

Appendix 2: The Disarticulated Human Bone

by Helen Webb, Angela Boyle and Róisín McCarthy

INTRODUCTION

The material includes 2374 fragments of human bone recovered from machine-disturbed soil deposit 3681, 433 disturbed bone fragments (context 3685) that were recovered during initial hand cleaning of the feature and 148 fragments of bone (small finds, 70 in total, from 3685) that could not be definitively assigned to individual skeletons during detailed excavation (see Chapter 1). It should be noted that where fragments of the same bone could be positively matched/reassociated, these were counted as single fragments.

Information on the skeletal elements present, estimated sex and age, and evidence for non-metric traits, pathology and trauma is summarised in Tables A2.1–A2.4. The minimum number and most likely number of individuals represented by this material has been considered along with the skulls and articulated skeletons described under ‘Number of Individuals’ in Chapter 3.

CONTEXT 3681

Skeletal elements represented

All skeletal regions and elements were represented within the disarticulated human bone assemblage from context 3681. Not surprisingly, fragments of rib and vertebrae were the most abundant. Many of the long bone fragments were large enough that exact element and side could easily be identified.

Demography

In keeping with the main skeletal assemblage, the age categories assigned to the disarticulated material were AL (adolescent, 13-17 years), YA (young adult, 18-25 years), PA (prime adult, 26-35 years), MA (mature adult, >45 years) and OA (older adult, >45 years).

Sex was estimated for a total of 83 fragments. These included fragments of skull, mandible and pelvis, which had observable sexually dimorphic features. In addition, there were complete humeral (three right, one left), radial (one left) and femoral

heads (eight right, ten left), and femoral (seven right, two left) and tibial (two right, three left) bicondylar breadths, which could be measured, to estimate sex.

Aside from a left acetabulum fragment and two left ischium fragments, which were more typical of female morphology (?F), all other fragments (80) for which sex could be estimated, were thought to be male (M), or probably male (?M).

A total of 80 human bone fragments from deposit 3681 had features that could be used to estimate an approximate age. These included teeth, where the level of attrition could be observed, bone fragments exhibiting unfused or fusing epiphyses, and fragments of pelvis with observable pubic symphyses or auricular surfaces. A total of four right, four left and one unsided pubic symphyses were complete enough for the Suchey-Brooks (Brooks and Suchey 1990) ageing methodology to be employed, and five right and two left auricular surfaces were sufficiently complete to carry out the Buckberry and Chamberlain (2002) ageing methodology.

Table A2.2 summarises the number of fragments per age category. Of the 80 fragments for which age could be estimated, the vast majority were from young adults.

Non-metric traits

Non-metric traits were observed on three disarticulated human bone fragments from context 3681. A fragment of left frontal bone exhibited a supra-orbital foramen (a bridged supra-orbital notch) and the right arch of a cervical vertebra exhibited a double condylar facet. A left calcaneus exhibited a double anterior facet.

Pathology

Dental disease

Of the 21 loose teeth, five exhibited calculus deposits. A further tooth, within a fragment of mandible, also had calculus. Four of the loose teeth had moderate attrition (one mandibular canine, two mandibular premolars and a second molar), whilst

'Given to the Ground'

Table A2.1 Summary of disarticulated human bone fragments recovered from context 3681

