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CHEST BURIAL: A MIDDLE ANGLO-SAXON FUNERARY RITE FROM NORTHERN ENGLAND

Summary

Chest burials, in which the body is interred in a wooden chest with a hinged lid, are one of the most characteristic funerary practices of the middle Anglo-Saxon period in northern England. The majority are dated to between the 7th and 9th centuries, and are found at 19 different sites located within the contemporary early medieval kingdom of Northumbria. The collation of a corpus of chest burials, and examination of their form, context and the identities of the individuals they were afforded to, has revealed that these interments seem to have been made in reused pieces of domestic furniture and provided to both sexes, but rarely afforded to infants or young children. The individuals buried in chests also shared an extremely physically active lifestyle and in some cases met a violent death, further distinguishing them from their contemporaries.

The use of burial containers is a key feature of funerary practices in early medieval England. Containers for the body were used throughout the entire period from the 5th to 11th centuries, but they appear more frequently in interments from the mid-7th century, at the point when the early Anglo-Saxon furnished funerary rite declines (Daniell 1997, 163-5; Hadley 2000a, 209; 2000b, 163; Lucy 2000, 102; Thompson 2004, 124 Hadley and Buckberry 2005, 132-5; Buckberry 2007). The variety of containers for the body also increases during this period to incorporate a wider range of container forms; stone containers and grave linings, wooden coffins jointed with iron nails or wooden dowels and wooden chests with a variety of metal fittings have all been encountered in cemeteries dating from the 7th to 10th century (Rodwell and Rodwell 1982, 301; Hadley 2000b, 163-4; Buckberry 2007).

This paper deals exclusively with one of these forms of burial container – wooden chests – focusing on characterising their form, their context within contemporary Anglo-Saxon funerary practices and the identities of the individuals buried in them. Where chest burials have been discussed previously in print, focus has rested primarily on the metal fittings, and to a lesser extent the methods of construction of the chests rather than the individuals afforded burial in them or their wider role in funerary rites (Kjølbye-Biddle 1995; Ottaway 2007, 122-4). Thus, this paper seeks to provide a broader, contextualised consideration of the chest burial rite.

CHEST BURIALS: CHARACTER AND FORM

The interment of individuals in Anglo-Saxon cemeteries in wooden chests has been mentioned only briefly in published works and has yet to be afforded detailed description and synthetic analysis (for brief comments see Hadley 2000b, 163-4; Lucy and Reynolds 2002, 16; Thompson 2004, 124-6; Buckberry 2007, 119-21). The form

of chest burials has, however, been recorded in much greater detail in site reports, although many of these are, as yet, unpublished (e.g. Manby no date; Newman 1989; Kjølbye-Biddle 1995; Ottaway 1996; 2010; Watson 1996; Nicholson 1997, 413-415; Hall *et al.* 2008, 67-8; Wilmott in prep.). In these reports, chests are broadly differentiated from other forms of wooden container by the presence of a hinged lid – a feature absent from any other form of burial container in use during the Anglo-Saxon period. In actuality, it is specifically the presence of metal fittings such as hinges and locks that particularly characterise chests, as they are often the only preserved remains that indicate the existence of functional lids. A clear distinction between chests and other burial containers has, however, not been universally applied. Chests are occasionally conflated with coffins, such as in the York Minster report, where some containers are described as coffins despite having metal locks and hinges (Kyølbye-Biddle 1995).

Despite this inconsistency in terminology, the majority of chest burials have been identified archaeologically by the similar form of their metal fittings, many of which have received specialist analysis (Ottaway 1996; 2001; 2002; 2007; 2010; no date). This analysis has revealed that the fittings utilised in chest construction are both more variable and more numerous than those of contemporary coffins, including locks, keys, hasps, hinges, straps and various plates, in addition to nails similar to those used in coffins. No chests from funerary contexts survive in a complete state of preservation, however assessment of small quantities of mineralised wood and the metric analysis of the metal fittings has revealed their dimensions and illuminated the process by which they were built. Evidence from Ailcy Hill, Ripon (North Yorkshire), York Minster, Wearmouth (Tyne and Wear) and Whithorn (Dumfries and Galloway) (Kyølbye-Biddle 1995; Hall and Whyman 1996, 84-93; Nicholson 1997, 413; Clogg

2005, 293-5) suggests that the main body of chests comprised oak planks of c. 15-30mm in thickness and that they were of peg and dowel construction, with sporadically placed nails used only for reinforcement. Nails were also rare at The Castle, Newcastle-upon-Tyne (Tyne and Wear), where skeleton 644 was interred in a chest with only two nails which was "clearly not nailed together" (Ottaway 2010, 274). This evidence is consistent with the known construction of contemporary coffins at Barton-upon-Humber, which were also of peg and dowel construction (Rodwell and Rodwell 1982, 301), and indicates a consistency in the manufacturing method of both forms of funerary container. Evidence for the dimensions of chests is very limited. At York Minster the width of two chests was calculated to be between 40 and 46cm and depth 26-35cm (Kyølbye-Biddle 1995). At Thwing (East Yorkshire) where there was limited disturbance to the chest burials, it was possible to deduce that, of thirteen chests analysed, width and height were generally uniform at around 30-40cm and 20-30cm respectively, but that length was very variable ranging from only 60cm to 210cm (Manby no date). Figure 1.

Although the chests encountered in burial contexts share many general features, great variation has been observed in the form, frequency and quality of the metal fittings both between and within sites. For example, at Wearmouth four different groups of hinge plates were identified based on form and function. These were, however, considered crude in comparison to the more decorative forms from Dacre (Cumbria), Garton II (East Yorkshire), Whithorn and Ailcy Hill (Clogg 2005, 293-303). Generally, where nails do occur they are iron, but again variability can be identified: tin-plated nails were associated with chest burials at Whithorn (Nicholson 1997, 413) while two nails at Spofforth (North Yorkshire) were also plated with a non-ferrous metal (NAA 2002, 60).

