# A Light in Dark Places: Later Prehistoric Funerary Mortuary Activity in Caves in Scotland and Northern England

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## ABSTRACT

Humans have utilised caves for funerary activities for millennia and their unique preservational conditions provide a wealth of evidence for treatments of the dead. This paper examines the evidence for funerary practices in the caves of Scotland and northern England from the Bronze Age to the Roman Iron Age (c. 2200­ BC–AD 400) in the context of later prehistoric funerary ritual. Results suggest significant levels of perimortem trauma on human skeletal remains from caves relative to those from non-cave sites. We also observe a recurrent pattern of deposition involving inhumation of neonates in contrast to excarnation of older individuals.

**Keywords:** Bronze Age, Iron Age, Roman Iron Age, Scotland, Northern England, Perimortem Trauma, Funerary Practices, Caves

## INTRODUCTION

The use of caves for funerary activities extends back for tens of thousands of years. Indeed, the earliest known human burials have been found within cave environments (e.g. Martinón-Torres *et al*. 2021). The unique preservational conditions within caves can, in many cases, provide a wealth of evidence for past funerary treatments. This paper examines human remains recovered from cave sites in Scotland and northern England that have been dated via radiocarbon dating or material culture from the start of the Bronze Age c. 2200 BC (Bradley 2019, 156) to the end of the Roman Iron Age/Romano British period, c. AD 400 (Armit *et al*. 2002, 4). It is based on a comprehensive literature search of published sources and databases including the National Record of the Historic Environment in Scotland (Canmore 2022) and the Gazetteer of Caves, Fissures and Rock Shelters in Britain Containing Human Remains (Chamberlain 2021). It aims to identify the nature and range of funerary treatments carried out within caves and to situate these within the context of broader developments in funerary practice over the period.

The last decade has seen a significant growth of research into the human use of caves. Recent edited volumes considering the significance of ritual and sacrality in acts performed within caves across the globe (Moyes 2012; Dowd and Hensey 2016; Büster *et al*. 2019) have been complemented by a wealth of regional and period-based studies (e.g. Bergsvik and Skeates 2012; Wilford 2016; Bergsvik and Dowd 2017; Peterson 2019). At the site-specific level, the processes involved with death and funerary activity in caves have been considered in depth at sites including the Sculptor’s Cave, northeast Scotland (Armit *et al.* 2011; Armit and Büster 2020) and Scaloria Cave, southeast Italy (Elster *et al*. 2016). Other studies have focussed on the role of material culture in cave use (Dowd 2016) and the influence of cave morphology on the structuring of human experience (e.g. Delannoy *et al*. 2020).

Recent work focussing on the theme of liminality has offered insights into the role of caves both as agents and as settings for ritual activity (e.g. Büster *et al*. 2019). For example, sea caves can be revealed and then disappear at different times of the day, as well as being cut off and isolated from the land with the tides (e.g. Armit and Büster 2020); the transient nature of sound in a cave can also influence the way that it is experienced. Furthermore, the coastal edge itself constitutes the threshold between land and water, with this relationship being renegotiated daily according to the tides (Meethan 2012, 70). The kinetic rhythms of the seascape and the ever-fluid cave morphology create a dynamic and transient environment (Edensor 2010, 69), as well as a consistently liminal state that must be considered in terms of its changeability as a factor in its use by humans.

The Sculptor’s Cave (Figure 1), as a sea cave cut off at high tide, and hard to access by either land or sea, is a prime example of a liminal place that exists in the hinterland between land and sea where funerary activity was embodied within multiple layers of liminality (Armit and Büster 2020, 247). The significance of water can also be clearly seen at Han-sur-Lesse in Belgium, where votive bronze discs were deposited in the waters of the cave (Dalaere and Warmenbol 2019, 143); this is also the case for when human remains have been deposited in rivers (Parker Pearson 2017, 130). The agency and materiality of caves is also significant, as with the Neolithic human remains deposited within active tufa formations in the cave of HA 3 near Settle in Yorkshire (Leach 2006, 160); this evidences an active funerary rite within a liminal context that continues after the departure of the mourners (Peterson 2019, 30).

