measures. The left fibula was however almost complete, and indicates a stature around 152 cm.

Fig 132: Grave 112.

Fig 133: Grave 112, mandible with periodontitis.

Dental status:

Ante mortem tooth loss, fractured teeth, periodontitis

Teeth present: 11, 12, 13, 21, 22, 23, 24, 32, 33, 36, 37, 41, 42, 43, 44

Teeth lost ante mortem: 14, 15, 16, 17, 18, 25, 26, 27, 28, 31, 34, 35, 38, 45, 47, 48

The alveolus of the central incisor of the left mandible is present, but is resorbing. There is a wear facet on the distal side of the second molar of the left mandible, indicating that the third molar has been lost ante mortem. If the other three third molars have been lost or never were present is unknown.

Post mortem lost tooth: 46

The alveolus of the first molar of the right mandible is widened, and the roots were exposed buccaly. The tooth was probably lost post mortem, but it could also have been lost shortly before the time of death. No resorbtion of the alveolus is present.

Dental wear: Heavy (molars 17-35 years)

Particularly anterior teeth are heavily worn, while the molars are less worn (probably due to ante mortem tooth loss).

Fractured teeth: 11, 21, 22

Particularly the central incisor of the right maxilla is affected, where the distal half of the crown is missing.

Periodontitis:

There is a general reduction of alveolar bone in the maxilla and mandible, and the roots of the teeth are exposed. The alveolar bone has surface porosity, particularly in the right maxilla. The buccal side of the roots of the first and second molar of the left mandible are completely exposed, and the second molar has calculus on the distal side of the distal root.

Fig 134: Grave 112, left fibula, with new bone formations.

Pathologies and general observations:

Periostitis, osteoarthritis, vertebral osteophytosis, osteoma, sinusitis

Periostitis: Right femur?, right and left fibula

The right femur has an area of porosity, c. 8x28 mm in size, at the proximal diaphysis, on the posterior/medial side. The area is poorly preserved.

The right fibula has two areas, c. 40 mm and 15 mm in size, of porous and uneven new bone mid diaphysis. There is also some porosity and thickening of the distal diaphysis. The left fibula has a layer of porous new bone along c. 60 mm of the mid diaphysis.

Osteoarthritis: Axis, cervical vertebrae, thoracic vertebra?, left hand

Axis has osteophyte formations of up to c. 4 mm around the anterior articular surface of dens, and a narrow line of eburnation, c. 7 mm long. The right inferior joint has surface porosity and marginal lipping. Three other cervical vertebrae also have surface porosity and marginal osteophytes at the joints.

Fig 135: Grave 112, left third metacarpal bone, with signs of osteoarthritis at the distal joint.

A fragment of a joint, probably from the thoracic region, has surface porosity and marginal osteophytes. Only few joint surfaces of the ribs are preserved. The two present from the right side both have surface porosity, and one of them also has marginal osteophytes.

The third metacarpal bone of the left hand has an area of eburnation, c. 3x5 mm in size, at the lateral margin of the distal joint. There is also some surface porosity of the joint, and marginal osteophytes of up to 5.5 mm size.

Vertebral osteophytosis: Cervical vertebrae

Three bodies of cervical vertebrae have marginal osteophytes of up to 6 mm, and porosity of the superior and inferior surfaces.

Osteoma: Occipital bone

Fig 136: Grave 112, occipital bone, with button osteoma.

There is a rounded bone knob, c. 7 mm in diameter, above the external occipital protuberance, probably a button osteoma.

Sinusitis: Left maxilla

There are small bone spicules and also some pitting in the base and anterior and superior walls of the sinus of the left maxilla. This indicates chronic sinusitis maxillaris.

Non metric traits:

Torus mandibularis (left, trace)

Extra bones:

Human: The distal part of a metacarpal bone and a second phalanx of the hand.

Grave 113

Bones present:

Cranium, teeth, cervical vertebrae, thoracic vertebrae, ribs, clavicle, scapula, hip bone

Fig 137: Grave 113, mandible, with large calculus deposits.

Preservation: Medium

The skeleton is medium well preserved. The cranium is well preserved, but the vicserocranium is damaged, and the maxilla pushed backwards. The mandible and the teeth are well preserved. The cervical vertebrae are well preserved, while only fragments of arches remain of the lower vertebrae. The long bones are well preserved, with some minor damage to the joints.

Age: Middle adult, c. 35-55 years

The estimation of age is based on the closure of cranial sutures and dental wear.

Sex: Female

The estimation of sex is based on the morphology of the cranium (female) and hip bone (female), and metric traits of the humerus (female).

Stature: c. 153 cm (TG), 149 cm (S)

The femora are not complete, and the estimation of stature is based on the bones of the arms. The maximum length of the left humerus is 283 mm, indicating a stature of approximately 153.1 cm (TG) or 149.4 cm (S). Stature estimations based on the measurements of other long bones range from 150.2 cm (TG) or 151.0 cm (S) (right radius) to 156.4 cm (TG) or 155.4 cm (S) (left ulna).

Fig 138: Grave 113.

Dental status:
Ante mortem tooth loss, large calculus deposits, periodontitis
Teeth present: 12, 13, 14, 15, 16, 18, 22, 23, 25, 32, 33, 35, 37, 38, 43, 44, 47, 48
Ante mortem lost teeth: 11, 21, 24, 26, 31, 34, 36, 41, 42, 46
Post mortem lost tooth: 45
The alveolus of the second premolar of the right mandible is enlarged and connected to the mental foramen. The tooth was possibly lost ante mortem, but no resorbtion of the alveolus is present.
Dental wear: Limited-medium (molars 17-35 years)
Large calculus deposits: 13, 16, 33, 34, 37, 38
The calculus deposits form large lumps of up to c. 20 mm, completely covering some teeth, including the occlusal surface. The calculus deposits around

Fig 139: Grave 113, mandible, with periodontitis and ante mortem tooth loss.

the canine of the left mandible are also covering the space for the lateral incisor, which has been broken off by the cervix. The calculus deposits around the second molar of the left mandible are covering the space of the ante mortem lost first molar.
Periodontitis:
There is a severe reduction of alveolar bone in the maxilla and the mandible. Much of the roots of the teeth are exposed, and partly covered in calculus. The hight of the body of mandible is much reduces.
Pathologies and general observations:
Osteoarthritis, vertebral osteophytosis
Osteoarthritis: Atlas, axis, cervical vertebra
The joint between the atlas and the dens of axis has surface porosity and marginal osteophytes of up to c. 3 mm. There is also surface porosity and marginal osteophyte formation around the joints between axis and C3.
Vertebral osteophytosis: Cervical vertebrae
C3-C6 have surface porosity at the superior and infe-

Fig 140: Grave 113, atlas, with signs of osteoarthritis.

rior sides of the bodies, and marginal osteophytes of up to c. 2.5-3 mm.
Other changes:
The right humerus has a c. 2 mm bone spicule at the medial side of the distal diaphysis.
The ramus of the mandible is narrower on the left side than on the right side, and the temporal crest of the left coronoid process has an angular outline.
Non metric traits:
Lambdoid ossicle (right)

Grave 116

Bones present:
Cranium, teeth, cervical vertebrae, thoracic vertebrae, lumbar vertebrae, sacrum, sternum, ribs, clavicle, scapula, humerus, radius, ulna, carpal bones, metacarpal bones, phalanges (hand), hip bone, femur, tibia, fibula, tarsal bones, metatarsal bones, phalanges (foot)
Preservation: Poor
The skeleton is poorly preserved. The bones are paper like, cracked and fragile. The cranium is fragmented, with mainly the right side preserved. Many teeth are missing, but the present ones are well preserved. The arches of the vertebrae, and some bodies from the cervical region, are present. The long bones are fragile, cracked and crumble easily.
Age: Adolescent, c.12-15 years
The indicators of age are somewhat contradictory. The development of the root of the second molar indicates an age of c. 12 years, while the fusion of the distal epiphysis of the left distal radius indicates an age of at least 15 years.
Sex: N/A
No estimation of sex has been performed.
Stature: N/A
No estimation of stature has been preformed.
Dental status:
Congenitally absent teeth, enamel hypoplasias
Teeth present: 13, 17, 31, 32, 33, 35, 36, 37, 41, 42,

Fig 141: Grave 116.

43, 44, 45, 46, 47
Post mortem lost tooth: 34
Congenitally absent teeth: 38, 48
The alveolar bone of the left mandible is broken and it is clear that no third molar is present. The third molar of the right mandible is not visible, but it is uncertain if it is missing or in the crypt.
Enamel hypoplasias: 13, 42, 43
Dental wear: Minimal

Pathologies and general observations:

Periostitis
Periostitis: Left clavicle, right and left ribs, left humerus, right and left radius, right hip bone, right and left tibia
The left clavicle has porous pale bone at the inferior side of the entire length of the bone, most clearly seen in the sternal end.
There are areas of porous and striated pale bone at

Fig 142: Grave 116, humerus (top) and radius (bottom), with pale new bone formations.

four rib fragments from the right side, and two from the left side.
The left humerus has pale striated bone, with some imprints of vessels, along the posterior side of the diaphysis.
The right radius has pale porous bone along c. 45 mm of the anterior side of the proximal and mid diaphysis. The left radius has pale porous bone at the medial side of the distal diaphysis,
The ilium of the right hip bone has areas of pale porous bone by the acetabulum and the auricular surface.
The right tibia has pale striated bone along the lateral margin, and the anterior side of the distal diaphysis.
The left tibia has a larger area of pale striated bone, on the anterior side of the preserved part of the diaphysis, covering c.100 mm mid diaphysis.
Other changes:
There are patches of pale bone with imprints of thin vessels on the cranial vault. There are also areas of increased porosity at the right temporal bone, by the mastoid process, and the medial side of the right ramus of the mandible.

Fig 143: Grave 117.

Grave 117

Bones present:
Cranium, teeth, cervical vertebrae, thoracic vertebrae, lumbar vertebrae, ribs, clavicle, scapula, humerus, radius, ulna, hip bone, femur, tibia
Preservation: Bad/medium
The bones are fragile and fragmented, but very well preserved considering their small size. There are a lot of small unidentified fragments.
Age: Infant, neonatal
The age estimation is based on the size and development of the pars petrosa of the temporal bone and the formation of the deciduous dentition.
Sex: N/A
No estimation of sex has been performed.
Stature: N/A
No estimation of stature has been performed.
Dental status:
Teeth present: 51, 52, 61, 62, 71, 72, 74, 75, 81, 82, 84, 85
Teeth not in occlusion: 51, 52, 61, 62, 71, 72, 74, 75, 81, 82, 84, 85
All teeth present are still in the crypt.
Pathologies and general observations:
No pathologies observed.

Grave 118

Bones present:
No bones recovered

Grave 119

Bones present:
Cranium, teeth, cervical vertebrae, thoracic vertebrae, sternum, ribs, clavicle, scapula, humerus, radius, ulna, carpal bones, metacarpal bones, phalanges (hand)
Preservation: Very good
The skeleton is very well preserved. The bones are in good condition, but the surface is partly flaking off. Only the cranium and the left part of the upper body are present.
Age: Adult
The closure of cranial sutures and the dental wear indicates an age of c. 20-40 years. The ossification of the thyroid and of cartilage of the ribs by the sternum suggests a more advanced age.
Sex: Male
The estimation of sex is based on the morphology of the cranium (male?) and metric traits of the humerus (inconclusive).
Stature: c. 176 cm (TG), 176 cm (S)

Fig 144: Grave 119.

The femora are not complete, and the estimation of stature is based on the bones of the arms. The maximum length of the left humerus is 339 mm, indicating a stature of approximately 176.1 cm (TG) or 175.9 cm (S). Stature estimations based on the measurements of other long bones range from 170.4 cm (TG) or 166.7 cm (S) (left radius) to 171.8 cm (TG) or 167.0 cm (S) (left ulna).

Fig 145: Grave 119, mandible, with calculus deposits on the occlusal surface of the third molars (38, 48) and crowded incisors.

Fig 146: Grave 119, right maxilla, with periodontitis and possible periapical lesion at the first molar (16).

Dental status:

Ante mortem lost teeth, large calculus deposits, periodontitis, crowded teeth

Teeth present: 11, 12, 13, 14, 16, 21, 22, 23, 24, 25, 31, 32, 33, 34, 35, 36, 37, 38, 41, 42, 43, 44, 45, 46, 47, 48

Ante mortem lost teeth: 15, 17, 18, 26, 27, 28

The third molars of the maxilla are possibly congenitally absent, or have been lost ante mortem. There are pits in the alveolar bone, but no proper alveolus, by the first molar of the left maxilla. The tooth was probably lost not to long before time of death.

Dental wear: Limited-medium (molars 17-35 years)

Large calculus deposits: 38, 48

There is calculus on all surfaces of the third molars of the mandible, including the fissures of the occlusal surface.

Periodontitis: 16, 25

The roots of the first molar of the right maxilla and the second premolar of the left maxilla are exposed, and there are deposits of calculus on the roots of the molar. The bucco-distal root of the molar has no alveolus left. Placed in the remaining alveoli the tooth is not on leavel with the other teeth. Possibly there were periapical lesions in the widened alveoli, and the tooth was hanging from the soft tissue. There is some porosity in the anterior part of the palate, possibly related to periodontitis and the ante mortem loss of maxillary molars.

Fig 147: Grave 119, T8, with Schmorl's nodes.

Crowded teeth:

The anterior teeth of the manible are crowded, and the lateral incisor of the left mandible is located lingually of the dental arch.

Pathologies and general observations:

Osteoarthritis, Schmorl's nodes

Osteoarthritis: Cervical vertebrae, thoracic vertebrae, left ribs

There is some porosity and marginal lipping enlarging the surface of the right joint between C3 and C4. The joints between T3 to T6 also have surface porosity and marginal osteophytes of up to c. 3.5 mm. The joint surface of the tenth left rib has surface porosity and marginal osteophytes. The costal facet of T10 also has some marginal osteophytes.

Schmorl's nodes: Thoracic vertebrae

There are shallow depressions in the superior and/or inferior surfaces of the bodies of T4-T10. Most of the depression have irregular shape, and are c. 5-19 mm in size. There is also some surface micro- and macro porosity at the vertebral bodies.

Fig 148: Grave 119, sternum, with ossified cartilage.

Other changes:

The cartilage of the first and fifth left ribs has ossified at the sternum. By the manubrium there is a c. 10 mm bone formation, and by the fourth segment of the body there is a c. 16 mm bone formation.

Non metric traits:

Metopic suture, bilateral torus mandibularis (moderate), lambdoid ossicles (right and left)

Grave 120

Bones present:

Cranium, teeth, cervical vertebrae, thoracic vertebrae, lumbar vertebrae, ribs, clavicle, scapula, humerus, radius, ulna, metacarpal bones, phalanges (hand), hip bone, femur, tibia, fibula, metatarsal

Fig 149: Grave 120.

bones, phalanges (foot)
Preservation: Good
The skeleton is very well preserved.
Age: Infant, neonatal
The age estimation is based on the formation of the deciduous dentition and the size of the bones.
Sex: N/A
No estimation of sex has been performed.
Stature: N/A
No estimation of stature has been performed.
Dental status:
Teeth present: 51, 52, 54, 55, 61, 62, 64, 65, 71, 72, 73, 74, 75, 81, 82, 83, 84, 85
Teeth not in occlusion: 51, 52, 54, 55, 61, 62, 64, 65, 71, 72, 73, 74, 75, 81, 82, 83, 84, 85
All teeth present are still in the crypt.
Pathologies and general observations:
Periostitis: Cranium, ribs
There are areas of pale, porous new bone formation on several bones, most clearly seen on fragments of the cranial vault, the basilar part of the occipital bone, and rib fragments. Some of the bone formations might be related to normal skeletal growth.

Grave 121

Context: The grave 118 has been cut through the grave 121, and some of the bones found in the filling of 118 probably belong to grave 121, including a

Fig 150: Grave 121.

clavicle matching the one present in 121. There are also bones not belonging to grave 121 present in the fill.

Bones present:

Cranium, teeth, cervical vertebrae, thoracic vertebrae, lumbar vertebrae, sacrum, ribs, clavicle, scapula, humerus, radius, ulna, metacarpal bones, phalanges (hand), hip bone, femur, patella, tibia, fibula, tarsal bones, metatarsal bones, phalanges (foot)

Preservation: Medium

The skeleton is medium well preserved. The middle of the body has been cut through by grave 118. The cranium is missing, but the mandible and many of the teeth are present. The first two cervical vertebrae, the left hand and the lower legs and feet are fairly well preserved, and not disturbed by the later grave.

Age: Middle-old adult, c. 40+ years

The estimation of age is based on dental wear.

Sex: Male?

The estimation of sex is based on the morphology of the mandible (inconclusive) and hip bone (male), and metric traits of the femur (inconclusive) and the humerus (inconclusive).

Stature: c. 165 cm (TG), 161 cm (S)

The only long bone complete enough for maximum

Fig 151: Grave 121, right tibia.

length measurement is the left radius. The maximum length is 225 mm, indicating a stature of approximately 164.7 cm (TG) or 160.6 cm (S).

Dental status:

Congenitally absent tooth

Teeth present: 11, 17, 25, 31, 33, 34, 35, 36, 37, 38, 41, 42, 43, 44, 45, 46, 47

Tooth not in occlusion: 33

Only the apex of the canine of the left mandible was above the alveolar bone. The central incisor was probably tilting distally, over the canine. The lateral incisor of the left mandible is missing, and there seem to be no alveolus for it. It has possibly been lost ante mortem or is congenitally absent, but there is also post mortem damage to the area.

Congenitally absent tooth: 48

Dental wear: Heavy (molars 33-45 years)

The third molar of the left mandible has less occlusal wear than the other teeth, indicating that the third molar of the left maxilla was possibly congenitally absent.

Pathologies and general observations:

Periostitis, osteoarthritis, ankylos, osteochondritis dissecans

Periostitis: Right and left tibia, right fibula, right and left tarsal bones

The right and left tibia have striations along the medial side of the diaphyses. Particularly the left tibia is affected. The right fibula also have striations along c. 65 mm od the diaphysis, and is a bit swollen mid diaphysis.

In the right foot there is porous new bone at the dorsal side of the cuboid bone, navicular bone, the intermediate and lateral cuneiforme bones, and the

Fig 152: Grave 119, right and left humerus, distal joint, with signs of osteoarthritis in the left elbow.

proximal ends of the metacarpal bones II-V. Similar, changes are present in the left foot, also affecting the medial cunieforme bone.

Osteoarthritis: Thoracic vertebrae, lumbar vertebrae, left elbow

The thoracic vertebrae are fragmented. Of 28 observable joint surfaces five exhibit both surface porosity and marginal osteophytes. The L3 and L4 also have surface porosity and small marginal osteophytes of c. 1 mm size at the joints.

Fig 153: Grave 121, left radius, proximal joint, with signs of osteoarthritis.

Fig 154: Grave 121, right and left femur, with osteochondritis dissecans at the lateral condyles .

The left humerus has marginal osteophytes of up to 4.5 mm size around the distal joint. There is surface porosity at the trochela and particularly on the capitulum. The olecranon fossa is narrow, compared to the right side. The proximal joint of the left radius is enlarged and is tilted toward the ulna. There are surface porosity and subchondral cysts at the joint.
Ankylos: Second and third phalanges of the foot
A second phalanx of the foot is fused with a third phalanx.
Osteochondritis dissecans: Right and left femur
The right and the left femur have pits, c. 8x8-10 mm in size, at the lateral condyles of the distal joints. The pits are shallow, with some porosity at the bottom. The osteochondritis dissecans is in a late, cicatrisation, phase, where new bone is beginning to cover the surface of the crater.

Fig 155: Grave 121, left hip bone, ischi.

Other changes:
There are two pits, c. 6.5 mm in size, with rounded margins, at the anterior side of the ischial tuberosity of the left hip bone.

Grave 122

Bones present:
Cranium, teeth, phalanges (foot)

Fig 156: Grave 122.

Preservation: Poor/medium
The skeleton is poorly to medium well preserved. The cranium is fragmented, with much of the viscerocranium missing, and the surface poorly preserved. The teeth are well preserved. There are also some fragments of long bones present, and a second phalanx of the foot.
Age: Adult
The estimation of age is based on dental development and wear.
Sex: Indeterminate sex
The estimation of sex is based on the morphology of

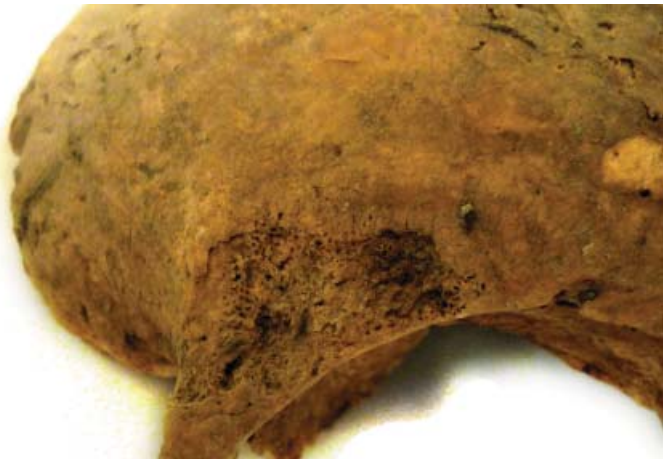

Fig 157: Grave 122, frontal bone, with lesion by the right orbit.

Fig 158: Grave 122, frontal bone, with lesion at glabella.

the cranium (female?). Few characters are observable, due to pathological changes in the orbital area.

Stature: N/A

No complete long bones suitable for measurements and stature estimation were available.

Dental status:

Teeth present: 11, 12, 13, 14, 15, 16, 17, 18, 21, 22, 23, 24, 25, 26, 27, 28, 31, 32, 33, 34, 35, 36, 37, 38, 41, 42, 43, 44, 45, 46, 47, 48

Dental wear: Limited (molars 17-25 years)

Pathologies and general observations:

Cranial lesions (syphilis?)

Cranial lesions: Frontal bone, mandible

The frontal bone has an uneven and pitted external surface. Above the lateral side of the right orbit there is a pit with uneven sides, c. 10x18.5 mm in size. The edges are sharp and the bottom is pitted. There is a similar pit, c. 12x18 mm in size, at glabella. There are shallow depressions with porosity at an area of c. 70x70 mm at the frontal bone, but most of these changes are possibly caused by post mortem damage.

The right mandible is swollen and has an uneven, porous surface, on the lateral side and base. The left mandible is also swollen and porous, with a pit, c. 3.5x7.5 mm in size, at the inferior/lateral side. Another pit by the mental foramen is possibly a later damage. The cranial lesions are possibly caused by syphilis, but it is uncertain, due to the poor preservation of the bone surface.

Non metric traits:

Lambdoid ossicles (right and left)

Fig 159: Grave 122, mandib le, with lesions.

Grave 166

Bones present:

Cranium, teeth, cervical vertebrae, ribs, scapula, humerus, radius, ulna, femur, tibia

Fig 160: Grave 166.

Preservation: Bad
The skeleton is poorly preserved. Many cranial elements are present, but fragmented. The teeth are in good condition. The postcranial bones were identified during excavation, but they are very fragmented.
Age: Infant, c. 0,5-1 years
The age estimation is based on the formation of the deciduous dentition.
Sex: N/A
No estimation of sex has been performed.
Stature: N/A
No estimation of stature has been performed.
Dental status:
Teeth present: 11, 16, 21, 31, 32, 36, 41, 42, 46, 51, 52, 53, 54, 55, 61, 62, 63, 64, 65, 71, 72, 73, 74, 75, 81, 82, 83, 84, 85
Teeth not in occlusion: 11, 16, 21, 31, 32, 36, 41, 42, 46, 51, 52, 53, 54, 55, 61, 62, 63, 64, 65, 71, 72, 73, 74, 75, 81, 82, 83, 84, 85
The permanent teeth and deciduous canines and molars are still in the crypt. There is no preserved alveolar bone and no visible wear facets on the anterior deciduous teeth. It is uncertain if they are in occlusion.
Pathologies and general observations:
No pathologies observed.

Grave 172

Bones present:
Cranium, teeth, cervical vertebrae, thoracic vertebrae, lumbar vertebrae, sacrum, ribs, clavicle, scapula, humerus, radius, ulna, carpal bones, metacarpal bones, phalanges (hand), hip bone, femur, tibia, fibula, tarsal bones, metatarsal bones, phalanges (foot)
Preservation: Medium
The skeleton is medium well preserved. The scapula, ribs and hip bone are fragmented. The atlas, axis and two additional cervical vertebrae are well preserved, the lower vertebrae are fragmented. The diaphyses of the long bones are preserved, but most of the joints are damaged. Most of the cranium is present, but it has been slightly deformed in the ground and there is some damage to the viscerocranium.
Age: Middle adult
The age estimation is based on the closure of cranial sutures and dental wear. A partly preserved auricular surface supports the estimation as middle adult.
Sex: male?
The estimation of sex is based on the morphology of the cranium (inconclusive) and the hip bone (inconclusive) and metric traits of the femur (male).
Stature: c. 163 cm (TG), 159 cm (S)
The only long bone available for maximum length measurement is the left radius. It is broken but complete. The maximum length is 221 mm, indicating a stature of approximately 163.2 cm (TG) or 159.0 cm (S).
Dental status:
Ante mortem tooth loss, congenitally absent teeth, periodontitis, periapical lesions
Teeth present: 13, 14, 15, 16, 17, 26, 27, 31, 32, 33, 34, 35, 36, 37, 41, 47
Ante mortem lost teeth: 11, 12, 21, 22, 23, 24, 25, 44, 45, 46
Post mortem lost teeth: 42, 43
Congenitally absent teeth: 18, 28, 38, 48
Dental wear: Heavy (molars 33-45+ years)
Periodontitis:

Fig 161: Grave 172.

Fig 162: Grave 172, mandible, with heavy occlusal wear, periodontitis and a periapical lesion.

There is a reduction of alveolar bone, and the roots of the teeth are exposed.
Periapical lesions: 26, 36
The teeth are heavily worn, in particular the first molars on the left side, where the entire crown has been worn down. In the maxilla the molar is leaning lingually, the buccal rotes are exposed, and there is a periapical lesion around the lingual root, opening to the buccal side of the alveolar bone. There is an opening to the pulp chamber in the occlusal surface, probably causing an inflammation, and bone destruction at the root apex. In the mandible two separate roots are all that remains of the first molar. There is a large periapical lesion, extending around both roots of the first molar, and also the root of the second premolar. It opens to the buccal side, but also extends into the lower part of the mandible.