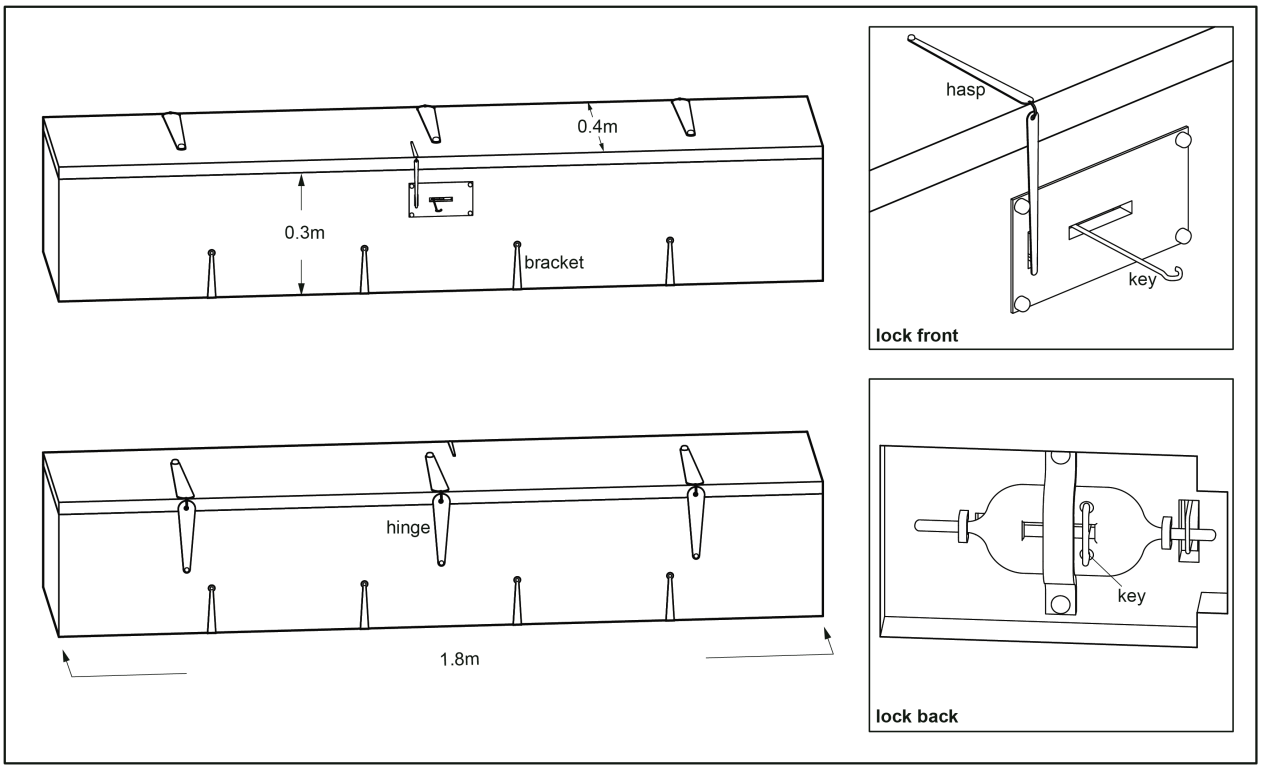


Figure 1. Representative reconstruction of a chest with detail of a sliding bolt lock. Drawn by I Atkins.

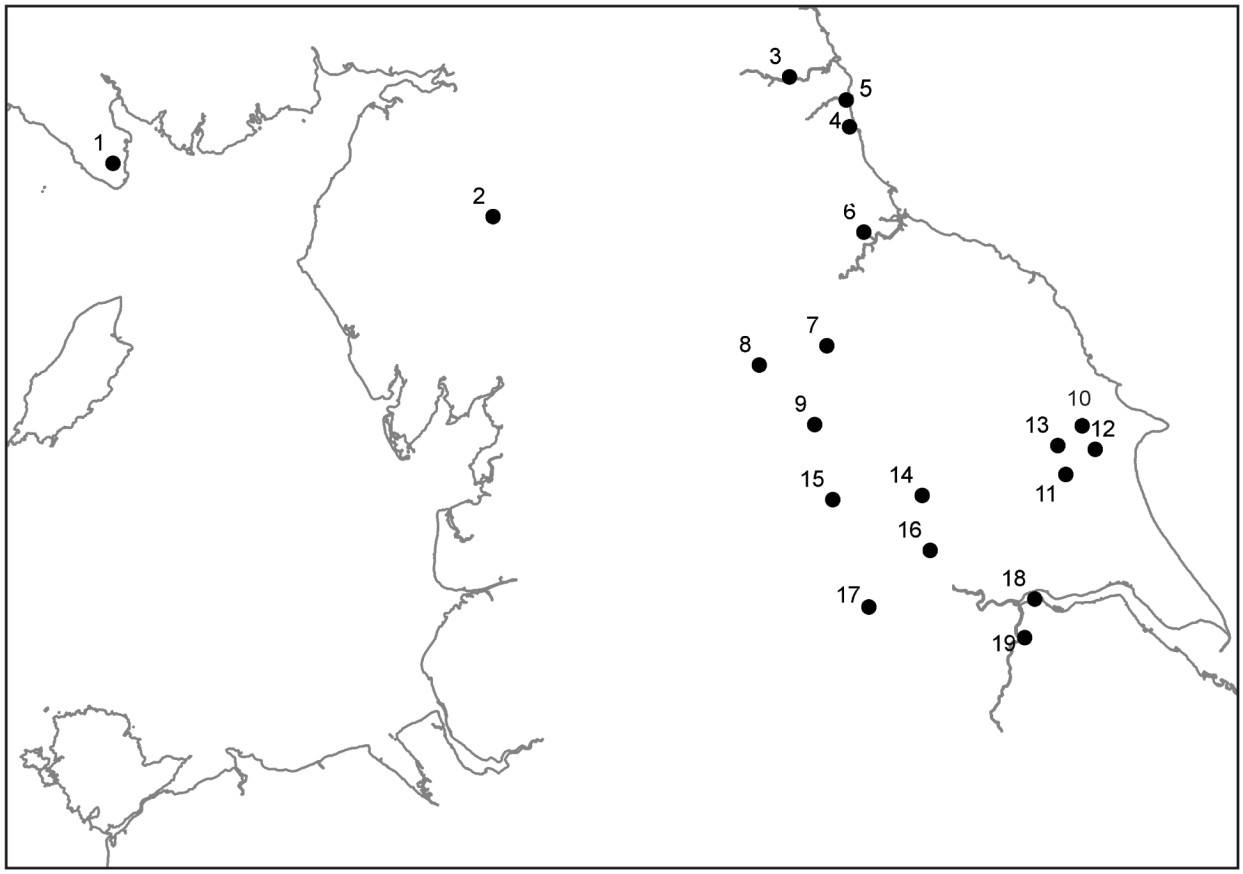
THE DATE AND DISTRIBUTION OF CHEST BURIALS

The chest burial rite is particularly distinctive as an Anglo-Saxon funerary practice for several reasons. In addition to the unique presence of a functioning lid, which differentiates chests from coffins of all kinds, chest burials have a strongly defined distribution, both chronologically and geographically. Interments in chests have been identified at 23 Anglo-Saxon cemetery sites in the UK. A substantial number of chest burials have been specifically targeted for radiocarbon dating. Table 1. There are also a series of additional dates from non-chest burials in cemeteries where chests are also found. Table 2. Chest burials appear to date to within the middle Anglo-Saxon period, with the majority of radiocarbon dates overlapping around the 7th to 9th centuries. At

York Minster and Spofforth the radiocarbon dating evidence for cemeteries is also supported by the occurrence of two coins dating to AD 841-8 and a mid-8th-century coin respectively, both recovered *in situ* from chest burials (Philips 1995, 90-1; NAA 2002).

