

The church at Amheida (ancient Trimithis) in the Dakhleh Oasis, Egypt

A bioarchaeological perspective on an Early Christian
mortuary complex

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Abstract: *Excavations at the site of Amheida (ancient Trimithis), Dakhleh Oasis, Egypt have identified a Christian church (Building 7), dated to the 4th century CE. While other 4th century churches have been identified in the Dakhleh Oasis and elsewhere in Egypt, the unexpected discovery of burials and a subterranean crypt distinguishes this church as unique in possibly hosting the earliest known example of a funerary crypt in Egypt. Excavations to date have revealed eight burials, five within the church complex, and three in the crypt. Four of the burials inside the church have been investigated; the remaining ones will be the subject of excavation in future seasons. Little is known about the use of early Christian churches as mortuary complexes, particularly who was allowed to be buried in these buildings and if there was a correlation between social hierarchy of the deceased and proximity of his/her burial to the area of the sanctuary. Here we present our findings on four of the individuals buried within the church. Analyses indicate that two individuals were adult males, one was an adult female, and the other was an approximately 15-17 year-old female. One of the adult males, aged 45 to 50 years at death, displayed a myriad of pathological conditions most likely linked to a major traumatic event. The adult female, aged 30 to 35 years at death, and the other adult male, aged 35 to 40 years of age, both showed few pathological conditions beyond healed fractures. The young female displayed a number of lytic lesions that may have been related to a metastatic cancer. The demographic profile and pathological conditions of these individuals challenge the notion of who might be buried in such a church complex. The combination of archaeological and skeletal evidence allows us to further understand who these individuals were, and how such a complex was used in the 4th century CE.*

Key words: Christianity; skeletons; palaeopathology; crypt; trauma; burials; neoplasm

Introduction

In 2012 and 2013 archaeological excavations were conducted at Building 7 (B7) at the site of Amheida (ancient Trimithis) in the Dakhleh Oasis, Egypt (Figures 1 and 2). B7, located in the east end of Amheida (Figure 3) was identified as a church structure during site survey, and excavations have since confirmed this. Excavations have revealed that the remains of the church architecture were in a poor state of preservation, with walls standing only a few centimeters above ground level (Figure 4).

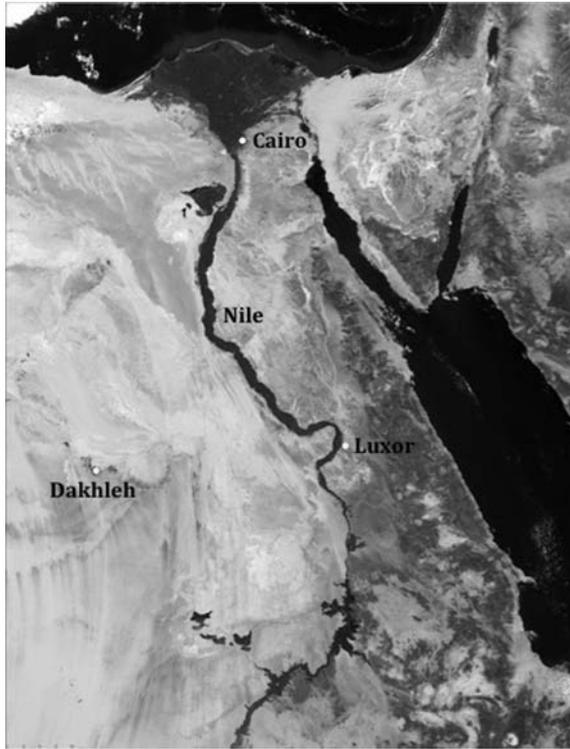


Figure 1. The location of the Dakhleh Oasis in Egypt (source: NASA).