Whether caves were created through the hydraulic action of the sea (Department of the Environment, Climate and Communications 2021) or through fluvial motion dissolving the rock (Gillieson 2021, 1), they provide a liminal location where the surface meets the underworld as well as one where water is constantly transitioning from one place to another. The constant changeability of these environments echoes that of shallow pools used for votive deposition, that may develop into peat bogs over millennia whilst retaining their ritual associations (Bradley 2000, 154). The deposition of objects and possible sacrificial human victims in such locations across northern Europe reflects their role as liminal locations where contact can be made with chthonic deities (Cunliffe 2018, 284; Giles 2020, 211).

The nature of the cave with its unique juxtaposition of above and below ground aspects is significant when considering the funerary rituals that occurred within; these marginal locations frequently become foci for human funerary activity and the votive deposition of offerings (Chamberlain 2012, 82). The role of caves in the transition from life to death is also evident cross-culturally, for example in ancient Greek mythology where a visit to the cave of Trophonius would allow for communication with Hades who embodies the underworld (Ustinova 2013, 121). Similar practices are seen in Central America during the Post-Classical Mayan period where myths tell of caves being used as gateways to a spiritual realm inhabited by supernatural beings (Pugh 2005, 50). This ritual aspect of cave use certainly presents a strong case to suggest that caves were inherently transitional and liminal locations that could be utilised for funerary activity to ensure that the dead received the necessary rites.

## SOURCES AND LIMITATIONS

Many of the sites considered in this paper were excavated and published in antiquarian sources from the eighteenth to early twentieth centuries, before the development of modern recovery techniques. Research into cave archaeology and human remains in this period was generally focused on rather descriptive ‘when’ and ‘where’ questions, which significantly limited the development of the more interpretive ‘why’ and ‘how’ questions (Bersgvik and Skeates 2012, 2). This inevitable reliance on antiquarian sources introduces two sets of problems. Firstly, theoretical and methodological issues in the ways that early excavators analysed and described data and secondly, the practical methods with which they excavated.

Late nineteenth and early twentieth century culture historical studies were closely intertwined with problematic issues in the early development of osteoarchaeology, for example the use of craniometrics to establish a notional distinction between different ‘races’ and ‘ethnicities’ (Manias 2013, 116-117; Morse 1999, 1; Stout 2013, 19). Scientific racism sought effectively to sort individuals by the measurements of their skull into different categories of humanity (Douglas 2008, 33), in much the same way that artefacts were categorised. In reporting the early excavations at the Sculptor’s Cave, northeast Scotland, for example, it was noted that the human remains were ‘so fragmentary and mixed that it is not possible to observe any characteristics of racial significance’ (Benton 1931, 207). Osteological analysis of individuals from the Obanian caves in western Scotland also suggested that certain physiological changes to the femora were associated ‘with the squatting attitude, a position which, as is well known, many savages assume when resting’ (Turner 1895, 416). The use of terms such as ‘savages’ directly reflects the social and political attitudes of the time, embedded with colonial motives and perspectives (e.g. Childe 1925, 207).

From a purely practical point of view, the limited focus of early osteological study led to the discard of large quantities of human remains that would otherwise form a hugely valuable resource for modern study. At the Sculptor’s Cave, for example, the original excavator Sylvia Benton noted during excavations in 1930 that ‘I am keeping all skulls and leg-bones …. You will be glad to hear that the rest goes into the dump’ (private correspondence cited in Armit and Büster 2020, 180). Similar histories of discard and neglect have affected a substantial proportion of such assemblages.

The problematic legacy of antiquarian methods is exemplified by the 1838 excavation of Victoria Cave in northeast England (Dearne and Lord 1998, 16). Although providing early evidence of Romano-British cave activity, the use of dynamite to clear areas of the cave will also have caused massive destruction to archaeological deposits (ibid, 21). ‘MacKie’s patent cotton gunpowder’ was similarly used to facilitate the removal of archaeological deposits within Borness Cave in southwest Scotland (Clarke 1878, 306). These were not especially aberrant occurrences: in a publication from 1884, the use of dynamite for excavation is likened to the use of the spade ‘when applied with sagacity and means’ (Merriam 1884, 8). Even where such extreme measures were not deployed, however, we must bear in mind the limited and relatively crude recovery techniques of the period, which will have been made especially difficult given the dark and cramped nature of cave environments.