Pathologies and general observations:
Osteoarthritis, calcification, sinusitis
Osteoarthritis: Cervical vertebrae, thoracic vertebrae

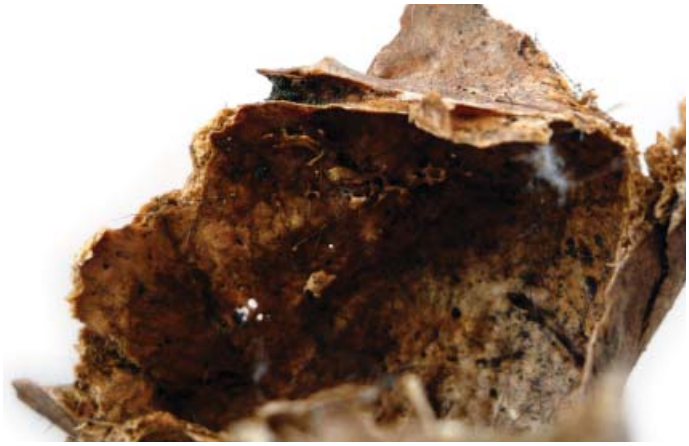

Fig 163: Grave 172, left maxilla, with bone spicules in the sinus cavity.

In the cervical vertebrae there is pitting of the joint surfaces and marginal osteophyte formations. Two of the thoracic vertebrae have pitting of the joint surfaces and marginal osteophyte formations.
Calcification: Small calcified fragments, up to c. 20 mm in size, were recovered from the lower ribcage on the right side.
Sinusitis: Left maxilla
There are small spicules of new bone in the left maxillary sinus, indicating chronic maxillary sinusitis. This is possibly related to the bad oral health, but no oro-antral fistula is present to support that.
Other observations:
In both feet two of the first phalanges (probably from the third and fourth digit) have small joints between them.

Grave 178

Bones present:
Cranium
Preservation: Bad
Only a few cranial fragments are present. A fragment of pertrous part of the temporal bone is the only fragment identified.
Age: Infant, neonatal
The age estimation is based on the size of the bones.
Sex: N/A
No estimation of sex has been performed.
Stature: N/A
No estimation of stature has been performed.

Fig 164: Grave 178.

Pathologies and general observations:
No pathologies observed.

Grave 186

Bones present:
Cranium, teeth, ribs, humerus, radius, femur, tibia, fibula
Preservation: Bad

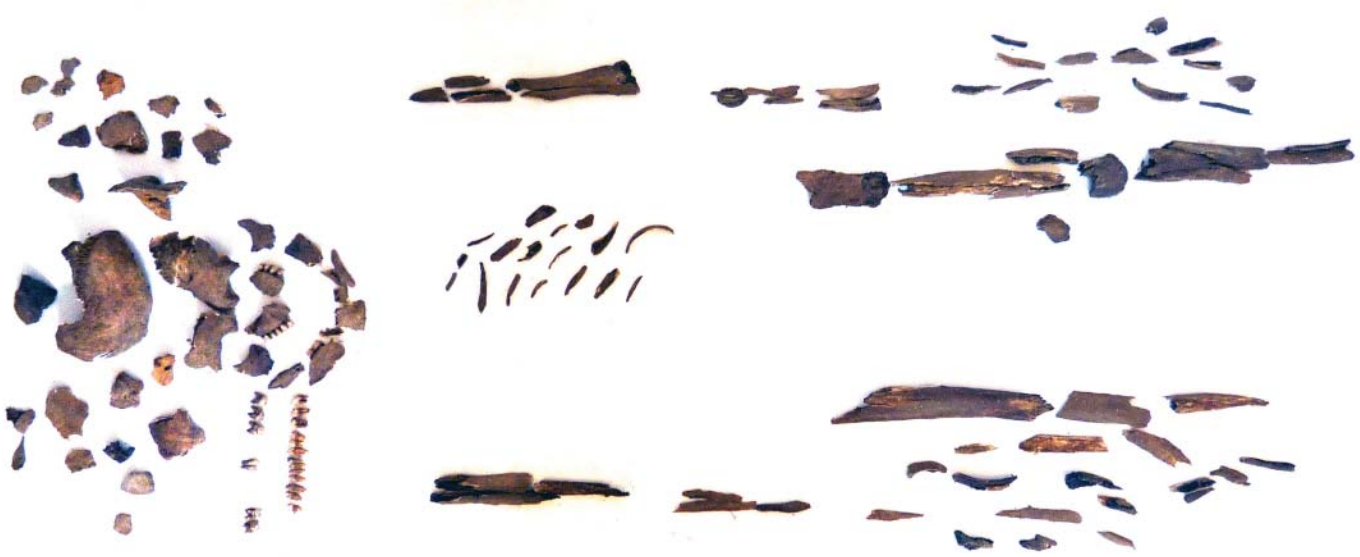

Fig 165: Grave 186.

The skeleton is poorly preserved. The cranial fragments and teeth are in relatively good condition. Only the diaphyses of the some of the long bones are preserved, but in a fragmented state. The bones of the legs are a bit moist with white patches of mould.
Estimation of age: Middle adult
The cranium is too fragmented to base the age estimation on the closure of sutures. The present sutures are in an early to medium stage of closure. The dental wear is uneven, and gives contradictory estimations of age, ranging from 17-45 years of age.
Estimation of sex: Male?
The estimation of sex is based on the morphology of the cranium (male?).
Stature: N/A
No complete long bones suitable for measurements and stature estimation were available.
Dental status:
Large calculus deposits, periodontitis,
Teeth present: 11, 12, 13, 14, 15, 16, 17, 18, 21, 22, 23, 24, 25, 26, 27, 28, 31, 32, 33, 34, 35, 36, 37, 38, 41, 42, 43, 44, 45, 46, 47
Post mortem lost tooth: 48
Dental wear: Uneven (molars 17-45 years)
Large calculus deposits: 18
Periodontitis:
Supragingival calculus extending down the roots of some of the molars indicates root exposure and periodontitis. Where the alveolar bone is still present it is not severe.
Pathologies and general observations:
No pathologies observed.

Grave 187

Bones present:
Cranium, teeth, cervical vertebrae, lumbar vertebrae, ribs, clavicle, scapula, humerus, radius, ulna, metacarpal bones, phalanges (hand), hip bone, femur, tibia, fibula, metatarsal bones
Preservation: Bad

Fig 166: Grave 187.

Fig 167: Grave 187, mandible, with misaligned healed trauma and ante mortem lost anterior teeth.

The skeleton is poorly preserved. The cranium is cracked and has damage to the viscerocranium. The mandible and teeth are well preserved. The first three cervical vertebrae are well preserved. Only fragments remain of the lower vertebrae. The diaphyses of the long bones are present, but not the joints.

Age: Adult

The cranium is too fragmented to base the age estimation on the closure of sutures. The observable sutures are completely open. The dental wear indicates an age of 17-35 years.

Sex: Female?

The estimation of sex is based on the morphology of the cranium (female?).

Stature: N/A

No complete long bones suitable for measurements and stature estimation were available.

Dental status:

Ante mortem tooth loss, large calculus deposits, periodontitis

Teeth present: 12, 15, 16, 17, 18, 25, 26, 27, 28, 34, 36, 37, 38, 44, 45, 46, 47, 48

Ante mortem lost teeth: 31, 32, 33, 35, 41, 42, 43

The anterior teeth of the mandible were possibly lost due to trauma to the mandible.

Dental wear: Medium (molars 17-35 years)

Large calculus deposits: 26, 27, 28, 34, 36, 37, 38

There are large deposits of calculus, particularly on the left side, where even the occlusal surface of the second and third molar of the maxilla, and the first and second molar of the mandible are covered.

Periodontitis:

There is a reduction of alveolar bone in the preserved part of the maxilla. In the palate and the lingual side of the alveolar process there are bone spicules and surface porosity.

Pathologies and general observations:

Periostitis, trauma, sinusitis

Periostitis: Frontal bone?, left humerus

The frontal bone has porous new bone formations at glabella. The bone surface is however poorly preserved.

On the distal part of the diaphysis of the left humerus there is new bone formation, covering c. 75 mm of the posterior side. There is some post mortem damage to the bone.

Trauma: Mandible

The anterior part of the mandible shows signs of a healed injury. It is very broad and had an uneven outline and the appearance of being cut off, or not properly aligned after a fracture. Possibly the anterior teeth of the mandible were lost in this injury. The massive calculus deposits on the left side of the dentition, indicating this side was not used for mastication, could be a sign of a permanent disability, possibly partial paralyses. As the anterior part of the

Fig 168: Grave 187, right maxilla, with bone spicules in the sinus cavity.

maxilla is not preserved it is unknown how the upper jaw was involved in the injury.
Sinusitis: Right and left maxilla
There are small spicules of new bone on the posterior walls of both maxillary sinuses, indicating bilateral chronic maxillary sinusitis.
Non metric traits:
Lambdoid ossicles (right and left)

Grave 189

Bones present:
Cranium, teeth, cervical vertebrae, thoracic vertebrae, ribs, clavicle, scapula, humerus, radius, ulna, carpal bones, metacarpal bones, phalanges (hand), femur, tibia, fibula, metatarsal bones
Preservation: Bad
The skeleton is poorly preserved. The cranium has been compressed. It is fragmented and the viscerocranium is damaged. The teeth are well preserved. The scapulae and vertebrae are fragmented. The ribs are unexpectedly well preserved in comparison, but not complete. The diaphyses of the long bones are cracked and the joints are not preserved.
Age: Adolescent, c. 17-20 years
The cranium is too fragmented to base the age estimation on the closure of sutures. The observable sutures are completely open beginning to close. There is very little dental wear. The roots of the third molars of the mandible are not yet closed, indicating an age of about 17.5-19.5 years.
Sex: Female?
The estimation of sex is based on the morphology of the cranium (female). The observable cranial features clearly indicate a female sex. The hip bone is however not available, and considering the youth of the individual the estimation of sex must be regarded as uncertain.
Stature: N/A
No complete long bones suitable for measurements and stature estimation were available.
Dental status:
Congenitally absent tooth
Teeth present: 11, 12, 13, 14, 15, 16, 17, 21, 22, 23, 24, 26, 31, 32, 33, 34, 35, 36, 37, 38, 41, 42, 43, 45, 46, 47, 48
Post mortem lost tooth: 25
Congenitally absent tooth: 18
Dental wear: Limited (molars 17-25 years)
Pathologies and general observations:

Fig 170: Grave 189, left tibia, with new bone formations.

Periostitis, calcification
Periostitis: Left and right femur, left and right tibia, left and right fibula, the first and the fifth metatarsal bone of the left foot
Both femora have striated new bone formations along the entire diaphyses, particularly on the posterior side. On the left femur this also affects the neck and the lesser trochanter, where the new bone is more porous in texture.
Both tibiae have striated new bone formations along

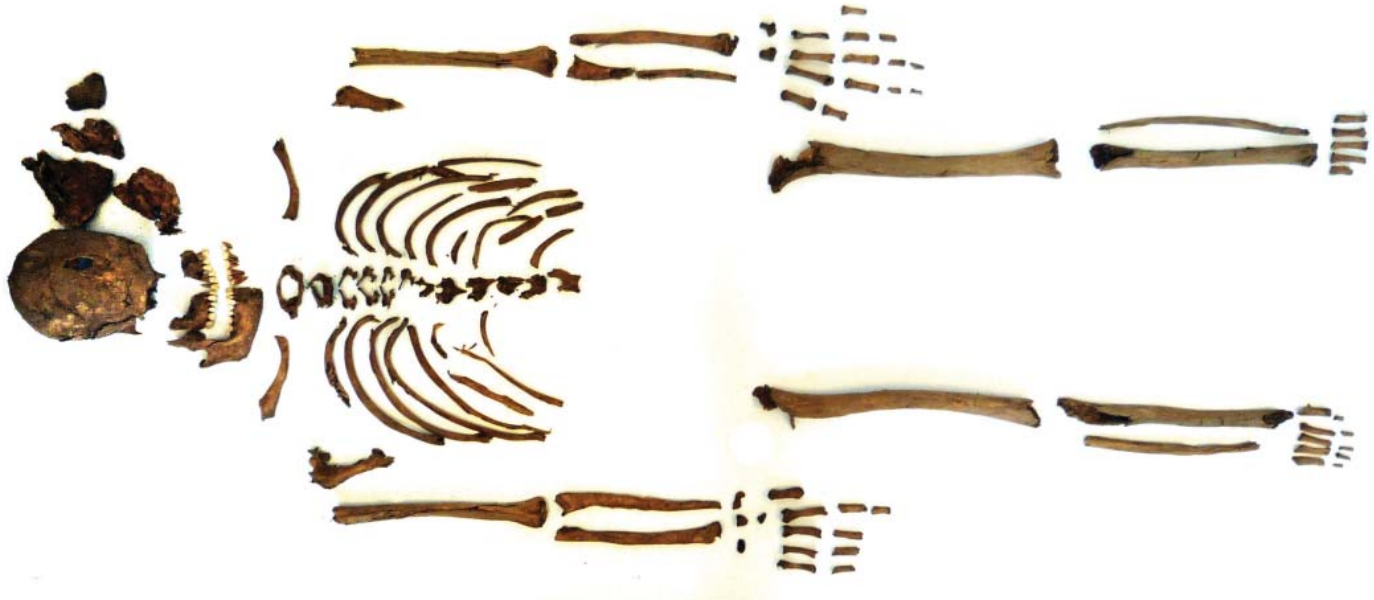

Fig 169: Grave 189.

the entire diaphyses, on all sides. The left tibia is more severely affected. There is also some post mortal damage to both bones. The right fibula has some striated new bone formations along the interosseous margin, along the entire diaphysis.
In the right foot the first and fifth metatarsal have porous new bone formations on the diaphysis. On the first metatarsal the medial side is affected, on the fifth the dorsal.
Calcification: A larger fragment (c. 30 mm in size) and several smaller (less than 1 mm in size) were recovered from the rib cage in grave 189. The larger fragment is c. 1 mm thick and rounded. It is possibly the calcified remains of a hyatid cyst?
Non metric traits:
Tympanic dihiscense (right)

Grave 190

Bones present:
Teeth

Fig 171: Grave 190.

Preservation: Bad
The crowns of the teeth are well preserved, while the state of the roots varies.
Age: Adult
The age estimation is based on dental wear. The third molar of the right mandible is in occlusion, with some wear of the enamel, indicating that the individual is adult.
Sex: N/A
No bones suitable for sex estimation were available.
Stature: N/A
No complete long bones suitable for measurements and stature estimation were available.
Dental status:
Enamel hypoplasias
Teeth present: 13, 14, 15, 16, 24, 25, 26, 32, 33, 34, 35, 36, 44, 45, 46, 47, 48
Enamel hypoplasias: 13, 15, 24, 25, 35, 44, 45
Dental wear: Limited (molars 17-25 years)
Pathologies and general observations:
No pathologies observed.
Extra bone:
A premolar from the mandible, probably 45

Grave 193

Bones present:
Cranium, teeth
Preservation: Bad
The cranium is fragmented. The crowns of the teeth are well preserved, but the roots are fragmented.
Age: Adult
The age estimation is based on dental wear. The dental wear suggests an age of 25-45 years. This is uncertain, but the individual is probably a middle adult.
Sex: N/A
No bones suitable for sex estimation were available.
Stature: N/A
No complete long bones suitable for measurements and stature estimation were available.
Dental status:
Enamel hypoplasias
Teeth present: 13, 14, 15, 16, 23, 24, 25, 32, 33, 34, 35, 36, 37, 41, 42, 43, 44, 45, 46, 47

Fig 172: Grave 193.

Enamel hypoplasias: 13, 23, 35, 41, 43
Dental wear: Medium (molars 25-45 years)
Pathologies and general observations:
No pathologies observed.

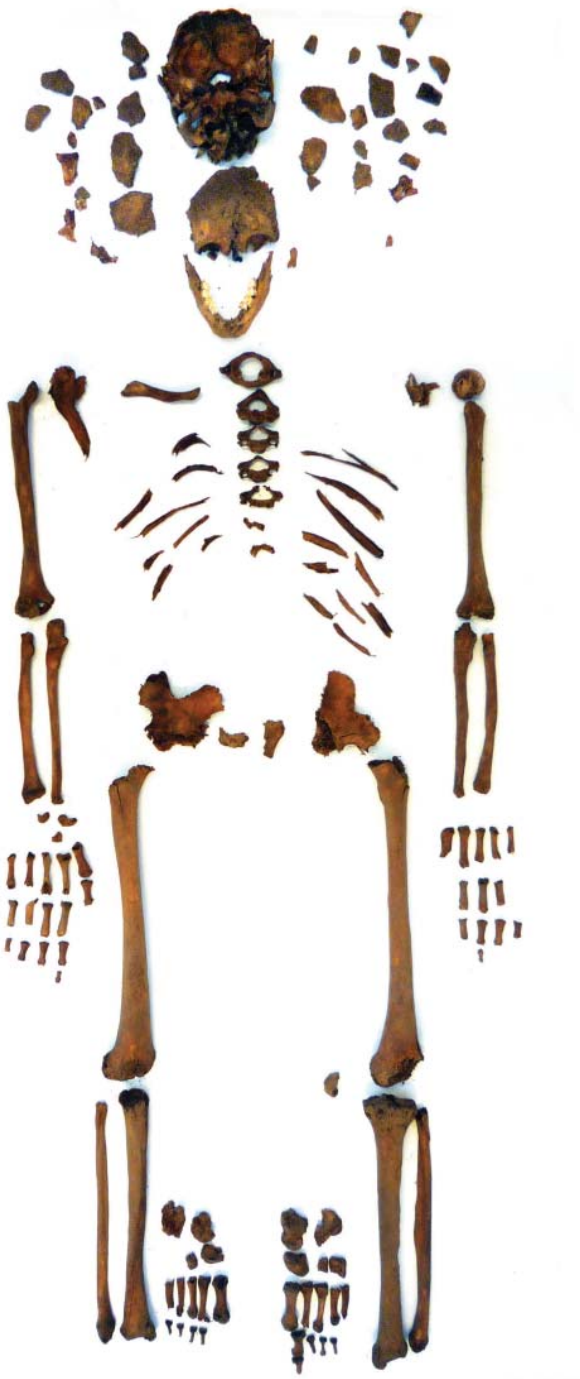

Fig 173: Grave 197.

Grave 197

Bones present:
Cranium, teeth, cervical vertebrae, thoracic vertebrae, ribs, clavicle, scapula, humerus, radius, ulna, carpal bones, metacarpal bones, phalanges (hand), hip bone, femur, patella, tibia, fibula, tarsal bones, metatarsal bones, phalanges (foot)
Preservation: Bad
The skeleton is poorly preserved. The base of the cranium, viscerocranium and the mandibule are reasonable well preserved, while the cranial vault is fragmented. A few cervical vertebrae are present, but the lower vertebrae are fragmented. The diaphyses of the long bones are well preserved, but most of the joints are damaged or missing. The right ulna and left tibiae are however almost complete. The scapulae, ribs and hip bone are fragmented.
Age: Adult
The cranium is too fragmented to base the age estimation on the closure of sutures. The observable sutures are completely open beginning to close. The age estimation is based on dental wear, which is uneven, and indicates an age of c. 25-45 years.

Fig 174: Grave 197, maxilla and mandible, with periodontitis and large calculus depositis.

Sex: Female?
The estimation of sex is based on the morphology of the cranium (female?) and the hip bone (female?).
Stature: c. 148 cm (TG), 149 cm (S)
The only long bone complete enough for maximum length measurement is the left tibia. The maximum length is 298 mm, indicating a stature of approximately 148.0 cm (TG) or 148.9 cm (S).
Dental status:
Large calculus deposits, periodontitis

Fig 175: Grave 197, right and left tibia and fibula, with new bone formations (bottom), left tibia, detail (top).

Teeth present: 15, 16, 18, 25, 26, 35, 36, 37, 38, 44, 45, 46, 47, 48
Post mortem lost teeth: 13, 14, 24, 27, 28, 33, 34, 42, 43
Dental wear: Uneven (molars 17-45 years)
The dental wear is uneven, and the occlusal surfaces full of pits.
Large calculus deposits: 16, 26, 35, 36, 37, 38, 46, 47, 48
Periodontitis: There is a reduction of alveolar bone in entire mandible and posterior part of the maxilla.
Pathologies and general observations:
Periostitis, cribra orbitalia, vertebral osteophytosis, trauma
Periostitis: Left and right tibia, left fibula
The right tibia has striated new bone formations along the medial side of the proximal two thirds of the diaphysis. At the medial side of the diaphysis of

Fig 176: Grave 197, frontal bone, left orbit, with perforations.

the left tibia there is a pit, about 30x20 mm in size, c. 10 cm from the distal end. The left fibula is enlarged, with some striated new bone at the interosseous margin.
Cribra orbitalia: There are areas of c. 13x6 mm with small perforations in the superior wall of both orbits.
Vertebral osteophytosis: Cervical vertebra
The body of C3 is porous and have osteophytes of about 1-2 mm at the anterior inferior margin.
Trauma: Left radius

Fig 177: Grave 197, left radius, with healed fracture.

The left radius narrows for about 20 mm in the distal third of the diaphysis, with some porous new bone formation. There is also a slight angle to the bone, indicating that this is a healed fracture.

Grave 199

Context: Fill of grave 1
Bones present:
Teeth, cervical vertebrae, thoracic vertebrae, lumbar vertebrae, sacrum, ribs, clavicle, scapula, humerus, carpal bones, metacarpal bones, phalanges (hand), hip bone, femur, patella, tibia, fibula, tarsal bones, metatarsal bones
Preservation: Good
The skeleton is well preserved. All parts of the body are represented, but not by complete bones. The long bones are represented by lose epiphyses, suggesting that the diaphyses have been removed.
Age: Child, c. 6-8 years
The estimation of age is based on dental development and the fusion of epiphyses.
Sex: N/A
No estimation of sex has been performed.
Stature: N/A
No estimation of stature has been preformed.

Fig 178: Grave 199.

Fig 179: Grave 199. Left: Right scapula and and left ilium from the main burial (child c. 6-8 years old). Right: Right scapula and right ilium from the fill (child c. 1-2 years old).

Dental status:
Teeth present: 11
Dental wear: Minimal
Pathologies and general observations:
No pathologies observed.
Extra bones:
Human: From a neonatal infant: The petrous part of a left temporal bone, a left stapes, a fragment of the frontal bone with left orbit, a left tibia.
From an infant, c. 1-2 years old: A right scapula, the ilium and ischi of a right hip bone.
There are also fragments of ribs and the diaphysis of a fibula of a child.
Animal: Caprine: A proximal left femur (epiphyses not fused), a talus, a proximal right metacarpal bone, a metapodial bone, a proximal radius, a first phalanx, a second phalanx and a third phalanx. Unidentified fragments of animal bones.

Grave 200

Bones present:
Cranium, teeth, cervical vertebrae, thoracic vertebrae, ribs, clavicle, scapula, humerus, radius, ulna, metacarpal bones, femur, tibia, fibula, tarsal bones, metatarsal bones, phalanges (foot)
Preservation: Bad/medium
The preservation of the skeleton is bad to medium.

Fig 181: Grave 200, madible, with erupting teeth.

The cranium, mandible and teeth are well preserved, but the cranial vault a bit damaged. The cervical vertebrae are well preserved. The lower vertebrae, ribs, and scapulae are fragmented. The fragmented diaphyses of long bones are present, but not the joints.
Age: Child, c. 9-11 years
The age estimation is based on formation and eruption of the deciduous and permanent teeth and the fusion of epiphyses.

Fig 180: Grave 200.

Sex: N/A
No estimation of sex has been performed.
Stature: N/A
No estimation of stature has been performed.
Dental status:
Enamel hypoplasias
Teeth present: 11, 12, 13, 14, 15, 16, 17, 18, 21, 22, 23, 24, 25, 26, 27, 28, 31, 32, 33, 34, 35, 36, 37, 38, 41, 42, 43, 44, 45, 46, 47, 48, 53, 54, 55, 63, 64, 65, 73, 74, 75, 84, 85
Teeth not in occlusion: 13, 14, 15, 17, 18, 23, 24, 25, 27, 28, 33, 34, 35, 37, 38, 43, 44, 45, 47, 48
The second molar of the right maxilla and the canine

Fig 182: Grave 200, frontal bone, right orbit, with perforations.

and first premolar of the right mandible are erupting, the remaining teeth not in occlusion are still in the crypt.
Enamel hypoplasias: 33, 43
Dental wear: Minimal
Pathologies and general observations:
Cribra orbitalia: There is an area of c. 10x3 mm with small perforations in the superior wall of the right orbit. There are no perforations in the left orbit.

Grave 201

Bones present:
Cranium, teeth, cervical vertebrae, thoracic vertebrae, lumbar vertebrae, sacrum, sternum, ribs, clavicle, scapula, humerus, radius, ulna, carpal bones, metacarpal bones, phalanges (hand), hip bone, femur, patella, tibia, fibula, tarsal bones, metatarsal bones, phalanges (foot)
Preservation: Medium
The skeleton is medium well preserved. The cranium is well preserved, but the surface is peeling and cracked. The mandible and teeth are well preserved. The long bones are cracked, and some of the joint surfaces are damaged. The scapulae, sternum, ribs and hip bone are fragmented. The atlas and axis are well preserved, but the lower vertebrae are fragmented.
Age: Adolescent-young adult, c. 16-23 years
The age estimation is based on dental development and the fusion of epiphyses.
Sex: Female?

The estimation of sex is based on the morphology of the cranium (female?) and the hip bone (inconclusive) and metric traits of the femur (female).
Stature: c. 157 cm (TG), 156 (S)
The femora were not complete, and the estimation of stature is based on the bones of the arms. The maximum length of the right humerus is 296 mm, indicating a stature of approximately 157.4 cm (TG) or 155.6 cm (S), and the maximum length of the left radius is 223 mm, indicating a stature of approximately 160.6 cm (TG) or 159.8 cm (S).
Dental status:
Periodontitis, periapical lesion?
Teeth present: 11, 12, 13, 14, 15, 16, 17, 21, 22, 23, 24, 25, 26, 27, 28, 31, 32, 33, 34, 35, 36, 37, 41, 42,

Fig 183: Grave 201.