Skeletal region	Skeletal element (fragments and discrete elements)	No. frags	Age info.	Sex info.	Ante-mortem pathology/ non-metric traits	Peri-mortem trauma
Axial (skull)	Frontal	3		x1 frag. ?M	?Cribra orbitalia (pin-point porosity in orbit roof); Non-metric: bridged supra-orbital notch	
	Parietal	5				
	Temporal	4		x1 frag. ?M		
	Occipital	3				
	Vault (unspec.)	43				
	Maxilla	1				
	Mandible	11	x1 frag. OA	x1 frag. ?M	x1 mandible frag with tooth exhibiting calculus; x1 mandible frag with heavy attrition on posterior teeth	Small inferior mandibular margin frag. - sliced through
	Loose teeth	21	x2 frags OA		x5 teeth with calculus; x4 with moderate attrition, x2 with heavy attrition	
Axial (torso)	Manubrium	3				
	Sternal body	6	x1 frag. YA		x1 frag. with lesion of abnormal bone loss on anterior surface	
	L rib	61	x2 frags YA		x1 frag. with osteophyte at margin of costal facet	
	R rib	57	x4 frags YA			
	Rib (unside)	310	x5 frags YA			
	CV1	1			Non-metric: double condylar facet	
	CV2	2				
	CV7	2				
	CV (unspec.)	23	x2 frags YA		Poss healed trauma on 1 spinous process frag.	2 chop marks on 1 frag. (arch + body)
	TV1	1				
	TV9	1			Schmorl's nodes	
	TV10	1			Schmorl's nodes	
	TV11	2			x1 frag. with joint contour change + osteophytes (OA) at R costal facet. Slight osteophytosis at L costal facet	
	TV12	8			x5 frags with Schmorl's nodes	
	TV (unspec.)	88	x4 frags YA		x7 frags with Schmorl's nodes, x2 frags with joint surface porosity (1 also with marginal osteophytes), x1 frag with lytic lesion on inf. body surface	
	LV2	1				
	LV3	1				
	LV4	1				
	LV5	1				
	LV (unspec.)	73	x1 frag. YA		x3 frags with Schmorl's nodes, x3 frags with marginal osteophytes, x1 frag. with porosity on inf. facet, x1 frag. with osteochondrosis	
Sacrum	48	x8 frags YA		x1 frag. with ?lumbarisation of S1		
Coccyx 1	1					
Vertebra (unspec.)	64	x1 frag. YA				
Appendicular (R upper limb)	Acromion	4				
	Coracoid	1				
	Glenoid fossa	9				

Appendix 2

Table A2.1 (continued)

<i>Skeletal region</i>	<i>Skeletal element (fragments and discrete elements)</i>	<i>No. frags</i>	<i>Age info.</i>	<i>Sex info.</i>	<i>Ante-mortem pathology/ non-metric traits</i>	<i>Peri-mortem trauma</i>
	Scapula	1				
	Clavicle	9	x1 frag. YA		Cortical defect on 1 frag.	x1 frag. With 2 chop marks on superior aspect of shaft, adjacent to acromial end
	Humerus	13		x2 frags ?M		
	Radius	13				
	Ulna	14			x1 frag. with ?healed styloid process fracture	
	Capitate	2				
	Hamate	2				
	Trapezium	1				
	Metacarpal	21				
Appendicular (L upper limb)	Acromion	6				
	Glenoid fossa	6				
	Clavicle	10	x1 frags YA, x1 frag. YA-PA		Cortical defect on 2 frags; Joint disease: porosity on acromio-clavicular joint (1 frag)	
	Humerus	12		x3 frags ?M		
	Radius	16	x1 frag. AL	x1 frag. ?M		
	Ulna	18	x1 frag. YA			
	Scaphoid	1				
	Hamate	1				
	Trapezoid	1				
	Lunate	1				
	Metacarpal	27				
Appendicular (unside upper limb)	Acromion	4				
	Scapula	24				
	Clavicle	3			x1 frag. with possible healed sharp-force trauma on superior aspect of shaft	
	Humerus	14	x1 frag. YA			
	Radius	18				
	Ulna	20				
	Metacarpal	8				
	Hand phalanx	60				
Appendicular (R lower limb)	Acetabulum	10	x2 frags YA	x5 frags ?M	Joint disease: OA affecting 1 frag.; porosity affecting another	
	Ilium	15	x3 frags YA, x4 frags PA-OA, x1 frag. MA-OA	x9 frags ?M		
	Ischium	6		x1?M	Inflammatory new bone on 1 frag.	
	Pubis	7	x3 frags YA, x2 YA-PA, x1 frag. PA-OA	x3 frags ?M		
	Femur	29	x1 frag. AL-YA, x1 frag YA	x18 frags ?M	Long-standing osteomyelitis affecting 1 shaft frag.	
	Patella	2				
	Tibia	17	x1 frag. AL-YA	x2 frags ?M		
	Fibula	7				
	Calcaneus	15			Sclerotic bone present on 1 frag, just posterior to sustentaculum	

Table A2.1 (continued)