The complex is dated to the 4th century CE based on the available ceramic, numismatic, and documentary evidence. It consisted of a large room oriented to the east, measuring approximately 12 by 13.65 meters (Figure 5) and divided by two rows of columns into a nave and two side aisles. It opened to the east, through a stepped platform, onto a raised apse and two side-chambers. This room, which was accessed

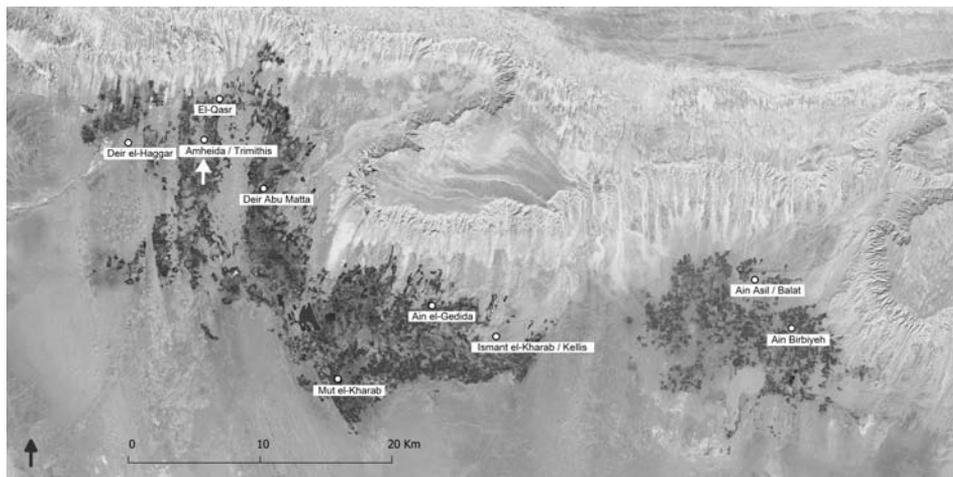


Figure 2. Map of the Dakhleh Oasis with the location of Amheida (white arrow).

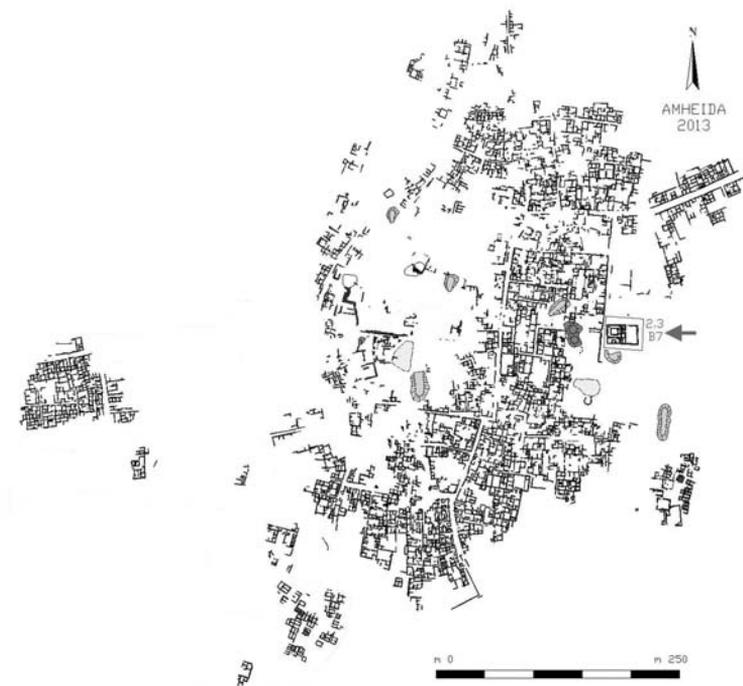


Figure 3. The map of Amheida with the location of the church (B7) indicated by the arrow.



Figure 4. Image showing the remaining architecture of the church at Amheida (aerial view to SE).

through a large doorway built along the west wall, also opened onto a set of smaller spaces, clustered along the outer face of the south wall. This layout is well attested in Upper Egypt in the 4th century CE (Grossman 2007), with parallels in the Kharga Oasis (Capuani et al. 2002; Wagner 1976) and in the Dakhleh Oasis (Bowen 2002). One of the most significant features recovered was the remains of a richly decorated ceiling, of which thousands of fragments were found scattered throughout the church at floor level. An earlier example of this coffer design can be found in Dakhleh, where a Roman villa, dated to the second century CE, was excavated at the site of Kellis and revealed evidence of a collapsed ceiling with a very similar decoration (Hope & Whitehouse 2006). A chronologically closer parallel is (still in-situ) in a family chapel at the Christian necropolis of Bagawwat, in the neighbouring Kharga Oasis (Fakhry 1951; Zibawi 2003, 2005).