Of the 23 sites where chest burials occur, 18 are located in the north of England, with a particular concentration in an area to the east of the Pennines between the rivers Tees and Humber. Chest burials were also excavated at one site in south-western Scotland, at Whithorn (Hill 1997, 167-70; Nicholson 1997, 412-6; Rogers 2008). Figure 2. Admittedly, not all chest burials fit into this chronological and geographical pattern. Partney (Lincolnshire), Repton (Derbyshire), Hereford (Herefordshire) and Winchester (Hampshire) are the only four Anglo-Saxon cemeteries with chest burials that have been recorded in the Midlands and southern England. In addition to being geographical outliers, chests at these four sites also appear to be later than the majority, more likely dating to the 10th-12th centuries (Shoesmith 1980, 27, 36; Ottaway 1996, 997; Atkins and Popescu 2010, 256-7). There are, in contrast, few cemeteries in northern England where chest burial can be demonstrated later than the 9th century. Even at Riccall (North Yorkshire) – a site conventionally, albeit tenuously, identified as the burial place of warriors killed after the rout at the battle of Stamford Bridge in 1066 (Wenham 1960, 305-7; Hall *et al.* 2008, 55-7, 64) – there is now evidence to suggest that burials began as early as the 7th century (skeleton 4, c. AD 680-805, Hall *et al.* 2008, 84), and therefore the occurrence of hinges whose morphology makes it seem likely they were from a chest burial within the cemetery may still be entirely consistent with the identified focus of chest burial during the7th-9th century. Further evidence for a distinction between earlier northern and later southern chest burials is indicated by analysis of the

metalwork, as it appears that slotted hasps were more commonly used in place of locks at the southern sites (Ottaway 1996, 113; 2010, 275). In sum, the more southerly examples of chest burial appear to share enough dissimilarity from their northern counterparts to suggest they might be a distinct form of chest burial, perhaps a later evolution of the earlier northern rite.



1. Whithorn
2. Dacre
3. The Castle, Newcastle-upon-Tyne
4. Seaham
5. Wearmouth
6. Norton Bishopsmill School
7. Viewly Bridge
8. Thornton Steward
9. Ailcy Hill, Ripon
10. Thwing
11. Garton II
12. Kilham
13. Kemp Howe
14. York Minster
15. Spofforth
16. Riccall
17. Pontefract
18. Whitton
19. Flixborough

Figure 2. Locations of early medieval sites with chest burials in northern England.

The chronological and geographical distribution of the northern group of chest burials holds particular significance if considered in light of what is known of the political and regional boundaries of Anglo-Saxon England. Prior to the 7th century northern England had existed in a state of uneasy division between the two kingdoms of Bernicia and Deira. The two were united into the kingdom of Northumbria through the campaigns of Æthelfrith (d. 616) and the remainder of the 7th century saw the Northumbrian kings subjugate vast areas until, at its greatest extent between AD 650 and 850, Northumbria extended from the Firth of Forth to the Humber on the east and as far west as the Irish Sea between the Solway Firth and modern Aryshire (Campbell 1992, 54; Rollason 2003, 6-8). The collapse of Northumbria in the 860s followed a period of political instability and short reigns, and after York fell to the Viking Great Army in AD 866/7, the kingdom fragmented once again into separate territories (Rollason 2003, 9). Thus it can be seen that all of the northern chest burials (including those in modern Scotland) are situated within the contemporary boundaries of the kingdom of Northumbria as it existed for the majority of the 7th-9th centuries. Henceforth, this discussion will focus on the northern chest burials as a distinct group of interments characteristic of the area covered by the maximum extent of Northumbrian political hegemony between the 7th and 9th centuries.

Chest burials are not common in those northern cemeteries in which they are found. Rather, they tend to form a small minority of interments at a significant number of different sites. The available metalwork indicates a minimum of 78 *in situ* chest burials across northern England, but this figure represents, at best, an absolute minimum number. Table 3. Many of the relevant sites have only been partially excavated and suffer from extensive disturbance, and an unquantifiable number of additional chest burials are represented by substantial out-of-context metalwork

assemblages. The largest number of chest burials from any one site were found at Thwing where there were 15 *in situ* chest burials and a further 15 graves with out of context fittings (22.7% of total interments) (Manby no date). At Whithorn, 13 chest burials (9.0%) were encountered across the two sites of Glebe Field and Fey Field (Hill 1997; McComish and Petts 2008). At Spofforth (North Yorkshire) chest fittings can be directly associated with 13 graves together with a further three out of their original context (8.9%) and at Viewly Bridge (North Yorkshire) five out of 33 excavated graves contained chests (15.2%). However, lower frequencies are much more common and the vast majority of sites have fewer than 10 chest burials, comprising less than 5% of the total number of excavated interments.

INTERPRETATION OF THE CHEST BURIAL RITE

A primary consideration in the interpretation of the chest burial rite is whether the chests themselves were purpose built as burial containers or whether they were reused items of furniture. Previous interpretations have favoured the latter explanation, citing a variety of evidence. Birthe Kjølbye-Biddle (1995, 517) considered the chests used in 9th-century burials at York Minster to be domestic storage chests reused as burial containers. Beetle trails were observed on part of a lock plate (M468) from a chest in burial 76 seemingly indicating that it had spend a significant time above ground and wear on the lock hinge from burial 105 indicated repeated use of the lid (Kjølbye-Biddle 1995, 491-3, 515). Similarly, examples of incomplete sets of fittings recovered from archaeological contexts have been argued to reflect the use of broken chests as burial containers (Nicholson 1997, 413) or the potential removal of fittings for recycling or reuse (Rogers 2008). Unfortunately, in the majority of cases, the archaeological evidence is not sufficient to differentiate convincingly between a chest

broken prior to burial and one damaged by post-depositional processes, especially as so many of the sites where chests occur have suffered extensive disturbance as a result of repeated intercutting by later graves. In contrast, evidence for repairs made to chests provides more conclusive evidence that they were not initially constructed for use in funerary practices. At Ailcy Hill one chest had an unusual concentration of nails at the western end, which may indicate an extensive repair (Hall and Whyman 1996, 93). At Thwing a similar concentration of nails suggests repair at the eastern end of the chest in grave 6. In addition, the chest in grave 29b had a large lead patch on the floor (Manby no date). Whether these chests were repaired in order to be used as burial containers or some time before to allow continuation of a different function, it seems apparent that the chests in question were not specifically made for the purpose of burial.

