GLADIATORS AT ROMAN COLCHESTER: RE-INTERPRETING THE COLCHESTER VASE

SUPPLEMENTARY MATERIAL: THE CREMATED REMAINS

*by* Emily Carroll

This appendix provides further details of the analysis of the cremated remains associated with the Colchester Vase. This appendix is intended to complement the printed text but in in places there is some limited overlap with the latter to maintain its coherence.

The cremated remains associated with the Colchester Vase were analysed as part of the *Decoding the Dead* project, alongside 30 other antiquarian Roman cremations.[[1]](#endnote-1) This was the first time modern osteoarchaeological analysis had been conducted for any of the remains. Cremated human remains from archaeological contexts have been largely understudied, and often overshadowed by other funerary practices, specifically inhumations.[[2]](#endnote-2) Despite being the preferred funerary practice from the first century B.C. to the late second/early third century A.D. in Roman Britain, cremation deposits in the past have been treated as secondary sources of archaeological evidence.[[3]](#endnote-3) It is only within the last three decades, coinciding with the methodological advances made in archaeological science, that the full potential of these deposits has been explored in detail, overturning previous misconceptions.

**Methodology**

The osteological analysis was conducted according to the Standards for Recording Human Remains, BABAO.[[4]](#endnote-4) All human bones were handled in accordance with the British Association for Biological Anthropology and Osteoarchaeology code of ethics and code of practice.[[5]](#endnote-5) Permission to examine the cremation assemblages and extract samples for isotopic analysis was granted by Colchester Museums.

**Results**

Overall, the cremation deposit of the Colchester Vase was sufficiently well-preserved to enable 51% of the burned bone recovered from the vessel to be identified to skeletal site (439.8g of the 856.8g in total). With regard to fragmentation, the majority of fragments (441.1g, 51%) measured >10mm in size, while 27% (230.7g) measured >5mm in size, and 22% (184.5g) measured from >2mm. The entire skeleton was well represented with the majority of identified bone (45%, 199.2g) derived from the skull. This is slightly unexpected because the densest bones in the body, the femur and tibia, form part of the appendicular skeleton and usually dominate skeletal representation. The remainder of identified material came from the appendicular (38%, 167.1g) and axial (17%, 73.5g) skeleton. One individual was identified in this cremation deposit. Demographic assessment suggested that their osteological sex is male and that they were aged over 40 years at time of death.

With regard to pathology, active periostitis was identified on the proximal femur suggesting active inflammation of the bone’s periosteum at the time of death. This lesion is demonstrative of non-specific infection, strain or trauma. In addition, six parietal fragments from the skull showed signs of porosity and pitting, associated with porotic hyperostosis which may be indicative of a nutritional deficiency.

Macroscopic bone colour showed that the majority of burned material was white, indicative of full calcination associated with high burning intensity. Instances of blue and grey-coloured bone were also observed throughout the assemblage, demonstrating inconsistency in firing conditions potentially due to an insufficient oxygen supply.

No artefact fragments (‘pyre goods’) were recovered from this cremation urn. However, fragments of oyster shell were identified during the analysis, as well as 24 fragments of burned animal bone. Unfortunately, due to the degree of fragmentation it was not possible to identify their species.

**Discussion**

*Burned Bone Preservation*

Researchers have used burned bone weight as an indicator of osteological sex, age, minimum number of individuals (MNI), as well as of cremation practices.[[6]](#endnote-6) However, it is important to be aware that this aspect of cremation analysis is heavily influenced by various environmental factors, including the temperature of the pyre, post-depositional disturbance and preservation. Ellingham *et al*. demonstrated in a series of laboratory-based experiments that weight loss in burned bone is subject to its exposure to varying temperatures and heating regimes.[[7]](#endnote-7) As such, it is possible for firing conditions caused by poor weather or lack of fuel to impact bone weight.