Skeletal region	Skeletal element (fragments and discrete elements)	No. frags	Age info.	Sex info.	Ante-mortem pathology/ non-metric traits	Peri-mortem trauma
	Talus	7			tali x1 frag. with osteophytosis + joint contour change at lateral articular surface (for fibula). ?Secondary traumatic OA at articulation with fibula	
	Navicular	1				
	Cuboid	1				
	Cuneiform 2	1				
	Cuneiform 3	1				
	Metatarsal	53				
Appendicular (L lower limb)	Acetabulum	8	x1 frag. MA-OA	x3 frags ?M, x1 frag. ?F	Joint disease: Porosity on 1 frag	
	Ilium	10	x3 frags YA, x3 MA-OA	x5 frags ?M		
	Ischium	10		x6 frags ?M, x2 frags ?F	Cortical defect on 1 frag. (ischial tuberosity surface)	
	Pubis	8	x3 frags YA, x1 frag. PA-OA, x1 frag. MA-OA	x1 frag M, x2 frags ?M		
	Femur	22	x1 frag. YA	x13 frags ?M	Poss. healed neck fracture in 1 frag; small depression on fem head (?developmental) in 1 frag. Near complete L femur with severe, long-standing <i>osteomyelitis</i> .	
	Patella	3				
	Tibia	15		x3 frags ?M		
	Fibula	7	x1 frag. YA			
	Calcaneus	8			Non-metric: 1 with double anterior facet	
	Talus	8				
	Navicular	1				
	Cuboid	1				
	Cuneiform 2	1				
	Cuneiform 3	1				
	Metatarsal	21				
Appendicular (unilateral lower limb)	Acetabulum	18			Joint disease: Porosity on 1 frag.	
	Ilium	28	x4 frags AL-YA, x1 frag. YA			
	Ischium	2				
	Pubis	4	x2 frags YA			
	Innominate (unid.)	58				
	Femur	48			x3 adjoining frags with <i>osteitis/osteomyelitis</i> , an additional x8 frags with <i>osteitis/osteomyelitis</i>	
	Tibia	37	x1 frag. AL			
	Fibula	42				
	Calcaneus	3			Sclerotic bone present on 1 frag.	
	Navicular	1				
	Metatarsal	3				
	Foot phalanx	27	x2 frags AL			
Unidentified	Long bone	151			Prob. <i>osteomyelitis</i> in one frag.	
	Other	469			Joint disease: Unid. joint surface frag. with marginal osteophytes	

two loose teeth (a mandibular first and second molar) exhibited heavy attrition. Heavy wear was also noted in the posterior teeth of a mandibular fragment.

Developmental conditions

In one sacral fragment from context 3681 it was clear that lumbarisation of the first sacral segment had occurred.

A depression in a left femoral head was also observed, adjacent to the *fovea capitis*. It is not clear whether this defect represents a developmental defect or perhaps just a morphological, non-pathological anomaly.

Metabolic disease

A fragment of frontal bone, which included the left orbit region, exhibited *cribra orbitalia*, in the form of pin-point porosity in the orbit roof. The lesion observed was consistent with Stuart-Macadam's (1991, 109) Grade 2 lesion.

Joint disease

Numerous fragments of bone from context 3681 exhibited evidence for joint disease. A fragment of left clavicle exhibited porosity at the acromial articular surface. In addition, two right, one left and one unsided fragment of acetabulum exhibited marginal osteophytes and joint surface porosity, consistent with osteoarthritis. A right talus exhibited osteophytes and joint contour change at the articular surface for the fibula. This may represent secondary traumatic osteoarthritis.

In the spine, one thoracic vertebral body fragment and three lumbar vertebral body fragments exhibited marginal osteophytes, whilst joint surface changes, including porosity and osteophytes, were observed in three thoracic and one lumbar vertebra fragments. A left rib fragment also exhibited marginal osteophyte formation at the costal facet.

Table A2.2 Age distribution within the disarticulated assemblage from context 3681

Age category (years)	No. of fragments
Adolescent (13-17)	4
Adolescent (13-17) – Young adult (18-25)	6
Young adult (18-25)	52
Young adult (18-25) – Prime adult (26-35)	3
Prime adult (26-35) – Older adult (45+)	6
Mature adult (36-45) – Older adult (45+)	6
Older adult (45+)	3

A total of 14 thoracic and three lumbar vertebra body fragments exhibited Schmorl's nodes.