Chests in Context

It is possible to explore the potential primary uses of the chests interred as burial containers through a survey of archaeological and historical evidence. Wooden chests have been found in a variety of contexts in Anglo-Saxon England, including and particularly, within the domestic sphere (Ottaway 1992, 624-5). For example, a variety of chest or casket fittings have been excavated from Anglo-Scandinavian and later settlement contexts at Bedern and Coppergate in York (Ottaway and Rogers 2002, 2840-2850). Some of the hinge straps, hasps and nails are of comparable size to those encountered in chest burials, and therefore might originate from chests of similar form and dimensions. Chests appear to have been a common and versatile method of transporting and storing goods during this period, and it is likely that they performed similar functions throughout preceding centuries. The will of Wulfwaru, a

10th-century noblewoman, records her legacy, including substantial amounts of land in Somerset, and it also leaves "to all my household women, in common, a good chest (*godes casteneres*) well decorated" (Whitelock 1930, 62-5). Although the text is not explicit about what the chest was used for, its bequest to "household women (*hiredwifmannum*)" suggests a domestic function, probably storage, although the mention of decoration and specific bequest suggests it is something more than just a humble box. Bede's early 8th-century *Life of St Cuthbert* records that the Abbess Ælfflæd of Whitby utilised a chest/box for the storage of a girdle she had been sent by St Cuthbert that had miraculously cured both Ælfflæd and one of her nuns (VSCuth xxiii, Colgrave 1940). Again, this chest was owned by a woman, but in this case it is found in a high-status ecclesiastical context. The link between chests and ecclesiastical spheres is developed further in the early 8th-century *Life of St Cuthbert*, in a description of the removal of Cuthbert's relics to a "light chest" (*theca*) by his brethren, 11 years after his burial, at which time his body was found to be incorrupt (VSCuth xlii, Colgrave 1940). The chest was then placed in the sanctuary of the monastery at Lindisfarne. This source is of particular note as it links chests to the storage of human remains in the north of England during the period contemporary with archaeologically identified chest burials. Moreover, it is assumed that the box must have been large enough to have accommodated the still-articulated body of the saint, making it similar in size to those encountered in funerary contexts during the middle Anglo-Saxon period.

A possible issue with this assessment of the appearance of chests in literary sources regards the determination of whether they refer to similar objects. It has not been possible to determine whether the *casteneres* of the Old English source and the *theca* of the Latin texts are comparable objects, or whether they are different types of

box. Bearing this caveat in mind, the previous discussion provides, at the very least, an indication of where chests or similar storage boxes may have been used in daily life.

Chests can also be found in a variety of funerary contexts in the earlier Anglo-Saxon period, although their use until the 7th century is notably different from that of later centuries. Small chests and boxes are encountered amongst grave assemblages in the 5th-7th centuries, particularly at later 6th-century sites in Kent (Geake 1997, 81-2; Lucy 2000, 57). This practice continues into the 7th century, where grave assemblages from the inhumations at Sutton Hoo included several small boxes (Evans 2005, 214, 260). A silver strip over 10cm in length and pierced by nails, interpreted as a decorative feature from a box or chest, was found in mound 2 (Evans 2005, 256), and is similar in form, if not in material, to straps found on the chests discussed in this paper. The context of these boxes suggests that they may have had both high-status associations and symbolic functions in the burial rite.

In sum, chests appear in many contexts in the Anglo-Saxon historical and archaeological record. Boxes appear as grave goods in 6th- and 7th-century funerary contexts, but despite similarities in their construction to later chest burials, these boxes are utilised in a very different way from those considered in this study. The only example of boxes used to store human remains is that recorded in the *Life of St Cuthbert*. Larger chests were probably utilised in domestic contexts throughout the Anglo-Saxon period. Later documentary sources suggest that chests were owned by high-status secular and ecclesiastical women during both the middle and later Anglo-Saxon periods. They were used for storage, but also regarded as sufficiently valuable pieces of furniture to be worth writing into a will.

Keys, locks and the containment of burials

The presence of keys and locks in funerary contexts is attested from both the early and later Anglo-Saxon centuries, as well as the later medieval period (Lucy 2000, 45; Gilchrist and Sloane 2005, 178). Latch-lifters are a common inclusion in early Anglo-Saxon grave contexts. These objects, which are metal L- or T-shaped slide keys believed to have been worn as part of the female costume at the waist, have been interpreted as either functional or symbolic household keys, and therefore linked to domestic roles (Meaney 1981, 178-81; Geake 1997, 57-8; Lucy 2000, 45). Keys have also been found in graves at Shaftesbury Abbey presbytery (Dorset), St Mary Merton (Greater London) (12th -13th century) and St Mary Spittal (Greater London) (13th- and 16th-century graves) (Gilchrist and Sloane 2005, 178). Roberta Gilchrist and Barney Sloane (2005, 178-9) suggest that keys in later medieval contexts may have represented a symbolic means of escape from, or faster transition through, purgatory but this is likely to be anachronistic as a potential explanation for contexts prior to the 12th century (Daniell and Thompson 1999, 79-80).

Barrel padlocks are occasionally found in interments across southern and central England from the 7th century, associated with caskets or contained in bags. Helen Geake (1997, 83) concludes that their context gives no indication that they held amuletic significance, however it is not possible to rule out a dual meaning, both as practical devices and perhaps symbols of sealing and closure. Locks were placed on the shrouded bodies in some medieval cemeteries, and examples have been found in the burials of a female and adolescent at Hereford Cathedral (11th century) and two further females at St Mary Grace's London (14th-16th century). The positions in which these locks were placed on the body suggest that they *did* serve a symbolic function, for example, the positioning of a lock on or around the pelvic area may indicate a

relationship to the important characteristic of sexual purity or chastity (Gilchrist and Sloane 2005, 178).

As we have seen, there is documentary evidence for the association of chests in non-funerary contexts with women, and, similarly, latch-lifters, padlocks and later medieval locks and keys seem to have been particularly associated with burials of females. Locks and keys also have a particular symbolic role within early Christian beliefs (Thompson 2004, 125-6, 129-31), in which they are linked to St Peter, the keeper of the gates of heaven and the guardian of the dead. Doors also appear frequently in Christian imagery of this period as the gates to both heaven and hell. Although the written evidence these deductions are based upon is mainly from the 10th-11th centuries, and therefore several centuries later than the interments that form the focus of this paper, it is plausible that earlier chests may also have had links, through complex Christian imagery, to St Peter and the gates of heaven.

The increase in popularity of grave elaborations such as grave linings, floors, covers, and containers for the body during the later Anglo-Saxon period has been suggested to reflect a change in the focus of funerary ceremony from the graveside tableau of a body laid in the grave fully clothed and surrounded by objects, towards ceremony, prayer and the lowering of a body enclosed in a container into the ground (Thompson 2002, 238; Geake 2003, 260). Chests with hinges and locks could fulfil the purpose of securely containing the body, yet retain the potential to be opened. There is inconclusive evidence for whether the functionality of the lock was an instrumental part of the funerary practice, and whether, for example, it was important (symbolically and/or functionally) that the chest was locked and secured. Reconstructions of the chests from Whithorn suggest that they were locked, and their keys placed on the lids during interment, but, in contrast, at Seaham (County Durham)

and Pontefract (West Yorkshire) analysis of the locks indicates they were left open at the time of burial (Ottaway 2001, 15; Wilmott in prep.). In addition to providing a means of securing the corpse within a container, the functional lids of chests may have had a more symbolic role. In her assessment of early Christian burial rites, Victoria Thompson (2004, 129-31) has likened the grave to a doorway. Interpreting the symbolic inspiration for a pre-Norman gravestone from Cambridge Castle, carved with the form of a large key, she cites biblical reference to St Peter's role controlling the keys for, and therefore access to, the gates of heaven and multiple theological references to doors as barriers to salvation. The grave cover thus represents an access route, or doorway, to the next life, complete with symbolic representation of the keys which control who can get there (Thompson 2004, 131). When viewed from above, the lid, hinges and lock of a chest could similarly have taken on the appearance of a door, and indeed Thompson notes the relevance of the locks and keys found with some coffins to her theory of graves as doorways. It seems unlikely that the chests were intended to serve as a physical doorway, given that they were buried during the funerary rite, but perhaps the combination of an enclosed box with a lock and keys had significance beyond the physical enclosure of the body.