Despite their relative crudity and often problematic colonial agendas, antiquarian and culture historical sources nonetheless remain invaluable for the analysis of funerary practices within caves, not least because around two thirds (66%) of individuals reported here were excavated before 1960. This essential data thus requires careful critical examination.

As well as being an archaeological resource, caves have also long intrigued researchers in other disciplines such as geology, biology and of course speleology (e.g. Culver and Pipan 2019; Gillieson 2021). Inevitably, reports written from the perspective of these disciplines may not always focus on accurately recording human remains or contextual archaeological data. Speleological analysis of High Pasture Cave, Skye, by the British Cave Research Association for example, focused on the geological features with only passing mention of a scattering of calcited human bones on the floor of the cave (Ryder 1974, 121); this site, as we now know, contained an exceptional funerary assemblage, revealed by subsequent archaeological investigations (Dulias *et al*. 2019; Birch *et al.* in press). This can be problematic from an archaeological perspective as essential contextual information may often be missing. Furthermore, non-archaeological cave activity can frequently disrupt deposits, causing disturbances to the complex stratigraphy and compromising later archaeological recording. On the other hand, speleological investigation by professionals and caving enthusiasts provides a novel opportunity and resource for archaeologists to research remains which otherwise may not have been discovered.

## METHODS

The dataset considered here is gathered from published and unpublished sources relating to the funerary use of cave sites within northern England and Scotland, dating from the start of the Bronze Age (c. 2200 BC) to the end of the Roman Iron Age/Romano British Period (c. AD 400); reanalysis of the human remains was beyond the scope of this research. It comprises 200 individuals (Figure 2) from 42 sites (Figure 3) that have been converted into the following comparable age categories (Falys and Lewis 2011): foetus: 40 weeks in utero; neonate: around the time of birth; infant: birth – 11 months; juvenile: 1 – 12 years; adolescent: 13 – 17 years; young adult: 18 – 25 years; young middle adult: 26 – 35 years; old middle adult: 36 – 45 years; mature adult: 46+ years; adult: over 18 years but exact age unknown; and unknown age: age was not possible to determine. The biological age of an individual has been used for ageing; the social ages of individuals are considered within the context of their biological age (see Halcrow and Tayles, 2008). The sexing of individuals has been limited to adults unless otherwise specified, for example, where DNA analysis has been undertaken. In some earlier studies, where the methods used for sexing are unclear, we have taken the interpretation as correct unless further evidence has contradicted the original analysis.

In standardising the terminology from earlier reports, we have utilised the following definitions: trauma in the skeleton can been defined as injuries such as fracture, dislocation, post-traumatic deformity or miscellaneous traumatic conditions that cause partial or complete discontinuity of the bone (Redfern and Roberts 2019, 211); these can then be further broken down to consider the cause of trauma, as well as when it occurred. Perimortem trauma can be defined as a traumatic event that occurred at or around the time of death which lacks any evidence of healing or remodelling (Ubelaker 2015, 95). Sharp force trauma is defined as an injury created by an implement with at least one sharp edge that produces a lesion with an elliptical or straight fracture, a well-defined clean edge or an irregular cut with a flaking, roughened appearance (Redfern and Roberts 2019, 220). Blunt force trauma can be considered as an injury resulting from the impact on the skeleton of a blunt object or the impact of the skeleton on a blunt surface (Wedel and Galloway 2014). Intentional violence covers a wide range of actions that are deliberately inflicted on an individual. These can vary across many actions that cause injury, mortality or morbidity (Redfern 2016, 128). Disarticulated bone assemblages represent human remains that have become mixed through accidental disturbance or that have been manipulated for ritual or cultural purposes (Brickley and McKinley 2004, 14). Cremation refers to individuals that have been subjected to burning for practical disposal or ritualised reasons and inhumation refers to individuals who have been intentionally deposited within a grave.