A small, unsided clavicle shaft fragment was queried as exhibiting possible healed, sharp-force trauma, in the form of a fairly well-defined area of flattened bone. On closer inspection, it appeared more likely that this was a morphological variation, possibly relating to musculature. Other fragments of clavicle exhibited similar markings.

Cortical defects

Cortical defects were observed at the site of attachment for the costo-clavicular ligament, on two left clavicle fragments, and one right clavicle. A left and a right ischial tuberosity also exhibited cortical defects, at the origin of the semimembranosus muscle.

Circulatory disease

A single fragment of lumbar vertebra exhibited an erosive, lytic lesion on the inferior body surface, adjacent to the anterior margin. Such lesions are indicative of *osteochondrosis*, although the superior body surface is more commonly affected (Aufderheide and Rodríguez-Martín 1998, 87).

Non-specific inflammation and infection

A number of cases of non-specific inflammation and infection were noted within the disarticulated material from context 3681. Of particular note were two adjoining fragments comprising the majority of a left femur, with long-standing osteomyelitis (see Chapter 3, Fig. 3.88). The entire length of the femur shaft was affected, exhibiting extensive sclerosis and bone remodelling, with significantly narrowed medullary cavity and multiple cloacae. Small patches of active periostitis were also present on the femur shaft. An additional 11 fragments of unsided femur shaft exhibited evidence of long-standing osteitis, with one fragment displaying a cloaca, indicative of osteomyelitis. Of these additional fragments, three were adjoining (counted as a single fragment). The other eight fragments were much darker in colour, possibly because they were from a different bone. None of these could be refitted with each other, but most likely formed part of the same bone.

Evidence for non-specific inflammation was also seen on a right ischium fragment, in the form of healed, inflammatory new bone. Two calcaneus fragments (one right, one unsided) displayed areas of sclerotic bone, probably indicative of healed periostitis.

Another possible case of infection was seen in a thoracic vertebra, where the inferior body surface

exhibited a solitary, well-defined, oval lytic lesion (9mm by 11mm, *c* 2-3mm deep), with a floor comprising exposed trabecular bone.

Ante-mortem trauma

Three probable healed fractures were observed. A cervical vertebra fragment exhibited a possible healed fracture of the spinous process, and the styloid process in a right distal ulna fragment appeared abnormally shaped with slight medial deviation, indicating a probable healed fracture. A left proximal femur fragment comprised a mushroom-shaped head, with an abnormally angled neck, also indicative of an old healed fracture.

Peri-mortem trauma

A small fragment of mandible, a partial cervical vertebra and a fragment of right clavicle displayed peri-mortem, sharp-force trauma. The mandible fragment comprised a very small portion of the inferior margin. This had been removed from the rest of the mandible via a blow from a sharp, bladed weapon. The cervical vertebra exhibited two chop marks, affecting both the body and arch regions (see Chapter 3, Fig. 3.90). The clavicle fragment exhibited two chop marks on the superior aspect, adjacent to the acromial end (Chapter 3, Fig. 3.91)

CONTEXT 3685 (NON-SMALL FINDS)

Skeletal elements represented

All skeletal regions were represented within the disarticulated human bone assemblage from context 3685 (Table A2.3). As with the material from context 3681, rib and vertebra fragments were numerous. However, in contrast, there were fewer fragments of identified long bone. The smaller bones, such as those of the hands and feet, were far better represented within context 3685. This is undoubtedly due to the nature of the context itself, in that these bones are those which were disturbed during the initial hand-cleaning of the feature, compared with those from 3681, which comprise bone disturbed by machine.

Demography

Sex could be estimated for just one fragment. This was a left temporal bone, which exhibited morphological features that were more typical of a male than a female.

Of the 428 non-small find bones from context 3685, 26 had features that could be used to estimate

an approximate age. These included teeth that had incompletely developed roots, a partial pubic symphysis and bones with evidence for unfused or fusing epiphyses.