Fig 184: Grave 201, right maxilla, with periodontitis, and remaining deciduous tooth (65).

43, 44, 45, 46, 47, 55, 65
Teeth not in occlusion: 15, 25, 28
The third molar of the left maxilla is in the crypt. The deciduous second molars of the maxilla are still present. The permanent second premolars are however erupting, and the rots of the deciduous teeth are resorbing. There is a root fragment from the deciduous second molar between the first and second premolar of the left mandible.
Dental wear: Limited (molars 17-35 years)
The first molar of the right mandible is more worn than the other teeth. The occlusal surface is uneven and hollowed, with no enamel apart from the marginal rim.
Periodontitis: 16, 17
The lingual roots of the first and second molar of the right maxilla are exposed, and supragingival calculus along the roots all the way down to the apex shows that this surface was also exposed ante mortem.
Periapical lesion?: 21
There is a hole (diameter c. 6 mm) at the lingual side of the alveolus of the left central incisor. The margins are rounded, and this is a possible fistula, but the tooth exhibits no pathological changes and there is no periapical cavity.

Fig 185: Grave 201, right clavicle, with new bone formations.

Fig 186: Grave 201, left ulna, with a large pit and new bone formation.

Pathologies and general observations:
Periostitis, osteomyelitis?
Periostitis: Right clavicle, left ulna, right and left tibia
The right clavicle has an area of about 30 mm of porous new bone formation at the lateral part of the diaphysis.

Fig 187: Grave 201, right and left tibia and fibula (bottom), left tibia, detail (top).

The left ulna has a sharp edged oval pit surrounded by a c. 25x45 mm area of porous new bone at the proximal part of the disphysis. There is also some post mortem damage to the area.
Both tibiae have thickened diaphyses with stirations

Fig 188: Grave 201, mandible, with swollen base.

along the medial sides, particularly mid diaphysis. The right side is more affected than the left.
Osteomyeltitis?: Mandible
The base of the mandible is wide, and the bone has a swollen appearance. This is possibly caused by osteomyelitis, but without radiology or sectioning the bone, it is uncertain.
Other observations:
There is a large (c. 10x20 mm) oval pit in the left palate process of the maxilla, with an opening to the nasal cavity. The sides are rough and uneven, indicating an active lesion. The palate is pitted, with new bone formation and sharp spicules of bone. There is also a pit destroying most of the horizontal plate of the right palate bone. A tumour in the palate or a syphilitic lesion are possible reasons.

Fig 189: Grave 201, maxilla, with a hole in the palatine. Also note the deciduous teeth present (55, 65).

Non metric traits:
Bilateral torus mandibularis (moderate)

Grave 202

Bones present:
Teeth
Preservation: Bad
The crowns of the teeth are well preserved, while the roots are fragmentary.
Age: Adult
The estimation of age is based on dental development.
Sex: N/A
No bones suitable for sex estimation were available.
Stature: N/A
No complete long bones suitable for measurements and stature estimation were available.
Dental status:
Enamel hypoplasia, large calculus deposits, periodontitis
Teeth present: 12, 13, 14, 15, 16, 17, 18, 21, 22, 23, 24, 25, 26, 27, 31, 32, 34, 35, 36, 37, 46, 47

Fig 190: Grave 202.

Enamel hypoplasia: 13
Dental wear: Medium (molars 17-45 years)
The dental wear is small to medium on the anterior teeth and premolars, more advanced on the molars.
Large calculus deposits: 18
There is some calculus on the occlusal surface of the first and third molar of the right maxilla. Smaller deposits of calculus are present on most teeth, but it is very fragile, and it is likely that some has been lost before registration.
Periodontitis: 16, 26, 36, 47
The first molars of the maxilla and left mandible, and the second molar of the right mandible, have calculus deposits that continue down the roots, indicating that part of the roots were exposed during life. There is no alveolar bone present.
Pathologies and general observations:
No pathologies observed.

Grave 203

Bones present:
Cranium, teeth, cervical vertebrae, ribs, clavicle, scapula, humerus, radius, ulna, carpal bones, metacarpal bones, phalanges (hand), hip bone, femur, tibia, fibula, tarsal bones, metatarsal bones, phalanges (foot)
Preservation: Bad/medium
The skeleton is poorly to medium well preserved. The cranium is fragmented. The mandible and teeth

Fig 191: Grave 203.

are well preserved. The atlas and axis are well preserved, but the lower vertebrae are only fragments. Ribs, scapulae and hip bone are fragmented. The diaphyses of all long bones and the right clavicle are present. One fibula has a marked bowing of the diaphysis.

Age: Adult

The estimation of age is based on dental development. The dental wear is uneven, indicating an age of 17-45 years.

Sex: Indeterminate sex

The estimation of sex is based on the morphology of the cranium (inconclusive) and the hip bone (female). Few indicators of sex are available.

Stature: N/A

No complete long bones suitable for measurements and stature estimation were available.

Dental status:

Periodontitis, periapical lesion

Teeth present: 11, 12, 13, 14, 15, 16, 17, 18, 21, 22, 23, 24, 25, 26, 27, 28, 31, 32, 33, 34, 35, 36, 37, 38, 41, 42, 43, 44, 45, 46, 47, 48

Dental wear: Medium/heavy (molars 17-45 years)

Periodontitis:

There is a reduction of alveolar bone. The calculus continues a bit down the roots of the molars and the first premolar of the left mandible.

Periapical lesion: 16

There is a periapical cavity by the buccal roots of the first molar of the right maxilla, but also some post mortem damage. The tooth appears healthy.

Pathologies and general observations:

Periostitis: Right humerus

The right humerus has an area of porous new bone formation on the medial side of the proximal part of the diaphysis, about 35x10 mm in size. There is also post mortem damage to the bone.

Fig 192: Grave 203, right maxilla, with periapical lesion at the first molar (16) and periodontitis.

Grave 204

Bones present:

Cranium, teeth, cervical vertebrae, thoracic vertebrae, lumbar vertebrae, sacrum, ribs, clavicle, scapula, humerus, radius, ulna, metacarpal bones, phalanges (hand), hip bone, femur, tibia, fibula, tarsal bones, metatarsal bones

Preservation: Bad/medium

The skeleton is poorly to medium well preserved. The viscerocranium is damaged and the cranial vault is peeling and cracked. The teeth and the mandible are well preserved. The atlas and the axis are well preserved. Most of the vertebral arches are present. The scapulae and hip bone are fragmented. The diaphyses of the long bones are preserved, but the joints are damaged. The diaphysis of the left femur is broken in two.

Age: Adult

The cranium is too fragmented to base the age estimation on the closure of sutures. The observable

Fig 193: Grave 204.

sutures ranges from completely open to completely closed. The age estimation is based on dental wear, and indicates an age ranging from 17-35 years.

Sex: Male?

The estimation of sex is based on the morphology of the cranium (male).

Stature: N/A

No complete long bones suitable for measurements and stature estimation were available.

Dental status:

Ante mortem tooth loss, congenitally absent teeth, periodontitis, periapical lesion

Teeth present: 11, 12, 13, 14, 15, 16, 17, 21, 22, 23, 24, 25, 26, 27, 28, 31, 32, 33, 34, 35, 37, 41, 42, 43, 44, 45, 46, 47, 48

Teeth not in occlusion: 43

Fig 194: Grave 204, mandible with ante mortem tooth loss and periodontitis.

The canine of the right mandible is still in the crypt. There is a narrow gap between the lateral incisor and the first premolar. The canine of the left mandible is rotated about 90 degrees, placing it slightly to the labial side of the dental arch. Due to this the canines of the maxilla are very pointy and show no wear facets at all.

Ante mortem lost tooth: 36

Congenitally absent teeth: 18, 38

Dental wear: Medium (molars 17-35 years)

Calculus deposits on the occlusal surface: 24, 25, 26, 27, 28, 35, 37

There are deposits of calculus on the occlusal surface of the posterior teeth of the left maxilla and mandible. This side of the mouth seems to have been used for some time at the time of death.

Periodontitis:

There is a reduction of alveolar bone by the molars in the maxilla and mandible, particularly by the ante mortem lost first molar in the left mandible, where part of the roots of the second premolar and second molar are exposed.

Periapical lesion: 17

There is a periapical cavity at the second molar of the right maxilla, at the mesiobuccal root, opening to the buccal side. The tooth appears to be healthy.

Pathologies and general observations:

Periostitis: Right radius, right ulna, right and left tibia, fibula

The right radius has an area of about 10x30 mm of porous new bone formation on the posterior side of the distal diaphysis. The right ulna has porous new bone formation along c. 15 mm of the distal part of the diaphysis.

The left tibia has striations along the medial side. At mid diaphysis there is a swelling, with an area of about 105 mm of porous and striated new bone. The

Fig 195: Grave 204, left tibia, with new bone formations.

right tibia has striations on all sides of the diaphysis, with some new bone deposits on the anterior margin, giving the bone a swollen appearance. There is some post mortem damage to the bone.
Both fibulae are bent and have striated surfaces. On one of them, side uncertain, there is an area of about 35 mm of porous new bone formation.
Other observations:
The frontal bone has a damaged surface with many cracks, and fragments missing. This gives the bone a pathological appearance, but is probably caused by post mortem damage.
Non metric traits:
Lambdoid ossicles (right and left)

Grave 205

Bones present:
Cranium, teeth, cervical vertebrae, thoracic vertebrae, lumbar vertebrae, sacrum, ribs, clavicle, scapula, humerus, radius, ulna, carpal bones, metacarpal bones, phalanges (hand), hip bone, femur, patella, tibia, fibula, tarsal bones, metatarsal bones, phalanges (foot)
Preservation: Medium/good
The cranium, mandible, teeth, clavicles, scapulae,

Fig 196: Grave 205.

Fig 197: Grave 205, mandible, with erupting canine (43).

two of the ribs and the calacnei and tali are well preserved. The vertebrae are well preserved, but a few are missing. The diaphyses of the long bones are medium well preserved. The hip bone is fragmented.
Age: Adolescent, c. 12-14 years
The age estimation is based on dental formation and eruption and the fusion of epiphyses.
Sex: N/A
No estimation of sex has been performed.
Stature: N/A
No estimation of stature has been performed.
Dental status:
Teeth present: 12, 13, 14, 15, 16, 17, 18, 21, 22, 23,

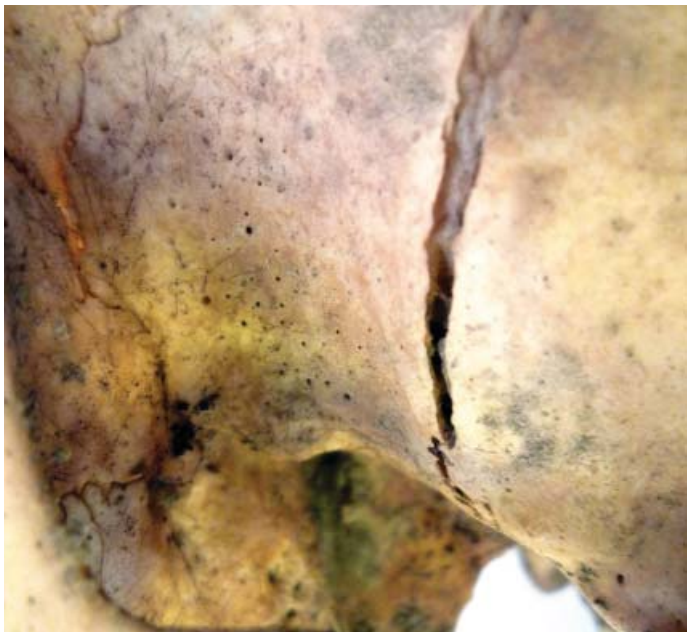

Fig 198: Grave 205, cranium, with porosity at the left greater wing of the sphenoid bone.

24, 25, 26, 27, 28, 31, 32, 33, 34, 35, 36, 37, 38, 41, 42, 43, 44, 45, 46, 47, 48
Teeth not in occlusion: 18, 28, 38, 43, 48
The third molars are still in the crypt. The canine of the right mandible is about 1 mm lower than the sur-

rounding teeth, and has not yet reached occlusion. The alveolus is slightly widened.

Pathologies and general observations:

Periostitis, cribra orbitalia

Periostitis: Cranium, radius

There are areas of porosity on some of the cranial bones. The affected areas are (bilaterally): The anterior side of the maxilla, at the alveolar process; the inferior and middle part of the greater wings of the sphenoid bone; the medial aspect of the ramus of the

Fig 199: Grave 205, frontal bone, left orbit, with perforations.

mandible, superior of the mandibular foramen. Periosteal new bone formations in these areas can be a sign of scurvy, but in this case there are no clear new bone formations.

The left radius has a small area, c. 7x10 mm, of porous new bone formation, just distal of the middle of

Fig 200: Grave 205, T1, with pit in the body.

the diaphysis.

Cribra orbitalia: There are areas of c. 5x10 mm with small perforations in the superior wall of both orbits.

Other observations:

The first thoracic vertebra has a pit, c. 8 mm in size, at the right side of the body. It has sharp edges and is possibly caused by an infection.

Non metric traits:

Metopic suture, epipteric bone (right), lambdoid ossicles (right and left)

Extra bones:

Human: The grave was disturbed, and the bones were not in anatomical position. A distal epiphysis of a femur and the manubrium of a sternum can belong to the main burial. The following bones were also present: A zygomatic bone, two cervical vertebrae, a metacarpal bone and four phalanges of the hand. They cannot belong to the main burial, either because the same elements are already present, or because they are from an adult.

Animal: A distal part of a metapodial bone of a horse, a phalanx and a cervical vertebra of a caprine and fragments of a scapula of an animal of caprine size.

Grave 206

Bones present:

Cranium, teeth, cervical vertebrae, thoracic vertebrae, ribs, clavicle, scapula, humerus, radius, ulna, carpal bones, metacarpal bones, phalanges (hand), hip bone, femur, tibia, fibula, tarsal bones, metatarsal bones, phalanges (foot)

Preservation: Medium

The skeleton is medium well preserved. The cranium is fragmented, but most elements are present. The mandible and teeth are well preserved. The cervical vertebrae are present, and the arch of the first thoracic vertebra. The diaphyses of the long bones are well preserved, with some cracks, but many of the joints are damaged. The scapulae and hip bone are fragmented.

Age: Middle adult

The age estimation is based on dental wear and the left pubic symphysis.

Sex: Female?

The estimation of sex is based on the morphology of the cranium (female) and hip bone (female) and metric traits of the femur (female?). The bones are generally larger than average for females in the population, but they are not very robust.

Stature: c. 173 cm (TG), 170 (S)

The only long bone complete enough for maximum length measurement is the left radius. The maximum length is 249 mm, indicating a stature of approxi-

Fig 201: Grave 206.

mately 173.0 cm (TG) or 170.3 cm (S).

Dental status:

Congenitally absent tooth, fractured tooth, periodontitis, periapical lesion

Teeth present: 11, 12, 13, 14, 15, 16, 17, 18, 21, 22, 23, 24, 25, 26, 27, 28, 31, 32, 33, 34, 35, 36, 37, 41, 42, 43, 44, 45, 46, 47, 48

Congenitally absent tooth: 38

Dental wear: Medium (molars 17-45 years)

The second molar of the left mandible has an uneven wear of the occlusal surface. The mesial half has only moderate wear, while the distal half is worn almost down to the root. There is no obvious reason for this, looking at the occlusion with the maxillary

Fig 202: Grave 206, first molar of the right maxilla (16).

teeth, and possibly the tooth has been used in some other activity, wearing only the distal part.

Calculus deposits on occlusal surface: 28

The third molar of the left maxilla has calculus deposits on the occlusal surface. As there was no third molar in the left mandible the tooth was probably not used a lot.

Periodontitis:

There is a general reduction of alveolar bone in the maxilla and mandible, affecting the left side molars in the mandible most severely, and much of their roots are exposed. The first molar has calculus deposits between the mesial and the distal root.

Fractured tooth and periapical lesion: 16

The first molar of the right mandible has been broken in half ante mortem. Only the mesial part is present, with some calculus on the break surface. Only a few mm of the mesiobuccal alveolus is preserved, the rest of the alveolar bone is resorbed. The lingual alveolus is widened, to a smooth edged, rounded pit of about 25x33 mm size. The lingual root has a shrunken twisted appearance, possibly a sign of root caries. The resorbed alveolar bone is probably due to an inflammation related to the dental trauma.

Pathologies and general observations:

Osteoarthritis, vertebral osteophytosis

Osteoarthritis: Atlas-axis

The left joint between the atlas and the axis has pitting of the joint surface and marginal osteophyte formations of c. 0.5-1 mm. There are two small areas of eburnation, the lateral c. 12x6 mm and the medial c. 4x4 mm in size.

Vertebral osteophytosis: Cervical vertebrae

C3 to C5 have porous bodies and osteophyte formations of up to 8 mm size around the margins, particularly on the anterior side.

Fig 203: Grave 206, C4, with osteophyte formations at the anterior side of the body.

Non metric traits:
Bilateral torus mandibularis (moderate), astergonic bone (left)

Grave 207

Bones present:
Cranium, teeth, cervical vertebrae, thoracic vertebrae, lumbar vertebrae, ribs, clavicle, scapula, humerus, radius, ulna, hip bone, femur, tibia, fibula
Preservation: Medium
The skeleton is relatively well preserved, but the bones are very fragile, an easily fall apart. The cranium is fragmented. The tooth buds are fragile and fragmented. The diaphyses of the long bones and the right clavicle are well preserved, and so is the right ilium, while the left is missing.
Age: Infant, neonatal
The age estimation is based on the size of the bones.
Sex: N/A
No estimation of sex has been performed.
Stature: N/A
No estimation of stature has been performed.
Dental status:
Teeth present: 51, 52, 53, 61, 52, 53, 71, 74, 81, 84
Teeth not in occlusion: 51, 52, 53, 61, 52, 53, 71, 74, 81, 84
All present teeth are in formation and are still in the crypt. They are very fragile, apart from the first deciduous molars of the mandible, and the identification is uncertain.
Pathologies and general observations:
No pathologies observed.

Fig 204: Grave 207.

Grave 208

Bones present:
Cranium, teeth, cervical vertebrae, thoracic vertebrae, lumbar vertebrae, sacrum, ribs, clavicle, scapula, humerus, radius, ulna, carpal bones, metacarpal bones, phalanges (hand), hip bone, femur
Preservation: Medium

Fig 205: Grave 208.

The skeleton is medium well preserved. The cranium is fragmented but the fragments are well preserved. The diaphyses of the long bones are preserved but cracked and fragile. The vertebrae, scapulae and hip bone are fragmented.
Age: Infant, c. 2-3.5 years
The age estimation is based on dental formation and the fusion of epiphyses.
Sex: N/A
No estimation of sex has been performed.
Stature: N/A
No estimation of stature has been performed.
Dental status:
Teeth present: 12, 13, 16, 22, 36, 46, 51, 52, 53, 54,

Fig 206: Grave 208, cranial fragment, with vessel imprints on the endocranial side.

55, 61, 62, 63, 64, 65, 72, 73, 74, 75, 81, 82, 83, 84, 85
Teeth not in occlusion: 12, 13, 16, 22, 36, 46
Post mortem lost tooth: 71
The permanent teeth are still in the crypt.
Pathologies and general observations:
Endo cranially there are patches of pale bone with imprints of small vessels. The cranium is fragmented, and the extent of this is unclear. However an area of at least 50x80 mm of the parietal bone is affected. This could be caused by a haemorrhage or an infection.

Grave 209

Bones present:
Cranium, teeth, cervical vertebrae, thoracic vertebrae, lumbar vertebrae, sternum, ribs, scapula, humerus, radius, ulna, carpal bones, metacarpal bones, phalanges (hand), hip bone, femur, patella, tibia, fibula, tarsal bones, metatarsal bones, phalanges (foot)
Preservation: Medium/good
The skeleton is medium well to well preserved. The cranium is fragmented. The mandible and teeth are well preserved. The cervical vertebrae are well preserved, but the lower vertebrae are fragmented. Ribs, sternum, scapulae and hip bone are fragmented. The long bones are well preserved, with some broken diaphyses and missing joints.
Age: Old adult, c. 50-59 years
The age estimation is based on dental wear and the auricular surface of the right hip bone. Dental wear is uneven, and indicates an age ranging from 25-45 years.
Sex: Male
The estimation of sex is based on the morphology of the cranium (inconclusive) and hip bone (male?) and metric traits of the femur (male).
Stature: c. 166 cm (TG), 163 (S)
The maximal length of the right femur is 431 mm, indicating a stature of approximately 165.5 cm (TG) or 163.3 cm (S). Stature estimation based on other long bones range from 167.4 cm (TG) (right tibia) or 164.3 (S) (left radius) to 176.7 cm (TG) or 173.1 cm (S) (right ulna). It should be noted that the radius and ulna of the right arm were more than 10 mm longer than those of the left arm.

Fig 207: Grave 209.

Fig 208: Grave 209, mandible, with the second premolar lost ante mortem (35) and uneven wear of the first permolar and first molar (34, 36).

Dental status:

Ante mortem tooth loss, congenitally absent teeth, periodontitis, periapical lesions

Teeth present: 11, 12, 13, 14, 16, 17, 18, 21, 22, 23, 24, 25, 26, 27, 31, 32, 33, 34, 36, 37, 38, 41, 42, 43, 44, 46, 47, 48

Ante mortem lost teeth: 35, 45

Congenitally absent teeth: 15, 28

Dental wear: Uneven (molars 17-45 years)

The teeth are heavily worn, except the second and third molars, and the first molar of the left maxilla, which have only moderate wear. The heavy and uneven wear of the teeth indicates that they could have been used as tools, with particular stress to the premolars, of which two have been lost ante mortem. Porosity of the tempomandibular joint can also be

Fig 209: Grave 209, right maxilla, with heavy occlusal wear, and the lingual root of the first molar (16) exposed.

an indication of heavy use of the jaw. The posterior teeth are not much worn in comparison to the anterior, where some have lost the entire crown. Periapical lesions were perhaps causing pain, and the use of the anterior teeth for chewing was preferred.

Calculus deposits on the occlusal surface: 38, 48

The occlusal wear of the third molars in the mandible is very limited, and there are calculus deposits in the fissures, indicating that the teeth have not been used for some time.

Periodontitis:

There is a reduction of alveolar bone by the molars in the maxilla and mandible.

Periapical lesions: 16, 21, 37, 46

There are several periapical lesions. The lingual root of the first molar in the right maxilla is exposed, as the alveolar bone has been resorbed and the alveolus is remodeled into a wide groove. There is a small, smooth and rounded periapical cavity at the central incisor of the left maxilla, possibly a granuloma. It is visible from the lingual side, but the opening appears to be postmortal damage. There is a large periapical

Fig 210: Grave 209, maxilla, with periapical cavity at the cenral incisor (21).

cavity around booth roots of the second molar of the left mandible, and a similar cavity around the roots of the first molar of the right mandible. The cavity on the right side extends mesially, and is possibly related to the loss of the second premolar.

Pathologies and general observations:

Periostitis, osteomyelitis?, osteoarthritis, vertebral osteophytosis, asymmetric bone length

Periostitis: Right and left radius, right and left ulna, left tibia, left fibula

The right and left radii have porous new bone formations along the distal diaphyses, proximal of the ulnar notch.

The right and left ulnae have new bone formations with porosity and striations along c. 50 mm (right) or c. 34 mm (left) of the distal diaphyses. The entire circumferences of the bones are affected, particularly

the medial surfaces.
The left tibia has a swollen appearance at the proximal part of the diaphysis, with areas of porous striated new bone on the medial and lateral sides.
The left fibula has porous striated new bone formation with along c. 55 mm of the medial side of the distal diaphysis.
Osteoarthritis: Right tempo-mandibular joint, atlas-axis, right and left elbow, right wrist

Fig 211: Grave 209. Joint disease; right head of the mandible (left) and right trapezium (right).

The right condyle of the mandible is a bit flattened and extended on the lateral side, with pitting of the joint surface. The heavy dental wear suggests that the joint has been exposed to a lot of stress. There is also some post mortem damage to the bone.
The dental fovea of atlas has pitting and eburnation on the joint surface, and about 4 mm of osteophyte formation around the margin. There is pitting on the joint surface of the dens of axis.
The right radius has pitting and slight marginal osteophyte formation at the tuberosity. There is a c. 4 mm large pit in the centre of the proximal joint surface. The left radius also have at least two pits in the proximal joint, leading to subchondral cysts of c. 7 mm size. The bone is partly damaged post mortem.
The carpal bones of the right hand have osteophytes and pitting on and between joint surfaces. The hamate has porous new bone formations, pitting in the joint surfaces and osteophytes of c. 2-3 mm surrounding them. The lunate had marginal osteophytes. The trapezium has pitting and larger holes between the articular surfaces. The triquetrum has osteophytes of c. 2-3 mm around the articular surfaces.
The carpal bones have severe bone changes, possibly caused by osteomyelitis.
Vertebral osteophytosis: Cervical vertebrae, thoracic vertebrae
The bodies of the cervical vertebrae have marginal osteophytes of up to 4 mm. The extent and size of the osteophytes increase in the lower cervical vertebrae. The body of C6 appears to be a bit compressed.
Fragments of lower thoracic vertebrae have osteophytes of 4-6 mm along the margins of the bodies.
Asymmetric bone length: Radius, ulna
The left radius is 13 mm shorter than the right radius. The left ulna is not complete enough for a measurement, but is clearly shorter than the right one.
Other observations:

Fig 212: Grave 209. The right radius (top) is visibly longer than the left radius (bottom).

Fig 213: Grave 209. Third phalanges of the foot, with enthesophytes.

The third phalanx of the first digit of the left foot has an enthesophyte of about 9 mm on the medial side. On three third phalanges of the right foot there are enthesophytes of c. 2-3 mm size on the medial and the lateral sides.
Non metric traits:
Bilateral torus mandibularis (moderate), parietal notch bone (right)

Grave 210

Bones present:
No bones recovered

Grave 211

Bones present:
Cranium, teeth, cervical vertebrae, femur, patella, tibia, fibula, tarsal bones, metatarsal bones
Preservation: Medium
The skeleton is medium well preserved. The cranium is fragmented, but well preserved and most elements are present. The teeth are well preserved. Fragments of cervical vertebrae, including the atlas and axis are present. The diaphyses of the long bones of the legs are present, but the joints are damaged or missing. The tarsals and metatarsals are fragile and fragmented.