Various methods have been used within the dataset to categorise the form of trauma present on the human remains, ranging from SEM to light microscopic and macroscopic analysis. Chronological attribution is based on radiocarbon dating, where available, or associated material culture. The dataset has been broken down into three geographical regions: Scotland, northeast England (including Yorkshire) and northwest England. Appendix 1 (S1 online) lists all individuals, including radiocarbon dating information where available. Appendix 2 (S2 online) provides information on each site. Each site has been assigned a unique catalogue number that appears in brackets in the text to enable cross-referencing with the appendices.

## FUNERARY EVIDENCE FROM CAVES

## *Scotland (Table 1)*

Funerary activity from the Bronze Age to the Roman Iron Age is definitively attested within fifteen caves in Scotland with evidence for inhumation, cremation and the presence of disarticulated human remains. All three funerary treatments are represented in the Bronze Age, whereas Iron Age and Roman Iron Age activity comprises exclusively disarticulation and inhumation. Evidence for perimortem trauma is present, as is the predominance of Roman Iron Age burial manifesting through the inhumation of neonates and infants rather than adults, with the exception of the adult female from High Pasture Cave (2). Within the Scottish dataset, there is an overwhelming dominance of disarticulated human remains through all time periods although these could derive, in some cases, from whole bodies that have subsequently disarticulated in situ.

## Bronze Age c. 2200 – 800 BC

The region of Moray in northeast Scotland provides significant evidence of disarticulated human remains deposited within a chain of sea caves that form part of a coastal funerary landscape close to Covesea, on the Moray Firth. The Sculptor’s Cave (7) was used from the Late Bronze Age to the Roman Iron Age with a strong focus on funerary and ritualised activity (Armit and Büster 2020). This can be seen through a distinct phase of funerary activity which contains the remains of several Late Bronze Age juveniles with evidence of curation, perhaps deposited as mummy bundles (ibid). Further evidence of ritualistic activity comes from votive offerings, including gold-covered hair-rings found deposited within the cave, some in association with the human remains. The nearby Covesea Cave 2 (6) contains the disarticulated remains of at least ten individuals, including genetically male and female individuals (based on aDNA analysis) that have been AMS dated to the Late Bronze Age (Sheridan *et al.* 2019). Some of these remains show evidence of cut marks and some (as at the Sculptor’s Cave) are associated with alignments of stakes in the cave floor which could suggest the laying out and processing of bodies (Büster 2014). An individual from Covesea Cave 1 (5) has been AMS-dated to the Early Bronze Age 2278–2027 cal BC (3731±36 BP, SUERC-61925). Both the Sculptor’s Cave and Covesea Cave 2 provide evidence of perimortem trauma which may have been caused either by intentional violence or by the processing of human remains to aid in disarticulation such as the perimortem trauma to the mandibles of one infant and three juveniles.

The closest parallel for the activity in the Covesea Caves comes from Borness Cave (14) in Kirkcudbrightshire, southwest Scotland (Clarke 1875; 1878), where one of two infant crania has yielded an AMS date of 1006–844 cal BC (2784±30, SUERC-61320; Sheridan *et al*. 2019). The bones of two infants excavated from St Baldred’s Cave, East Lothian (12) are undated, but their context and association with later prehistoric pottery plausibly puts them into the same broad period (Laynard 1934). Further disarticulated human remains have been uncovered at Gasworks Cave (9) and Sand 1 Rock Shelter (3) with a cremation found at Glennan (10).

## Iron Age C. 800 bc – AD 43

Evidence for funerary practices in Scottish caves in the Iron Age can be seen through two sites, both on the west coast. High Pasture Cave (2) in Skye, contains five disarticulated individuals from this period, while MacArthur Cave (11) contains the remains of four possible individual inhumations (though the records are such that it is possible that they may actually have been disarticulated when found) with radiocarbon determinations dating throughout the Iron Age (Saville and Hallén 1994).