A total of 18 fragments were from adolescents, six were from adolescent or young adults, and two were from young adults. It should be highlighted here that the majority of unfused epiphyses/epiphyseal surfaces observed, were on hand and foot phalanges. It is likely that in many cases multiple phalanges came from a single individual.

Non-metric traits

Only one non-metric trait was observed. A left medial cuneiform exhibited a double proximal facet. The associated unfused first metatarsal epiphysis was also present, indicating that this belonged to an adolescent.

Ante-mortem pathology

A small number of fragments exhibited ante-mortem pathology. A clavicle fragment displayed a cortical defect at the insertion for the costo-clavicular ligament. A proximal foot phalanx exhibited a well healed, but slightly malaligned midshaft fracture, and a first proximal foot phalanx had a lytic lesion in the proximal articular surface, probably consistent with *osteochondritis non-dissecans*.

Peri-mortem trauma

Multiple fragments within this assemblage exhibited peri-mortem sharp-force trauma. In keeping with the peri-mortem trauma observed in the main skeletal assemblage, only bones of the head, neck, shoulder and hands were affected. A right mandibular ramus fragment had been sliced through, by at least two separate blows from a sharp, bladed weapon. An atlas exhibited a slice mark through the left, and possibly right, superior articular facets (probably a single blow), and two atlases exhibited identical cut marks (possibly representing the halting of a blade) in the posterior surface, just below the dens. The inferior body surfaces of a third axis, and an unidentified cervical vertebra body, had been sliced through and removed. A chop mark was also observed on the posterior surface of a left acromion. Evidence for probable defensive injuries was observed in the proximal ends of two proximal hand phalanges, and a (?2nd) metacarpal, undoubtedly from the same individual, which had been sliced through, with the blade cutting longitudinally through the head and shaft of the metacarpal.

Appendix 2

Table A2.3 Summary of disarticulated human bone fragments recovered from context 3685 (non-small finds)

Skeletal region	Skeletal element (fragments and discrete elements)	No. frags	Age info.	Sex info.	Ante-mortem pathology/ non-metric traits	Peri-mortem trauma
Axial (skull)	Temporal	8		x1 frag ?M		
	Occipital	2				
	Vault (unspec.)	33				
	Zygomatic	2				
	Maxilla	3				
	Nasal	1				
	Skull (unid.)	3				
	Mandible	7				x1 frag. (R ramus) chopped/ sliced through (at least 2 blows)
	Loose teeth	16	x2 teeth AL			
Axial (torso)	Sternal body	1				
	L rib	4	x1 frag. AL-YA			
	R rib	6	x1 frag. AL-YA			
	Rib (unsided)	65	x2 frags YA			
	CV1	1				Slice through sup surface of L superior articular facet (+ possibly through left also)
	CV2	3				x2 bodies with cuts (?blade halts) in the posterior surface, just inferior to dens; x1 with inferior body surface sliced through
	CV (unspec.)	7				x1 CV body with inferior surface sliced through
	Sacrum	6				
	Coccyx 1	1				
	Vertebra (unspec.)	37				
Appendicular (R upper limb)	Acromion	1				
	Radius	1				
	Ulna	1	x1 frag. AL-YA			
	Scaphoid	2				
	Lunate	2				
	Capitate	1				
	Hamate	1				
	Trapezium	2				
	Triquetral	1				
	Trapezoid	2				
	Pisiform	1				
Metacarpal	5	x4 frags AL				
Appendicular (L upper limb)	Acromion	1				x1 frag. with chop mark in posterior surface
	Coracoid	3				
	Scaphoid	1				
	Capitate	1				
	Trapezium	1				
	Hamate	1				
	Trapezoid	1				
	Pisiform	1				
Metacarpal	7				x1 metacarpal (?2nd) sliced through longitudinally (same individual has phalanges sliced through – see below)	

Table A2.3 (continued)