Fig 214: Grave 211.

Age: Old adult, c. 45+ years
The cranium is too fragmented to base the age estimation on the closure of sutures. The present sutures are in a medium stage of closure. The age estimation is based on dental wear. Only two molars are available, due to ante mortem tooth loss and general bad preservation. The first molar of the right maxilla has been worn down to the root and beyond, indicating an age of 45 years or more. The first molar of the left maxilla is considerably less worn, and indicates an age of 25-35 years.
Sex: Female?
The estimation of sex is based on the morphology of the cranium (female).
Stature: N/A
No complete long bones suitable for measurements and stature estimation were available.
Dental status:
Ante mortem tooth loss, large calculus deposits, periodontitis
Teeth present: 13, 14, 16, 24, 25, 26, 42, 44
Ante mortem lost teeth: 11, 12, 21, 22, 23, 31, 32, 41, 46, 47, 48
Post mortem lost teeth: 43, 45
Dental wear: Heavy (molars 25-45+ years)
Due to the heavy wear, where sometimes only root fragments remains, the identifications are uncertain.
Large calculus deposits and calculus on the occlusal surface: 26
There is some calculus on the occlusal surface of the first molar of the left maxilla, but it is not completely covering the surface. This tooth is also less worn than the other remaining teeth. Possibly the opposing molar was lost earlier, but this is unknown as the mandible is not preserved.
Periodontitis:
There is a reduction of alveolar bone by the second premolars and the first molars of the maxilla. The first molar of the left maxilla has supragingival calculus all the way down the buccal root. Due to the bad preservation of the bone it is unknown if other teeth are also affected.

Fig 215: Grave 211, mandible, with ante mortem lost teeth, heavy occlusal wear and periodontitis.

Fig 216: Grave 211, maxilla, with ante mortem lost teeth, but also some alveoli present .

Pathologies and general observations:
Osteoma: Frontal bone, left parietal bone
On the cranial vault there are two small, rounded and flat bone knobs. The larger one, c. 9 mm in diameter, is situated on the left parietal bone. The smaller one,

c. 7 mm in diameter, is located on the frontal bone, by the glabella. They are probably button osteomas.

Grave 212

Bones present:
Cranium, teeth, cervical vertebrae, scapula, humerus, ulna, metacarpal bones, femur, tibia, tarsal bones, metatarsal bones

Fig 217: Grave 212.

Preservation: Bad/medium
The skeleton is poorly to medium well preserved. The bones are very fragile. The cranium is fragmented. Enamel from teeth in formation is present, but cracked. Vertebrae, ribs and scapulae are fragmented. Fragments of diaphyses of long bones are present, but the identification is a bit uncertain.
Age: Infant, c. 0-0.5 years
The age estimation is based on formation of the deciduous dentition.
Sex: N/A
No estimation of sex has been preformed.
Stature: N/A
No estimation of stature has been preformed.
Dental status:
Present teeth: 51, 52, 53, 54, 55, 61, 62, 63, 64, 65, 71, 72, 75, 81, 82, 84, 85
Teeth not in occlusion: 51, 52, 53, 54, 55, 61, 62, 63, 64, 65, 71, 72, 75, 81, 82, 84, 85
The present teeth are in formation and are still in the crypt.
Pathologies and general observations:
No pathologies observed.

Grave 213

Bones present:
Teeth

Fig 218: Grave 213.

Preservation: Bad
The teeth are well preserved, but most of the roots are broken at the apex.
Age: Adolescent, c. 19-20 years
The age estimation is based on dental formation and wear. The root of the third molar is still open indicating an age of 19.1-19.5 years.
Sex: N/A
No bones suitable for sex estimation were available.
Stature: N/A
No complete long bones suitable for measurements and stature estimation were available.
Dental status:
Teeth present: 11, 13, 14, 16, 31, 32, 33, 34, 35, 36, 37, 38, 41, 42, 43, 44, 45, 46, 47
Dental wear: Limited (molars 17-25 years)
Pathologies and general observations:
No pathologies observed.

Grave 214

Bones present:
Cranium, cervical vertebrae

Fig 219: Grave 214.

Preservation: Bad
Only fragments of the cranium and vertebra could be recovered. These fragments are however in medium good condition.
Age: Infant, c. 0-1 years
The age estimation is based on the size of the bones. The arches of the vertebrae are not fused, indicating an age below 3.5 years.
Sex: N/A
No estimation of sex has been preformed.
Stature: N/A
No estimation of stature has been preformed.
Pathologies and general observations:
No pathologies observed.

Grave 215

Bones present:
Cranium, teeth, cervical vertebrae, thoracic vertebrae, ribs, clavicle, humerus, radius, ulna, carpal bones, metacarpal bones, phalanges (hand), hip bone, femur, patella, tibia, fibula, tarsal bones, metatarsal bones, phalanges (foot)
Preservation: Bad/medium
The skeleton is poorly to medium well preserved. The cranium and mandible are fragmented and the bone surface is peeling. The teeth are well preserved. The vertebrae, ribs and hip bone are fragmented. The diaphyses of the long bones are present, with some damage to the joints.
Age: Young adult
The age estimation is based on dental wear. Fragments of the auricular surface of the right hip bone and cranial sutures support a young age.
Sex: Female?
The estimation of sex is based on the morphology of the cranium (female).
Stature: c. 149 cm? (TG), 150 cm? (S)
No long bone was complete for a measurement of maximal length. The right radius was however almost complete, with perhaps one or a few mm of the styloid process missing, and can give some indication of the stature of the individual. The maximal length of the preserved bone was 199 mm, indicating a stature of 149.3 cm (TG) or 150.2 cm (S).
Dental status:
Ante mortem tooth loss, large calculus deposits, periodontitis, trauma?
Teeth present: 11, 12, 13, 14, 15, 16, 17, 18, 21, 22, 23, 24, 25, 26, 27, 28, 31, 32, 33, 34, 35, 36, 37, 38, 42, 43, 44, 45, 46, 47, 48

Fig 221: Grave 215, mandible, with ante mortem tooth loss and large calculus deposits.

Ante mortem lost tooth: 41
Dental wear: Limited (molars 17-25 years)
Large calculus deposits: 42
All present teeth have small to medium deposits of calculus, except the lateral incisor of the right mandible which is covered in large calculus deposits on all but the occlusal surface. The central incisor of the left mandible also has quite big calculus deposits.
Periodontitis:
There is a reduction of alveolar bone, and the roots of the anterior teeth in the mandible are exposed. Possibly the missing central incisor was lost due to

Fig 220: Grave 215.

periodontitis. Another suggestion is that the tooth loss was caused by trauma. The large calculus depostits possibly built up after the injury, if the anterior teeth were not used for some time. The periodontitis could then be secondary to the calculus deposits.

Pathologies and general observations:

Other observations:

On the medial side of the right mental foramen there is a transversal ridge of bone, c. 12 mm long, with a groove beneath, perhaps an imprint of a vessel.

On inferior part of the left greater wing of the sphenoid bone there is an area of porosity. On the exocranial surface the bone is pale and has small perforations in an area of c. 8x15 mm. There is also some pitting on the endocranial surface.

Grave 216

Bones present:

No bones recovered

Grave 217

Bones present:

Teeth

Preservation: Bad

The crowns of the teeth are fairly well preserved, but the roots are damaged or missing.

Fig 222: Grave 217.

Age: Child, c. 9-10 years

The estimation of age is based on dental eruption.

Sex: N/A

No estimation of sex has been preformed.

Stature: N/A

No estimation of stature has been preformed.

Dental status:

Enamel hypoplasias

Teeth present: 11, 12, 13, 14, 15, 16, 17, 21, 22, 23, 24, 25, 26, 31, 32, 33, 34, 35, 36, 37, 41, 42, 43, 44, 45, 46, 47, 53, 55, 63, 64, 65, 74, 75, 84, 85

Teeth not in occlusion: 24

As there is no alveolar bone preserved the stage of eruption of the permanent dentition is uncertain. There are small wear facets on the permanent incisors and first molars. The first molars and some of the incisors in the mandible exhibit small deposits of calculus. So does the canine of the right mandible, indicating that the tooth was at least partly exposed. The first premolar of the left maxilla has small remains of alveolar bone attached to the crown, showing that this tooth was still in the crypt.

Enamel hypoplasias: 11, 12, 13, 22, 23, 31, 32, 33, 42, 43, 44

Dental wear: Minimal

Non metric traits: The permanent first molars of the maxilla have the cusp of Carabelli, particularly large on the right side.

Pathologies and general observations:

No pathologies observed.

Grave 218

Bones present:

Cranium, teeth, cervical vertebrae, humerus, radius, ulna, femur, tibia, fibula, tarsal bones, metatarsal bones, phalanges (foot)

Preservation: Bad/medium

The skeleton is poorly to medium well preserved. The bones are cracked, soft and fragile, with flakes falling off. The cranium is compressed, with the sides partly destroyed and the medial section slightly warped. The viscerocranium and the mandible are fragmented, with the zygomatic bones and teeth well preserved. Fragments of cervical vertebrae are present. The diaphyses of the long bones are present, but most of the joints are damaged.

Age: Adult

Fig 223: Grave 218.

The age estimation is based on dental wear. The cranium is too fragmented to base the age estimation on the closure of sutures. The present sutures are in different stages of closure, or completely obliterated. It is likely that this individual is a middle adult, but it is uncertain.

Sex: Male?

The estimation of sex is based on the morphology of the cranium (male?). The left femur has an almost complete distal end, large enough to indicate a male

Stature: c. 163 cm? (TG), 160 cm? (S)

No long bone was complete for a measurement of maximal length. The right tibia was however almost complete, and can give some indication of the stature of the individual. The measured maximum length of the tibia was 334 mm, which suggests a stature of about 162.8 cm (TG) or 159.8 cm (S).

Dental status:

Teeth present: 11, 12, 13, 14, 15, 16, 17, 18, 21, 22, 23, 24, 25, 26, 27, 28, 31, 32, 33, 35, 36, 37, 38, 41, 42, 43, 44, 45, 46, 47, 48

Fig 224: Grave 218, frontal bone, with surface porosity.

Dental wear: Medium (molars 17-35 years)

Pathologies and general observations:

There cranial vault has a porous external surface, particularly the frontal bone, but also on the parietal bone. It is uncertain if this is pathological.

Grave 219

Bones present:

Cranium, teeth

Preservation: Bad

The cranial bones are very fragile and easily fall apart. The crowns of the teeth are well preserved, while the roots are fragile, fragmented or missing.

Age: Young adult

The age estimation is based on dental wear. The third molar is in occlusion, with minimal wear. The limited wear of the entire dentition suggests that this is a young adult.

Fig 225: Grave 219.

Sex: N/A

No bones suitable for sex estimation were available.

Stature: N/A

No complete long bones suitable for measurements and stature estimation were available.

Dental status:

Enamel hypoplasias

Teeth present: 11, 14, 15, 16, 25, 26, 27, 28, 34, 35, 36, 37, 38, 42, 43, 44, 45, 46, 47, 48

Enamel hypoplasias: 34, 45

Dental wear: Limited (molars 17-25 years)

Most of the teeth have damaged roots. Where the roots are present they appear to be unusually short. For example the root of the central incisor of the right maxilla is 7 mm long, and the root of the second premolar of the right maxilla is 9 mm long.

Pathologies and general observations:

No pathologies observed.

Grave 220

Bones present:

Cranium, teeth, femur, tibia

Preservation: Bad

The skeleton is poorly preserved. The cranium is fragmented. The teeth are well preserved. The femora and tibiae are cracked and fragmented.

Age: Adult

The age estimation is based on dental wear. The third

Fig 226: Grave 220.

molars are in occlusion and worn, indicating that this is an adult individual. The dental wear is uneven, with the second molar of the left maxilla indicating an age of 17-25 year and the third molar of the right mandible, indicating an age of more than 45 years, the other molars somewhere in between.

Sex: Indeterminate sex

The only feature indicating sex present was the mastoid process (inconclusive).

Stature: N/A

No complete long bones suitable for measurements and stature estimation were available.

Dental status:

Enamel hypoplasias

Teeth present: 11, 12, 13, 14, 15, 16, 17, 18, 21, 23, 24, 25, 26, 27, 31, 32, 33, 34, 35, 36, 37, 38, 41, 42, 43, 44, 45, 46, 47, 48

Enamel hypoplasias: 11, 13, 21, 33

Dental wear: Uneven (molars 17-45 years)

Pathologies and general observations:

No pathologies observed.

Grave 221

Bones present:

Cranium, teeth, cervical vertebrae, humerus, radius, ulna, phalanges (hand), hip bone, femur, tibia, fibula

Preservation: Bad

The skeleton is poorly preserved. All present bones are cracked, and flakes easily fall off. The cranium is fragmented, but the mandible and teeth are fairly well preserved. The vertebrae, ribs and hip bone are fragmented. The diaphyses of the long bones are preserved, but not the joints.

Age: Adolescent, c. 15-16 years

The age estimation is based on dental formation and eruption, and the fusion of epiphyses.

Sex: N/A

No estimation of sex has been preformed.

Stature: N/A

No estimation of stature has been preformed.

Dental status:

Enamel hypoplasias

Teeth present: 11, 12, 13, 14, 15, 16, 17, 18, 21, 22, 23, 24, 25, 26, 27, 28, 31, 32, 33, 34, 35, 36, 37, 38, 41, 42, 43, 44, 45, 46, 47, 48

Fig 227: Grave 221.

Teeth not in occlusion: 18, 28, 38, 48
The third molars are still in the crypt.
Enamel hypoplasias: 33, 43
Dental wear: Minimal

Fig 228: Grave 221, right femur, with new bone formation.

Pathologies and general observations:
Periostitis: Left femur
On the left femur there is a c. 30x10 mm area of new bone formation on the medial side of the linea aspera at the middle of the diaphysis.
Non metric traits:
Torus mandibularis (right, trace)
Extra bones:
Human: A right scaphoid, right and left lunate, right and left first metacarpal bone, a right second metacarpal bone, a right third metacarpal bone, a right fourth metacarpal bone, right and left fifth metacarpal bone, two first phalanges of the hand, a second phalanx of the hand, two third phalanges of the hand, a intermediate cuneiforme bone, a metatarsal bone, a first phalanx of the foot and a second phalanx of the foot.

Grave 222

Bones present:
Cranium, teeth, cervical vertebrae, thoracic vertebrae, lumbar vertebrae, sacrum, sternum, ribs, clavicle, scapula, humerus, radius, ulna, carpal bones, metacarpal bones, phalanges (hand), hip bone, femur, patella, tibia, fibula, tarsal bones, metatarsal bones, phalanges (foot)
Preservation: Good
The skeleton is well preserved and almost complete. The bones are in good condition, but the cranium and the long bones have areas where the surface is flaking and falling off.
Age: Middle adult, 30-45 years
The age estimation is based on the closure of cranial sutures, dental wear, and the auricular surface of the hip bone.
Sex: Female
The estimation of sex is based on the morphology

Fig 229: Grave 222.

of the cranium (female) and hip bone (female), and metric traits of the femur (female) and the humerus (female).
Stature: c. 156 cm (TG), 158 cm (S)
The maximum length of the left femur is 412 mm, indicating a stature of approximately 155.9 cm (TG) or 158.3 cm (S). Stature estimations based on the measurements of other long bones range from 154.1 cm (TG) or 156.5 cm (S) (right femur) to 167.7 cm (TG) or 165.9 cm (S) (right radius). The right radius was 16 mm longer than the left radius.
Dental status:
Ante mortem tooth loss, congenitally absent teeth, periodontitis, periapical lesion

Fig 230: Grave 222, maxilla, with the left canine (23) partly visible in the incisive foramen. Also note the small alveolus for the deciduous canine (63).

Teeth present: 11, 12, 13, 14, 15, 16, 17, 18, 21, 22, 23, 25, 26, 27, 28, 31, 32, 33, 34, 36, 37, 38, 41, 42, 43, 44, 46, 47
Tooth not in occlusion: 23
The canine of the left maxilla is growing sideways, diagonally across the palate, with the root apex approximately at the normal site of the canine, and the crown visible in the incisive foramen behind the left central incisor. At the site of the left canine there is a small alveolus, perhaps from a deciduous canine that have been lost post mortem.

Fig 231: Grave 222, mandible, with a periapical lesion at the central incisor (31).

Ante mortem lost teeth: 35, 45
Post mortem lost tooth: 24
Congenitally absent teeth: 38, 48
Dental wear: limited (molars 17-25 years)

Periodontitis:
There is a reduction of alveolar bone, and the roots of the premolars and molars of the mandible are exposed. On the left side there is a cavity on the medial side of the first molar. The roots of the second and third molars of the maxilla also are partly exposed.
Periapical lesion: 31
There is a periapical cavity by the alveolus of the central incisor of the left mandible. The cavity opens to the labial side. It is about 4 mm in diameter and has smooth, rounded sides, possibly a granuloma. The tooth appears to be healthy.

Pathologies and general observations:
Periostitis, osteoarthritis, ankylos, lumbarization, coxa vara, asymmetric bone length
Periostitis: Left and right radius, left and right ulna, left and right tibia, right fibula

Fig 232: Grave 222, right tibia, with new bone formations.

Both radii have porous and striated new bone formations at the distal diaphysis, by the ulnar notch, extending proximally c. 26 mm (right) and c. 35 mm (left).
Both ulnae have porous and striated new bone formations by the interosseous border in the distal part of the diaphysis, extending c. 37 mm (right) and c. 26 mm (left). On the left radius and ulna the bone changes are slight.
The left femur has an area of porosity, c. 15 mm in

Fig 233: Grave 222, axis, with eburnation at the left inferior joint.

diameter, on the anterior side of the distal diaphysis, proximally of the patellar surface.
The right tibia has striations along the distal ¾ of the diaphysis, on the medial and lateral sides. The

Fig 234: Grave 222, sacrum, with a lumbarized first segment.

anterior part has a swollen appearance with porosity in the distal half of the diaphysis. The left tibia has striations along distal 2/3 of the medial and lateral sides of the diaphysis. It is possibly a bit swollen, but not as much as the right tibia.
The right fibula has porous, striated and uneven new bone formations along the diaphysis.

Fig 235: Grave 222, right and left femur, with a reduced angle of the neck.

Osteoarthritis: Cervical vertebrae, right and left ribs, right knee
The left joint between the axis and the third cervical vertebra has areas of eburnation. On the axis there is an eburnated area of c. 6x2 mm, while the eburnated area on C3 is slightly smaller. T12 has pitting of the joint surface and marginal osteophytes at the right side costal facet. The left side is not preserved. The right and left twelfth ribs both have pitting of the joint surface and marginal osteophytes at the head. The right patella has pitting on the proximal part of the medial joint surface, and osteophytes of c. 2 mm size along the medial margin of the joint.
Ankylos: Second and third phalanges of the foot
A second phalanx of the foot is fused with a third phalanx. They are probably from the left foot.
Lumbarization: S1
S1 is not fused with S2 on the left side. Only the joints and arches are preserved, not the bodies.
Coxa vara:
The angel of the necks of the femora is almost 90 degrees. The necks of the femora are of normal length.
Asymmetric bone length: Radius, ulna

Fig 236: Grave 222, l4-l5, with warped arches.

The left radius is 16 mm shorter than the right radius. The ulnae are not complete enough for a measurement, but the left one is clearly shorter than the right one.
Other observations:
The arches of L4 and, to a lesser extent, L5 are slightly warped. The spinous process points a bit to the left, and the left part of the nerural arch is shorter than the right.
There are bilateral costo-clavicular joints.
The frontal bone has an area of porosity by glabella, with three shallow depressions, c. 3 mm in diameter. The area affected is c. 50x35 mm in size, with porosity extending along the supra orbital borders. Parts

Fig 237: Grave 222, frontal bone, with lesions at glabella.

of the cranial surface are damaged and flakes of bone peeling off, so the original extent of the bone changes is unknown. These changes are possibly caused by syphilis, but they do not have the typical appearance of caries sicca.

Non metric traits:

Septal aperture (right), bilateral torus mandibularis (marked), epipteric bone (right)

Extra bones:

Human: A canine of the right maxilla (13), slightly worn.

Grave 223

Bones present:

Cranium, teeth, cervical vertebrae, thoracic vertebrae, lumbar vertebrae, sacrum, ribs, clavicle, scapula, humerus, radius, ulna, carpal bones, metacarpal bones, phalanges (hand), hip bone, femur, patella, tibia, fibula, tarsal bones, metatarsal bones, phalanges (foot)

Preservation: Good

The skeleton is well preserved, with most elements present. The vertebrae, ribs, scapulae and hip bone are poorly preserved and fragmented. The long bones are more or less complete, with some minor damage to a few joints.

Age: Young-middle adult, c. 25-45 years

The age estimation is based on the closure of cranial sutures, dental wear, and the auricular surface of the hip bone. Dental wear was uneven, indicating an age between 17-45 years.

Sex: Female?

The estimation of sex is based on the morphology of the cranium (female?) and hip bone (female), and metric traits of the femur (inconclusive) and the humerus (female).

Stature: c. 152 cm (TG), 154 cm (S)

The maximum length of the left femur is 396 mm, indicating a stature of approximately 151.9 cm (TG) or 154.1 cm (S). Stature estimations based on the measurements of other long bones range from 152.3 cm (TG) (right tibia) or 151.7 cm (S) (left ulna) to 159.8 cm (TG) or 158.9 cm (S) (right humerus).

Dental status:

Ante mortem tooth loss, periapical lesion

Teeth present: 12, 13, 14, 15, 16, 17, 18, 21, 24, 25, 26, 27, 28, 31, 32, 33, 34, 36, 37, 38, 41, 42, 43, 44, 45, 46, 47, 48

Ante mortem lost tooth: 35

Post mortem lost teeth: 11, 22, 23

Dental wear: Medium (molars 17-45 years)

Periapical lesion: 22

There is a periapical cavity at the lateral incisor of the left maxilla. The labial side of the bone is damaged, and it is unknown if there was a fistula originally. The cavity is about 8 mm in diameter, with rounded margins. It extends to the distal margin of the alveolus of the central incisor. The lateral incisor is missing. The central incisor is heavily worn, but appears healthy.

Fig 239: Grave 223, left radius, with signs of osteoarthritis (right), compare to the right radius, with a normal joint (left).

Fig 238: Grave 223.

Fig 240: Grave 223, T6, with Schmorl's node.

Pathologies and general observations:
Osteoarthritis, Schmorl's nodes, hallux valgus?
Osteoarthritis: Left wrist
The distal joint of the left radius has pitting on the joint surface and osteophytes of c. 2 mm size along the anterior and posterior margins.
Schmorl's nodes: Thoracic vertebrae
There are Schmorl's nodes on the inferior surface of the bodies of T5-T8 and T11. They are c. 5-10x10-15 mm in size. Many thoracic vertebrae have damaged bodies.
Hallux valgus?
On both feet the distal joints of first phalanx of the first digit have an angle, increasing the lateral turn of

Fig 241: Grave 223, angeled distal joints in the first phalanges of the big toes.

the big toe. The left first metacarpal bone has a slight lipping of c. 1 mm around the distal joint. The first phalanx of this toe has marginal lipping of up to 3 mm around the proximal joint.
Other observations:
There is a costo-clavicular joint on the right side.
Extra bones:
Human: Bones of the hands were found loose in the grave, and some of them might be from another individual than the main burial. The lunate of the right and the left hand have significantly different size. Possibly the smaller right lunate belongs to another individual. The left lunate articulates with a preserved capitate, while there are no other carpal bones of the right hand present. There are two fifth metacarpals of the left hand. The larger probably belongs to another individual, as the smaller is more similar to the fifth metacarpal of the right hand.

Grave 224

Bones present:
Cranium, teeth, cervical vertebrae, humerus, femur, tibia, fibula
Preservation: Bad
The skeleton is poorly preserved. The cranium is fragmented, fragile and the surface is peeling. The teeth are in good condition. Only a few fragments of the vertebral column are preserved. The long bones are very fragile, and only parts of the diaphyses are present.
Age: Old adult, c. 45+ years

Fig 242: Grave 224.

The age estimation is based on dental wear. The cranium is too fragmented to base the age estimation on the closure of sutures. The observable sutures are in different stages of closure, or completely obliterated.
Sex: Female
The estimation of sex is based on the morphology of

Fig 243: Grave 224, mandible, with heavy occlusal wear, ante mortem tooth loss, and torus mandibularis.

the cranium (female).
Stature: N/A
No complete long bones suitable for measurements and stature estimation were available.
Dental status:
Ante mortem lost teeth, congenitally absent teeth, large calculus deposits, periodontitis, periapical lesions
Teeth present: 13, 14, 15, 17, 18, 27, 28, 31, 32, 33, 34, 35, 36, 37, 41, 42, 47
Ante mortem lost teeth: 16, 45, 46
Post mortem lost teeth: 43, 44
Congenitally absent teeth: 38, 48
Dental wear: Heavy (molars 33-45+ years)
The teeth are heavily worn, and some of them broken, with only the root remaining. This, in combination with poor preservation if the alveolar bone, makes the identification of the teeth uncertain. Seven loose roots could not be identified to tooth. There is heavy interproximal wear on the second molar of the right maxilla, with the distal half of the crown worn away. The medial part of the crown of the second molar of the left maxilla has been worn down. In the mandible the incisors and the left canine (the right canine is missing) are worn to the root. The left lateral incisor and canine have openings to the pulp chamber, and so has the heavily worn second molar of the left mandible.
Large calculus deposits: 18, 37
The dental calculus is very fragile and easily falls of. Probably some have been lost before examination. The third molar of the left maxilla have some calculus in the fissures of the occlusal surface, indicating that this toot was not much in use.
Periodontitis:
There is a reduction of alveolar bone, and the roots of the teeth are exposed. In the mandible the alveolar bone only covers the root apexes of the molars.
Periapical lesions: 13, 14, 23, 36
In the right maxilla there is a c. 7x12 mm periapical cavity at the canine and the first premolar, opening on the labial side. There is also a periapical cavity by the canine of the left maxilla. This is partly damaged, and the original appearance is uncertain. Probably there was a connection to the maxillary sinus. The cavity extends medially to the intermaxillary suture, measuring c. 6x7x10 mm. The cavity has irregular shape, and there is porosity around the opening on the labial surface, possibly an abscess. In the right side of the mandible there is a periapical cavity by the root of the second premolar and the mesiobuccal root of the first molar. The edges are rounded and it is about 5 mm in diameter, possibly a granuloma.