## Roman Iron Age c. 43 – AD 400

The Sculptor’s Cave evidences a second phase of funerary activity in the Roman Iron Age and provides compelling evidence to suggest intentional decapitation within the cave of at least nine individuals, as well as funerary evidence from the same broad period (Armit and Büster 2020). There is also strong evidence of funerary activity during the Roman Iron Age in Skye, of which the remains of six individuals from High Pasture Cave (2) fall into two main groups. The first group is evidenced through disarticulated remains, which may have been brought to the cave in that condition or excarnated within it, before the removal of certain skeletal elements. The second group comprises the burial of an adult female under stones that may have been used to crush her to death, or to deliberately weigh down her corpse, and is associated with the burial of several neonates and infants (Armit 2022); further research could possibly shed more light on the exact circumstances (see Osterholtz *et al*, 2021). This apparently deviant inhumation could suggest a specific rite associated with traumatic death (ibid). At the rock shelter of Fiskavaig (1), also in Skye, a cranial fragment was discovered, belonging to a Roman Iron Age individual. This is particularly interesting as the cranial fragment has a circular hole drilled (post-mortem) through the centre (Birch 2009) and resembles the fragment missing from a cranium found at MacArthur Cave (11). One hypothesis for the perforation was for its suspension as an ornament or as part of a larger decorative piece worn either on the person or displayed in the home, and could reflect practices associated with either ancestor veneration or trophy-taking (Shapland and Armit 2012, 106). There is thus strong evidence of a funerary tradition associated with caves in Skye, from the Iron Age into the Roman Iron Age. A further worked human tibia of unknown sex or age was also recovered from Torrs Cave in Dumfries and Galloway (15). Furthermore, several Scottish caves have yielded human remains in probable association with Roman Iron Age objects, as with two caves at Archerfield (13), East Lothian (Cree 1909) and one at Rhodes Links Cave (4), North Berwick (Richardson 1907), the latter apparently yielding the bones of one or more juveniles.

## *Northeast England (Table 2)*

Funerary activity is represented in twenty caves in the northeast of England including evidence for cremation, disarticulation and inhumation. As in Scotland, Bronze Age sites evidence all three forms of funerary practice whereas Iron Age and Romano-British sites are only represented through disarticulated human remains and inhumation. As with the Scottish sites, there is evidence for perimortem trauma as well as neonate inhumations present at Carsington Pasture Cave (29). Conversely, individuals buried at Bishop Middleham Quarries (18) were all adults and deposited in a crouched position beneath large, flat stones.

## Bronze Age 2200 – 800 BC

Raven Scar Cave (24) in the Yorkshire Dales has produced disarticulated remains of at least 15 individuals, including ten juveniles (Leach 2006, 103). AMS dates suggest deposition of these remains in the tenth century BC (ibid, 113), contemporary with the similar funerary activity in the Covesea Caves (5, 6). Carsington Pasture Cave (29) in Derbyshire presents a wealth of funerary activity that spans from the Neolithic to the Iron Age across three near vertical chambers and contains one individual dating to 1918–1750 cal BCE (3515±20 BP, PSUAMS-8288; Booth 2022).

In Yorkshire, there is strong evidence to suggest perimortem trauma. Antofts Windypit (20) contains two main chambers which have a focus on funerary activity. Chamber 3 contained three individuals scattered amongst boulders with animal remains and Beaker pottery although these individuals have now been AMS dated to the Middle Bronze Age (Leach 2006, 272). Pin Hole (33) cave also evidenced the inhumation of a juvenile and an adult.

## Iron Age C. 800 bc – AD 43

At Carsington Pasture Cave (29), there appears to be an area primarily reserved for the deposition of neonates that have been directly AMS dated to the Iron Age c. 770-400 BC (Booth 2022, 2). Across the rest of the cave were many disarticulated adult human remains also dating to the Iron Age, which sharply contrasts with the inhumed neonates (ibid). This pattern is also evident at Dog Hole Cave (37) in Cumbria and High Pasture Cave (2) on Skye which also date to the Iron Age or Roman Iron Age. Chamber 2 at Antofts Windypit (20) is mostly dominated by disarticulated adult human remains that also have evidence of perimortem defleshing and traumatic lesions. AMS and typological dating of associated pottery have dated these remains to the Iron Age 760 - 390 BC (Leach 2006, 272). Further disarticulated human remains have been evidenced at Bishop Middleham Quarries (18), Heights Lane Grike (22), North End Pot (23), Langwith Cave (31) and Mother Grundy’s Parlour (32).