It is also common for cremation deposits to be heavily disturbed following deposition; this could be a result of damage or disturbance from the burial context. After excavation, these deposits must also be processed and archived appropriately to avoid contamination or compromising the integrity of the assemblage. A review of several antiquarian collection cremations for the *Decoding the Dead* project revealed that grave integrity, particularly the grave groups of the antiquarian George Joslin, had been compromised over their decades of curation.[[8]](#endnote-8) The Colchester Vase, belonging to the ‘Taylor Collection’, showed far greater grave integrity by comparison. The amount of bone recovered from the urn (856.8g) is typical for Romano-British cremation burials.[[9]](#endnote-9) Experimental research on the cremation of modern cadavers has demonstrated burned bone weight averages of 2226.7g for females and 3036.5g for males.[[10]](#endnote-10) Presumably the bone was left as pyre debris or curated as part of the cremation process.[[11]](#endnote-11)

*Demographic Profile*

The individual recovered from the Vase demonstrated sexually dimorphic features from the skull and pelvis that are more associated with males. The degeneration observed throughout the skeleton, specifically the spine, indicated that this individual was at least 40 years of age when he died. Establishing a narrow age bracket is challenging in cremation analysis due to the level of destruction caused by the firing process. The typical aging techniques applied in osteological examination are not always applicable to cremated human remains because of the variation in preservation.[[12]](#endnote-12) As such, the level of accuracy is limited to the key biological milestones in a life cycle that distinguish between pre-adolescents, adolescents, 18 years and over, and 40 years and over. This individual had several vertebrae demonstrating extra bone growth or lipping around the vertebral body. These are referred to as osteophytes that usually form around joints effected by osteoarthritis, a condition predominantly associated with older individuals.[[13]](#endnote-13)

Additional bone growth was identified in the proximal femur. The bone was active, meaning that the tissue was still growing at the time of death. These lesions were most similar to periostitis, a pathological lesion whereby the connective tissue that forms the outer layer of bone, the periosteum, becomes inflamed as a result of a non-specific infection, strain or trauma, and would have led to aching pain, tenderness and swelling.[[14]](#endnote-14) Due to the numerous potential causes of this condition, it is not possible to comment on what led to its manifestation in this individual. Further pathological lesions identified included localised pitting or perforations in six cranial fragments, most similar to porotic hyperostosis. These lesions are used as a broad indicator for health and are often found alongside cribra orbitalia. In this instance, fragments from the cranial orbits were not identified in the assemblage. Research still debates the correlation between porotic hyperostosis and anaemia.[[15]](#endnote-15) As such, it is not possible to state whether the individual from the Colchester Vase suffered from anaemia, but this indicates potential health stress and possible nutritional deficiencies.

*The Cremation and Burial Process*

The entire body was represented in the fragments of burned bone retrieved from the Colchester Vase which could be identified to skeletal site (439.8g/856.8g). While most of the identified bone identified derived from the skull, it is unlikely that certain bodies parts were selected for burial or curation. The cremation and burial of the entire body suggest that this individual was subject to normative Roman cremation practices.

The recovery of burned animal bone from the deposit indicates funerary feasting or sacrificial offerings placed on the pyre, a practice also seen at Wallington Road, Hertfordshire.[[16]](#endnote-16) The pyre would have burned down until the body was fully cremated. The burned bone would have then been collected and placed inside the funerary urn – the Colchester Vase – before being buried at the cemetery site.

BIBLIOGRAPHY

Brickley, M.B. 2018: ‘Cribra orbitalia and porotic hyperostosis: A biological approach to diagnosis’, *American Journal of Physical Anthropology* 167(4), 896–902

Brickley, M. and McKinley, J.I. 2004: *Guidelines to the Standards for Recording Human Remains*, Institute of Field Archaeologists, BABAO, Southampton

British Association for Biological Anthropology and Osteoarchaeology (BABAO) 2019a: *Code of Ethics*, <https://www.babao.org.uk/assets/Uploads/BABAO-Code-of-Ethics-2019.pdf> (accessed April 2022)

British Association for Biological Anthropology and Osteoarchaeology (BABAO) 2019b: *Code of Practice*, <https://www.babao.org.uk/assets/Uploads/BABAO-Code-of-Practice-2019.pdf> (accessed April 2022)

Brück, J., 2014: Cremation, gender and concepts of the self in the British early Bronze Age. In: I., Kuijt, C.P., Quinn, G., Cooney, eds. *Transformation by fire: The archaeology of cremation in cultural context*. Tuscon, 119–39

Burleigh, K. and Fitzpatrick-Matthews, G.R. 2010: *Excavations at Baldock, Hertfordshire, 1978-1994. Volume 1. An Iron Age and Romano-British Cemetery at Wallington Road*, Letchworth

Carroll, E.L. 2019: *Burning by Numbers: Cremation and Cultural Transitions in Late Iron Age and Roman Britain (100BC–AD410)*, unpublished doctoral thesis, University of Reading

Carroll, E.L. 2021: *Decoding the Dead: Human Bone Report (Cremation Burials)*, unpublished report commissioned by Colchester Museums, Colchester