Burial in a chest appears to be consistent with trends observed in early Christian funerary practices towards the enclosure of the body prior to burial. A symbolic context for locks, keys and the chest itself might be postulated through assessment of evidence from both earlier funerary practices, which link these objects to females and domestic roles, and later practices, which may reflect Christian concepts of purity and the journey to the afterlife.

PROVISION OF CHEST BURIALS

The occurrence of chests in only a small proportion of the total interments at every site where they are found suggests two potential scenarios: that chest burials were used for a very restricted time period, or that they were only afforded to a select range of individuals. Archaeological evidence from several sites undermines the first scenario. At Ailcy Hill, Norton Bishopsmill School (North Yorkshire) (Johnson 2005) and Pontefract, chest burials can be found in two or more stratigraphic phases of burial. Furthermore, evidence for the intercutting of chest burials at Spofforth and York Minster suggests that they took place over a long period of time, at least long enough for the earlier burial to have decayed to a stage where the act of intercutting was physically possible. This indicates that the second scenario – that chest burial was only provided to a restricted range of individuals – is a valid avenue of consideration.

Since the assumption that early Christian burials were egalitarian has been undermined, it has become increasingly apparent that the provision of funerary rites from the 7th century was still utilised to express aspects of the identity of the deceased, in a similar way to that in which certain grave goods were used to signal aspects of gender and age identity during the previous centuries (Richards 1987; Härke 1990; Lucy 1998; 2000, 87-90; Stoodley 1999a; 1999b; 2000; Hadley 2000b, 152). Indeed, previous studies of the chest burial rite have occasionally indicated patterns in the provision of chests to particular individuals. It has been noted, for example, that "in most cases where these graves have been recovered the human remains have not been studied in detail, but where results are available, it appears that chest graves were usually, but not exclusively, those of adult males" (NAA 2005, 23). Patrick Ottaway (1996, 113) suggests that the custom of chest burial may be related to "high rank rather than, for example, ethnic or other social affiliations", an inference that is supported further by conclusions that chest burials were particularly associated with

high-status ecclesiastical sites (Ottaway 1996, 113; Nicholson 1997, 415; Lucy and Reynolds 2002, 16). However, in his brief summary of chest burials across Britain in the recent Wearmouth and Jarrow report, Phillip Clogg (2005, 303) asserts that, based on current evidence, it was difficult to envisage how the contextualisation of chest burials could be taken further. Yet, the cautious tone of the statement regarding the preponderance of male burials in fact reflects the limited synthetic analysis that has been undertaken on chest burials and whilst Ottaway's suggestion that chests were a high-status burial practice may be valid, the role of "other social affiliations" has yet to be satisfactorily explored. Indeed, the recent excavation of chest burials at sites with no known associations with religious communities, such as Thwing and Spofforth, also casts doubt on the strength of the relationship of chest burials with religious communities.

In order to investigate further the provision of chest burial to individuals of different identities, it is necessary to combine archaeological evidence from the funerary context with osteological evidence from human remains. Accordingly, five sites have been selected from the corpus of cemeteries with chest burials, and the remainder of this paper reports on the results of their analysis. This investigation explores the provision of chest burial to individuals of different biological profiles (i.e. age, biological sex, stature, health status) in order to illuminate any links between chest burial and osteologically identifiable aspects of identity. The case-study sites were selected from those which provide detailed data regarding population composition, burial rites and cemetery layout. Several recently excavated and/or unpublished sites were also preferentially selected in order to facilitate the integration of new data with more well-known evidence. The five case study sites comprised: Ailcy Hill, Norton Bishopsmill School, Pontefract Tanner's Row/The Booths, Village

Farm Spofforth and Thwing. An integrated analysis on funerary and osteological data provides an ideal means of testing the previous generalisations made about chest burials and exploring their provision in more detail.

The biological profile of those interred in chests

In order to investigate the biological profiles of the individuals buried in chests, osteological data were collated concerning all individuals from the five case study cemeteries. Osteological analysis of the human remains from Spofforth was undertaken by the author (Craig 2008) and evidence for the other four sites was obtained from published records and unpublished site archives. The corpus created comprises 1146 burials, of which 53 (4.6%) produced *in situ* chest fittings[1]. The demographic profile of the chest graves is mixed, including 12 juveniles and 35 adults. Amongst the adults were 17 males and 16 females. Table 4. When the sex bias in the population is taken into account there are actually proportionally more females buried in chests than males (9.8% and 7.7% respectively, 1.28 females: 1 male). When analysed further this result was not statistically significant (chi square $p=0.181$ where $p<0.05$ is significant). Table 5. It appears, therefore, that the population buried in chests is a mixture of both sexes, which contradicts the statement that chest burials are usually males (NAA 2005, 23).

[1] Twenty-six burials associated with chest fittings were disturbed such that fittings were not considered to be *in situ*. These cases have therefore been omitted from analysis here to avoid potential errors in association between skeleton and funerary practices.

In contrast to the equal sex profile of chest burials, a notable bias exists in the age at death of the occupants. The youngest individuals within the population are underrepresented and, at four of the five case-study sites, no individual under the age of around seven years was buried in a chest (Kruskal-Wallis p=0.021). Table 5.The only exceptions are skeleton 88, a three month old infant in a small repaired box and skeleton 77, a four to six year old child, both from Thwing (Manby no date). The unusual nature of the former example, which is the youngest individual chest burial in this sample by around four years, is emphasised by the unique morphology of the chest, which had a huge lock plate and has been repaired with a lead patch, and the unusual burial, in which the chest had been inserted into the earlier grave of an adult male (Manby no date). The lack of provision of chest burial to children is reflected more broadly, and only one other example of the burial of a child in a chest is known from any other middle Anglo-Saxon site cemetery, a neonate in coffin six from Whithorn (Hill 1997, 171).

