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FULL ANALYSIS OF HUMAN REMAINS FROM FIELD 258 OF THE A1 WIDENING SCHEME

Katie Keefe & Malin Holst

Introduction

Excavations conducted by Northern Archaeological Associates between February 2015 and January 2016 identified a small quantity of inhumed bone and a cremation in Field 258, Scotch Corner, North Yorkshire. The inhumed bone along with small quantities of burnt bone were recovered from features believed to be inhumation burials; however, upon analysis, none of the fragments from Features [15410], [26033], [15394], or [15217] were diagnostic and therefore could not be identified as human. This document presents the objectives, methods and results of the analysis of these remains.

Objectives

The aim of the skeletal analysis was to determine the age, sex and stature of the skeletons, as well as to record and diagnose any skeletal manifestations of disease and trauma. Additionally, information was sought regarding the cremation techniques.

Methodology

The cremated bone was sieved through a stack of sieves, with 10mm, 5mm and 2mm mesh sizes. The bone recovered from each sieve was weighed and sorted into identifiable and non-identifiable bone. The identifiable bone was divided into five categories: skull, axial (excluding the skull), upper limb, lower limb and long bone (unidentifiable as to the limb). All identifiable groups of bone were weighed and described in detail.

Osteological Analysis

Preservation of the cremated bone 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. Cremation Burial 15171 was in a good state of preservation, with the retention of surface detail and sharp margins to the bone fragments.

Moderate warping and bone cracking, which occurs commonly during the cremation process, was evident in Cremation Burial 15171. The fragment size of cremated bone is frequently

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attributed to post-cremation processes. This is because skeletal elements retrieved from modern crematoria tend to be comparatively large before being ground down for scattering or deposition in the urn. Bone is also prone to fragmentation if it is moved while still hot (McKinley 1994, 340). The bone from Cremation Burial 15171 was heavily fragmented, with just under half of the fragments deriving from the 5mm sieve, and just under a third from the 2mm sieve. This would suggest that the remains may have been subject to disturbance while hot or intentional fragmentation.

The cremated bone assemblage weighed 2,807.8grams, which is greater than the quantity of bone expected from a modern cremation, and in fact weighed considerably more than the average given by (McKinley 1993). The average bone weight produced by modern crematoria tends to range from 1,000.5g to 2,422.5g with a mean of 1,625.9g (McKinley 1993). Wahl (1982, 25) found that archaeologically recovered remains of cremated adults tend to weigh less (between 250g and 2500g) as a result of the commonly practised custom of selecting only some of the cremated bone from the pyre for inclusion in the burial, thereby representing a symbolic, or token, interment.

The cremated bone assemblage was completely calcined. According to McKinley (1989), the body requires a minimum temperature of 500° Celsius over seven to eight hours to achieve complete calcination of the bone. The bone from both cremation burials was white, suggesting that the bone had reached sufficient temperatures, and been allowed to burn for long enough, on a pyre that was well constructed.

It was possible to identify 74.1% of the cremated bone. The majority of identifiable fragments were long bone shafts, which could not be identified to a specific region, followed by skull fragments. It is unsurprising that skull fragments were one of the most abundant skeletal elements, since the cranial vault is very distinctive and easily recognisable, even when severely fragmented; as such, it often forms a large proportion of identified bone fragments in cremated remains (McKinley 1994).

It is not possible to calculate the MNI for the cremation burials, because only a token selection of bone from the pyre tends to be buried. Double burials can be identified only if skeletal elements are duplicated, or if skeletons of different ages are represented in one burial. Cremation Burial 15171 appeared to contain the remains of at least two individuals, with two left orbital margins present.

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 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

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(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).

Cremation Burial 15170 contained the remains of an adult, however, because none of the criteria normally used for age determination were present amongst the cremated remains, age determination was based on less reliable criteria, such as bone robusticity, which suggested that the two individuals were at least sixteen years old but may have been considerably older.

Commented [H1]: this is the correct number. Previously this report stated 20405

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.

Due to the shrinkage and warping of skeletal elements during the cremation process, assessing the sex of any remains must be considered as tentative at best, however, a supraorbital ridge and orbital rim recovered from the cremated remains were thought to potentially possess male characteristics.

Dental Health

Analysis of the teeth from archaeological populations provides vital clues about health, diet and oral hygiene, as well as information about environmental and congenital conditions. All teeth and jaws were examined macroscopically for evidence of pathological changes.

Due to heavy fragmentation, many of the tooth roots could not be identified, although two mandibular premolars and a canine were recognisable. However, none of the teeth exhibited signs of dental pathology.

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Appendix

Table 1 Summary of cremated bone assemblages

Cremation No	Feature Type	Period	Artefacts and Inclusions	Bone Colour	Preservation	Weight (g)	Percentage of Expected Quantity of Bone
15171	Pit	Roman	-	White	Good	2807.8	172.7%*

*contains the remains of at least two individuals

Table 2 Summary of cremated bone fragment size

Cremation No.	10mm (g)	10mm (%)	5mm (g)	5mm (%)	2mm (g)	2mm (%)	Residue (g)	Weight (g)
15171	611.7	21.8	1285.0	45.8	858.9	30.6	52.2	2807.8

Table 3 Summary of identifiable elements in the cremation burials

Burial	Skull	Skull	Axial	Axial	UL	UL	LL	LL	UIL	UIL	Total	Total	Total	Total

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No	(g)	(%)	(g)	(%)	(g)	(%)	(g)	(%)	(g)	(%)	ID (g)	ID (%)	UID (g)	UID (%)
15171	616.8	22.0	69.3	2.5	150.2	5.3	204.4	7.3	1039.0	37.0	2079.7	74.1	728.1	25.9

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