Fig 244: Grave 224, atlanto-occipital fusion. Part of the anterior arch of atlas, with the dental fovea, at the top right.

Pathologies and general observations:
Ankylos, sinusitis
Ankylos: Atlanto-occipital fusion
The occipital bone is fused with the atlas in the right condyle. The left one is not preserved. This is probably a congenital condition.
Sinusitis: Left maxilla
The maxilla is partly damaged, but it is probable that there was an oro-antral fistula in the left maxilla, connecting the alveoli of the canine and first premolar with the sinus. The cavity (periapical cavity/maxillary sinus) continues in between the floor of the nasal cavity and the palate. In the maxillary sinus there is a network of new bone spicules on the anterior and medial walls. The posterior wall is porous and swollen, both inside the sinus cavity and the

outside of the bone. This indicates chronic maxillary sinusitis of dental origin.
Other observations:
The left temporal bone has an area of porosity, c. 15 mm in diameter, superior to the external acoustic meatus.
Non metric traits:
Bilateral torus mandibularis (right moderate, left marked)
Extra bones:
Human: The deciduous central and lateral incisors of the left maxilla (61, 62) were found in the fill of the grave. The crown of the central incisor is fully formed, indicating an age of one or a couple of months.

Grave 225

Bones present:
Teeth

Fig 245: Grave 225.

Preservation: Bad
The crowns of the teeth are fairly well preserved, while the roots are fragile, fragmented or missing.
Age: Adult
The age estimation is based on dental wear. The third molars are in occlusion, with minor wear facets, indicating that the individual is adult.
Sex: N/A
No bones suitable for sex estimation were available.
Stature: N/A
No complete long bones suitable for measurements and stature estimation were available.
Dental status:
Teeth present: 16, 18, 27, 31, 33, 34, 35, 37, 38, 45, 46
Dental wear: Limited (molars 17-25 years)
Pathologies and general observations:
No pathologies observed.

Grave 226

Bones present:
Cranium, teeth, cervical vertebrae, ribs, clavicle, scapula, humerus, radius, ulna, metacarpal bones, phalanges (hand), hip bone, femur, tibia, fibula, metatarsal bones
Preservation: Medium
The skeleton is medium well preserved. The cranium is fairly well preserved, but the posterior part is damaged. The teeth are in good condition. The atlas and axis are well preserved. A few more cervical vertebrae are present, but not the lower vertebrae. The ribs, scapulae and hip bone are fragmented. The diaphyses of the long bones are medium well preserved, with a few cracks, but the joints are not preserved.
Esitmated age: Middle adult, c. 30-50 years
The age estimation is based on the closure of cranial sutures and dental wear.
Sex: Male

Fig 246: Grave 226.

The estimation of sex is based on the morphology of the cranium (male).
Stature: N/A
No complete long bones suitable for measurements and stature estimation were available.
Dental status:
Congenitally absent tooth, periodontitis
Teeth present: 11, 14, 15, 16, 17, 18, 22, 24, 25, 26, 27, 31, 32, 33, 34, 35, 36, 37, 38, 41, 42, 43, 44, 45, 46, 47, 48
Post mortem lost teeth: 13, 21, 23
Congenitally absent tooth: 28
Dental wear: Limited-medium (molars 17-35 years)

Fig 247: Grave 226, left tibia, proximal diaphysis, with new bone formations.

Periodontitis: There is a reduction of alveolar bone, and the roots of the teeth are exposed in the mandible and at the molars in the maxilla. There is also some post mortem damage to the bones.
Pathologies and general observations:
Periostitis, osteoarthritis, sinusitis
Periostitis: Left tibia
The left tibia has an area, c. 16 mm in diameter, with porous, uneven new bone at the medial side of the proximal end of the diaphysis. The affected area is limited, and the bone changes possibly related to a local infection or injury.
Osteoarthritis: Cervical vertebrae
The right joint surface between the axis and C3 has surface porosity and marginal osteophyte formations.
Sinusitis: Left maxilla
There are spicules of new bone on the anterior wall of the left maxillary sinus, indicating chronic maxillary sinusitis.
Non metric traits:
Metopic suture, torus mandibularis (left, trace), lambdoid ossicle (right)

Fig 248: Grave 226, left maxilla, with bone spicules in the sinus cavity.

Grave 227

Bones present:
Cranium, teeth, cervical vertebrae, thoracic vertebrae, lumbar vertebrae, sacrum, sternum, ribs, clavicle, scapula, humerus, radius, ulna, carpal bones, metacarpal bones, phalanges (hand), hip bone, femur, patella, tibia, fibula, tarsal bones, metatarsal bones, phalanges (foot)
Preservation: Good
The skeleton is well preserved. The cranium is almost complete, with some damage to the viscerocranium. The teeth are well preserved. The vertebrae are fragmented. The scapulae, ribs and hip bone are well preserved, but fragmented. The manubrium is preserved, but the rest of the sternum is not. The long bones are complete.
Age: Old adult, c. 50-59 years
The age estimation is based on the closure of cranial sutures, dental wear and the auricular surface.
Sex: Male
The estimation of sex is based on the morphology of the cranium (male?) and hip bone (male), and metric traits of the femur (male) and the humerus (male?).
Stature: c. 173 cm? (TG), 172 cm? (S)
The maximum length of the left femur is 465 mm,

Fig 249: Grave 227, right maxilla, with periodontitis.

Fig 250: Grave 227.

indicating a stature of approximately 173.4 cm (TG) or 172.3 cm (S). There are however pathological changes in the knee joint that might affect the measurement of the femur and also the estimated stature of the individual. The estimations based on the femur can be compared to estimations based to bones without pathological changes. The maximum length of the both fibulae is 356 mm, indicating a stature of approximately 168.1 cm (TG) or 164.1 (S) and the maximum length of the right humerus is 332 mm, indicating a stature of approximately 174.0 cm (TG) or 172.6 cm (S).

Dental status:

Ante mortem tooth loss, large calculus deposits, periodontitis

Fig 251: Grave 227, mandible, with ante mortem tooth loss, periodontitis and large calculus deposits.

Teeth present: 12, 14, 15, 16, 17, 18, 22, 23, 24, 25, 26, 27, 31, 33, 34, 35, 41, 42, 43, 44, 46

The crown of left canine of the mandible has been broken off during life. The root remains in the jaw, but the broken surface is partly overgrown by alveolar bone. Part of the root of the left central incisor of the mandible also remains in the jaw. There are also root remains in the posterior part of the left mandible, probably from the second molar.

Ante mortem lost teeth: 11, 21, 32, 36, 37, 38, 47, 48

Post mortem lost teeth: 13, 45

The alveolus of the second premolar is small, probably due to periodontitis, but it is possible that the tooth was lost ante mortem.

Dental wear: (molars 17-25 and 33-45 years)

The premolars of the left maxilla are heavily worn, almost down to the root, with openings to the pulp chamber. The right first molar of the mandible is heavily worn, buccaly almost down to the root, and there is an opening to the pulp chamber. The alveoli are enlarged, but there is no clear periapical cavity.

Large calculus deposits: 18, 46

Periodontitis:

There is a severe reduction of alveolar bone in the entire maxilla, and the roots of the teeth are exposed and have calculus deposits.

Pathologies and general observations:

Periostitis, osteoarthritis, vertebral osteophytosis, ankylos, trauma?, osteoma

Fig 252: Grave 227, ninth left rib, with new bone formations.

Periostitis: Left ninth rib, first phalanx of the left hand
The ninth left rib has an uneven surface and porous new bone formation c. 33 mm along the inferior margin at the angle.
The first phalanx of the second digit of the left hand has periosteal new bone formation, c. 7x9 mm in size, at the middle of the diaphysis.

Fig 253: Grave 227, right second metacarpal bone, with signs of osteoarthritis at the distal joint

Osteoarthritis: Left elbow, right and left hand, right and left knee
The distal joint of the left humerus has a c. 20 mm large area of eburnation on the capitulum. There are osteophyte formations, c. 3-8 mm in size, around the distal joint, and pitting of the joint surface, particularly on the capitulum. The left radius has eburnation and pitting on the proximal joint, and osteophytes around the margin. The left ulna also have marginal osteophytes at the proximal joint.
The second metacarpal bone of the right hand has pitting and an eburnated area, c. 7x9 mm in size, on the distal joint surface. Around the joint there are osteophytes of up to 8 mm size. The first phalanx of the digit has pitting, an eburnated area, and marginal osteophytes of c. 1 mm at the proximal joint.
The third metacarpal bone of the right hand has pitting on the entire distal joint surface, and eburnation on the lateral half of it. There are large rounded bone formations around the entire distal joint, up to c. 17 mm in size on the dorsal side. The distal joint is somewhat angled laterally (perhaps was the finger pointing in that direction?). The first phalanx of the digit has pitting and eburnation on the entire proximal joint surface, and c. 4 mm osteophyte formations on the dorsal margin.
The second metacarpal bone of the left hand has an area of eburnation, c. 3x8 mm in size, at the lateral part of the distal joint. There are osteophyte formations of c. 6 mm on the dorsal and palmar margins of the joint. The first phalanx of the digit has a small area of eburnation at the lateral part of the proximal

Fig 254: Grave 227, left femur with signs of osteoarthritis at the distal joint. Eburnation at the medial condyle (top) and marginal osteophytes (bottom).

joint.
The third metacarpal bone of the left hand has an area of eburnation, c. 3x7 mm in size, at the lateral part of the distal joint. There are porous new bone formations around the distal joint, up to 6 mm in size on the dorsal side. The first phalanx of the digit has possibly traces of eburnation on the proximal joint surface, but this part of the bone is a bit damaged.
The distal joint of the right femur has large osteophyte formations around the margins. On the medial and lateral condyles the osteophytes are up to 13 mm in size. Both condyles have pitting of the joint surface. On the medial condyle there is an eburnated area, c. 25x40 mm in size, with striation in the direction of joint movement. The distal joint is flattened.
The right tibia has osteophyte formations around the margin, extending c. 6.5-10 mm distally at the anterior margin of the medial and lateral condyles. At the medial condyle there is a concave eburnated area, striated in the direction of movement of the joint, c.

Fig 255: Grave 227, right tibia, with eburnation at the medial condyle.

35x37 mm in size.
The right patella has osteophytes of c. 2.5-5 mm size around the margin of the joint surface.
The distal joint of the left femur has large osteophyte formations around the margins. On the medial and lateral condyles the osteophytes are up to 12 mm in size. On the medial condyle there is an eburnated area, c. 34x50 mm in size, and pitting of the joint surface. There are faint stirations to the eburnated surface, but not as clearly seen as on the right femur. The distal joint is flattened.
The left tibia has osteophyte formations extending c. 8 mm distally at the anterior and posterior margin of the medial and lateral condyle. At the medial condyle there is a concave eburnated area, c. 36x37 mm in size, striated in the direction of movement of the joint.
The left patella has osteophytes of less than 1 mm size at the medial margin of the joint surface.
Vertebral osteophytosis: Thoracic vertebrae
Two fragments of vertebral bodies from the lower thoracic region have large marginal osteophytes.
Ankylos: Thoracic vertebrae, second and third phalanx of the foot
Two vertebrae from the thoracic region are fused. The vertebral bodies are separate, but connected by an outer bone layer. The fusion of vertebral bodies in the thoracic region could be caused by diffuse idiopathic skeletal hyperostosis (DISH). For a diagnosis at least four vertebrae in sequence should be fused, and typically the bone formations look like melted wax, and are located on the right-hand side of the vertebral bodies. In this case only two fused vertebrae have been identified, and due to poor preservation the original appearance and location of the bone formation is not clear. DISH restricts the flexibility of the spine, but often causes no problems (Waldron 2009:72-79). An early stage of DISH is a possibility. Another possibility is ankolysing spondylitis. Ankolysin spondylitis is considered less likely as the sacroiliac joint is not fused, and there are large osteophyts on preserved fragments of vertebral bodies (not a prominent feature in ankylosing spondylitis). Two second phalanges of the foot are fused with two third phalanges.

Fig 256: Grave 227, thoracic vertebras. Two fused bodies (left) and two bodies with marginal osteophytes (right).

Trauma?: First phalanx of the right hand
One first phalanx (probably from the fifth digit) has a bump on the dorsal part of the lateral distal condyle. This bone formation, c. 5 mm in size, was possibly caused by trauma.

Fig 257: Grave 227, first phalanx of the hand, with a bump on the distal joint.

Osteoma: Right parietal bone
There is a small, c. 4 mm diameter, round, smooth bump at right parietal bone, by the middle of the sagittal suture, possibly a button osteoma.

Non metric traits:
Metopic suture, lambdoid ossicles (right and left)

Grave 228

Context: Some bones from the right side of the upper body are from the fill of grave 221.

Bones present:
Cranium, teeth, cervical vertebrae, ribs, scapula, humerus, radius, ulna, metacarpal bones, phalanges (hand), femur, tibia, fibula, tarsal bones, metatarsal bones

Preservation: Bad
The skeleton is poorly preserved, but most body parts are represented. The bones are very fragile and fragmented, and easily fall apart. The cranium is fragmented, but the teeth are well preserved. The vertebrae, ribs and scapulae are fragmented. Diaphyses and fragments of joints remain of the long bones.

Age: Young adult

Fig 258: Grave 228.

The age estimation is based on dental wear. The third molars are in occlusion, and the root is fully formed, indicating that it is an adult individual.
Sex: N/A
No bones suitable for sex estimation were available.
Stature: N/A
No complete long bones suitable for measurements and stature estimation were available.
Dental status:
Teeth present: 34, 35, 36, 37, 38, 43, 44, 45, 46, 47, 48
Post mortem lost tooth: 33
Neither alveolar bone nor teeth of the maxilla are preserved.
Dental wear: Limited (molars 17-25 years)
Pathologies and general observations:
No pathologies observed.

Grave 229

Bones present:
Cranium, teeth, cervical vertebrae
Preservation: Bad
The skeleton is poorly preserved, with only fragments of the cranium, mandible, teeth and atlas remaining. Many of the cranial fragments and the atlas are paper thin and fragile. The temporal bones and mandible are in better condition, and the teeth are well preserved.

Fig 259: Grave 229.

Age: Adult
The age estimation is based on dental wear. The third molars are in occlusion, indicating that it is an adult individual.
Sex: Indeterminate sex
The only feature indicating sex present was the mastoid process (inconclusive).
Stature: N/A
No complete long bones suitable for measurements and stature estimation were available.
Dental status:
Teeth present: 11, 12, 13, 14, 15, 16, 17, 18, 21, 22, 23, 24, 25, 26, 27, 28, 31, 32, 33, 34, 35, 36, 37, 38, 41, 42, 43, 44, 45, 46, 47, 48
Dental wear: Limited (molars 17-25 years)
Non metric traits: The lateral incisors of the maxilla are rather small, and the left one is peg-shaped.
Pathologies and general observations:
No pathologies observed.

Fig 260: Grave 230.

Grave 230

Bones present:
Cranium, teeth, cervical vertebrae, thoracic vertebrae, lumbar vertebrae, sacrum, ribs, clavicle, scapula, humerus, radius, ulna, carpal bones, metacarpal bones, phalanges (hand), hip bone, femur, patella, tibia, fibula, tarsal bones, metatarsal bones, phalanges (foot)
Preservation: Medium
The skeleton is medium well preserved. The cranium is well preserved, but the occipital bone and the mandible are broken. The teeth are well preserved. The vertebrae, scapulae, ribs and hip bone are fragmented. The surfaces of the long bones are cracked and the joints are often present, but not complete. The bones of the hand are relatively well preserved, but the bones of the feet are in worse condition.
Age: Young adult, c. 22-25 years
The age estimation is based on the closure of cranial sutures, dental wear and the auricular surface of the hip bone. The sternal epiphysis of the clavicle is fused, indicating an age of at least 22 years.
Sex: Female
The estimation of sex is based on the morphology of the cranium (female) and hip bone (female), and metric traits of the femur (female?) and the humerus (female).
Stature: c. 153 cm (TG), 156 (S)
The maximum length of the right femur is 402 mm, indicating a stature of approximately 153.4 cm (TG) or 155.7 cm (S). The only other long bone complete enough for maximum length measurement is the right radius, which is 216 mm, indicating a stature of 157.3 cm (TG) or 157.1 cm (S).
Dental status:
Periodontitis
Teeth present: 11, 12, 13, 14, 15, 16, 17, 18, 21, 22, 23, 24, 25, 26, 27, 28, 31, 32, 33, 34, 35, 36, 37, 38, 41, 42, 43, 44, 45, 46, 47, 48
Dental wear: Limited (molars 17-25 years)
Periodontitis: 16
There is a reduction of alveolar bone, and the roots of the first molar of the right mandible are exposed to the bifurcation.
Pathologies and general observations:
Periostitis, calcification
Periostitis: Right and left ribs, right and left femur, right and left tibia

Fig 261: Grave 230, rib fragment with a layer of new bone.

The bone changes of the femora and tibiae, interpreted as periostitis, are a bit uncertain, due to poor preservation.
The right and left femora have small areas of new bone formations, c. 5 mm (right) and c. 30 mm (left) and the medial-inferior side of the neck.
The tibiae have striations along the medial side of the diaphyses. On the left bone there is also some porosity at the medial side.
There are large new bone formations on many of the left ribs. As the ribs are fragmented the number of

Fig 262: Grave 230, calcified lumps from thoracic region.

affected bones is unknown, but about two thirds of the recovered fragments have new bone formations. The first two ribs, and the dorsal part of the lower ribs, up to the angle, seem not to be affected. The affected ribs have a layer of light, porous, crumbling, up to 2 mm thick, new bone on the inferior and internal surfaces.
Calcification: Calcified fragments were found at the left side of the vertebral column in the lower thoracic region. The recovered sample includes paper-thin flakes and fragments up to c. 10-20 mm in size. This can be related to the pathological changes in the right ribs.
Other observations:
The left temporal bone has an area of porosity, c. 10x25 mm in size, superior to the external acoustic meatus.
Non metric traits:
Bilateral torus mandibularis (trace), epipteric bone (right)

Grave 231

Bones present:
Cranium, teeth, cervical vertebrae, ribs, humerus, radius, ulna, carpal bones, metacarpal bones, phalanges (hand), femur, patella, tibia, fibula, tarsal bones, metatarsal bones, phalanges (foot)
Preservation: Bad
The skeleton is poorly preserved. The bones are very fragile and fragmented and easily fall apart. The cranium is fragmented. The mandible is very fragile, but the teeth are well preserved. The atlas and axis are well preserved, and there are fragments of additional vertebrae. The long bones are very fragile.
Age: Young adult
The age estimation is based on dental wear. The cranium is too fragmented to base the age estimation on the closure of sutures. The observable sutures are completely open.
Sex: Indeterminate sex
The estimation of sex is based on the morphology of the cranium (female?).
Stature: N/A
No complete long bones suitable for measurements and stature estimation were available.
Dental status:
Fractured tooth, gingivitis?
Teeth present: 11, 12, 13, 14, 15, 16, 17, 18, 21, 22, 23, 24, 25, 26, 27, 28, 31, 32, 33, 34, 35, 36, 37, 38, 41, 42, 43, 44, 45, 46, 47, 48
Dental wear: limited (molars 17-25 years)
Fractured tooth: 33
The crown of the canine of the left mandible is fractured ante mortem, and there is a thin layer of calculus on the surface of the break. The lingual part of the crown, and also a small piece of the root, is missing. There is an opening to the pulp chamber.
Gingivitis?: Both maxillae have surface porosity on the alveolar process, from the second premolar to the second molar. The level of the alveolar bone is however not reduced.

Fig 264: Grave 231, fourth metacarpal bone, with a healed fracture.

Pathologies and general observations:
Cribra orbitalia, trauma
Cribra orbitalia: There is an area of c. 10x20 mm with small perforations in the superior wall of the left orbit. The right orbit is not as well preserved, but perforations can be observed in an area of c. 10x10 mm in the superior wall.
Trauma: Left fourth metacarpal bone
The fourth metacarpal bone of the left hand has a

Fig 263: Grave 231.

slight angle to the diaphysis, making the dorsal side more convex. This is probably a completely healed, but slightly misaligned, fracture.

Grave 232

Bones present:
Cranium, teeth, femur, tibia, fibula
Preservation: Bad
The skeleton is poorly preserved. The cranium is fragmented, fragile and the bone surface is peeling. There are fragments of the mandible. The teeth are well preserved. The only postcranial elements present are the diaphyses of the femora, tibiae and fibulae.
Age: Young adult
The age estimation is based on dental wear. The cranium is too fragmented to base the age estimation on the closure of sutures. The observable sutures are completely open.
Sex: female?
The estimation of sex is based on the morphology of the cranium (female?).
Stature: N/A
No complete long bones suitable for measurements and stature estimation were available.
Dental status:
Fractured tooth, gingivitis, periapical lesion
Teeth present: 11, 12, 13, 14, 15, 16, 17, 18, 21, 22, 23, 24, 25, 26, 27, 28, 31, 32, 33, 34, 35, 36, 37, 38, 41, 42, 43, 44, 45, 46, 47, 48
Tooth not in occlusion: 13 (23)
The canine of the right maxilla is not fully erupted, but the apex of the crown was possibly visible ante mortem. The left maxilla is not preserved. The canine of the left maxilla has no wear facets and no calculus deposits, suggesting that this tooth was at a similar stage of eruption.
Dental wear: Limited (molars 17-25 years)
Fractured tooth: 15
Gingivitis: There is some porosity in the labial side of the alveolar bone by the incisors, possibly due to gingivitis and related to the large calculus deposits (stage 2).
Periapical lesion: 15
The second premolar of the right maxilla is fractured diagonally, and the mesiolingual half of the crown is missing. The surface of the break is rounded, indicating ante mortem damage. There is an opening to the pulp chamber. At the root apex there is a cavity of c. 7.5x5 mm size, opening on the buccal side.
Pathologies and general observations:
Cribra orbitalia: There is an area with perforations in the lateral part of the superior wall of the right orbit. The left orbit is not preserved.

Fig 265: Grave 232.

Fig 266: Grave 232, right maxilla, with erupting canine (13) and periapical lesion at the second premolar (15).

Grave 233

Bones present:
Cranium, teeth, cervical vertebrae, ribs, humerus, radius, ulna, carpal bones, metacarpal bones, phalanges (hand), femur, tibia, fibula, tarsal bones, metatarsal bones, phalanges (foot)

Preservation: Bad
The skeleton is relatively poorly preserved. The bones are fragile, easily fall apart, and have been flattened in the soil. The cranium is fragmented. The teeth are well preserved. The cervical vertebrae and ribs are fragmented. Only the diaphyses are preserved of the long bones, and fragments of the joints of the right radius and ulna. There are some fragments from the hands and left foot. The right foot is relatively well preserved.

Age: Adult
The age estimation is based on dental wear. The dental wear is uneven, but most on most of the molars it indicates an age of c. 25-35 years.

Fig 267: Grave 233, mandible vith periodontitis.

Sex: Indeterminate sex
The estimation of sex is based on the morphology of the cranium (inconclusive).

Stature: N/A
No complete long bones suitable for measurements and stature estimation were available.

Dental status:
Periodontitis
Teeth present: 11, 12, 13, 14, 15, 16, 21, 23, 24, 25, 26, 28, 31, 32, 33, 34, 35, 36, 37, 38, 41, 43, 44, 45, 46, 47
Post mortem lost teeth: 17, 22, 27, 42, 48
Dental wear: Uneven (molars 17-35 years)
The dental wear is limited, except on the first molars of the left maxilla and mandible, where the crown partly is worn down to or almost down to the root.
Periodontitis:
There is a general reduction of alveolar bone in the mandible, and the roots of the teeth are exposed. Particularly the left third molar has little alveolar bone left.

Fig 269: Grave 233, right maxilla, with pitting in the sinus cavity.

Pathologies and general observations:
Cribra orbitalia, sinusitis
Cribra orbitalia: There is an area of c. 5 mm with small perforations in the superior wall of the right orbit. There are no perforations in the left orbit.
Sinusitis: Left maxilla
There is pitting at the base of the left maxillary sinus, indicating chronic maxillary sinusitis. The general poor preservation of the bone surface makes the

Fig 268: Grave 233.

diagnosis uncertain.
Non metric traits:
Bilateral torus mandibularis (moderate)

Grave 234

Bones present:
Cranium, teeth, cervical vertebrae, thoracic vertebrae, lumbar vertebrae, sacrum, sternum, ribs, clavicle, scapula, humerus, radius, ulna, carpal bones, metacarpal bones, phalanges (hand), hip bone, femur, patella, tibia, fibula, tarsal bones, metatarsal bones, phalanges (foot)
Preservation: Good
The skeleton is well preserved and almost complete. There is some damage to the right side of the cranial vault, but most of the cranium, mandible and teeth are in good condition. All vertebrae are present, with only minor damage. All ribs are present, but fragmented. The scapula and hip bone are well preserved, but not complete. The long bones are well preserved.

Fig 270: Grave 234.

Age: Young-middle adult, c. 30-45 years
The age estimation is based on the closure of cranial sutures, dental wear and the auricular surface of the hip bone. The right and the left auricular surfaces were in different phases.
Sex: Female?
The estimation of sex is based on the morphology of the cranium (female?) and metric traits of the femur (female).
Stature: c. 150 cm (TG), 152 cm (S)
The maximum length of the left femur is 387 mm, indicating a stature of approximately 149.7 cm (TG) or 151.7 cm (S). Stature estimations based on the measurements of other long bones range from 149.0 cm (TG) or 145.8 cm (S) (left fibula) to 159.4 cm (TG) or 158.6 cm (S) (right ulna).
Dental status:
Ante mortem tooth loss, congenitally absent teeth, fractured teeth, large calculus deposits, periodontitis, periapical lesions
Teeth present: 11, 12, 13, 15, 16, 17, 21, 22, 23, 24, 26, 27, 31, 32, 33, 34, 35, 36, 37, 38, 41, 42, 43, 44, 45, 46, 47, 48

Fig 271: Grave 234, right maxilla, with ante mortem lost tooth (14), periodontitis and large calculus deposits .

Only the roots remain of some premolars. The crown of the second premolar of the right maxilla was lost ante mortem, and the remaining root is partly covered by alveolar bone. Root fragments also remain of the first premolar of the left maxilla and the second premolar of the left mandible.
Ante mortem lost teeth: 14, 25
There is a small alveolus present at the second premolar of the left maxilla. Probably the tooth was lost earlier, and the alveolus is partly resorbed.