<i>Skeletal region</i>	<i>Skeletal element (fragments and discrete elements)</i>	<i>No. frags</i>	<i>Age info.</i>	<i>Sex info.</i>	<i>Ante-mortem pathology/ non-metric traits</i>	<i>Peri-mortem trauma</i>
	Hand phalanx	2				x2 proximal hand phalanges (?L) with chops/slices through (same individual, + also has L metacarpal sliced through – see above)
Appendicular (unilaterated upper limb)	Scapula	3				
	Clavicle	1			x1 frag with cortical defect at acromioclavicular ligament insertion	
	Humerus	5				
	Radius	1				
	Ulna	5				
	Metacarpal	1				
	Hand phalanx	31	x6 frags AL			
Appendicular (R lower limb)	Acetabulum	1				
	Pubis	1				
	Patella	1				
	Fibula	1				
	Talus	1				
	Cuboid	2				
	Cuneiform 2	1				
	Cuneiform 3	1				
	Metatarsal	4				
Appendicular (L lower limb)	Ischium	1	x1 frag AL-YA			
	Pubis	1				
	Fibula	2	x1 frag. AL			
	Navicular	1				
	Cuneiform 1	1	x1 frag. AL		Non-metric: double proximal facet	
	Cuneiform 3	1				
	Metatarsal	10	x1 frag. AL			
	Foot phalanx	4				
Appendicular (unilaterated lower limb)	Acetabulum	2				
	Ilium	4				
	Ischium	1				
	Pubis	1	x1 frag. AL-YA			
	Innominate (unid.)	29	x1 frag. AL-YA			
	Femur	19				
	Tibia	1				
	Fibula	3				
	Foot phalanx	23	x3 frags AL			x1 proximal foot phalanx with healed fracture; x1 1st proximal phalanx with ?osteochondritis non-dissecans
Unidentified	Long bone	7				
	Other	17				

CONTEXT 3685 (SMALL FINDS)

Skeletal elements represented

A total 148 fragments of human bone were lifted as 70 small finds (some small finds comprise multiple fragments), each of which was 3 dimensionally recorded (Table A2.4). Small find 10430, comprising a right capitate, scaphoid, lunate and trapezium, two metacarpals and 15 hand phalanges, was re-associated with skeleton 3790 during analysis, but has been included in the total count for small find bones, presented here. Small find 10393, was later identified as animal bone and has not been included in the total count or in Table A2.4.

As with the non-small find disarticulated material from context 3685, the most frequently represented fragments were the small bones of the hands (44 phalanges, 17 metacarpals and 14

carpals). It is not surprising that these were the most frequent elements that could not be confidently assigned to individual skeletons during detailed excavation, given the complex nature of the deposition of the skeletons and their physical proximity with each other within the grave, coupled with the fact that small bones, particularly those from the hands and feet, will have fallen into empty spaces, created when the bodies decomposed (Duday 2006).

Of particular note are small finds 10371 and 10420. The former is the only fragment of maxilla bone in the entire grave assemblage that exhibits peri-mortem sharp force trauma in the form of a chop mark (peri-mortem trauma was observed on teeth from maxillae, however). The latter small find, a mandible, was located on top of the right hand of skeleton 3715. Sharp force trauma had removed the base of the anterior mandible. The fact

Table A2.4 Summary of the bones recorded as small finds from context 3685

SF no.	No. frags	Element/s (fragments and discrete elements)	Side	Age info.	Sex info.	Ante-mortem pathology/ non-metric traits	Peri-mortem trauma
10333	1	Proximal hand phalanx	?				
10337	1	Maxillary PM2	R				
10342	1	Metacarpal 1	R			Flattened head	
10350	1	Metacarpal shaft	?				
10351	1	Metacarpal	?L	AL			
10356	1	Femur shaft frag	?				
10357	1	Proximal ulna	R				
10358	2	Pelvis (auricular surface), long bone frag. (?femur)	R	YA	M		
10359	1	Femur shaft frag	R				
10366	1	Proximal hand phalanx	?				
10367	1	x4 adjoining mandible frags	?				Peri-mortem trauma – chopped
10368	1	Mandible frag	?				Peri-mortem trauma – chopped
10369	1	Mandible condyle	?R				Peri-mortem trauma – chopped
10370	1	Mandible frag with molar root	?				Peri-mortem trauma – chopped
10371	1	Maxilla frag, ?PM2 + ?M1	?R			Heavy attrition	Peri-mortem trauma – chopped
10372	1	Mandible condyle	?L				Peri-mortem trauma – chopped
10374	1	Rib shaft frag	L				
10375	1	Mid hand phalanx	?				
10376	1	Proximal hand phalanx 1	?				
10377	1	Proximal hand phalanx	?				
10378	1	Distal hand phalanx	?				
10379	1	Lateral cuneiform	R				
10380	1	Scapula frag (?acromion)	?				
10381	1	Middle hand phalanx	?				
10382	3	x4 adjoining frags tibia shaft, ?pelvis frag, ?ulna shaft frag	Tib=?L				
10383	1	Humerus (distal third)	R				
10384	1	Calculus – bladder/kidney stone?	?				
10385	1	Radius shaft frag	?L				
10386	1	Ilium frag	L	YA			
10387	1	Distal fibula	L				
10388	1	Clavicle frag	R				
10389	1	Metatarsal distal half	L				
10391	1	Metatarsal1	L				