## Romano-British c. 43 – AD 400

Similarly to Antofts Windypit (20), Buckland’s Windypit (21) contained the remains of six disarticulated Romano-British individuals of which at least four show evidence of perimortem blunt force trauma to the cranium (Leach 2006, 308). At least one young adult and an adult, both disarticulated, from Slip Gill Windypit (26) have been AMS dated to the Late Iron Age – Early Romano-British period and exhibit evidence of perimortem trauma including one potential decapitation (Leach 2006, 243) Further evidence of disarticulated human remains can be seen at the sites of Bull Pit (28), Frank i' th' Rocks Cave (30), Poole’s Cavern (34) and Robin Hood's Cave (35).

*Northwest England (Table 3)*

Northwest England contains fewer excavated cave sites than the other two regions, due presumably to differences in geology and histories of antiquarian exploration. It nonetheless contains six sites with evidence of later prehistoric funerary activity. As with Scotland and northeast England, three methods of deposition — cremation, disarticulation and inhumation — were evidenced.

## Bronze Age 2200 – 800 BC

Individuals dating to the Bronze Age were represented at four sites through disarticulation and cremation. An example of disarticulation comes from the three individuals from Heaning Wood Bone Cave (38) in Cumbria whose remains may have been discarded in a crevice leading to the cave below and likely date to the Early Bronze Age (Barnes 1970). This contrasts with the urned cremations of adults at Fairy Holes (40) in Lancashire and Carden Park Rock Shelter (42) in Cheshire.

## Iron Age C. 800 bc – ad 43

There is an apparent lack of individuals dating to the Iron Age from caves in the northwest of England (see ARCHI 2024). This may reflect a genuine lack of Iron Age funerary activity, preservation biases or the relatively limited history of research relative to caves in the other two regions.

## Romano-British c. 43 – AD 400

Romano-British inhumations in this region were dominated by neonates and foetuses from the site of Dog Hole Cave (37), Cumbria, which also contains evidence of disarticulated human remains. Two distinct phases were detected at this site with the first being a foetus and four neonates buried with a horse and a dog. All the human remains from Phase 2 were juvenile or older and were instead, associated with the heads and feet of cattle as well as the remains of dogs (O’Regan *et al*. 2020, 87). One context from the cave has been described as potentially being a ‘ritual pit’ on account of the large quantities of copper alloy, iron and stone objects found within (Branigan and Dearne 1991, 79). Rawthey Cave (39) in Cumbria and Dunald Mill Hole (41) in Cheshire evidence disarticulated human remains although the latter may have been deposited through fluvial systems within the cave.

## DISCUSSION

## *Evidence for excarnation*

One of the most striking features of the corpus considered here is the dominance of disarticulated human remains (Figure 4), which is common across all periods and regions in our data and is also found in other contemporary contexts such as settlement sites, ramparts, pits and boundary ditches (Carr and Knüsel 1997, 167). In many cases this most likely results from excarnation of the dead, where rites of separation and transition occur through physical and emotional changes to both the deceased and the mourners through manipulation of the remains to aid in the transition from life to death (Weiss-Krejci 2013, 283); this sharply contrasts with inhumations where it is most likely that the individual was deposited as a fleshed corpse. This is evident, for example, at Frank i' th' Rocks Cave (30) in Derbyshire, where a lack of long bones and adult skulls provide strong evidence to suggest that these elements were preferentially removed after a period of excarnation (Palmer and Lee 1928, 246) although there were, however, some fragmentary juvenile jaws, teeth, skulls, vertebrae and clavicles. It is important to note however, that this site was excavated by speleologists rather than archaeologists which can certainly influence the interpretation of the site in relation to their specific research questions. A strikingly similar pattern has been found among the broadly contemporary Roman Iron Age funerary remains from the Sculptor’s Cave, Moray (7) (Armit and Büster 2020). Therefore, actions that have previously been considered simply as ‘ritual practice’ such as the removal of skeletal elements most likely had a more grounded application for the practitioners in order to physically influence the funerary process and the transition of the individual to their afterlife (Brück 1999, 314).