Congenitally absent teeth: 18, 28
Dental wear: Uneven (molars 17-45 years)
Fractured teeth: 13, 36
The mesial part of the crown of the canine of the left maxilla was broken ante mortem, and some calculus covers the surface of the break. The mesio-lingual cusp of the first molar of the left mandible was broken ante mortem. The surface is rounded and worn, and there is some calculus on the surface of the break.

Fig 272: Grave 234, mandible, with periodontitis and large calculus deposits.

Large calculus deposits: 17, 27, 33, 34, 36, 37, 38, 43, 45, 46, 47, 48
Periodontitis:
There is a general reduction of alveolar bone, particularly by the molars, and the roots of the teeth are exposed. There is no alveolar bone left at all at the buccal roots of the second molar of the right maxilla, and large deposits of calculus cover most of the crown and the buccal roots. The alveoli of the second molar of the left mandible have merged to one large alveolus (the tooth have two roots), with no bone on the buccal side. The second molar of the right mandible also had no alveolar bone at the buccal side of the alveoli.
Periapical lesion: 22
There is a periapical cavity at the lateral incisor of the left maxilla, with a c. 2.5 round opening on the labial side.
Pathologies and general observations:
Periostitis, osteoarthritis, vertebral osteophytosis, hallux valgus?, osteochondritis dissecans
Periostitis: Ribs
The lower ribs, particularly the ninth right rib, have porous new bone on the inferior margin, by the angle.
Osteoarthritis: Right and left ribs, left wrist, right hand, right knee

Fig 273: Grave 234, right femur, with eburnation on the medial condyle.

Some of the vertebral-costal joints have pitting of the joint surfaces and marginal osteophytes. This can be observed in T7-T10, in the fourth to tenth right ribs, and the sixth to eleventh left ribs.
The triquetrum of the left hand has an area of eburnation, c. 5x7 mm in size on the concave joint surface.
The first metacarpal bone of the right hand has an eburnated area, c. 3 mm in size, at the distal joint. The first phalanx of the digit has a similar eburnated area at the proximal joint surface.
The right femur has an eburnated area of c. 30x6 mm size at the centre of the medial condyle. There are osteophytes around the margin of the distal joint, up to 8.5 mm in size at the posterior side of the lateral condyle.

Fig 274: Grave 234, right first metatarsal bone and phalanges. Note the extra joint at the distal diaphysis of the metatarsal bone.

The right tibia has a similar eburnated area at the medial part of the medial condyle, c. 27x11 mm in size. There are also osteophytes along the medial margin of the proximal joint, up to c. 8 mm in size.
Vertebral osteophytosis: Cervical vertebrae
The bodies of the C5-C7 have surface porosity and

Fig 275: Grave 234, osteochondritis dissecans, left femur (top) and right humerus (bottom).

osteophyte formations, c. 2-5 mm in size, along the anterior margin.
Hallux valgus?
On both feet the distal joints of first phalanx of the first digit have an angle, increasing the lateral turn of the big toe.
Osteochondritis dissecans: Right humerus, right and left femur
The right humerus has a rounded pit in the middle of the distal joint. The pit is about 12 mm in diameter, with even margins. The osteochondritis dissecans is in a middle phase, where the sequestrum is lost, and a crater in the bone is exposed.

Fig 276: Grave 234, right radius, with an extended tuberosity.

Both femora have an oval island of bone, c. 25x12 mm in size, on the lateral condyle. The osteochondritis dissecans is in an early phase, where the sequestrum is still attached to the articular surface, though with clear limits.

Other observations:
The tuberosity of the right radius is extended anteriorly.
The posterior side of the right maxilla has an uneven and porous surface above the second molar. This could be related to the periodontal disease. Maxillary sinusitis is also a possibility, but this cannot be investigated without destructive methods.
Non metric traits:
Torus mandibularis (right, moderate), epipteric bone (left)

Grave 235

Bones present:
Cranium, teeth, cervical vertebrae, thoracic verte-

Fig 277: Grave 235.

brae, lumbar vertebrae, sacrum, sternum, ribs, clavicle, scapula, humerus, radius, ulna, carpal bones, metacarpal bones, phalanges (hand), hip bone, femur, patella, tibia, fibula, tarsal bones, metatarsal bones, phalanges (foot)

Preservation: Good

The skeleton is well preserved and almost complete. The cranium, mandible and teeth are well preserved. The vertebral column is medium well preserved. The sacrum and coccyx are well preserved. The ribs, sternum, scapulae and hip bone are well preserved, but not complete. The long bones are well preserved, but some of the joints are damaged.

Age: Young-middle adult, c. 18-44 years

The age estimation is based on the closure of cranial sutures, dental wear and the auricular surface of the hip bone. The indicators of age are contradictory, with limited dental wear and sacral vertebrae not completely fused anteriorly, while the auricular surface shows signs of a more advanced age.

Sex: Female?

The estimation of sex is based on the morphology of the cranium (female?) and the hip bone (female?) and metric traits of the femur (inconclusive) and the humerus (female).

Stature: c. 158 cm (TG), 161 cm (S)

The maximum length of the left femur is 422 mm, indicating a stature of approximately 158.3 cm (TG) or 161.0 cm (S). Stature estimations based on the measurements of other long bones range from 161.6 cm (TG) (right tibia) or 161.0 cm (S) (left radius) to 165.8 cm (TG) or 167.4 cm (S) (left humerus).

Dental status:

Teeth present: 11, 12, 13, 14, 15, 16, 17, 18, 21, 22, 23, 24, 25, 26, 27, 28, 31, 32, 33, 34, 35, 36, 37, 38, 41, 42, 43, 44, 45, 46, 47, 48

Dental wear: Limited (molars 17-25 years)

Fig 278: Grave 235, left tibia, with new bone formations at the diaphysis.

Pathologies and general observations:

Periostitis: Right and left tibia

The right tibia has a c. 30 mm area of new bone formation on the lateral side of the diaphysis, and a narrow area of new bone in the distal part of the medial side. The left tibia has porous, striated new bone formations along the distal part of the lateral side, and a thinner area along the entire diaphysis by the medial side. There are also some striations on the left fibula.

Other observations:

The humeri, radii and ulnae are very thin, and have narrow joints. The metacarpal bones are also long and thin. On both radii the tuberculum is very smooth and flat, not clearly marked. The ulnae have very narrow olecranon. This can indicate atrophy, and that the arms were not used very much.

Fig 279: Grave 235, right and left humerus.

Extra bones:

Human: There were some additional bones of the feet present, of a lighter colour and slightly bigger and more robust than those belonging to the main burial. The extra bones are a right and a left first metatarsal bone, and a first phalanx of the first metatarsal.

Grave 236

Bones present:

Cranium, teeth, cervical vertebrae, thoracic vertebrae, lumbar vertebrae, sacrum, sternum, ribs, clavicle, scapula, humerus, radius, ulna, carpal bones, metacarpal bones, phalanges (hand), hip bone, femur, patella, tibia, fibula, tarsal bones, metatarsal bones, phalanges (foot)

Preservation: Very good

The skeleton is very well preserved and almost complete. It is in good condition, with only minor damage to fragile areas. The cranium is well preserved, but slightly cracked, and there is some damage to the left and anterior part of the mandible.

Age: Old adult, c. 50+ years

The age estimation is based on the closure of cranial sutures, dental wear and the auricular surface of the hip bone.

Sex: Female

The estimation of sex is based on the morphology of the cranium (female) and the hip bone (female) and

Fig 280: Grave 236.

metric traits of the femur (inconclusive) and the humerus (inconclusive).

Stature: c. 157 cm (TG), 160 cm (S)

The maximum length of the left femur is 418 mm, indicating a stature of approximately 157.3 cm (TG) or 159.9 cm (S). Stature estimations based on the measurements of other long bones range from 150.8 cm (TG) or 149.3 cm (right ulna) to 168.5 cm (TG) or 171.2 cm (S) (right humerus). The right humerus is 25 mm longer than the left humerus.

Dental status:

Ante mortem tooth loss, periodontitis, periapical lesions

Teeth present: 17, 23, 25, 26, 27, 35, 36, 37, 38, 43, 44, 45, 46, 47

Ante mortem lost teeth: 18, 28, 48

It is uncertain if the third molars on the right side are congenitally absent or lost ante mortem, there is enough space in the jaw for them. In the right maxilla some tooth in the premolar-canine region has been lost ante mortem. Probably the tooth was lost early, and the other teeth moved to fill the gap, or a tooth was congenitally absent.

Fig 281: Grave 236, mandible, with ante mortem tooth loss, periapical lesions and periodontitis.

Post mortem lost teeth: 14, 15, 16, 24

Seven heavily worn teeth, with only parts of the root remaining, are not identified, probably belonging to the teeth registered as lost post mortem, and to the anterior region, where the alveolar bone is not preserved.

Dental wear: Heavy (molars 33-45+)

The premolars of the left maxilla are worn down to the root. The first molar of the left maxilla is also worn down to the root, with only the lingual root remaining.

Calculus on the occlusal surface: 27, 36, 37, 38

The second molar of the left maxilla and the molars of the left mandible have some calculus on the occlusal surface, indicating that these teeth had not been used for a while at the time of death.

Periodontitis: There is a reduction of alveolar bone in the maxilla and the mandible. In the maxilla it is almost on the same level as the palate. The distal root of the second molar of the right maxilla is exposed, and a layer of supragingival calculus all the way down to the root apex on the buccal side shows that it was also the situation ante mortem.

Periapical lesions: 24, 25, 46

The premolars of the left maxilla have a small periapical cavity, connecting their alveoli, and opening on the buccal side, possibly a granuloma. There are periapical cavities around the roots of the first molar of the right mandible. They have smooth, rounded openings on the buccal side, the distal c. 4 mm in diameter, and the mesial c. 6 mm in diameter. The surrounding alveolar bone displays some porosity.

Pathologies and general observations:

Periostitis, osteoarthritis, vertebral osteophytosis, Schmorl's nodes, butterfly vertebra, spondylolysis, osteoma, calcifications, asymmetric bone length

Periostits: Mandible, right and left tibia
The mandible has periosteal new bone formations on the lateral side of the left ramus, covering an area of c. 20x25 mm. The alveolar bone below the first premolar to the second molar is covered in porous new bone formations, with smaller patches at the anterior part of the bone. The bone formations continue along the inferior margin to the right mental foramen. At the mental protuberance the new bone is c. 9 mm wide, less on the sides. There are also smaller patches of porous new bone on the right side

Fig 282: Grave 236, mandible, with new bone formations.

of the mandible. The mandible is broken by the left third molar, and also has damage to the anterior part, by the incisors. The bone was probably weakened by the pathological process, possibly osteomyelitis or a tumour.
The left tibia have new bone formation by the fibular notch. Both tibiae have impressions of vessels on the posterior side of the diaphysis, and striations medially. The middle of the diaphysis, particularly on the left tibia, is a bit swollen.
Osteoarthritis: Right and left wrist, right and left hand, right and left hip, right and left ankle, right and left foot
Both radii have pitting on the joint surface and marginal osteophyte formations at the distal joint with ulna.
Both ulnae have flattened styloid processes, with c. 10 mm large joints. There is also some pitting of the joint surface of the left ulna. The right bone is partly damaged post mortem.
The carpals of the right and left hands have pitting of the surface on and between the joints. Particularly the triquetrum, trapezoid, capitate and lunate of the right hand, and the triquetrum, trapezoid, hamate and lunate of the left hand are affected.
The second metacarpal bone of the right hand has pitting the distal joint surface, and marginal osteophytes.
The third metacarpal bone of the right hand has a flattened distal joint, with pitting over the entire joint surface and osteophytes, c. 3 mm in size, at the palmar margin.
The first phalanx of the first digit of the right hand has pitting of the distal joint surface, and marginal osteophytes of c. 1 mm in size. The third phalanx of the digit has osteophytes, c. 2 mm in size, at the proximal joint.

Fig 283: Grave 236, right and left ulna, with joints on the styloid processes.

Fig 284: Grave 236, third metacarpal bones, with signs of osteoarthritis at the distal joints, right (top) and left (bottom).

The pisiform of the left hand has pitting and marginal osteophytes of the joint.
The third metacarpal bone of the left hand has a flattened distal joint, with pitting over the entire joint surface and new bone formations of 5-10 mm in size around the joint.

The first phalanx of the third digit of the left hand has pitting of the proximal joint, and marginal osteophytes of up to 4 mm.
Both femora have new bone formations and pitting of the joint surface at the pit (fovea) in the head of the femur. The left hip bone is also affected, with pitting of the joint surface at a c. 5.5 mm large area in the acetabulum.
Both fibulae have a small extra distal joint. On the right side the joint is c. 8x16 mm and have some pitting of the joint surface and marginal osteophyte formations.

Fig 285: Grave 236, T7-T12, anterior view (top), T10, with a divided body (bottom).

The navicular bone of the right foot has pitting of the distal joint surface and osteophytes at the dorsal margin of the distal joint.
The talus of the left foot has pitting of the joint surfaces. Some of it probably due to post mortem surface damage. The posterior calcanean facet has c. 2 mm of marginal osteophytes.
The navicular bone of the left foot has pitting of the distal joint surface, and marginal osteophytes, up to 5 mm in size.
The intermedial and lateral cuneiforme bones of the left foot have pits in the proximal joint surface. The lateral cuneiforme have osteophytes, c. 3 mm in size, at the margin of the proximal joint.
Vertebral osteophytosis: Cervical vertebrae, thoracic vertebrae, lumbar vertebrae
C3-C6 have 3-4 mm long osteophytes on the anterior margin of the bodies. The sixth cervical vertebra has some porosity on the superior side of the body. T7-T12 have smaller osteophytes at the anterior margin of the vertebral bodies.
L4 and L5 have osteophytes along the anterior and lateral margins of the bodies. The superior and inferior surfaces of the bodies are partly destroyed, particularly in L5, probably ante mortem.
Schmorl's nodes: Thoracic vertebrae
T5-T7 have Schmorl's nodes on the inferior side of the bodies. T6-T9 have porosity and perforations to the caudal side of the bodies, which seem partly hollow. The Schmorl´s nodes may in this case be caused by osteoporosis, and loss of bone strength in the vertebral bodies.
Butterfly vertebra: T10
The body of T10 is divided into two halves, with a hole in the center. The anterior side is thin, while the lateral sides are of normal thickness. The bodies of T9 and T11 have a ridge in the middle, filling the space left by the hole in the tenth thoracic vertebra. The vertebrae have porosity or new bone or osteophyte formations around the hole. This is probably a congenital condition, butterfly vertebra, where the two ossification centers of the vertebral body have not joined completely.
Spondylolysis: L4, L5
The fourth and fifth lumbar vertebrae exhibit bilateral spondylolyis, a stress fracture to the arch of the vertebra. In L4 the left superior joint is attached to the body, while the right superior joint, and the inferior joints are attached to the arch. In L5 both superior joints are connected to the body, and both inferior joints to the arch. It can be caused by stress to the lower spine, but also by acute trauma, as a fall (Waldron 151-153).

Fig 286: Grave 236, L4-L5, with spondylolysis.

Osteoma: Frontal bone
There is a small, c. 7 mm in diameter, rounded and not clearly defined bump on the left side of the fron-

Fig 287: Grave 236, calcified fragments from the lower ribcage.

tal bone, possibly a button osteoma.
Calcifications: Two calcifications, irregular in shape and c. 20-30 mm in size, were found in the lower ribcage, one on each side, possibly caused by a bilateral infection of the lungs.
Asymmetric bone length: Humerus, radius, ulna

Fig 288: Grave 236, right and left humerus, with a visible difference in length.

The right humerus is c. 25 mm longer than the left one. The right ulna is c. 8 mm shorter than the left ulna. This compensates a bit for the longer right humerus, but the right ulna and appears to be too short to fit the right radius (which is 1 mm longer than the left one).
Other observations:
There is an extra joint between the occipital bone and the atlas. At the occipital bone there is a c. 12 mm wide joint surface anterior to the foramen magnum. On the atlas a similar joint is located on the anterior arch.

Fig 289: Grave 236, right hip bone, ilium, with osteophytes.

There are two small extra joints between the sacrum and the left hip bone, on the dorsal side of the auricular surface.
Both hip bone have c. 4-7 mm long osteophytes along 45 mm of the lateral side of the iliac crest.
Both humeri have perforations, c. 3-7 mm in size, and new bone spicules of c. 2-4 mm size, at the lesser tubercle.
Both maxillae have surface porosity at the posterior side. This could be related to the periodontal disease. Maxillary sinusitis is also a possibility, but this cannot be investigated without destructive methods.
The piriform aperture is asymmetrical, with the right side larger and extending more inferiorly.

Non metric traits:

Epipteric bones (right and left), parietal notch bone (left)

Fig 290: Grave 236, cranium, with an assymetric piriform aperture. Also note damage to the anterior part of the mandible.

Grave 237

Bones present:
Cranium, teeth, cervical vertebrae, thoracic vertebrae, lumbar vertebrae, sacrum, ribs, clavicle, scapula, humerus, radius, ulna, carpal bones, metacarpal bones, phalanges (hand), hip bone, femur, patella, tibia, fibula, tarsal bones, metatarsal bones

Preservation: Good
The skeleton is fairly well preserved. The cranium, mandible and teeth are well preserved. The vertebrae, scapulae and sacrum are fragmented. The hip bone is well preserved. The diaphyses of the long bones are well preserved, with some surface damage. The epiphyses are loose, and some of them missing.

Age: Adolescent, c. 15-19 years

Fig 291: Grave 237.

Fig 292: Grave 237, maxilla, with porosity in the palate, and erupting third molars (18, 28).

The age estimation is based on dental formation and eruption and the fusion of epiphyses.
The indications of age are contradictory, but suggest an adolescent. The epiphyseal fusion indicates an age of c. 13-15 years. The dental development indicates an age of c. 17-19 years, as one of the third molars is in occlusion, while the others are erupting. The formation of the roots is almost complete in the third molar of the left maxilla.

Sex: Indeterminate sex
The cranium has feminine, or juvenile, features. The mandible is however robust and masculine. The hip bone is not developed enough to give clear indications of sex.

Stature: N/A
No estimation of stature has been preformed. The maximal length of the diaphysis of the right femur is 380 mm.

Dental status:
Teeth present: 11, 12, 13, 14, 15, 16, 17, 18, 21, 22, 23, 24, 25, 26, 27, 28, 31, 32, 33, 34, 35, 36, 37, 38, 41, 42, 43, 44, 45, 46, 47, 48
Teeth not in occlusion: 18, 28, 38
Dental wear: Limited (molars 17-25 years)
Only about two thirds of the root of the lateral incisor of the left maxilla is formed. The development of this tooth seems to be delayed, and the root of the right lateral incisor is fully formed.

Pathologies and general observations:
Periostitis, scurvy?
Periostitis: Occipital bone, right and left femur, right and left tibia, right fibula
Thin layers of new bone formation, pale in colour and porous in texture, are found on the occipital bone, the femora and the tibiae.

Fig 293: Grave 237, right tibia, with an area of new bone formation.

The occipital bone has the area, c. 20 mm in diameter, with new bone formation, at the inferior part of the squama.
The right femur has new bone formation along about 100 mm of the lateral/anterior part of the proximal diaphysis. The left femur has new bone formation at the lateral/anterior part of the proximal diaphysis, and extending along about 2/3 of the posterior side of the diaphysis.
The right tibia has some porous new bone on the lateral side, in an area of c. 7x20 mm, by the nutrient foramen. On the medial side there are striations, and an area of porosity in the proximal end. The left tibia has new bone formation at the proximal half of the diaphysis on the lateral side. There are striations on the medial and anterior sides.
The right fibula has some bone formations, with holes for vessels, at the proximal part of the diaphysis.

Fig 294: Grave 237, left maxilla, with surface porosity.

Other observations:
There is porosity on the posterior surface of both maxillae above the third molars. This is possibly related to dental eruption, as the molars are not yet in occlusion. There is also some porosity in the anterior part of the palate. This, in combination with the periosteal bone formations, can be signs of scurvy.
Non metric traits:
Lambdoid ossicle (right)

Grave 238

Bones present:
Cranium, teeth, cervical vertebrae, thoracic vertebrae, lumbar vertebrae, sacrum, sternum, ribs, clavicle, scapula, humerus, radius, ulna, carpal bones, metacarpal bones, phalanges (hand), hip bone, femur, patella, tibia, fibula, tarsal bones, metatarsal bones, phalanges (foot)
Preservation: Very good
The skeleton is very well preserved and almost complete. The cranium is well preserved, but the viscerocranium is damaged. The mandible and teeth are well preserved. The vertebrae and hip bone are well preserved, with some minor damage. All long bones are complete, except the fibulae, where the proximal

Fig 295: Grave 238.

joint is missing.
Age: Middle adult
The age estimation is based on the closure of cranial sutures, dental wear, the auricular surface of the hip bone and the pubic symphysis. The pubic symphysis is, however, partly damaged, and has a somewhat pathological appearance.
Sex: Female?
The estimation of sex is based on the morphology of the cranium (inconclusive) and the hip bone (female?) and metric traits of the femur (female) and the humerus (female).
Stature: c. 159 cm (TG), 162 cm (S)
The maximum length of the left femur is 424 mm, indicating a stature of approximately 158.8 cm (TG) or 161.5 cm (S). Stature estimations based on the measurements of other long bones range from 157.3 cm (TG) (right femur) or 158.6 cm (S) (left ulna) to 162.1 cm (TG) or 161.0 cm (S) (right radius).
Dental status:
Ante mortem tooth loss, periodontitis
Teeth present: 11, 12, 13, 14, 15, 16, 17, 21, 22, 23, 24, 25, 26, 27, 31, 32, 33, 34, 35, 36, 37, 38, 41, 42, 43, 44, 45, 46, 47, 48
Ante mortem lost teeth: 18, 28

Fig 296: Grave 238, left, zygomatic, maxilla and mandible, with periodontitis.

The left third molar of the maxilla was probably lost quite some time before death, as there is a large deposit of calculus on the distal side of the second molar. The right third molar might have been lost later, or perhaps even post mortem.
Dental wear: Medium (molars 17-45 years)
The central incisor of the right mandible is worn almost to the root, only a couple of mm remains of the crown. There is a pit in the occlusal surface, making the entire crown hollow. It has smooth edges, and does not appear to be caries. There is a shallow grove in labial-lingual direction in the middle of the occlusal surface of the canine of the right maxilla, most clearly seen on the lingual side.
Periodontitis:
There is a general reduction of alveolar bone in the maxilla and the mandible. The roots of the teeth are partly exposed and calculus on the labial/buccal side continues a bit down the roots. The second molar of the left maxilla is severly affected. The distal part of the root (the tooth has one root) is almost completely exposed, and remains of calculus are found on the distal side of the root. The first molar of the left mandible also has an exposed mesiobuccal root.
Pathologies and general observations:
Periostitis, cribra orbitalia, osteoarthritis, vertebral osteophytosis, ankylos, trauma, sinusitis
Periostitis: Left ninth and tenth rib
On the inferior margin of the ninth and tenth left ribs there are porous bone formations at the angle, c. 4x10 mm in size.
Cribra orbitalia: There is an area with small perforations in the superior wall of the right orbit. There are no perforations in the left orbit.

Fig 297: Grave 238, atlas and axis, with signs of osteoarthritis in the left joint.

Osteoarthritis: Atlas-axis, cervical vertebrae, lumbar vertebrae, lumbar vertebra-sacrum, right and left ribs, right and left shoulder, right and left wrist, right and left hand, right and left hip, left knee, right foot
The left joint between the atlas and the axis is uneven and enlarged, with pitting of the joint surface and of the left side of the dens of axis. Atlas-C5 have porosity of the joint surfaces and marginal osteophytes, with eburnation in the right joint between

axis and C3.
The left joint between L5 and sacrum has pitting of the surface and marginal osteophytes.
The ribs have pitting of the joint surfaces articulating with the thoracic vertebrae, and/or marginal osteophytes.
The acromial joints of both clavicles are uneven, with new bone formations and pitting of the joint surfaces.
The right scapula has an os acromiale, with osteophytes, pitting and eburnation on the inferior side, articulating with the humerus. The glenoid cavity has a pit of c. 2.5 mm size, and osteophytes of c. 4-5 mm size in the posterior-inferior margin. The joint of

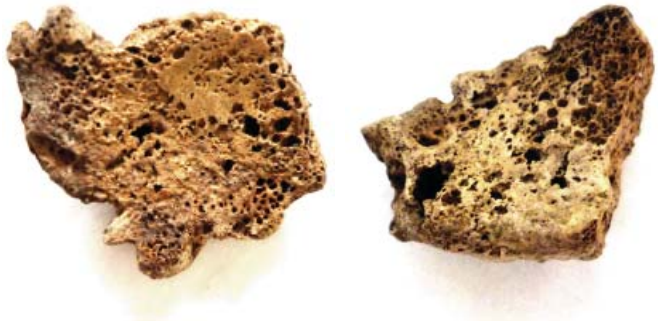

Fig 298: Grave 238, right and left os acromiale.

the coracoid process also have some marginal osteophytes.
The right humerus has pitting and an uneven surface at the anterior-medial side of the head. The greater and lesser tubercles are transformed, have irregular shapes and displays macroporosity. Along the lateral inferior part of the head there is a c. 12 mm wide bone formation. The joint has been damaged post mortem.

Fig 299: Grave 238, right scapula.