Table A2.4 (continued)

SF no.	No. frags	Element/s (fragments and discrete elements)	Side	Age info.	Sex info.	Ante-mortem pathology/ non-metric traits	Peri-mortem trauma
10397	1	Proximal foot phalanx	?				
10398	1	Maxillary canine	R			Calculus, linear enamel hypoplasia	
10399	1	Maxillary PM2	R			Calculus	
10400	1	Maxillary M3	R			Calculus, heavy attrition	
10402	1	Maxillary incisor 2	L			Calculus	
10403	1	Mandibular PM2	R			Calculus	
10405	1	Maxillary M3	R			Calculus	
10406	1	Maxillary incisor 1	R			Calculus	
10407	1	Mandibular PM1	R			Calculus	
10408	1	?Maxillary M3	?L			Heavy attrition	
10410	1	Cervical vertebra	L+R	AL-YA			
10411	1	Maxillary incisor 1	?L			Calculus, heavy attrition	
10412	2	x2 cranial vault frags	?				
10413	1	Zygomatic	L				
10415	1	Tibia shaft frag.	?L				
10417	2	Proximal tibia (x2 frags)	L				
10416	1	?Ulna shaft	?L				
10418	9	x9 rib shaft frags	L+R				
10420	1	Mandible (x2 frags, inc. complete L body. 11 tooth roots in sockets)	L+R		M		Peri-mortem trauma – chop marks to L+R sides
10421	2	Cervical vertebra arch frag, mandible (x6 adjoining frags, plus L mandibular teeth 1-8, R mandibular teeth 2-6 (+?6))	L+R		?M	Calculus	Peri-mortem trauma – numerous chop marks to mandible + teeth fractures
10423	1	Metacarpal 5	L				
10424	2	x2 middle hand phalanx	?				
10425	1	Patella	R				
10426	33	Hand: distal radius/ulna epiphyses, all 8 carpals (+ additional capitate), all metacarpals (inc. unfused epiphyses), x12 phalanges (inc. x5 unfused epiphyses).	L	AL			
10428	1	Mandible frag.(gonial angle)	L		?M		Peri-mortem trauma – chopped
10430	21	Capitate, scaphoid, lunate, trapezium, hand phalanges (x2 proximal, x8 middle, x5 distal), metacarpal 1, metacarpal (unid) (10430 REASSOCIATED WITH SK 3790)	R				
10431	1	Patella	R			Marginal OPs	
10432	2	Pubis (inc. syphysis), x1 ilium frag.	L	PA	M		
10433	2	x2 proximal foot phalanx	?				
10434	3	x2 proximal foot phalanx, metatarsal1 frag (unfused)	R	AL-YA			
10435	2	Proximal hand phalanx, scaphoid	Scaph=R				
10436	1	Patella	L			Marginal OPs	
10437	1	Fibula shaft frag., proximal fibula (adjoining frags)	R			OA at prox. fibula joint surface	
10438	1	Patella	L				
10439	1	1st distal foot phalanx	?L				
10440	7	x2 proximal, x2 middle, x2 distal hand phalanx, metacarpal 1	MC=L				
10441	1	Proximal hand phalanx	?				

that skeleton 3715 was in possession of all of its cervical vertebrae may suggest that this mandible was associated with it.

Demography

Features useful for estimation of sex were present in five small finds. These comprised fragments of mandible and pelvis. In all cases, sex was estimated to be male, or probably male.