Crummy, N. and Loughton, M. 2021: *Decoding the Dead: A Reassessment of the Joslin Collection*, Unpublished report commissioned by Colchester Museums, Colchester

Eckardt, H., Carroll, E.L., Davis, G.J.C., Rangel de Lima, C., Montgomery, J., Moore, J. and Nowells, G. forthcoming: ‘Decoding the dead: new osteoarchaeological, isotope and artefact analysis of Roman cremations from antiquarian collections at Colchester (UK)’

Ellingham, S.T.D., Thompson, T.J.U., Islam, M. and Taylor, G. 2015: ‘Estimating temperature exposure of burnt bone – a methodological review’, *Science and Justice* 55, 181–8

Gonçalves D., Thompson T.J. and Cunha E. 2013: ‘Osteometric sex determination of burned human skeletal remains’, *Journal of Forensic and Legal Medicine* 20.7, 906–11

Jurmain, R.D. and Kilgore, L. 1995: ‘Skeletal evidence of osteoarthritis: a palaeopathological perspective’, *Annuals of the Rheumatic Diseases* 54, 443–50

May, S.E. 2011: ‘The effects of body mass on cremation weight’, *Journal of Forensic Sciences* 56.1, 3–9

McKinley, J.I 1993: ‘Bone fragment size and weights of bone from modern British cremation and the implication for the interpretation of archaeological cremations’, *International Journal of Ostearchaeology* 3, 283–7

McKinley, J.I. 1994: ‘A pyre and grave goods in British cremation burials; have we missed something?’, *Antiquity* 68.258, 132–4

McKinley, J.I. 2018: ‘Compiling a skeletal inventory: cremated human bone’, in P.D. Mitchell and M. Brickley (eds), *Updated Guidelines to the Standards for Recording Human Remains*, 14–19

Mitchell, P.D. and Brickley, M. 2018: *Updated Guidelines to the Standards for Recording Human Remains*, Chartered Institute for Archaeologists, BABAO, Reading

Pearce, J. 2013: *Contextual Archaeology of Burial Practice: Case Studies from Roman Britain*, Oxford

Roberts, C. and Manchester, K. 2010: *Archaeology of Disease*, Stroud

Ward, S.M and Tayles, N. 2015: ‘The use of ethnographic information in cremation studies: a southeast Asian example’, in C.W. Schmidt and S.A. Symes (eds), *The Analysis of Burned Human Remains*, Oxford, 381–402

Wells, C. 1960: ‘A study of cremation’, *Antiquity* 34.133, 29–37

White, N.C.C. 2007: ‘Catering for the cultural identities of the deceased in Roman Britain: interpretative potential and problems’, in B. Croxford, N. Ray, R. Roth and N. White (eds), *TRAC 2006: Proceedings of the Sixteenth Annual Theoretical Roman Archaeology Conference, Cambridge 2006*, Oxford, 115–32

Williams, H. 2008: ‘Towards an archaeology of cremation’, in C.W. Schmidt and S. Symes (eds), *The Analysis of Burned Human Bone*, London, 239–69

1. Eckardt *et al.* forthcoming. [↑](#endnote-ref-1)
2. McKinley 1994. [↑](#endnote-ref-2)
3. Wells 1960; Williams 2008, 259; Pearce 2013; Carroll 2019. [↑](#endnote-ref-3)
4. Brickley and McKinley 2004; Mitchell and Brickley 2018. [↑](#endnote-ref-4)
5. BABAO 2019a; BABAO 2019b. [↑](#endnote-ref-5)
6. McKinley 1993; May 2011; Ward and Tayles 2015. [↑](#endnote-ref-6)
7. Ellingham *et al*. 2015. [↑](#endnote-ref-7)
8. Crummy and Loughton 2022, 5-7; Eckardt *et al.* forthcoming. [↑](#endnote-ref-8)
9. Carroll 2021. [↑](#endnote-ref-9)
10. Gonçalves *et al.* 2013. [↑](#endnote-ref-10)
11. Brück 2014. [↑](#endnote-ref-11)
12. McKinley 2018, 14. [↑](#endnote-ref-12)
13. Jurmain and Kilgore 1995. [↑](#endnote-ref-13)
14. Roberts and Manchester 2010. [↑](#endnote-ref-14)
15. Brickley 2018. [↑](#endnote-ref-15)
16. White 2007; Burleigh and Fitzpatrick-Matthews 2010; Pearce 2013, 35 ff. [↑](#endnote-ref-16)