Excarnation appears to have been a dominant funerary practice across Britain more generally in the later prehistoric period and could explain why isolated human remains frequently appear in settlement contexts due to secondary burial or curation, where the remains are moved after defleshing has concluded (Carr and Knüsel 1997, 167; Cunliffe 2018, 308). At the Iron Age hillfort of Maiden Castle in Dorset, for example, secondary burial occurred after defleshing which is evidenced through cut marks, dry fractures and canid gnaw marks (Redfern 2008, 293); this presents a strong case to suggest that the remains were processed and then left above ground for some time before being deposited. Although often equated with exposure burial, where the corpse is left in the open to decay through natural means, excarnation encompasses a wider range of practices by which flesh might be removed from the bones by either natural or artificial means. In Iron Age Wessex, for example, the lack of gnawing and weathering exhibited on human bones suggests that excarnation in this region was a closely managed process (Madgwick 2008, 107), perhaps conducted in covered environments such as mortuary houses. Protected excarnation can be seen in our dataset, for example, at Ash Tree Cave (27) in Derbyshire, where disarticulated human remains were carefully covered by stones in order to protect and preserve them (Armstrong 1956, 57). In this context it appears that, in regions where the geology allowed, caves could be used as sites of protected excarnation, where the dead might be allowed to decay under controlled conditions, where they might be revisited from time to time, and where human interventions may take the form of rearrangement or removal of certain bones or body parts; the process of disarticulation can therefore be a direct result of excarnation.

## *Funerary treatments and demography*

One of the most striking patterns to emerge from the analysis is the different funerary practices afforded to neonates and adults. Carsington Pasture Cave (29) in Derbyshire, High Pasture Cave (2) in Skye, and Dog Hole Cave (37) in Cumbria all evidence inhumation of foetuses and neonates whereas adults are predominantly disarticulated (apart from a female young middle adult buried under rocks at High Pasture Cave). Figure 5 demonstrates the comparison of inhumations and disarticulated individuals at these three sites. This trend is interesting as the inhumations at Carsington Pasture Cave have been dated to the Iron Age whereas the other sites all date to the Roman Iron Age/Romano-British period. This could imply some continuity of practice surrounding the specific circumstances of neonatal and foetal death. Saint Baldred’s Cave (12) in East Lothian also has evidence of infant inhumations, however these are poorly dated and not apparently accompanied by adult disarticulation.

A similar disjunction in funerary treatments can be seen elsewhere in later prehistoric Britain. In Atlantic Scotland, for example, the Iron Age site of the Knowe of Skea, Orkney, contains numerous infant inhumations placed within rubble mounds with a clear attempt to retain skeletal articulation despite intercutting burials (Gooney 2015, 234). This contrasts with a broader picture of excarnation/disarticulation for adult human remains in the region (e.g. Tucker 2010). This demonstrates the significance of preserving the integrity of the infant in comparison to older individuals and reverses the focus of the rite depending on their age.

Evidence of infant inhumation is widely present at non-cave sites in East Yorkshire such as at the Romano-British site at Shiptonthorpe where 22 infants were buried together and date from the second to the fourth centuries AD (Millett and Gowland 2015, 174); this may suggest that this element of Iron Age funerary ritual persisted over time even when other aspects were lost (Harding 2016, 290). It is worth noting, however, that funerary practices at villa sites can vary from rural and urban sites although aspects of continuity can still be seen.

If excarnation allowed an individual to transition into the wider community of ancestors (Harding 2016, 277) then articulated inhumation could represent an attempt to stop such reintegration and regeneration. For neonates and young infants, this may reflect a societal attitude that they had not yet achieved the status of persons and therefore, there was a requirement for an alternative method of disposal. For the few adults receiving this treatment, however, the reasons are likely to be different. This is particularly significant, for example, when considering the traumatic death of the female adult from High Pasture Cave (2), Skye, who seems to have been crushed beneath rocks and buried with several neonates.

## *Perimortem trauma*

A further outcome of our analysis is the prevalence of perimortem trauma, which manifests in our dataset predominantly in the form of cutmarks and violently inflicted lesions on human skeletal remains (Figure 6). Evidence for this can have varying aetiologies and it can sometimes be difficult to establish the motive. For example, perimortem trauma can occur during an episode of violence shortly before death (Roberts 2009, 178) or it can occur during the initial funerary process as a means to process and/or display either a revered ancestor or a despised enemy (Armit 2020, 453; Armit and Ginn 2007, 130). This distinction is significant as it is important to assess, where possible, how violence may have affected individuals from within the community versus those who were perceived as outsiders (Duncan 2012, 252). Of the 200 individuals in our dataset, at least 27 (13.5%) showed some evidence of perimortem trauma. This is not only a remarkably high percentage but it is also likely to be a significant underestimation due to the highly fragmentary and incomplete nature of many of the human remains and the fact that many violent actions leave no physical trace on the skeleton. Furthermore, the use of modern scientific techniques for evidencing perimortem trauma could also increase this percentage if some of the remains from the older publications were subjected to reanalysis.