Age was estimated for just seven small finds. These included a complete auricular surface, a pubic symphysis and other fragments exhibiting fusing or unfused epiphyses. Two fragments were deemed to have come from adolescents, two from young adults, two from adolescents or young adults, and one from a prime adult.

Ante-mortem pathology

Of the 15 small finds that included teeth, nine exhibited deposits of calculus, and four had notably heavy attrition. A maxillary canine (small find 10398) also exhibited linear dental enamel hypoplasia.

Four of the small finds were patellae. Of these, two (small finds 10431 and 10436) exhibited marginal osteophytes. A proximal fibula joint surface displayed marginal osteophytes and porosity, indicative of osteoarthritis.

A metacarpal (small find 10342) exhibited a flattened head. This probably represents a non-pathological, morphological anomaly.

One of the fragments within the assemblage was a calculus (small find 10384), probably a kidney or bladder stone (Chapter 3, Fig. 3.89). It is particularly unfortunate that this could not be associated with a specific skeleton because this is direct evidence of soft tissue disease, rarely observed in human skeletal remains.

Peri-mortem trauma

A total of nine small finds exhibited peri-mortem sharp-force trauma. In eight cases, mandibular fragments were affected, and in one case, a maxilla fragment was involved.

Small finds 10367, 10368 and 10428 comprised small fragments of inferior mandible border, which had been sliced through and separated from the rest of the mandible, by a sharp bladed weapon. Similarly, small finds 10369 and 10372 were small fragments of mandibular condyle, which had been sliced off from the main part of the mandible. Small finds 10370 and 10371 comprised small fragments of mandible and maxilla, respectively, each with teeth in sockets. In both cases, the teeth, as well as the jaws, had been sliced through.

Small find 10421 comprised the majority of the left side of a mandible (six fragments). This exhibited multiple slice and chop marks through the anterior region, with the inferior margin separated completely. In addition, the left ramus exhibited a sharp-force blade injury, with loss of bone superior to the chop mark. This lesion may mark the halting of the blade tip, during one of the blows.

Small find 10420 comprised an almost complete left and partial right side of another mandible (two fragments). This exhibited at least three blows from a sharp blade. The left coronoid and condyle had been removed by a single blow, and there were a further two cuts/slices through the left body, also involving the teeth. The right mandibular body had been sliced completely through by at least two blows, almost certainly caused by two of the blows affecting the left side of the mandible.

CONCLUSIONS

Key observations are as follows.

The difference in elements represented between the disarticulated material from context 3681, compared with that from 3685 is certainly due to the nature of the contexts, ie machined bone 3681 – comprising many more larger fragments and recognisable long bone fragments when compared with bone disturbed during decomposition and hand excavation (3685) – which comprised predominantly small fragments, with many small bones, particularly of the hands and feet.

The presence of numerous fragments belonging to adolescents and young adults is in keeping with the main skeletal assemblage. Likewise, where sex could be estimated, the overwhelming majority of fragments exhibited features consistent with male morphology, also in keeping with the main assemblage.

Several examples of ante-mortem trauma and pathology are present in the assemblage and are an important addition to the examples identified amongst the articulated skeletons. In particular, they augment the assemblage wide prevalence for non-specific bone inflammation and infection, *cribra orbitalia* and healed fractures. They also increase the range of pathological conditions identified (for example, kidney/bladder/gall stones and confirmed examples of osteomyelitis were not identified amongst the articulated skeletons).

Patterns of peri-mortem trauma are consistent with those observed on the articulated remains. Included is the only example in the entire assemblage of a sharp force injury to a maxilla.

The only skeletal elements exhibiting peri-mortem trauma were those of the skull, mandible, neck and shoulder regions, in keeping with the peri-mortem trauma observed in the main skeletal

assemblage. However, sharp-force trauma to the maxilla bone was not identified in the main assemblage.

The vast majority of disarticulated skeletal material probably comes from individuals that have already been accounted for in the main skeletal

assemblage. If the disarticulated material comprises skeletons that have not been accounted for in the main skeletal assemblage (ie additional skeletons), there is nothing to suggest that these would be atypical for this group (ie no females, no young children etc.).