The left scapula has an os acromiale, with osteophytes, pitting and eburnation on the inferior side, articulating with the humerus. The glenoid cavity is partly damaged. The joint surface has pitting and there are osteophytes, c. 3 mm in size, at the posterior margin.
The left humerus has similar changes to the head as the right, but not as severe, with c. 7.5 wide bone formations at the inferior-lateral side and irregular shape of the greater and lesser tubercles. At the superior part of the head there is pitting and eburnation at an area of c. 10x17 mm. The head also appears to be flattened at the top.
The joint changes in the shoulders are complicated, possibly the proximal humeri and os acromiale of the scapulae also have osteomyelitis.
In the right hand the joint surfaces between the scaphoid and the trapezoid have pitting and a c. 6x3.5 mm area of eburnation.
The carpal bones of the left and right hands have porous surfaces with perforations on and between the joints, and there is a tendency to marginal lipping of the joints. Paticularly the lunate and hamate of the right hand, and triquetrum, capitate, trapezoid and

Fig 300: Grave 238, phalanges of the left thumb, with signs of osteoarthritis.

trapezium of the left hand are affected, with pits and holes on and between joints. The carpal bones have severe bone changes, possibly caused by osteomyelitis.
The first metacarpal bone of the right hand has osteophytes at the distal joint, and a c. 3 mm patch of eburnation. The first phalanx of the digit has pitting in the proximal joint surface, and marginal osteophytes of c. 4-5 mm size.
The third metacarpal of the right hand has pitting of the distal joint and a c. 6x7 mm large area of eburnation. By the distal joints there are porous new bone formations, c. 6 mm in size. The first phalanx of the third digit has a c. 4x7 mm area of eburnation on the proximal joint surface. This phalanx and another first phalanx of the hand have 4-5 mm large bone formations at the dorsal side of the distal joint.
The first metacarpal bone of the left hand has a small eburnated area, c. 2.5 mm in size, at the distal joint

Fig 301: Grave 238, right femur, with eburnation, pitting and osteophytes at the head.

and marginal osteophytes of c. 1 mm size. The first phalanx of the first digit has pitting of the distal joint surface, possibly some eburnation, and marginal osteophytes of c. 3.5 mm size. The third phalanx of the digit has pitting and marginal osteophytes of c. 1.5 mm size at the proximal joint.
The right femur has marginal osteophytes around the entire circumference of the head, inferiorly c. 12 mm, and superiorly c. 5-6 mm. The pit in the head of the femur is filled with bone, which has an eburnated area of c. 5.5x9.5 mm size. On the superior side of the head there is also pitting and eburnation at an area of c. 7x18 mm size.
The acetabulum of the right hip bone has c. 2.5-5.5 mm of osteophytes around the entire margin. Almost the entire base of the acetabulum is filled with solid bone.

Fig 302: Grave 238, left patella, with eburnation and pitting.

The acetabulum of the left hip bone has c. 1-3 mm of osteophytes around the entire margin. There is a c. 9x18 mm area of porous new bone formation at center, and an area of c. 5 mm with pitting of the joint surface.
The left femur has an area of eburnation and pitting, c. 8x20 mm in size, at the patellar surface. The left patella has two areas of eburnation, c. 9x13 mm and 5x8 mm in size at the medial medial part on the joint. The pitting of the surface is more wide spread.
The first metatarsal bone of the right foot has some pitting and an eburnated area at the center of the distal joint. At the margins there are osteophytes of c. 2 mm size. The first phalanx of the digit has osteophytes of up to 2.5 mm around the proximal joint.
Vertebral osteophytosis: Cervical vertebrae, thoracic vertebrae, lumbar vertebrae
C4-C7 have osteophytes of c. 1-5 mm size along margins of the bodies. C3-C6 have surface porosity of the bodies, particularly on the caudal side.
T7-T12 have osteophytes along margins of the bodies, and porosity on the cranial and caudal side.

Fig 303: Grave 238, C3-C7, with osteophytes at the bodies.

The osteophytes are c. 4-5 mm in size on T10-T12, smaller on T7-T9.
L3 and L4 have osteophytes along margins of the bodies, and porosity on the cranial (L3) and cranial and caudal (T4) surfaces.
Ankylos: Second and third phalanges of the foot
A second phalanx of the foot is fused with a third phalanx.
Trauma: Mandible
On the inferior side of the left mental tubercle of the

Fig 304: Grave 238, mandible, with a bump on the chin, possibly a healed trauma.

mandible, there is a shallow grove, c. 2 mm wide. On the lateral side of the groove there is a small lobule of bone, c. 4.5 mm in diameter. These bone changes are possibly a healed injury to the inferior side of the chin.
Sinusitis: Right maxilla
There are small spicules of new bone on the medial and posterior wall of the right maxillary sinus, indicating chronic maxillary sinusitis.
Other observations:
The external acoustic meatus on both sides are unusually small and oval, c. 5x10 mm in size.
Non metric traits:
Bilateral tympanic dihiscense, bilateral torus mandibularis (moderate), parietal notch bone (right)

Grave 239

Bones present:
Cranium, teeth, cervical vertebrae, ribs, humerus, radius, ulna, phalanges (hand), hip bone, femur, tibia, fibula, metatarsal bones
Preservation: Bad
The skeleton is poorly preserved. The bones are cracked, fragile and fragmented. The cranium is broken into deformed fragments with poor surface preservation. The maxilla and mandible are in somewhat better condition, and the teeth are well preserved. Paper thin fragments of the atlas and the axis are the only vertebrae preserved. There are small fragments of the ribs and the hip bone. The only parts preserved of the long bones are cracked diaphyses.
Age: Young adult, c. 19-25 years
The age estimation is based on dental development and wear. The third molars of the mandible are in occlusion, while the third molars of the maxilla are erupting. The roots of the third molars are fully formed.
Sex: Indeterminate sex
The estimation of sex is based on the morphology of the cranium (inconclusive)
Stature: N/A
No complete long bones suitable for measurements and stature estimation were available.
Dental status:
Periodontitis
Teeth present: 12, 13, 14, 15, 16, 17, 18, 21, 22, 23, 24, 25, 26, 27, 28, 31, 32, 33, 34, 35, 36, 37, 38, 41, 42, 43, 44, 45, 46, 47, 48, 63
Teeth not in occlusion: 18, 23, 28
The third molars of the maxilla are not in occlusion. On the right side the entire crown is erupted, but on the left side only the cusps are visible above the alveolar bone. The permanent canine of the left maxilla is still in the crypt, visible in the anterior wall of the maxilla. The tip of it was probably erupted ante mortem. The deciduous canine is still present. The root has not been resorbed, and it is located distally of the permanent canine. The fist premolar of the left maxilla is slightly rotated counter clockwise and has medium sized deposits of calculus, perhaps due to the crowding of teeth with the extra canine present.
Dental wear: Limited (molars 17-25 years)

Fig 305: Grave 239.

Fig 306: Grave 239, left maxilla, with the deciduous canine (63) still present, and the permanent canine (23) erupting.

Periodontitis:
There is a tendency to a reduction of alveolar bone at the molars in the maxilla, with some root exposure.

Pathologies and general observations:

Periostitis: Right zygomatic bone, right and left humerus, right and left radius, right and left ulna, right and left femur, right and left tibia, right and left fibula

The frontal process of the right zygomatic has an area of fine porosity, c. 6x10 mm in size, at the anterior side, by the margin of the orbit.

The distal third of the diaphysis of the left humerus is a bit swollen, with striated, slightly porous bone. The right humerus also appears to be affected, but is less well preserved.

The the diaphysis of the right radius is swollen along c. 50 mm of the distal part. There is also a c. 20 mm

Fig 307: Grave 239, right and left tibia and fibula, with new bone formations.

area of porosity mid diaphysis. The distal diaphysis of the left radius is swollen and porous, particularly the anterior side.

The right ulna has striations and porosity along the anterior and posterior side of the interosseus margin, in the distal 3/4 of the diaphysis. The diaphysis of the left ulna is swollen, with porosity and striations, along the entire length of the diaphysis, and the proximal joint.

Both femora have striated, porous new bone formations, and a swollen appearance at the anterior side of the distal diaphysis. About 90 mm of new bone formations are preserved, but some might have been lost post mortem. The bone changes are more easily observed on the left femur.

Both tibiae and both fibulae have extensive periosteal new bone formations. The diaphyses of both tibiae are covered in striated porous new bone formations. The bone appears swollen on the anterior

Fig 308: Grave 239, left maxilla, with a pit in the palatine process.

side, but to what extent is unknown due to post mortem damage.

The right fibula is enlarge and porous along c. 65 mm of the distal diaphysis. Some periosteal new bone is also present on the left fibula, but due to the bad preservation the extent is unknown.

Other observations:

The palatine process of the left maxilla has a pit on

Fig 309: Grave 239, parietal bone, with new bone formations endocranially.

the superior surface, the base of the nasal cavity. The pit is c. 4 mm in diameter, and has irregular margins, and an eroded and undercut appearance.
On two cranial fragments, probably the parietal bones with the sagittal suture, there are uneven new bone formations endocranially, with some porosity and imprints of vessels along c. 50 mm of the suture.

Fig 310: Grave 239, the narrow left stapes (right) compared to a normal stapes from grave 230 (left).

The stapes of the left ear is very narrow. The auditory ossicles of the right ear are not present for comparison.
Non metric traits:
Bilateral torus mandibularis (moderate)

Grave 240

Bones present:
Cranium, teeth, cervical vertebrae, thoracic vertebrae, lumbar vertebrae, sacrum, ribs, clavicle, scapula, humerus, radius, ulna, carpal bones, metacarpal bones, phalanges (hand), hip bone, femur, tibia, fibula, tarsal bones, metatarsal bones
Preservation: Medium
The skeleton is medium well preserved. The cranium is in good condition, but the viscerocranium is a bit damaged, and the bone surface has partly peeled off. The posterior part of the cranial vault is poorly preserved, cracked and decayed. The mandible and teeth are well preserved. The vertebrae, scapulae and ribs are fragmented. The ilium of the right hip bone is fairly well preserved, while only fragments remain of the left one. The long bones have some cracks in the diaphyses and most of the joints are damaged or missing. The bones of the lower limbs are in worse condition than the bones of the upper limbs.
Age: Young adult, c. 20-40 years
The age estimation is based on the closure of cranial sutures and dental wear.
Sex: Female?
The estimation of sex is based on the morphology of the cranium (female) and the hip bone (inconclusive) and metric traits of the humerus (female).
Stature: c. 155 cm (TG), 155 cm (S)
The femora were not complete, and the estimation of stature is based on the bones of the arms. The maximum length of the left radius is 210 mm, indicating a stature of approximately 154.5 cm (TG) or 154.6 cm (S), and the maximum length of the right ulna is 228 mm, indicating a stature of approximately 155.1 cm (TG) or 154.0 cm (S).
Dental status:
Periodontitis
Teeth present: 12, 13, 14, 15, 16, 17, 18, 21, 22, 23, 24, 25, 26, 27, 28, 31, 32, 33, 34, 35, 36, 37, 38, 41, 42, 43, 44, 45, 46, 47, 48
Dental wear: Limited-medium (molars 17-35 years)
Periodontitis:
There is a reduction of alveolar bone by the maxillary molars and the anterior part of the maxilla, but it is not advanced.
Pathologies and general observations:
Periostitis, osteoarthritis
Periostitis: Right and left parietal bone, frontal bone, right and left tibia
There is a thin layer of new bone around the bregma. On the right parietal bone an area of c. 20x63 mm is covered with new bone. Smaller areas of c. 20x20 and 10x10 mm are found on the left parietal bone

Fig 311: Grave 240.

and the frontal bone.
Both tibiae have striations and porosity along the medial side of the entire diaphysis. In the distal part

Fig 312: Grave 240, cranium, frontal and parietal bones, with a layer of new bone.

of the diaphysis there are also striations on the lateral side.
Osteoarthritis: Right and left ribs
The joints of some of the ribs, particularly the lower, have pitting of the joint surface and marginal osteophytes.

Grave 241

Bones present:
Cranium, teeth, cervical vertebrae, thoracic vertebrae, lumbar vertebrae, sacrum, sternum, ribs, clavicle, scapula, humerus, radius, ulna, carpal bones, metacarpal bones, phalanges (hand), hip bone, femur, patella, tibia, fibula, tarsal bones, metatarsal bones, phalanges (foot)
Preservation: Good
The skeleton is well preserved and almost complete. The cranium, mandible and teeth are well preserved. The cervical vertebrae are well preserved, but the thoracic and lumbar region of the spine is fragmented. The scapulae and ribs are fragmented, but generally in good condition. The hip bone is well preserved. Most of the long bones are complete, and in good condition.
Age: Young adult, c. 30-40 years
The age estimation is based on the closure of cranial sutures and dental wear. The auricular surfaces of the hip bone are in stage 8 and indicate an age of at least 60 years. The state of the auricular surfaces is probably not caused only by age related decay, but also by pathological processes, making them unsuitable for an estimation of age.

Fig 313: Grave 241.

Sex: Female
The estimation of sex is based on the morphology of the cranium (female) and the hip bone (female) and metric traits of the femur (female) and the humerus (female).
Stature: c. 156 cm (TG), 159 cm (S)
The maximum length of the left femur is 413 mm, indicating a stature of approximately 156.1 cm (TG) or 158.6 cm (S). Stature estimations based on the measurements of other long bones range from 155.9 cm (TG) (right femur) or 157.5 cm (S) (left humerus) to 160.6 cm (TG) or 159.8 cm (S) (right radius).
Dental status:
Ante mortem tooth loss, large calculus deposits,

periodontitis
Teeth present: 11, 12, 13, 14, 15, 16, 17, 18, 21, 23, 24, 25, 26, 27, 28, 31, 32, 33, 34, 35, 36, 37, 38, 41, 42, 43, 44, 45, 47, 48
Ante mortem lost teeth: 22, 46
The gap between the central incisor and the canine of the left maxilla is only slightly wider than the gap between other teeth, suggesting that the lateral incisor was lost early, and the other teeth have moved medially, alternatively that the tooth was congenitally absent
Dental wear: Limited (molars 17-25 years)
Large calculus deposits: 16, 17, 18, 26, 27, 28
Periodontitis:
There is a reduction of alveolar bone, and the roots of the teeth are exposed. The first molar of the left mandible is most severely affected. The mesiobuccal root is almost completely exposed, and there is a cavity in between the roots. The roots of the other teeth are partly exposed, and there is some porosity on the buccal side of the alveolar process of the maxilla and mandible. In the maxilla there are also bone spicules on the lingual side.

Fig 314: Grave 241, mandible, with periodontitis.

Pathologies and general observations:
Osteoarthritis, vertebral osteophytosis, ankylos, calcifications
Osteoarthritis: Atlanto-occipital joint, atlas-axis, cervical vertebrae, right and left ribs, right and left shoulder, right and left elbow, right hand, left hip, right and left knee, right and left foot
The joint between the occipital bone and the atlas has a changed contour and pitting of the surface. The condyles of the occipital bone are enlarged posteriorly-lateraly. On the right side the angle of the new bone is vertical. On the atlas the left joint has extended laterally, while the right joint is instead more narrow than normal. This alteration of the joint

Fig 315: Grave 241, cranium, with signs of osteoarthritis in the condyles of the occipital bone. Also note that the lateral incisor of the left maxilla (22) is missing.

is restricting the movement and almost locking the vertebra in position.
The joints between the atlas and the axis are enlarged and have pitting of the joint surfaces, and there are osteophytes att the inferior margin of the dental fovea of atlas. At the right side of the dens of axis there is a small joint, c. 6.5 mm in diameter, articulating with the occipital bone.
The inferior joint of C3 has pitting of the joint surface and marginal osteophytes. There is also some pitting of the joint surfaces of C4, C5, C7 and T1.
The joints of the ribs are poorly preserved. The preserved fragments have pitted joint surfaces, and sometimes also marginal osteophytes.
The right scapula has pitting in the anterior superior part of the glenoid cavity, with small marginal osteophytes. At anterior margin, there are osteophytes of c. 4.5 mm size. The left scapula has pitting of the joint surface and c. 20 mm of the superior posterior margin is remodeled.
Both humeri have pitting and rounded new bone formations around the heads, c. 6-10 mm in size at

the anterior side. The greater tubercle of the right humerus is flat.
Both humeri have pitting on the surface of the distal joint. In the left humerus the trochlea and capitulum are affected, in the right humerus only the trochlea.
The radii and ulnae have pitting of the proximal joint surfaces. The heads of the radii are enlarged, and

Fig 316: Grave 241, right radius, with pitting in the proximal joint.

there are osteophytes at the margins of the proximal joint of the ulnae.
The first metacarpal bone of the right hand has pitting of the proximal joint, with c. 2 mm of marginal osteophytes. The distal joint is flattened.
The third metacarpal bone of the right hand has c. 4 mm of osteophytes at the dorsal margin of the dis-

Fig 317: Grave 241, first metacarpal bone and capitate of the right hand, with signs of osteoarthritis.

tal joint. The first phalanx of the digit has pitting of proximal joint surface and marginal osteophytes of c. 3 mm.
The carpal bones of the right hand have macroporosity in between the joints, particularly the scaphoid, lunate, trapezium, capitate and hamate. The carpal bones of the left hand are rather poorly preserved. The capitate has similar porosity as the carpals of the right hand. The carpal bones have severe bone changes, possibly caused by osteomyelitis.
The acetabuli of both hip bone have pitting of the joint surface. There is also pitting around the articular surface. At the ischi there are pits with porosity at the outer margin of the acetabulum, three smaller (3x3-3x10 mm in size) on the right bone, and one larger (7x10 mm in size) on the left bone. The femora also have pitting of the surfaces of the proximal joints, with some bone formation around the fovea capitis femoris of the left femur.
The right femur has a c. 5 mm area of new bone formation surrounded by pitting on the posterior part of

Fig 318: Grave 241, left hip bone, acetabulum, with pitting on and around the joint surface.

the medial condyle, and a lump of bone, c. 3.5 mm in size, on the anterior side. The right patella has pitting and new bone formation at the medial joint surface, with marginal osteophytes of c. 2-2.5 mm. The right tibia has surface pitting and osteophytes of c. 1.5 mm at the dorsal margin of the proximal joint.
The left femur has a c. 4.5 mm area of new bone formation surrounded by pitting in the middle of the medial condyl. The left tibia has pitting of the proximal joint surface and c. 2.5 mm of osteophytes at the

medial margin.
The cuboid bone of the right foot has pitting on the distal joint surface, and new bone formations on the dorsal side of the joint.
The navicular bone of the right foot has surface pitting and osteophytes of c. 5.5 mm size at the distal joint.

Fig 319: Grave 241, tarsal bones from the left foot, with signs of osteoarthritis. Navicular bone and lateral and intermediate cuneiforme bones.

The intermediate cuneiforme bone of the right foot has pitting of the distal joint, with and new bone on the dorsal margin.
The fourth metatarsal bone of the right foot has pitting of the proximal joint surface and c. 2 mm of bone formations around the margin.
The head of the talus of the left foot has a pitted and uneven joint surface, with c. 1.5 mm osteophytes along the margin. The posterior calcanean facet is pitted, and has osteophytes of c. 3.5 mm size along the lateral margin.
The cubiod bone of the left foot has marginal osteophytes at the proximal and distal joints and pitting of the joint surfaces.
The proximal joint of the navicular bone is enlarged, with c. 8.5 mm of osteophytes at the dorsal margin, and pitting of the joint surface. The distal joint also has pitting and some marginal osteophytes.
The intermediate cuneiforme bone of the left foot has pitting on the entire surface of the proximal and distal joint, and ostephytes of c. 3 mm size.
The lateral cuneiforme bone of the left foot has pitting in the proximal and distal joint surfaces, and osteophytes of c. 3 mm size at the proximal joint.
The first metatarsal bone of the left foot has pitting and marginal osteophytes at the proximal and distal joints. The first phalanx of the digit has osteophytes of up to c. 3.5 mm size around the proximal joint.
Vertebral osteophytosis: Cervical vertebrae
There are marginal osteophyte formations at the bodies of the C3-C6, reaching c. 2-5 mm in size.
Ankylos: Axis-C3
The axis is fused with the third cervical vertebra at the right articular surface and the right part of the arch. The left side joints and the bodies are separated.

Fig 320: Grave 241, axis fused with C3.

Fig 321: Grave 241, possible calcified cyst.

Calcifications: Calcified fragments, possibly of a rounded cyst, c. 30 mm in diameter, was recovered from the grave. It is very fragile, and several smaller fragments are also present.
Other changes:
The cartilage of the first rib of the right side has begun to ossify, forming a bone growth of c. 16 mm at the sternal end.
Non metric traits:
Epipteric bone (left)

Fig 322: Grave 241, right first rib, with ossified cartilage.

Grave 242

Bones present:
Cranium, teeth, cervical vertebrae, thoracic verte-

brae, lumbar vertebrae, sacrum, ribs, clavicle, scapula, humerus, radius, ulna, carpal bones, metacarpal bones, phalanges (hand), hip bone, femur, patella, tibia, fibula, tarsal bones, metatarsal bones, phalanges (foot)

Preservation: Medium

The skeleton is medium well preserved. The cranium is well preserved, but somewhat deformed post mortem. The viscerocranium is warped and flattened. There is breakage around the temporal and sphenoid bones. A patch of hair is preserved on the frontal bone. The mandible and teeth are well preserved. The vertebrae, scapulae and hip bone are fragmented. The long bones are well preserved, but their joints are a bit damaged.

Fig 323: Grave 242.

Age: Young adult, c. 20-40 years

The age estimation is based on the closure of cranial sutures, dental wear and the auricular surface of the hip bone.

Sex: Male

The estimation of sex is based on the morphology of the cranium (inconclusive) and the hip bone (male) and metric traits of the femur (male).

Stature: c. 171 cm (TG), 169 cm (S)

The maximum length of the right femur is 453 mm, indicating a stature of approximately 170.6 cm (TG) or 169.1 cm (S). No other long bones were complete enough to base an estimation of stature on.

Dental status:

Enamel hypoplasias

Teeth present: 11, 13, 14, 15, 16, 17, 18, 21, 22, 23, 24, 25, 26, 27, 28, 31, 32, 33, 34, 35, 36, 37, 38, 41, 42, 43, 45, 46, 47, 48

Enamel hypoplasias: 32, 33, 43

Dental wear: Medium (molars 17-35 years)

Pathologies and general observations:

Osteoarthritis, trauma?

Osteoarthritis: Right elbow

The right elbow show signs of joint disease, with eburnation, surface porosity, enlarged joint surfaces and new bone formation. The fossa olecrani of the humerus is almost completely filled with bone. There are areas of eburnation, c. 20 mm in size, on part of the capitulum of the humerus and the head of the radius. The head of the radius also has surface porosity and the articular surface has been extended laterally. The ulna has lipping around the proximal joint, particularly towards the radius. The olecranon and trochlear notch of the ulna are widened. The mobility of the joint was restricted due to the new bone formations of the humerus, radius and ulna, and the arm could probably not straighten more than about

Fig 324: Grave 242, right elbow, with the fossa olecrani of the humerus almost filled with bone.

Fig 325: Grave 242, right humerus and ulna, showing the restricted mobility of the elbow joint.

90 degrees, and not bend completely either. The eburnation shows, however, that there was some mobility. The bone changes are not explained by normal wear to the joint, and there was possibly a trauma to the elbow initially.

Non metric traits:
Lambdoid ossicle (right)

Grave 267

Context: The skeletons grave 38 and grave 267 (originally 38A and 38B) were found in the same grave.

Bones present:
Humerus, radius, ulna, hip bone, femur, tibia

Preservation: Bad
The bones are in a very fragile and fragmented state. It is not possible to determine to which individual some of the bones belong. The bones of uncertain origins include unidentified fragments, cranial fragments and metapodial bones.

Age: Infant, neonatal
The age estimation is based on the size of the bones.

Sex: N/A
No estimation of sex has been performed.

Stature: N/A

Fig 326: Grave 267.

No estimation of stature has been performed.

Dental status:
No teeth present

Pathologies and general observations:
No pathologies observed.

Grave 269

Context: Fill of graves 234 and 238 (one humerus)
The bones of grave 269 and grave 272 were found in the fill of the graves 234 and 238. The bones represented at least two individuals, one smaller with feminine features and one larger with masculine features. There might however be some mixing of the bones, and there is a possibility that they represent more than two individuals.

Bones present:
Cranium, teeth, cervical vertebrae, thoracic vertebrae, lumbar vertebrae, ribs, clavicle, scapula, humerus, radius, ulna, metacarpal bones, phalanges (hand), hip bone, femur, patella, tarsal bones, metatarsal bones, phalanges (foot)

Preservation: Medium
The skeleton is medium well preserved. The cranial vault is well preserved, but compressed from the sides, and displaying some cracks and holes. The mandible is also compressed. The teeth are well preserved. The vertebrae, ribs, scapulae and hip bone are fragmented. There diaphyses of long bones present, but the joints are damaged.

Fig 327: Grave 269.

Age: Young adult
The age estimation is based on the closure of cranial sutures and dental wear.
Sex: Female
The estimation of sex is based on the morphology of the cranium (female) and the hip bone (female). The grave is disturbed, and it is uncertain if all the bones represent the same individual. The feminine cranium has been grouped with the feminine hip bone.
Stature: N/A
No long bones were complete and no maximal length could be measured. The right radius and left ulna were however almost complete, indicate a stature around 155 cm.
Dental status:
Ante mortem tooth loss, congenitally absent teeth, enamel hypoplasias
Teeth present: 12, 16, 17, 18, 24, 25, 26, 27, 28, 31, 32, 33, 34, 35, 36, 37, 38, 42, 43, 44, 46, 47
Ante mortem lost teeth: 21, 22
Post mortem lost teeth: 11, 13, 14, 15, 41, 45
Congenitally absent teeth: 38, 48
Enamel hypoplasias: 31, 32
There are faint linear enamel hypoplasias on the incisors of the mandible, most clearly seen on the left central incisor.
Dental wear: Limited (molars 17-25 years)
Pathologies and general observations:
Periostitis, sinusitis
Periostitis: Right radius, left ulna, right femur
The right radius has a swollen appearance at the distal diaphysis. The bone is porous and striated along c. 50 mm of the interosseous margin. The left ulna has a general rounded and possibly a bit swollen diaphysis, with a slightly porous surface. There are stirations and more pronounced porosity at the distal part of the diaphysis. The right femur has a striated area, c. 45 mm in diameter, at the medial side of the distal part of the diaphysis.
Sinusitis: Right maxilla
There is a network of new bone spicules, covering an area of c. 6-11 mm, on the posterior wall of the right maxillary sinus, indicating chronic maxillary sinusitis.
Non metric traits:
Metopic suture, bilateral torus mandibularis (trace), epipteric bone (right)

Fig 328: Grave 269, right maxilla, with bone spicules in the sinus cavity.

Grave 270

Bones present:
Cranium, teeth, humerus, tarsal bones
Preservation: Medium
The skeleton is medium well preserved. Large and relatively well preserved fragments of the cranial vault and the mandible are present. The teeth are well preserved. The postcranial skeleton is only represented by the arch of the axis, the diaphysis of the left humerus, and a well preserved but not complete right calcaneus.
Age: Child, c. 5.5-6 years

Fig 329: Grave 270.

