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FULL ANALYSIS OF HUMAN REMAINS FROM FIELD 179 OF THE A1 WIDENING SCHEME

Introduction

During excavations in 2014, thirteen contexts of disarticulated bone were recovered from Field 179 of the A1 Leeming to Barton Joint Venture for widening of the A1. Three of these contexts were found to contain animal bone, but the fragments of bone from the remaining ten contexts were all human (Table 1). In total eighteen fragments of human bone were recovered from these contexts. This document presents the objectives, methods and results of the analysis of the disarticulated remains.

Objectives

The skeletal assessment aimed to determine age and sex, as well as any manifestations of disease from which the individuals may have suffered.

Methodology

The human bone fragments were analysed in detail, assessing the preservation and completeness, as well as determining the age and sex of the individual. All pathological lesions were recorded and described. A summary of the osteological and palaeopathological data for the disarticulated skeletal material is provided in Table 2.

Osteological Analysis

Skeletal preservation depends upon a number of factors, including the age and sex of the individual as well as the size, shape and robusticity of the bone. Burial environment, post-depositional disturbance and treatment following excavation can also have a considerable impact on bone condition. Preservation of human remains is assessed subjectively, depending on the severity of bone surface erosion and post-mortem breaks, but disregarding completeness.

Preservation was assessed using a grading system of five categories: very poor, poor, moderate, good and excellent. Excellent preservation implied no bone erosion and very few or no post-depositional breaks, whereas very poor preservation indicated complete or almost complete loss of the bone surface due to erosion and severe fragmentation.

The disarticulated human bone was generally very well to moderately preserved, with retention of surface detail. Completeness of the bones ranged from 15% to 100%.

A count of the 'minimum number of individuals' (MNI) recovered from a cemetery is carried out as standard procedure during osteological assessments of inhumations in order to establish how many individuals were represented by the articulated and disarticulated human bones (without taking the archaeologically defined graves into account). The MNI is calculated by counting all long bone ends, as well as other larger skeletal elements, such as the hip joints and cranial elements.

Within the adult bones there were no duplicates, dentition of at least one young juvenile was present, and three right femora of foetal/neonatal/perinatal individuals were identified. This gives a total MNI of five individuals (1 adult, 1 young juvenile, and three foetuses/neonates/perinates).

Age is usually determined using standard ageing techniques, as specified in Scheuer and Black (2000a; 2000b) and Cox (2000). Age estimation in adults relies on the presence of the pelvis and uses different stages of bone development and degeneration in order to calculate the age of an individual (Lovejoy et al 1985; Meindl and Lovejoy 1989). Age is split into a number of categories, from foetus (up to 40 weeks in *utero*), neonate (around the time of birth), infant (newborn to one year), juvenile (1-12 years), adolescent (13-17 years), young adult (ya; 18-25 years), young middle adult (yma; 26-35 years), old middle adult (oma; 36-45 years), mature adult (ma; 46+) to adult (an individual whose age could not be determined more accurately as over the age of seventeen).

Within the disarticulated human bone assemblage from Field 179 four adult/possible adult bones were identified, based on completion of fusion and general robusticity of the long bones (likely 17+ years of age). The right maxilla of a young juvenile (approximately 1 to 6 years of age) was present, and age estimated based on the eruption of the right upper first^t deciduous molar. Numerous long bones were present, likely belonging to at least three foetal/neonatal/perinatal (likely at or around the time of birth) individuals, based on ages estimated from the diaphyseal lengths of the complete bones. Context (9318) also contained a loose lower deciduous first molar, indicating the presence of a possible second young juvenile.

Sex determination is usually carried out using standard osteological techniques, such as those described by Mays and Cox (2000). Assessment of sex in both males and females relies on the preservation of the skull and the pelvis and can only be carried out once sexual characteristics have developed, during late puberty and early adulthood. No skeletal criteria for the estimation of sex were present for any of the human bone fragments recovered from Field 179.

Despite some of the bones present being adult long bones, stature could not be determined as these elements were not complete.

Non-metric traits are additional sutures, facets, bony processes, canals and foramina, which occur in a minority of skeletons and are believed to suggest hereditary affiliation between

skeletons (Saunders 1989). The origins of non-metric traits have been extensively discussed in the osteological literature and it is now thought that while most non-metric traits have genetic origins, some can be produced by factors such as mechanical stress (Kennedy 1989) or environment (Trinkhaus 1978). No non-metric traits were identified within the disarticulated bone from Field 179.