In Scotland, the prime examples of skeletal trauma come from the Sculptor’s Cave (7) and Covesea 2 (6) in Moray where violence and funerary defleshing are evidenced on multiple individuals dating from both the Late Bronze Age and the Roman Iron Age. The frontal bone from a Late Bronze Age juvenile skull from the Sculptor’s Cave, for example, bears evidence of processing through multiple anthropogenically induced striations that are indicative of the removal of the soft tissues (Armit and Büster 2020, 192). The second funerary phase, dating to the Roman Iron Age, has evidence of multiple decapitations with distinct cut marks to the vertebrae which appear to result from executions rather than as a form of funerary rite (Armit *et al*. 2011, 258). Further evidence of decapitation can be seen at Slip Gill Windypit (26) in Yorkshire where one individual may have had their head forced down and to the side where it was held it in place for another to inflict a blow leading to trauma only detectable because a chop-mark is present on the inferior aspect of the mandibular body (Leach 2006, 267).

Perimortem trauma is also evident at the sites of Antofts Windypit (20) and Buckland’s Windypit (21) in Yorkshire. At Antofts, multiple Middle Bronze Age individuals display perimortem traumatic lesions that were almost certainly the cause of death. One example comes from an old middle adult female who received a sharp force trauma to the cranial vault from a slim metal blade that caused radiating fractures around the periphery of the cut (Leach 2006, 290). Further evidence comes from Buckland’s Windypit where several individuals bear evidence of blunt force trauma to the cranium (ibid, 325). The cranium is a common target during intentional violence due to the possibility to incapacitate, but also due to the close association of the skull with the identity of the individual (Knüsel 2005, 55).

These instances of violence can be distinguished from evidence of defleshing which is often focused around areas of articulation in order to disarticulate the remains as an element of secondary funerary practice (e.g. Hallgren 2011, 244; Russell 1987, 394). Defleshing can occur throughout various phases of the decomposition process leaving evidence in the form of cutmarks to the bone (Bello *et al*. 2016, 723) although perimortem cutmarks could only be made whilst the collagen of the bone remained fresh. Evidence for defleshing can be seen on both the worked tibia of unknown biological age from Torrs Cave (15) in Scotland (Morris 1937, 427) and a tibia also with possible perimortem cutmarks from Antofts Windypit (20). The latter exhibits marks indicative of the removal of the soleus muscle from the posterior of the tibia (Leach 2006, 299) whereas the former has been worked for an unknown purpose after defleshing has occurred (Morris 1937, 425). Defleshing can accelerate decomposition and aid in the process of excarnation (Harding 2016, 277) which is seen across many sites throughout the study period. The prevalence of defleshing in northern Britain contrasts with evidence from Bronze Age, Iron Age and Roman Iron Age cave sites in Ireland, which showed no evidence of deliberate defleshing but nonetheless exhibit strong evidence to suggest excarnation, principally in the form of high quantities of small skeletal elements (Fibiger 2016, 13).

## CONCLUSION

This paper has examined the wealth of evidence for later prehistoric and Romano-British funerary activity in caves in northern England and Scotland, revealing their distinctive funerary use. In particular, our analysis highlights the high levels of perimortem trauma evident on human remains from cave sites. The distinct funerary treatments accorded to different age groups, notably neonates and adult individuals is also striking. This is especially significant due to the relative paucity of human remains that have been discovered in most parts of Britain that date to these periods and highlights the potential that caves have for the preservation of remains that are often otherwise archaeologically invisible. In particular, caves offer the potential for the identification and excavation of primary excarnation sites which are otherwise extremely elusive. Finally, this research provides a dataset for future study which could allow for further regional and temporal comparisons.

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