The chest burial rite was, then, largely one afforded to adults of both sexes, but appears not to have been widely appropriated for the youngest children and infants. The provision of chest burial to adults more frequently than children can also be explored in its wider context. Archaeological and documentary evidence argues that the age of majority for Anglo-Saxon children came around the end of the first decade of life, and it has been widely noted that this age threshold signifies a point of change in the provision of funerary rites (Härke 1997, 126; Crawford 1999, 53; Stoodley 1999a, 1999b, 2000). Thus, if we consider the age profiles of chest burials in light of this evidence, perhaps chest burial was not widely appropriate for those without adult status.

Other patterns are also discernable in the provision of chest burial to different age groups. There seems a relatively high prevalence amongst seven to 12 year olds (9.1%) and between the four age categories from 13 and 45 years the relative proportion of individuals buried in chests more than doubles from 6.1 % to 13.1%. However, neither the apparent preponderance of chests in the seven to 12 year age group nor the increase in chests amongst older adults is statistically significant, therefore unlikely to represent any real trends in the provision of chest burials (Kruskal-Wallis p=0.700 where individuals under seven are omitted from analysis). Although not evidenced here, patterns in the provision of funerary rites to adults of varying age is seen in burial practices of both the earlier and later Anglo-Saxon periods. In 5th-7th century burials, Nick Stoodley (2000) found that prime-aged adults received the most elaborate grave good assemblages and during the later Anglo-Saxon period in northern England, older adults were found to receive elaborate burials more commonly (Buckberry 2007, 123-4). Burial in a chest appears to have been afforded to both males and females, but was preferentially used for individuals over seven years. Yet it is clear that by no means all adults received chest burial, and therefore additional explanations must be sought for its selective provision.

Examination of pathological conditions experienced by the individuals buried in chests provides another indication that a distinctive group within society was afforded this burial rite. It reveals evidence of extremely active, and in some cases, perhaps violent lifestyles. Fractures, dislocations, degenerative joint diseases and skeletal trauma are all present at significantly elevated levels amongst the individuals buried in chests. Table 6. There is also evidence of high levels of activity-induced

skeletal asymmetry and habitual activity such as spondylolysis and os acromiale[2] amongst chest burials. Several cases from within the chest-burial population stand out. Skeleton 1045, an older male from Ailcy Hill not only suffered arthritis of the elbow and hand joints and degenerative joint disease of the spine, but also had a marked asymmetry of the humeri, indicative of habitual and strenuous unilateral loading of the upper body (Langston 1988, 85-94; 1996). In addition skeleton 43, an older adult female from Thwing, experienced a chronic dislocation of the left elbow alongside severe degenerative spinal joint disease, including fusion of four mid-cervical vertebrae and osteophytic lipping of the lumbar and lower thoracic vertebral bodies (Dawes no date). Despite the potentially debilitating manifestations of a chronic dislocation, it appears this woman remained very physically active throughout life. Those buried in chests experienced more strenuous and stressful physical lifestyles than those afforded other sorts of burial, but it must be noted that this does not necessarily reflect unhealthy lifestyles. Pathological changes to the skeleton build up slowly, creating the paradoxical situation whereby older individuals with multiple lesions were potentially healthier that those with no observable pathology who met an early and quick death due to low immune resistance (Wood *et al*. 1992). The fact that both of the individuals noted here survived into their fourth decade suggests general resilience to disease and trauma that would be expected of relatively healthy individuals.

[2] Spondylolysis is a fracture to the neural arch (posterior portion) of the vertebra and os acromiale is the non-union of the acromial epiphysis of the scapula. Both are thought to result from strenuous physical activity and habitual muscular movement (Standaert and Herring 2000; Stirland 2000).

Two individuals who received chest burial had sharp force trauma injuries to the cranium that occurred at or around the time of death. Skeleton 247 from Spofforth (radiocarbon dated to AD 660-830) and skeleton 1043 from Ailcy Hill were both males, the former aged c. 18-25 and the latter between 35 and 45. In addition to cranial trauma, the young male from Spofforth also showed evidence of strenuous activity including bilateral os acromiale. The older male from Ailcy Hill also showed evidence of a physically active life including widespread spinal and appendicular degenerative joint disease. The kind of cranial trauma identified at Spofforth, assessed by the author (Craig 2008), is characteristic of a single strike to the cranial vault with a sharp edged weapon. Examples of cranial trauma are generally very rare in Anglo-Saxon cemeteries (Roberts and Cox 2003, 169), and therefore it is not clear which individuals may have been particularly predisposed to suffer this sort of trauma. Combatants might potentially be expected to suffer such injuries, but so might non-military individuals caught in conflict. It does, however, seem noteworthy that two individuals who had experienced sharp force trauma, from two different sites, are buried amongst those afforded chest burial.

In several recent studies the prevalence of a suite of pathological conditions indicative of biological stress has been used to provide a proxy for health status, and thus to correlate potential health with evidence of social status (Robb 2001; Craig and Buckberry 2010). Using the hypothesis that higher-status individuals will have been able to meet their biological needs better, and therefore suffer less biological stress, it has been possible to identify relationships between higher-status funerary rites and their provision to healthier people and lower-status rites and their provision to individuals showing skeletal signs of biological stress. A similar approach was undertaken in comparing chest burials to other forms of burial, but no significant

differences were observed between the population buried with and without chests. Table 6.

THE COMBINATION OF CHEST BURIAL WITH OTHER FUNERARY RITES

Chest burials stand out as being some of the most elaborate graves in the cemeteries in which they occur. For example, at Thwing, a 40-45 year old female (A. D. 758-1028 to 2 sigma) was interred in a chest with a knife, buckle and beads of amber and blue glass placed as if worn as a necklace. It appears that this woman was fully clothed when interred in a chest, whereas no other burial at this site provides convincing evidence of being buried clothed. Other examples of chests containing grave inclusions include a mid 8th-century Northumbrian sceatta interred with a 35-45 year old female from Spofforth (NAA 2002, 19), two coins of Æthelred II dating to AD 841/2-848 associated with burials 65 and 81 and a coin of AD 352 in burial 79, all at York Minster (Kjølbye-Biddle 1995, 497, 500) and a juvenile at Norton buried with a fossil crinoid (AD 710-910 to 2 sigma) (Johnson 2005, 75).

Grave goods are relatively rare in northern-English cemeteries of this date. Objects were only encountered in 4% of all graves amongst the case study sites and included coins, small stones and pebbles, beads, pottery, bone/ivory objects and various unidentifiable metal objects. Despite their rarity, objects were found more frequently in graves with chests than in those without a container across all five case-study sites, a relationship that was highly statistically significant (chi square $p<0.001$).

The appearance of grave goods and burial containers in the same grave has previously been argued to provide an indication of high social status, as it provides evidence of significant investment in multiple aspects of the burial rite (Hirst 1985, 23-3). Whilst it can be hypothesised that certain rare items, whether made of unusual

and valuable materials or imported from a distance, would have had a restricted circulation amongst those of higher social status, we must be careful to avoid equating quantity of inclusions directly with wealth and therefore social status. Some objects encountered in chest burials, such as the crinoid from Norton, may have held an apotropaic value disproportionate to their physical worth (for examples see Stoodley 1999a, 155; Hadley 2000b, 155; Gilchrist 2008). Nonetheless, it appears that those buried in chests were part of a select group of burials that were also afforded other, comparatively rare, funerary practices.