Pathological Analysis

The analysis of skeletal and dental manifestations of disease can provide a vital insight into the health and diet of past populations, as well as their living conditions and occupations.

The *in situ* deciduous tooth (right upper 1st molar) within Context (8153) had a possible abscess above the mesial root. It was externally draining (approximately 3.6 x 4.5mm in size) and had sharp margins.

References

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Appendix

Table 1 List of contexts containing disarticulated human bone

Context No.	Location on site	No. fragments	Notes
8015	Fill of large modern cuts along eastern edge of excavation area	1	Adult femur
8153	Rubble dump deposit/possible roof collapse	1	Juvenile maxilla and <i>in situ</i> dentition
8189	Foundation bedding layer of possible cobbled flooring	0	Two fragments of a severely pathological bone, determined to likely be a cattle rib
8191	Deposit layer	1	Adult ulna
8234	Bedding material for road surface	7	Long bones from a foetus/neonate/perinate
8332	Fill of truncated ditch [8331]	1	Small long bone fragment from a foetus/neonate/perinate
8346	Upper fill of pit [8589]	3	Long bones from a foetus/neonate/perinate
8363	Fill of [8278]	1	Adult humerus
8848	Deposit within a cobbled area	1	Adult hand phalanx
9133	Backfilled layer	1	Adult humerus
9318	Burnt deposit	1	Juvenile deciduous tooth
17713	Fill of pit [17712]	139	Mix of burnt and unburnt bone, only identifiable fragments were animal bone, 56.7g
17784	Fill of pit [17783]	0	Two fragments of animal bone
Total		18	

Table 2 Osteological and palaeopathological catalogue – Disarticulated bone

ID	Context	Bone Element	Detailed Description	Side	%	SP	No. Frags	Age	Sex	Other
1	8153	Maxilla	Missing lateral half of alveolar bone, and sockets for incisors	R	60	3	1	YJ	-	3 tooth positions, 1 deciduous tooth present (RdM1 – no pathology), 1 unerupted permanent incisor visible. Abscess above the mesial root of the 1 st molar, externally draining, sharp margins (3.6x4.5mm)

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2	8191	Ulna	Missing proximal and distal ends	L	70	2	1	A?	-	-
3	8234	Humerus	Distal half of shaft	L	50	2	1	F/N/P	-	ID3-7 likely same individual
4	8234	Radius	Missing proximal and distal ends	R	75	2	1	F/N/P	-	ID3-7 likely same individual
5	8234	Ulna	Missing distal third, proximal end damaged	R	70	2	1	F/N/P	-	ID3-7 likely same individual
6	8234	Femur	Proximal and distal ends damaged	R	90	1	1	F/N/P	-	ID3-7 likely same individual. Ends damaged, but minimum length of 68.1mm = birth-6 months
7	8234	Tibia	Missing proximal and distal ends	R	80	1	1	F/N/P	-	ID3-7 likely same individual
8	8234	Femur	Distal third of femur	R	20	1	1	N/P/I?	-	Slightly larger than right femur ID6
9	8234	Long bone	Shaft fragment	-	-	-	1	F/N/P	-	Possibly radius or fibula
10	8332	Femur	Proximal quarter of shaft, head damaged	R	15	3	1	F/N/P	-	-
11	8346	Humerus	Whole	L	100	2	1	F/N/P	-	ID11-13 likely same individual. 64.1mm = approximately birth-6 months
12	8346	Femur	Whole	R	100	1	1	F/N/P	-	ID11-13 likely same individual. 74.1mm = approximately birth-6 months
13	8346	Tibia	Proximal half of shaft	R	50	1	1	F/N/P	-	ID11-13 likely same individual
14	8363	Humerus	Distal two-thirds of shaft	R	60	1	1	F/N/P	-	-
15	8848	Intermediate hand phalanx	Whole	?	100	1	1	A	-	No DJC
16	9133	Humerus	Distal two-thirds, missing distal end	L	60	1	1	A	-	-
17	9318	Deciduous lower 1 st molar	Crown	R	50?	1	1	J	-	Crown heavily worn, so it is possible that root is resorbing rather than damaged
18	8015	Femur	Distal epiphysis	R	15	2	1	A	-	No DJC

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