Excavations in 2013 focused on the area under what was once the northern *pastophorion*, revealing an underground crypt in a fairly good state of preservation, with only the uppermost part of the vault no longer in place. The room is of a rectangular shape and measures approximately 3.2m north-south by 3.4m east-west. It is a fairly spacious chamber, with walls preserved to a maximum height of 2.5m (along the south side). Three undisturbed burials, yet to be excavated, are cut into a clay floor and aligned against the west wall (Figure 6). Among the limited finds discovered in the room were botanical remains on the superstructure of Burial 6 (likely part of an offering for the deceased) and a complete jar, found at floor level in the northeast

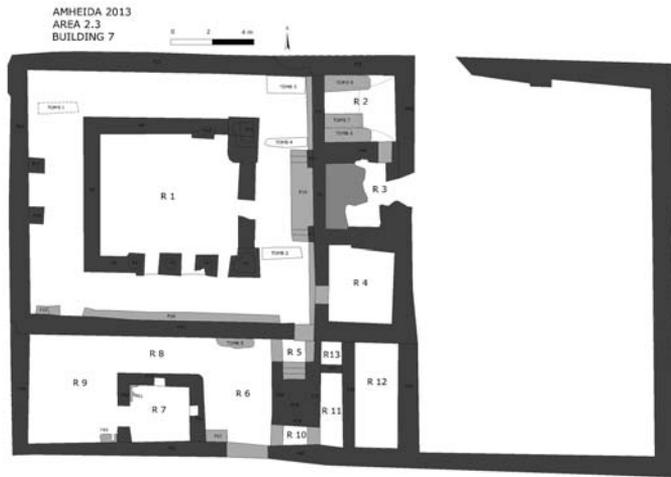


Figure 5. Plan of the church at Amheida illustrating excavated portions and the location of the burials.



Figure 6. Image showing the excavated portion of the crypt, with three burials lined against the west wall (view to W).

corner of the crypt, filled with fish bones and traces of other substances, yet to be analyzed, adhering to its interior surface and base. The underground crypt was accessed through a doorway in the south wall, which led to the area under the now-disappeared apse. Since this sector still awaits excavation, the overall layout and dimensions of the underground space are unknown, as is the location of the passage leading into the crypt from the church and/or the outside. It is certain, however, that the crypt was not excavated under the *pastophorion* at a later stage. Indeed, the archaeological evidence shows beyond doubt that this underground space was planned and built as a structurally integral part of the church.

Although little is known about the nature of the liturgical practices that were once performed inside the church at Amheida, what is clear is that the building served as a funerary complex. Excavations thus far have revealed a total of eight graves, four of which have been excavated. Of these most were found intact, with the exception of Burial 1 located in the north-west corner of Room 1. At present, four of these burials have been excavated. Although no funerary goods were found associated with the burials, the orientation of the skeletons, with the heads to the west, is quite standard for Christian burials, attested to by evidence from Christian cemeteries in the region (Bowen 2003; Wheeler 2009; Williams 2008). This association of a Christian place of cult with funerary practices was already known in the Dakhleh Oasis even before the discovery of this church, for example in the church at Dayr abu Matta (Bowen 2009, 2012; Mills 1981) and in the West Church of Kellis (Bowen 2002). The presence of three burials within the crypt strengthens the identification of the church of Amheida as a funerary complex. Furthermore, the discovery of an underground space below the *pastophorion* (and most likely also the apse) is very significant, as it is the first Christian funerary crypt identified in the Dakhleh Oasis. With regard to the rest of Egypt, other underground crypts such as those in the South Church at Hermopolis Magna (Bailey & Grossmann 1994), at Pharan (Grossmann 2002), in the basilica at Marea (Szymańska & Babraj 2003), and in the Great Basilica at Abu Mina (Grossmann 2002) have been identified. The crypt in the church at Amheida, however, is one of the earliest, if not the earliest, among the known Christian funerary crypts in Egypt and offers significant evidence on burial customs within places of cult in the Early Christian period.

Many questions, however, remain to be answered. For example, who was buried in the church? Were these important individuals, possibly members of the local clergy? Were these wealthy individuals or family members of affluent benefactors to this particular church? In an attempt to answer these questions, bioarchaeological analyses of the individuals from the four excavated burials were conducted.