CHEST BURIALS AND MONASTICISM

The occurrence of chest burials in cemeteries associated with religious communities at Wearmouth, York Minster, Whithorn and Dacre, reinforced by some of the documentary evidence presented above, has led to suggestions that chest burials were particularly associated with high-status ecclesiastical sites (Ottaway 1996, 113; Nicholson 1997, 415; Lucy and Reynolds 2002, 16). Among the case study sites, the evidence from Ailcy Hill, Ripon has certainly contributed to the association between chests and ecclesiastical contexts. Bede records the presence of two successive religious foundations in Ripon, the first following Celtic doctrine and the second under St Wilfred, established c. A. D. 670 (HE iii, 25; v, 19, Colgrave and Mynors 1969) and the burials from phase 2 on Ailcy Hill, of which nine out of 10 are male, have been identified as the monks of the mid 7th-century institution (Hall and Whyman 1996, 120). However, amongst the sample considered in this study, high proportions of chests were also found at Thwing and Spofforth, and neither can be associated with any monastic context.

The apparently high proportion of chest burials at Ailcy Hill might also be misleading. The site was only partially excavated, in isolated trenches orientated radially about the summit of a natural hill. This has resulted in the omission of a significant proportion of the population from our assemblage, and created a bias towards certain areas of the site including the summit of the hill, which appears to have a dense area of chest burials. At all of the sites considered across northern England, chest burials were found to cluster in certain areas of the cemetery (Craig in prep.), thus there is the potential at Ailcy Hill for large areas of burial with no chests to have existed, but not to have been excavated. In addition, a large assemblage of charnel was also recovered from the site, which significantly increases the potential total burial population. When both charnel and out of context chest fittings are included, it is unlikely that more than 4% of the burials at Ailcy Hill were in chests. In fact, when out of context remains at the case-study sites are included in analysis, it is Thwing, not Ailcy Hill that stands out as particularly unusual. Over 22% of the population appear to have been interred in chests, in contrast to under 10% at the other more completely excavated sites. The cemetery at Thwing lies inside a multi-period prehistoric earthwork, in close proximity to a seemingly high-status middle Anglo-Saxon settlement that includes structures comparable in form to those at the Royal site of Yeavering (Northumbria) (Hope-Taylor 1977, 119-22; Manby no date). Thus it may not be ecclesiastical contexts p*er se*, but rather higher-status cemeteries more broadly, that were characterized by high proportions of chest burials in northern England.

CHEST BURIALS AND SOCIAL STATUS

The use of burial containers can be interpreted as a high-status rite for a variety of reasons. First, their construction would have required craftsmanship and resources that may have been of limited accessibility, and therefore their burial represents an act of conspicuous consumption. Second, these burial containers tend to appear in graves where other uncommon objects appear. This pattern has been noted, not only in the present study, but in various studies concerning the entire Anglo-Saxon period (Hirst 1985, 32-3; Buckberry 2004). During the 7th-11th centuries in northern England the majority of interments were plain earth dug graves (Buckberry 2007, 118; Craig 2010, 132) and therefore it seems viable to consider that an elaboration such as a chest would have been utilised as a higher-status rite. The osteological evidence is more difficult to interpret as evidence of links between chest burial and social status, although it does reinforce the idea that chest burial was provided to a select group of people. That those interred in chests had strenuous and active lifestyles, and occasionally met violent deaths, is ambiguous evidence for reconstructing social status – osteological evidence of this kind can be a problematic resource for distinguishing clearly between pathology gained through daily drudgery or resulting from a high life of pleasurable athletic pursuits.

CONCLUSIONS

The interment of a small number of individuals in wooden chests is encountered at many cemeteries located in northern England during the 7th to 9th centuries. In form, chests vary considerably both between and within cemeteries; however they all have evidence of a hinged lid which differentiates them from other forms of wooden coffin. The rarity of chest burials and the biological profiles of those interred within them appear to emphasise their appropriateness as a funerary rite for only certain members

of society. The individuals interred in chests come from most age groups and both sexes although infants and the youngest children are rarely buried in this way, therefore this form of funerary rite may have been considered inappropriate for them. In several cases, individuals interred in chests had very active lives suggested by skeletal evidence for trauma and had, on occasion, met a violent death. This paper is the first research to apply a multidisciplinary approach to the study of chest burial, providing new insights into the context and provision of this unique burial rite. It has also refuted previous assumptions that individuals buried in chests tend to be males and that the rite is particularly prevalent in ecclesiastical contexts, whilst evidencing the utility of going beyond correlations between burial rites and the sex and age of individuals to consider aspects of health, disease, activity and trauma. Moreover, this paper supports the notion that certain forms of burial were utilised by distinct sectors of society and that Anglo-Saxon funerary rites articulated within a Christian milieu were used to reflect aspects of the identity of the deceased.

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TABLES

Table 1. Dating evidence directly obtained from chest burials.

* These dates have been recalibrated by the author using OxCal v.4.1 (Bronk Ramsay 2009) and the calibration curve of Reimer and colleagues (2004).

Site	Dating evidence directly from chest burials (radiocarbon dates to 2 sigma)	Reference
Ailcy Hill	Radiocarbon dates: AD 660-810 (sk 1045) AD 660-830 (sk 2005)	Hall and Whyman 1996, 88
Norton Bishopsmill School	Radiocarbon dates: AD 650-770 (sk 333) AD 680-990 (sk 330) AD 710-910 or 920-960 (sk 417)	Johnson 2005, 58
Spofforth	Radiocarbon dates: AD 660-780(sk 60) AD 660-810 (sk 229) AD 660-830 (sk 247) AD 680-880 (sk 429) Post mid-8th century from *in situ* coin (sk 277)	Pers. Comm. Gail Hama, NAA NAA 2002, 19
Thwing	Radiocarbon dates*: AD 376-680 (sk 54) AD 574-831 (sk 5) AD 656-890 (sk 97) AD 758-1028 (sk 48)	Manby no date.
York Minster	Post AD 841 by two coins (sks 65 and 81)	Philips and Heywood 1995, 90-1

Table 2. Dating evidence for cemeteries in which chest burials were found (i.e. not directly from chest burials themselves).