The age estimation is based on dental formation and eruption and fusion the of epiphyses.
Sex: N/A
No estimation of sex has been preformed.
Stature: N/A
No estimation of stature has been preformed.
Dental status:
Teeth present: 36, 37, 41, 43, 46, 47, 74, 75, 84, 85
Neither alveolar bone nor teeth of the maxilla are preserved.
Teeth not in occlusion: 36, 37, 41, 43, 46, 47
The permanent first molars of the mandible are erupted and almost in occlusion, though they are not at the level of the deciduous teeth, and no occlusal wear is present. The other permanent teeth are still in the crypt. Probably all the permanent teeth of the mandible are present, but they are not observable.
Post mortem lost teeth: 72, 73, 82, 83
Dental wear: Minimal
Pathologies and general observations:
On the endocranial surface of the occipital bone there are imprints of thin vessels in the sagittal sulcus, superior to the internal occipital protuberance and on the left and right side of it.

Grave 271

Bones present:
Cranium, teeth, thoracic vertebrae, hip bone, femur, tibia
Preservation: Medium
The skeleton is medium well preserved. The cranium is fragmented, and the preservation of the bone surface is varied. The teeth are well preserved were. Of the postcranial skeleton only fragments of vertebrae, hip bone and the diaphyses of some long bones are present.
Age: Infant, c. 2.5-3 years
The age estimation is based on dental formation and eruption and the fusion of epiphyses.
Sex: N/A
No estimation of sex has been preformed.
Stature: N/A

Fig 330: Grave 271.

No estimation of stature has been preformed.
Dental status:
Teeth present: 11, 16, 21, 46, 52, 54, 55, 61, 62, 63, 64, 65, 72, 73, 74, 75, 82, 84, 85
Teeth not in occlusion: 11, 16, 21, 46
Dental wear: Minimal
Pathologies and general observations:
No pathologies observed.
Extra bones:
Human: The following bones, from an adult individual, were found with the bones of grave 271: A talus and a cuboid bone of the left foot, the diaphysis of a metapodial bone and a phalanx of the hand.

Grave 272

Context: Fill of grave 234
The bones of grave 269 and grave 272 were found in the fill of the graves 234 and 238. The bones represented at least two individuals, one smaller with feminine features and one larger with masculine features. There might however be some mixing of the bones, and there is a possibility that they represent more than two individuals.

Fig 331: Grave 272.

Bones present:
Cranium, teeth, clavicle, hip bone
Preservation: Medium
The bones are medium well preserved, but only a few elements are present. Fragments of the cranium and the teeth of the maxilla are present. The right clavicle and fragments of the hip bone are also present.
Age: Young adult
The age estimation is based on dental wear. The cranium is too fragmented to base the age estimation on the closure of sutures. The observable sutures are completely open.
Sex: Male?
The estimation of sex is based on the morphology of the cranium (male?) and the hip bone (male). The grave is disturbed, and it is uncertain if all the bones represent the same individual. The masculine cranium has been grouped with the masculine hip bone.
Stature: N/A
No complete long bones suitable for measurements and stature estimation were available.
Dental status:
Periodontitis
Teeth present: 13, 14, 15, 16, 17, 25, 26, 27
Neither alveolar bone nor teeth of the mandible are preserved.

Fig 332: Grave 272, right parietal bone, with a hole in the external table.

Dental wear: Medium (molars 17-35 years)
The canine of the right maxilla has no visible wear facets. Minimal deposits of calculus show however that it was erupted. Compared to the wear of the molars this tooth seems to belong to a younger individual. It is possible that it is not from the same individual or that the eruption of the tooth was delayed.

Periodontitis:
There is a reduction of alveolar bone, and the roots of the molars in the left maxilla are exposed. No alveolar bone is present at the other teeth.
Pathologies and general observations:
The right parietal bone has a hole in the external table, by the parietal notch. The hole is oval, c. 9x10 mm in size, with sharp, slightly undercut edges. The internal table is intact, and the diploë makes up a relatively smooth bottom of the pit. This is probably a pathological change, but post mortal damage is also a possibility.
Non metric traits:
Tympanic dihiscence (left)

Grave 273

Context: Fill of grave 31
Bones present: Cranium, teeth, ribs, humerus?, hip bone, femur, patella, tibia, tarsal bones,
A cranium and some postcranial bones were found in grave 31, apart from the main burial. **Preservation:** Good
The bones are well preserved, but the skeleton is far from complete, and it is uncertain if the cranium and the postcranial elements are from the same individual.
Age: Young adult, c. 20-25 years
The age estimation is based on the closure of sutures, the dental wear and the auricular surface of the left hip bone.
Sex: Male?
The estimation of sex is based on the morphology of the cranium (inconclusive) and hip bone (male) and metric traits of the femur (male). The grave is disturbed, and it is uncertain if all the bones represent the same individual.
Stature: N/A
There were no complete bones suitable for measurements for estimation of stature. The left tibia was almost complete, and can give some suggestion to the stature of the individual. The tibia was at least 363 mm, which suggests a stature of 169.8 cm (TG) or 168.6 cm (S).

Fig 334: Grave 273, mandible, with new bone formations.

Dental status:
Teeth present: 13, 14, 15, 16, 17, 18, 21, 22, 24, 25, 26, 28, 32, 33, 34, 35, 36, 37, 41, 42, 43, 46, 47, 48
Post mortem lost teeth: 11, 12, 23, 27, 31, 38, 44, 45
Dental wear: limited (molars 17-25 years)
Pathologies and general observations:
Periostitis, osteomyelitis, cranial lesions, syphilis
Periostitis: Mandibula
The right angle of the mandible has an area of smooth new bone and the bone had a swollen appearance.

Fig 335: Grave 273, long bone (humerus?) with osteomyelitis.

Osteomyelitis: Long bone (humerus?)
A diaphysis of a long bone, probably a humerus, has

Fig 333: Grave 273.

an uneven surface with porosity, new bone formation and a cloaca, indicating osteomyelitis. It is uncertain if this bone belongs to the same individual as the cranium and the mandible.
Cranial lesions: Frontal bone, right and left parietal bones
The frontal bone and the right parietal bone, have lesions typical of caries sicca. There are active erosive

Fig 336: Grave 273, cranium, with caries sicca, right parietal bone (top) and frontal bone (bottom).

lesions, damaging the diploë and undercutting the external table. There are also more rounded lesions with signs of healing, and areas of scarring, where only lines and shallow depressions remain. The individual probably suffered from veneral syphilis.
Non metric traits:
Coronal ossicle (left), lambdoid ossicles (right and left)

Grave 274

Context: Fill of grave 36, western section
Bones present: Cranium, teeth, phalanges (hand)
Preservation: Good
The cranium is well preserved, with only some minor damage to the left zygomatic bone, the sphenoid bone and the right lateral part of the occipital bone. The mandible is missing. Two phalanges of the hand are smaller and of a lighter colour than the rest in grave 36, and possibly belong to grave 274.
Age: Young adult, c. 25-40 years
The age estimation is based on the closure of sutures and dental wear.
Sex: Female?
The estimation of sex is based on the morphology of the cranium (female).
Stature: N/A
No complete long bones suitable for measurements and stature estimation were available.
Dental status:
Teeth present: 16, 17, 18, 26, 27, 28
Post mortem lost teeth: 11, 12, 13, 14, 15, 21, 22, 23, 24, 25
No mandible present
Dental wear: Medium (molars 17-35 years)
There is a pit in the occlusal surface of the second molar of the right maxilla.
Pathologies and general observations:
No pathologies observed.

Fig 337: Grave 274, cranium.

Grave 275

Context: Fill of grave 37
Bones present:
Femur
Preservation: Good
A single, well preserved diaphysis of a right femur is the only bone present.
Age: Child, c. 3-3.5 years
The age estimation is based on the maximum length of the diaphysis of the femur (Scheuer & Black s

394). Considering the short average stature of the adult population and the possibly delayed development the child could have been older.
Sex: N/A
No estimation of sex has been performed.
Stature: N/A
No estimation of stature has been performed.

Fig 338: Grave 275.

Dental status:
No teeth present
Pathologies and general observations:
No pathologies observed. There is some porosity to the inferior side of the neck of the femur, cribra femoris, a normal feature of growing bone.

Grave 277

Context: Fill of grave 41
Bones present:
Ulna, femur, tibia, fibula
Preservation: Medium
The diaphyses of the long bones are well preserved, apart from a few minor cracks. There is some damage to the joint surfaces.
Age: Adult
All observable epiphyses are fused, but no bones suitable for a more precise estimation of age are available.
Sex: Male?
The estimation of sex is based on metric traits of the femur (male).
Stature: c. 168 cm (TG), 166 cm (S)
The maximum length of the right femur is 440 mm, indicating a stature of approximately 167.6 cm (TG) or 165.7 cm (S). A stature estimations based on the maximum length of the right ulna gives a stature of about 173.7 cm (TG) or 169.3 cm (S). The difference is not great, it should however be noted that it is not certain that the ulna and the femur belongs to the same individual.
Dental status:
No teeth present
Pathologies and general observations:
Periostitis: Right ulna, right femur, right and left tibia, right and left fibula
The right ulna has two areas of porosity and new bone formation, c. 30x15 mm in size, in the proximal and distal parts of the diaphysis, on the lateral side.

Fig 340: Grave 277, long bones with new bone formations, right femur (top), left fibula (middle) and left tibia (bottom).

The right femur has striations and porous new bone formation along c. 130 mm the distal part of the diaphysis, covering the posterior, lateral and partly the anterior side. In the centre of this area there is a U-shaped impression. There is also a smaller area of striated new bone formation at the lateral epicondyle, c. 20x20 mm in size.

Fig 339: Grave 277.

The right tibia has striated new bone formations along the entire diaphysis, on the medial and lateral sides. There is a porous new bone formation, c.35x55 mm in size, at the lateral side of the distal diaphysis.
The left tibia has striated new bone formations along the entire diaphysis, on the medial and lateral sides. At the middle of the diaphysis the new bone formations are amorphous, and the bone has a rounded and swollen appearance. There is some post mortem damage to the distal part of the bone.
The left fibula has new bone formation along ¾ of the diaphysis diastaly. On the distal part of the diaphysis there is a 70 mm long and a few mm high, rounded new bone formation with a possible a cloaca.
The right fibula has striated and porous new bone formations at the distal 2/3 of the diaphysis, particularly on the lateral side.
Extra bones:
Human: A thoracic vertebra, a lumbar vertebra, fragments of ribs, a right clavicle and a partly damaged right hip bone could belong to either grave 277 or grave 278. The features of the hip bone indicate that it belongs to a middle adult (c. 40-44 years) male?. There is a Schmorl's node on the lumbar vertebra.

Grave 278

Context: Fill of grave 41
Bones present:
Femur, fibula
Preservation: Medium
The bones are medium well preserved. Only fragments of the left(?) fibula are preserved.
Age: Adult
All observable epiphyses are fused, but no bones suitable for a more precise estimation of age are available.
Sex: Male?
The estimation of sex is based on metric traits of the femur (male).

Fig 341: Grave 278.

Stature: N/A
No complete long bones suitable for measurements and stature estimation were available.
Dental status:
No teeth present
Pathologies and general observations:
No pathologies observed.
Extra bones:
Human: A thoracic vertebra, a lumbar vertebra, fragments of ribs, a right clavicle and a partly damaged right hip bone could belong to either grave 277 or grave 278. The features of the hip bone indicate that it belongs to a middle adult (c. 40-44 years) male?. There is a Schmorl's node on the lumbar vertebra.

Grave 279

Context: Fill of grave 48
Bones present:
Cranium, teeth
Preservation: Good
The cranium is well preserved. The mandible is missing.

Fig 342: Grave 279, cranium.

Age: Young adult, c. 25-40 years
The age estimation is based on suture closure and dental wear.
Sex: Male?
The estimation of sex is based on the morphology of the cranium (male?).
Stature: N/A
No complete long bones suitable for measurements and stature estimation were available.
Dental status:
Teeth present: 13, 14, 15, 16, 17, 18, 23, 24, 25, 26, 27, 28
Post mortem lost teeth: 11, 12, 21, 22
No mandible present.
Dental wear: Limited (molars 17-25 years)

Fig 343: Grave 279, left mandible, with a groove in the occlusal edge of the canine (23).

In the canine of the left maxilla there is a U-shaped groove in the middle of the occlusal surface. The entire tooth is leaning in mesial direction. A possible cause is that this tooth has been used to hold/pull an object, frequently and forcefully enough to make a grove and move the tooth slightly out of position. There is possibly a faint trace of a similar grove on the canine of the right maxilla.

Pathologies and general observations:
Cribra orbitalia: There is an area of c. 10 mm with small perforations in the superior wall of the left orbit. The area is not at the anterior part of the orbit, where cribra orbitalia is usually found.

Grave 281

Context: Fill of grave 190

Bones present:
Cranium, teeth, radius, femur, tibia

Preservation: Medium
The cranium and mandible are fragmented. There are fragments of the diaphyses of the long bones present. It is possible that all bones are not from the same individual.

Age: Adult
The age estimation is based on dental wear.

Sex: Male?
The sex estimation is based on the measurement of the head of the femur. It is not complete, but the size is still enough to indicate that this is a male.

Stature: N/A
No complete long bones suitable for measurements and stature estimation were available.

Dental status:
Periodontitis
Tooth present: 37
Post mortem lost teeth: 31, 32, 33, 34, 36, 41, 42
Dental wear: Medium (molar 25-35 years)
Periodontitis: 37
There is a reduction of alveolar bone at the second molar of the left mandible, and enlargement of the alveolus.

Pathologies and general observations:
No pathologies observed.

Fig 345: Grave 281, left mandible, with periodontitis.

Grave 282

Context: Fill of grave 204

Bones present:
Cranium, teeth, cervical vertebrae, thoracic vertebrae, ribs, scapula, humerus, radius, ulna, hip bone, femur, tibia, metatarsal bones

Preservation: Medium
The skeleton is medium well preserved. Parts of the

Fig 344: Grave 281.

Fig 346: Grave 282.

cranial vault and mandible are preserved. The teeth are well preserved, but fragile. Fragments of vertebrae, scapulae, hip bone and one rib are present. The diaphyses of the long bones are preserved, but they are not complete.

Esitmated age: Infant, c. 0.4-2 years

The age indications are somewhat contradictory in this infant. The fusion of vertebral arches and formation of the foramen Huschke indicates an age of about 2 years, while the dental formation and eruption, indicates an age of about 0.4-1 years and the length of the diaphysis of the right femur indicate an age of about 0.25 years. Perhaps poor health delayed growth and dental development in this infant.

Sex: N/A

No estimation of sex has been performed.

Stature: N/A

No estimation of stature has been performed.

Dental status:

Teeth present: 46, 52, 53, 54, 55, 71, 72, 73, 74, 75, 81, 82, 83, 84, 85

Teeth not in occlusion: 46, 52, 53, 54, 55, 72, 73, 74, 75, 82, 83, 84, 85

The alveolar bone is only partly preserved and there are no visible wear facets. It is uncertain if the deciduous anterior teeth were in occlusion.

Pathologies and general observations:

Periostitis: Right and left temporal bone, right and left ilium, left tibia

The left temporal bone has porous new bone formation on the squamous part. The right temporal bone exhibits similar formation, but most of the surface is damaged.

Fig 347: Grave 282, temporal bone, with new bone formations.

Fig 348: Grave 282, right tibia, with new bone formations.

Both ilia have porous new bone, c. 10-20 mm in size, on the lateral-posterior surface, by the greater sciatic notch.

The left tibia has a layer of porous new bone along the medial side of the diaphysis. The diaphysis is slightly bent anteriorly.

Grave 283

Context: Fill of grave 232

Bones present:

Cranium, teeth

Preservation: Bad

The teeth are well preserved, but the roots are a bit broken at the apex. A tiny bone fragment from the maxilla and a larger fragment of the mandible are also present.

Fig 349: Grave 283.

Age: Adolescent, c. 12-15 years
The age estimation is based on dental development.
Sex: N/A
No estimation of sex has been preformed.
Stature: N/A
No estimation of stature has been preformed.
Dental status:
Teeth present: 12, 22, 23, 24, 25, 26, 27, 35, 36, 37, 43, 45, 46, 47, 65
Teeth not in occlusion: 25
The second premolar of the left maxilla was not erupted, indicated by a fragment of alveolar bone attached to the crown, and the absence of occlusal wear and calculus. The presence of the deciduous second molar was probably delaying the eruption.

Fig 350: Grave 283, a premolar (25), with some alveolar bone attached.

Dental wear: Limited
Pathologies and general observations:
No pathologies observed.

Grave 284

Context: Fill of grave 14
Bones present:
Lumbar vertebra, sacrum, clavicle, scapula, humerus, radius, ulna, hip bone, femur, patella, tibia, fibula, tarsal bones
Preservation: Good
The bones are well preserved. They were matched through atriculation and left-right symmetry. There is however some uncertainty if they all are from the same individual. The measurements indicate that the humerus and the femur are form one individual, or individuals of similar stature.
Age: Middle adult, c. 30-50 years
The estimation of age is based on the auricular surfaces of the hip bone and the left pubic symhpysis.
Sex: Male
The estimation of sex is based on the morphology of the hip bone (male), metric traits of the femur (male?) and humerus (inconclusive). The grave is disturbed, and it is uncertain if all the bones represent the same individual.

Fig 351: Grave 284.

Stature: c. 172 cm (TG), 170 cm (S)
The maximum length of the left femur is 458 mm, indicating a stature of approximately 171.8 cm (TG) or 170.4 cm (S). Stature estimations based on the measurements of other long bones range from 166.6 cm (TG) or 164.6 cm (S) (right tibia) to 173.8 cm (TG) or 172.2 cm (S) (both humeri).
Dental status:
No teeth present
Pathologies and general observations:
Osteoarthritis: Right and left knee, lumbar vertebra
The right femur has an area of eburnation, c. 20x30 mm in size, on the medial condyle. The left tibia has an area of eburnation, c. 35x25 mm in size, on the medial condyle, sloping from the center to the medial side.
The left femur has an area of eburnation, c. 20x20 mm in size, on the medial condyle. The lateral and medial condyles both have pitting of the joint surface and marginal osteophyte formation. The area of eburnation is c. 35x20mm on the medial condyle of the left tibia. The eburnated area is sloping anteriorly-medially, and there are osteophyte formations along the anterior and medial margin.
There are fragmented lumbar vertebrae in the grave,

Fig 352: Grave 284, left tibia, with eburnation at the medial condyle.

but it is uncertain if they belong to the same individual. In one of the joints there is eburnation, pitting of the joint surface and marginal osteophytes.
Extra bones:
Human: A central incisor from the left maxilla, bones from a left and a right hand, including carpal bones, metacarpal bones and phalanges, fragments of ribs and vertebrae of the lower thoracic and lumbar region and some metatarsal bones and phalanges of the foot could belong to either grave 284 or 285.

Grave 285

Context: Fill of grave 14
Bones present: Sacrum, radius, ulna, hip bone, femur, tibia, fibula, tarsal bones
Preservation: Medium
The bones in grave 285 are more fragmented than the ones registered as grave 284. It is not certain that all bones registered as grave 285 are from the same individual.
Age: Adult
No bones suitable for a more precise estimation of age were available. The auricular surfaces of the hip bone were partly preserved, but not enough for an estimation of age.
Sex: Indeterminate sex

Fig 353: Grave 285, and extra bones from the fill.

The estimation of sex is based on the morphology of the hip bone (inconclusive), and metric traits of the femur (male).
Stature: N/A
No complete long bones suitable for measurements and stature estimation were available.
Dental status:
No teeth present
Pathologies and general observations:
No pathologies observed.
Extra bones:
Human: A central incisor from the left maxilla, bones from a left and a right hand, including carpal bones, metacarpal bones and phalanges, fragments of ribs and vertebrae of the lower thoracic and lumbar region and some metatarsal bones and phalanges of the foot could belong to either grave 284 or 285.

Grave 295

Context: Fill of grave 40. The temporal bones, the occipital bone, the teeth, the mandible and the vertebrae are from the fill of the grave, while the frontal bone, the ribs and fragments of the cranium and long bones were recovered from the end of the grave. It is not certain that all bones belong to the same individual, but it is possible.

Bones present:

Cranium, teeth, cervical vertebrae, ribs, tibia

Preservation: Poor

The skeleton is poorly preserved. The bones are fragmented, but in reasonably good condition.

Fig 354: Grave 295.

Age: Infant, c. 0.5-1 years

The estimation of age is based on dental development, the development of the temporal bone and the fusion of epiphyses.

Sex: N/A

No estimation of sex has been performed.

Stature: N/A

No estimation of stature has been preformed.

Dental status:

Teeth present: 55, 63

Teeth not in occlusion: 55, 63

The deciduous teeth are still in the crypt.

Pathologies and general observations:

Cribra orbitalia: There are many small perforations in the superior wall of the right and left orbits, and also on the external surface of the frontal bone, by the metopic suture.

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APPENDIX I: Summary table of the graves in the report.

grave	age	sex	stature	delayed t	ante morte tooth loss	congenitally absent	enamel defects	fracture	caries	heavy calculus	periodontitis	periapical lesion	periostitis	osteomyelitis	cribra orbitalia	porotic hyperostosis	osteoarthrit	osteoarthrit (vert)	osteophytosis (vert)	ankylos	Scmorl's nodes	trauma	OD	spondylolysis	osteoma	calcification	sinusitis	other
6	MA	F?			x	x				x	x	x					x	x	x							x		
7	MA	F	147		x		x			x	x		x					x	x							x		
14	Ad	M?			x																x					x		
19	Inf																											
21	Inf																											
22	Ad																			x		x						x
28	YA	F?	162						x											x	x							x
31	MA	?	150																									
32	Inf																											
36	YMA	M?	195		x				x		x							x					x					x
37	MA	F	150									x			x		x	x										
38	Inf																											
40	Fet																											
41	Inf																											
45	Ad	M?	176		x																							x
47	Inf															x												
48	MOA	M	172		x						x			x			x	x		x								x
50	MOA	M	179		x				x			x	x				x		x			x						
55	MOA	M	165			x		x			x	x	x				x	x	x		x	x						x
56	Inf																											x
58	Ad Y	F?	161																	x								
59	MOA										x																	
60	Inf																											
64	Ad	?					x						x							x								
69	MA	M?				x	x						x														x	
70	Inf														x	x												
71	YA	F?	162	x																							x	
77	Inf																											
78	A		162																									
79	YMA	M?	170								x																x	
81	YA	F		x		x							x	x								x						x
82	Inf																											
86	Ad						x																					
89	MA	M	170		x	x	x				x							x										
91	YA	M	171						x		x		x							x								x
93	Inf												x															
94	Inf																											
101	A																											
107	A																											

grave	age	sex	stature	delayed t	ante morte tooth loss	congenitally absent	enamel defects	fracture	caries	heavy calculus	periodontitis	periapical lesion	periostitis	osteomyelitis	cribra orbitalia	porotic hyperostosis	osteoarthrit	osteoarthrit (vert)	osteophytosis (vert)	ankylos	Scmorl's nodes	trauma	OD	spondylolysis	osteoma	calcification	sinusitis	other
108	YA	F	162			x																						
111	Inf																											
112	MA	F?			x			x			x		x			x	x	x						x		x	
113	MA	F	153		x					x	x						x	x										
116	Ad					x	x						x															
117	Inf																											
119	A	M	176		x					x	x						x	x			x							
120	Inf												x															
121	MOA	M?	165			x							x				x	x		x			x					
122	A	?																										x
166	Inf																											
172	MA	M?	163		x	x					x	x						x								x	x	
178	Inf																											
186	MA	M?								x	x																	
187	A	F?			x					x	x		x									x				x	
189	Ad	F?				x							x												x			
190	A						x																					
193	A						x																					
197	A	F?	148							x	x		x		x				x			x						
199	Chi																											
200	Chi						x								x													
201	Ad Y	F?	157								x	x	x	x														
202	A						x			x	x																	
203	A	?									x	x	x															
204	A	M?			x	x					x	x	x															
205	Ad												x		x													
206	MA	F?	173			x		x			x	x						x	x									
207	Inf																											
208	Inf																											x
209	OA	M	166		x	x					x	x	x	x			x	x	x									x
211	OA	F?			x					x	x														x			
212	Inf																											
213	Ad																											
214	Inf																											
215	YA	F?	150		x					x	x											x						
217	Chi						x																					
218	A	M?	163																									x
219	YA						x																					
220	A	?					x																					
221	Ad						x						x															

grave	age	sex	stature	delayed t	ante morte tooth loss	congenitally absent	enamel defects	fracture	caries	heavy calculus	periodontitis	periapical lesion	periostitis	osteomyelitis	cribra orbitalia	porotic hyperostosis	osteoarthrit	osteoarthrit (vert)	osteophytosis (vert)	ankylos	Scmorl's nodes	trauma	OD	spondylolysis	osteoma	calcification	sinusitis	other
222	MA	F	156		x	x					x	x	x				x	x		x								x
223	YMA	F?	152		x							x					x				x							x
224	OA	F			x	x				x	x	x	x							x							x	
225	A																											
226	MA	M				x					x		x					x									x	
227	OA	M	173		x					x	x		x				x		x	x		x			x			
228	YA																											
229	A	?																										
230	YA	F	153								x		x													x		
231	YA	?						x							x							x						
232	YA	F?						x				x			x													
233	A	?									x				x												x	
234	YMA	F?	150		x	x		x		x	x	x	x				x		x				x					x
235	A	F?	158										x															
236	OA	F	157		x						x	x	x				x		x		x			x	x	x		
237	Ad	?											x															
238	MA	F?	159		x						x		x		x		x	x	x	x		x					x	
239	YA	?									x		x															
240	YA	F?	155								x		x				x		x									
241	YA	F	156		x					x	x						x	x	x	x						x		
242	YA	M	171				x										x					x						
267	Inf																											
269	YA	F			x	x	x						x														x	
270	Chi																											x
271	Inf																											
272	YA	M?									x																	x
273	YA	M?											x	x														x
274	YA	F?																										
275	Chi																											
277	A	M?	168										x															
278	A	M?																										
279	YA	M?													x													
281	A	M?									x																	
282	Inf												x															
283	Ad																											
284	MA	M	172														x	x										
285	A	?																										
295	Inf														x													

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