Methods

All individuals were analyzed to determine the basic biological profile of sex, age at death, and stature, and pathological conditions were also noted. Due to location and limited permissions, only macroscopic analysis was possible. Data was collected using established protocols from Buikstra and Ubelaker (1994), and stature was estimated and rounded to the closest number using formulae standardized for ancient Egyptian populations (Raxter et al. 2008).

Results

Burial 1

The individual in Burial 1 was found *in situ* but in a disturbed context. The mud-brick superstructure, as well as most of the upper part of the grave pit, were destroyed due to erosion and/or previous human intervention. The excavation of the remains in Burial 1 revealed a complete skeleton of an adult male aged 45 to 50 years at death, with a stature of approximately 162 ± 3.2 cm. Preservation of head hair indicated that this individual had short grey hair.

Burial 1 showed typical dental pathology (Figures 7 and 8) associated with someone of this age living in ancient Egypt including severe wear and periodontal disease (Forshaw 2009). While the apparent nature of death is not evident, periapical abscesses associated with the maxillary left 2nd premolar, right 2nd premolar and 2nd molar (Figure 7), and the mandibular right 1st molar (Figure 8) suggest that death may have resulted from a dental sepsis that became systemic (e.g., Schuman & Turner 1994). This individual had several caries located on the maxillary left and right 2nd premolars, and 2nd and 3rd molars, as well as on the mandibular right 2nd premolar and 1st molar. This individual had also experienced antemortem loss of the maxillary and mandibular right 3rd molars. Several of the teeth have minor calculus staining and linear enamel hypoplasia, located near the cementum-enamel junction on seven anterior teeth, suggesting idiopathic stress during early childhood (Hassett 2014).

This individual also has several pathological conditions including healed fractures, a possible healed sharp force trauma, and fused skeletal elements. The left clavicle shows a well-healed fracture on the acromial end, and the left scapula has a corresponding well-healed fracture at the base of the coracoid process (Figure 9). Coracoid process fractures of this nature are relatively rare and may be explained by a direct blow to the shoulder, although they may also be subsequent to a dislocation of the humeral head, or as a result of the tensile forces produced by the clavicular ligaments and tendons (Goss 1996). Given that the fracture is located on the acromial end of the clavicle, it is most likely that these two fractures occurred at the same time and

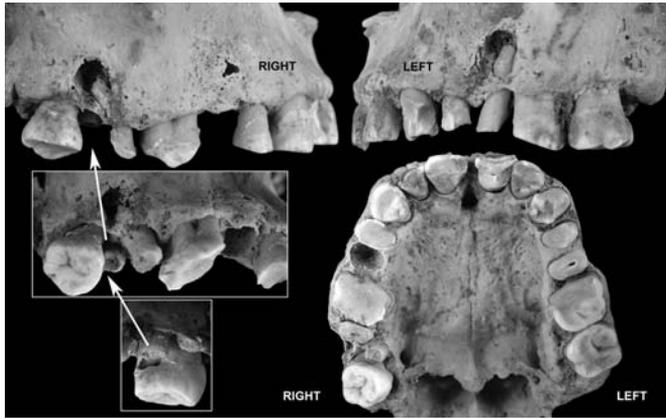


Figure 7. Maxillary dentition from Burial 1, showing dental wear, calculus, periodontal disease, dental caries, and apical abscesses.



Figure 8. Mandibular dentition from Burial 1, showing dental wear, periodontal disease, dental caries, and apical abscess.

are likely the result of a direct blow. The right scapula shows two unusual foramina located on the posterior wall of the supraspinous fossa (**Figure 10**). The larger of the two foramina measures 14×4 mm, and the smaller ovoid foramen measures 3×5 mm. Differential diagnosis for these foramina include atrophic perforations, scapular foramen, tumor, occupational or accidental trauma, and sharp force trauma (Dabbs & Zabecki 2015). Given the location, shape, and margin composition, these foramina may be either developmental or related to a traumatic event such as sharp force trauma (Dabbs & Zabecki 2015). Further investigation will include radiographic analysis to assist with differentiation.



Figure 9. Left scapula and clavicle from Burial 1. Healed fracture of the coracoid process (arrows) of the left scapula (close-up inset), and healed fracture of the acromial end of the left clavicle (arrows), shown in both superior (top) and inferior (bottom) view.