Site	Dating evidence for cemeteries with chest burials, but not obtained directly from interments in chests (all dates are radiocarbon dates to 2 sigma unless otherwise specified)	Reference
The Castle, Newcastle-upon-Tyne	Radiocarbon dates from 13 burials, the majority of which fall within c. 8th-11th centuries	Nolan 2010, 282-3
Dacre	8th-9th century from numismatic evidence	Newman 1989, 233
Garton II	Late 7th-8th century from *in situ* grave goods	Mortimer 1905
Flixborough	7th to early 11th centuries from site phasing	Loveluck and Atkinson 2007, xiii
Kemp Howe	AD 490-650 (grave 3)	Brewster 1967-8, 24
Pontefract	AD 591-771 (sk 267, phase 1) AD 550-710 (sk 519, phase 1) AD 830-1220 (sk 548, phase 2)	Wilmott in prep.
Riccall	Radiocarbon dates from 6 burials, the majority of which fall within c. 10th -12th centuries, however skeleton 4 is dated to AD 680-805	Hamilton and McCormac 2008, 84
Seaham Flower Field	AD 660-790 (sk 16) AD 660-880 (sk 19)	Adamson and Abramson 1998, 5
Thornton Steward	AD 660-810 (grave 066) AD 680-900 (grave 059) AD 810-1020 (grave 069)	Adamson and Abramson 1997
Viewly Bridge	AD 640-780 (sk 127) AD 660-870 (sk 1621) AD 660-860 (sk 1666) AD 670-880 (sk 1022)	Pers. Comm. Paul Johnson and Gail Hama, NAA
Wearmouth	Mid 7th-11th century from historical records and numismatic evidence	Cramp 2005
Whithorn	Possibly as early at 7th century at Fey Field but mostly 7th-9th century, from site phasing and historical records	Hill 1997; McComish and Petts 2008
Whitton	AD 560-780 (sk 007) AD 650-770 (sk 009) AD 680-960 (sk 020)	Hadley 2004
York Minster	AD 696-997 (burial 37) AD 717-742/754-1021 (burial 40) AD 819-837/856-1164 (burial 106) AD 819-1218 (burial 107) three dates for the same sample between AD 783 and1122, 891-1218 (burial 38) three dates for the final sample between AD 779 and 1158 (burial 38)	Philips and Heywood 1995, 220-221

Table 3. Frequencies of chest burials across northern England. All references are as in tables 1 and 2. Where cemeteries have multiple phases, the maximum number of individuals excavated omits burials from phases with no chest burials.

Site	Maximum number of chest burials (where different, number of *in situ* chests shown in parentheses)	Approximate proportion of chests as a % (max number of chests/ max number excavated individuals)
Ailcy Hill	6	4.3 (6/140)
The Castle, Newcastle-upon-Tyne	3 (2)	0.5 (3/660)
Dacre	5	1.7 (5/300)
Garton II	1	1.8 (1/56)
Flixborough	1	5.9 (1/17)
Norton Bishopsmill School	7	6.5 (7/107)
Kemp Howe	1	11.1 (1/9)
Kilham Lambing Pasture	1	only one grave excavated
Pontefract	4	2.0 (4/197)
Riccall	1	1.6 (1/64)
Seaham Flower Field	2	5.9 (2/36)
Spofforth	16 (13)	8.9 (16/180)
Thornton Steward	1	3.4 (1/29)
Thwing	30 (15)	22.7 (30/132)
Wearmouth	1	0.2 (1/417)
Viewly Bridge	5	15.2 (5/33)
Whithorn	13	9.0 (13/145)
Whitton	1	2.0 (1/50)
York Minster	5	4.6 (5/109)

Table 4. Demographic profile of individuals buried in chests from the five case study cemeteries.

		Biological sex number, (% of chest burials)			**Total**
		Unsexed	Male	Female	
Age at death	No exact age	5 (9.4)	1(1.9)	0	6 (11.3)
	Under 1 month	0	-	-	0
	1-12 months	1 (1.9)	-	-	1 (1.9)
	1-6 years	1 (1.9)	-	-	1 (1.9)
	7-12 years	7 (13.2)	-	-	7 (13.2)
	13-17 years	3 (5.7)	-	-	3 (5.7)
	18-25 years	1 (1.9)	3 (5.7)	1 (1.9)	5 (9.4)
	26-35 years	1 (1.9)	4 (7.4)	6 (11.3)	11 (20.8)
	36-45 years	1 (1.9)	6 (11.3)	6 (11.3)	13 (24.5)
	46+ years	0	3 (5.7)	3 (5.7)	6 (11.3)
Total		20 (37.7)	17 (32.1)	16 (30.2)	53 (100)

Table 5. Prevalence of chest burial in the population from the five case study cemeteries for each sex and age group.

		Biological sex % (cases/population)			**Total**
		Unsexed	Male	Female	
Age at death	No exact age	1.4 (5/369)	1.7 (1/56)	0 (0/30)	1.3 (6/455)
	Under 1 month	0 (0/73)	-	-	0 (0/73)
	1-12 months	1.9 (1/53)	-	-	1.9 (1/53)
	1-6 years	1.3 (1/78)	-	-	1.3 (1/78)
	7-12 years	9.7 (7/72)	-	-	9.7 (7/72)
	13-17 years	6.1 (3/49)	-	-	6.1 (3/49)
	18-25 years	17.1 (1/14)	8.1 (3/37)	3.6 (1/28)	6.3 (5/79)
	26-35 years	3.7 (1/27)	6.8 (4/59)	15.4 (6/39)	8.8 (11/125)
	36-45 years	5.9 (1/17)	14.3 (6/42)	15.0 (6/40)	13.1 (13/99)
	46+ years	0 (0/9)	10.7 (3/28)	11.5 (3/26)	9.5 (6/63)
Total		2.6 (20/761)	7.7(17/222)	9.8 (16/163)	4.6 (53/1146)

Table 6. Prevalences of pathological conditions amongst chest burials and non-chest burials at the five case study sites.

Statistically significant results are marked in italics.

*The format of the data collated from published records prevented the calculation of true prevalence rate (number of individuals with a condition presented as a proportion of the number of individuals where it was possible to observe presence or absence). Crude prevalence (number of individuals with condition presented as a proportion of the total number of individuals in the population) has been calculated instead.

Pathological condition	**Prevalence rate** % (cases/population)		**Statistical significance (Fisher's exact test)**
	In situ chest burials	Non-chest burials	
Osteoarthritis of the appendicular joints	42.8 (15/35)	15.2 (68/445)	Chi square=17.253 p<*0.001*
Spinal degenerative joint disease	59.4 (19/32)	34.1 (106/311)	Chi square=8.013 p=*0.006*
Fracture/dislocation*	8.9 (4/45)	2.2 (23/1029)	Chi square=9.634 p=*0.008*
Trauma (blunt or sharp force)*	4.7 (2/43)	0.3 (3/1009)	Chi square=30.131 p<*0.001*
Cribra orbitalia	3.1 (1/32)	7.8 (28/360)	Chi square=0.929 p=0.494
Tibial periostitis	8.0 (2/25)	10.9 (33/302)	Chi square=0.194 p=1.000
Enamel hypoplasia	26.3 (10/38)	16.2 (59/364)	Chi square=2.472 p=0.118
Rickets/scurvy*	2.0 (1/49)	1.0 (10/1032)	Chi square=0.539 p=0.400