The individual's right humerus has a well-healed spiral fracture on the proximal diaphysis (**Figure 11A-C**). Spiral fractures of the humerus occur when there is a force applied to the bone during rotation (Galloway 2014), and this can include scenarios such as the twisting of the arm by another person, when the lower arm is "locked" in position and the body rotates, or by throwing objects. Modern clinical literature includes activities such as arm wrestling (de Barros & Gustilo 1993), pitching (Reed & Mueller 1998), and the throwing of hand grenades (Chao et al. 1971), snowballs, and javelins (Ogawa et al. 1998) as causing humeral spiral fractures. The right ulna

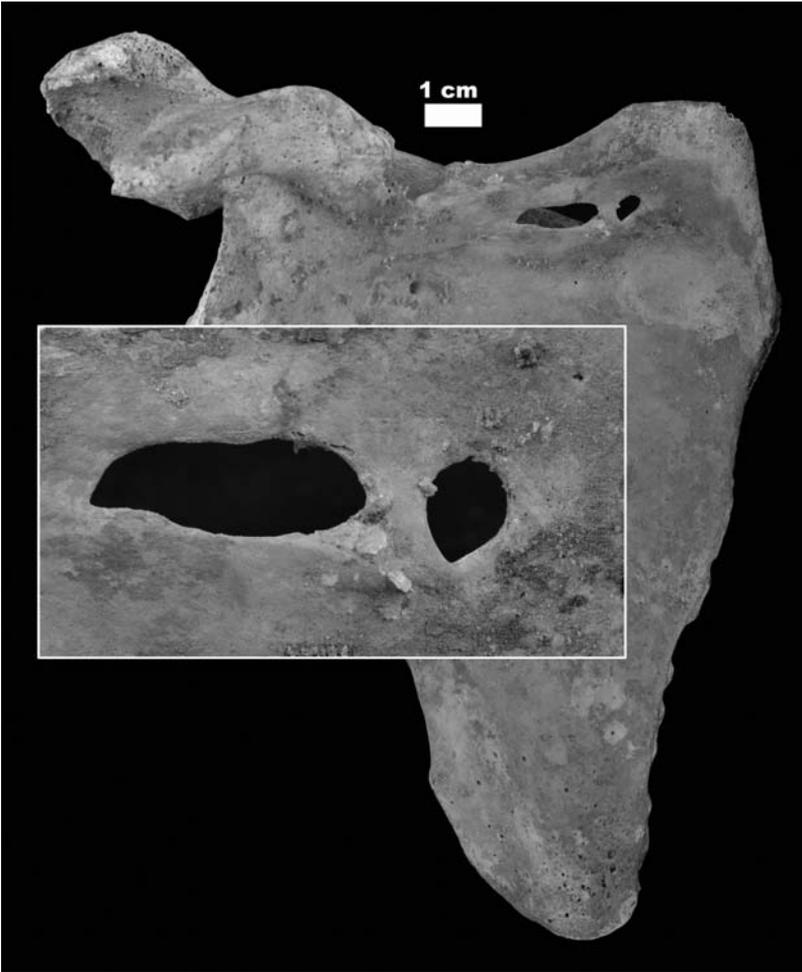


Figure 10. Unusual foramina located on the posterior surface of the supraspinous fossa of the right scapula from Burial 1. Close-up shown in the inset.

also shows a well-healed fracture on the distal diaphysis (**Figure 11D**). Fractures to this part of the bone are usually the result of a direct blow when the arm is in a pronated position, and this fracture, meeting the criteria outlined by Judd (2008), is commonly referred to as a “parry”, “nightstick”, “fending”, or “pool cue” fracture (Brogden 1998; Rogers 1992). Individuals usually have their arm raised in a defense position to protect themselves from an oncoming blow, and cases of an archaeological nature are usually associated with interpersonal violence (Galloway 2014). Also of note is a healed fracture of the corresponding styloid process. Clinical literature commonly associates styloid fractures with motor vehicle accidents, or a fall from a height

where significant force is generated (Galloway 2014). There is also a well-healed fracture on the distal end of the left radius, causing pronounced anterior curvature (Figure 11E). This uncommon fracture is called a reverse Colles' or Smith's fracture, and is caused by a direct blow to the dorsal forearm or the back of the hand, or by falling onto the back of the hand or a flexed wrist (Galloway 2014).



Figure 11. Healed fractures of the long bones from Burial 1. Posterior (A) and anterior (B) views of the spiral fracture on the proximal right humerus in comparison to the unaffected left humerus (C). Healed fracture (arrow) of the distal right ulna (D). Healed fracture (arrow) of the distal left radius (E).

Both the right and left ribs show evidence of healed trauma. The right 2nd rib has a healed fracture in the angle with new bone formation and an active infection over the fracture site. The 5th right rib is fused to the 6th thoracic vertebra (Figure 12). The 6th, 7th, 9th and 10th right ribs all have healed fractures with new bone formation. On the left side, the 9th rib has a healed fracture and is also fused to the 8th thoracic vertebra (Figure 12), and the 10th left rib also has a healed fracture.

All of the vertebrae show pathological changes. The cervical vertebrae have enlarged transverse foramina on the left side (Figure 12A), and cervical vertebrae 3 through 6 all have compressed bodies with significant development of syndesmo-

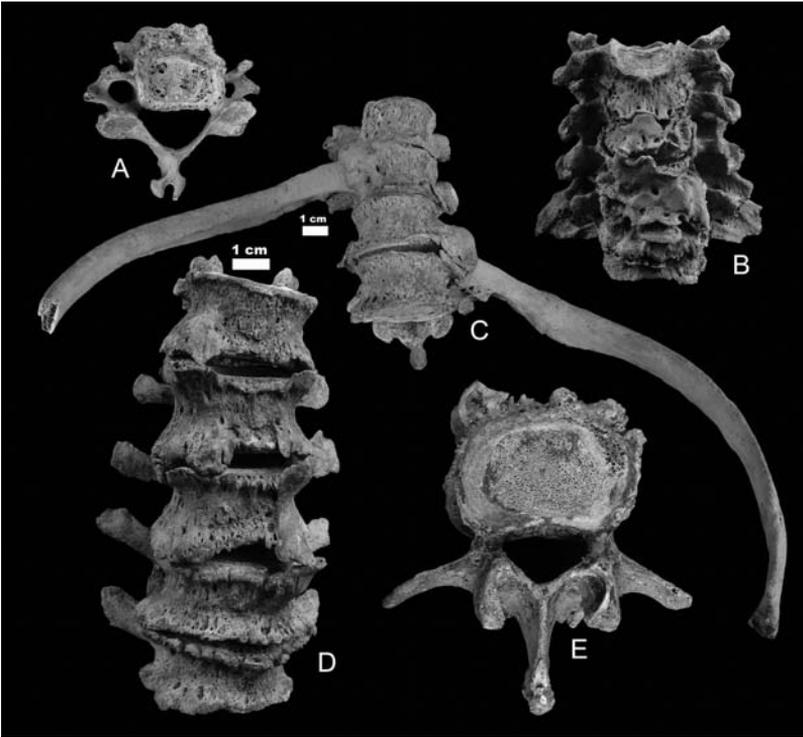


Figure 12. Noted pathology of the spinal column from Burial 1. Enlargement of the left transverse foramen on a cervical vertebra (A). Syndesmophyte development and body compression on the anterior surfaces of cervical vertebrae 3 through 7 (B). Syndesmophyte development and rib fusion on thoracic vertebrae 5 through 8 (C). Syndesmophyte development on the lumbar vertebrae (D and E).

phytes on both the superior and inferior surfaces (**Figure 12B**). This individual was congenitally missing a thoracic vertebra, and the remaining thoracic vertebrae show osteoarthritic changes with syndesmophyte development causing the fusion of the 5th and 6th vertebrae, and the fusion of the ribs to the 6th and 8th thoracic vertebrae (**Figure 12C**). The lumbar vertebrae show significant syndesmophyte development, almost to a state of fusion on all vertebrae (**Figure 12D and E**). It should also be noted that, although broken postmortem, during life this individual's sacrum was fully fused to the right and left os coxae (**Figure 13**). Given the fusion of the sacroiliac joints, the state of syndesmophyte development on the lumbar vertebrae, the fusion of thoracic vertebrae, and the fusion of two ribs to the vertebral column, it is most likely that this individual suffered from the onset of ankylosing spondylitis (Ortner 2003). This is a progressive inflammatory disease whose etiology is still unknown. Erosion and

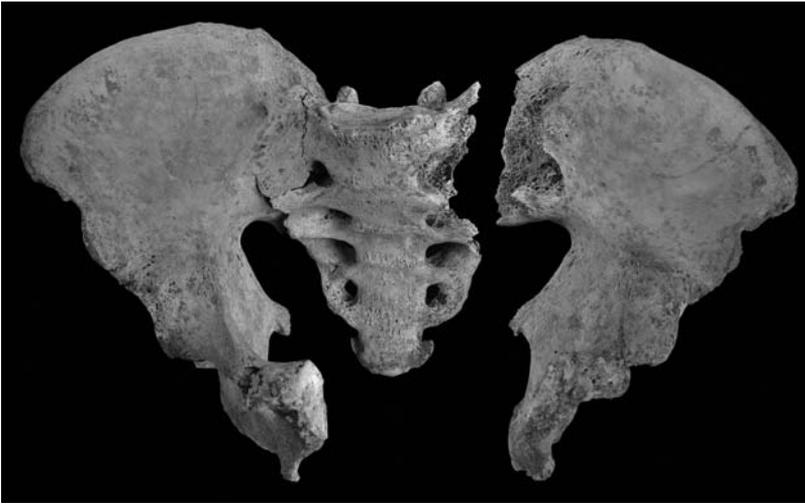


Figure 13. Fusion at both the right and left sacroiliac joints (postmortem breakage) from Burial 1.

porosity of the distal joint surfaces of the metacarpals are also noted, and this is also an associated condition of ankylosing spondylitis.

Burial 2

Burial 2 is located in the southeast portion of Room 1, in the immediate proximity of the apse. Its pit cut through the latest floor of the church to a depth of ca. 120cm and was sealed with a superstructure of mud-bricks, following a custom that is attested to elsewhere in Dakhleh and beyond (Bowen 2003). The burial revealed a complete skeleton of a juvenile female of approximately 15 to 17 years of age at death, with a stature of approximately 155 ± 3.6 cm. All of the adult dentition is present, and although all four 3rd molars are in their sockets, none have erupted. While there is no evidence of dental pathology, all of the anterior teeth show evidence of linear enamel hypoplasia (Figure 14), suggesting an idiopathic stress during childhood (Hassett 2014).

While the cause of death is unclear, her skeleton does show some notable pathological conditions. One of her right ribs has as a small lytic lesion on the posterior sternal end on the superior surface, and there is some notable hemolytic (blood) staining around the lesion (Figure 15). A preliminary differential diagnosis suggests that this lesion resembles those documented as chondrosarcoma or metastatic carcinoma (Aufderheide & Rodriguez-Martin 1998; Ortner 2003). In addition, her right ilium shows a circular cyst-like lesion located just below the iliac crest on the anterior sur-



Figure 14. Enamel hypoplasia on the maxillary and mandibular anterior dentition from Burial 2.

face (**Figure 15**), and her left os coxa shows evidence of cyst-like lesions below the iliac crest. These defects resemble what has been described in the clinical literature as an aneurysmal bone cyst, and although the etiology is unknown and these lesions are benign, approximately 30% of cases are correlated with other neoplastic conditions such as chondrosarcoma (Bajracharya et al. 2007). The epidemiological characteristics of these cysts show them mainly occurring in the 2nd decade of life, with a peak incidence occurring at 16 years of age, and at a ratio of 1:1.3 for females over males (Bajracharya et al. 2007), all of which fit this individual. Although aneurysmal cysts are rare in both the palaeopathological and clinical literature, neoplastic conditions have been noted in the Kellis cemeteries in the Dakhleh Oasis (Sheldrick 2015; Zimmerman & Aufderheide 2010), and in other locals in ancient Egypt (Kozieradzka-Ogunmakin 2015; Nerlich et al. 2006; Prates et al. 2011; Strouhal 1991) and Nubia (Binder et al. 2014). In addition, one of the individual's right ribs shows significant new bone formation, usually attributed to trauma or disease.

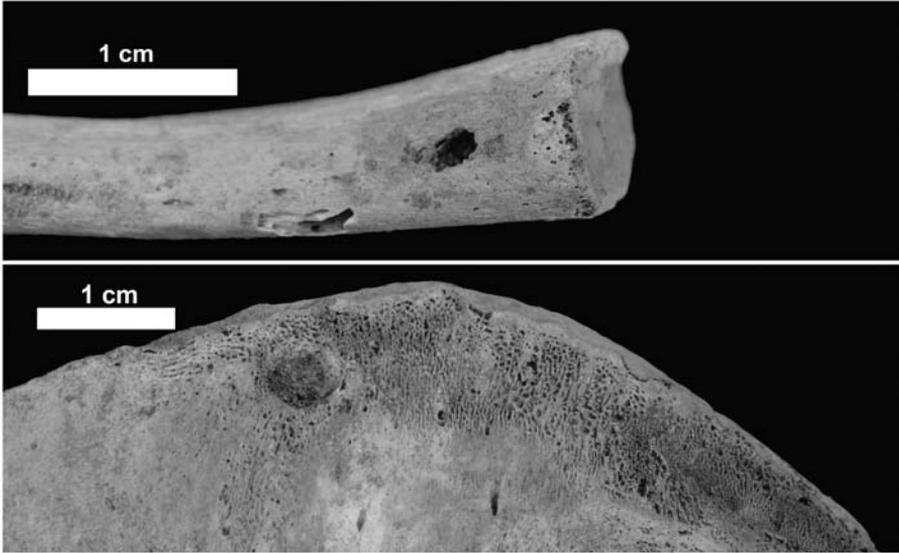


Figure 15. Lytic lesion on sternal end of rib (top), and cystic-like lesion on the ilium from Burial 2.

Burial 3

Burial 3 is located against the northeast corner of Room 1. The grave was found undisturbed, and its excavation revealed a pit that was significantly deeper than those of the other investigated burials, reaching 140cm below floor level. The bottom of the pit contained a complete skeleton of an adult female of approximately 30 to 35 years of age at death, with a stature of 155 ± 3.7 cm. The preservation of all of her long black hair indicates a style with multiple plaits gathered into one bun on the top of her head. Her dentition shows no dental pathology, with very little wear and minimal calculus. The only notable pathological condition is a series of healed fractures on left ribs 7-10. These fractures would have most likely occurred in the same event.

Burial 4

The grave of Burial 4 is also located in the northeast part of Room 1 near the apse. The grave was undisturbed and had a pit that reached a depth of 100cm below the original floor level. It contained the complete skeleton of an adult male of approximately 35 to 40 years of age at death, with a stature of approximately 168 ± 3.2 cm. Although the skeletal features indicate a middle-aged adult, it is notable that he had significant ossification of his thyroid cartilage, a condition that is somewhat uncommon in the Dakhleh Oasis skeletal populations. His preserved hair indicates that it was subject



Figure 16. Maxillary dentition from Burial 4 showing dental wear and caries (A), and associated apical abscesses (B).

to henna treatment approximately 2-3 weeks before death, a practice documented in other cemeteries in the Oasis (Williams 2008). Unlike the others buried in the church, this individual also had preserved fingernails, brain, and skin tissue.



Figure 17. Fusion of right ulna to the humerus in Burial 4.

The dental pathology of this individual was minimal. All of his teeth are present with moderate to severe attrition on all his molars, with the cusps gone and dentin exposure. There is some evidence of periodontal disease and minimal calculus. There is evidence of only one carious lesion on the occlusal surface of the maxillary first left molar, which was severe enough to cause resulting apical abscesses and fenestration on both buccal roots (**Figure 16**).

He had some notable pathological conditions including two fused intermediate and distal manal phalanges, a healed fracture of the 1st coccygeal vertebral segment, and a significant fracture of his left elbow. His left humerus and ulna were fused together (**Figure 17**) so that his arm would have been in a permanent 90-degree angle, although the radius still appeared to have some ability to supinate. This fusion seems to be related to a traumatic event such as a direct fall onto his elbow.

Discussion

Nine Christian churches have been identified in the Dakhleh Oasis, with seven of these being tentatively dated to the early Christian period (4th century CE) based on architectural style and associated artefacts (Aravecchia 2012; Bowen 2002, 2003, 2012, 2015). At present, human remains have been excavated from two other churches in the Dakhleh Oasis, from the West Church at Kellis (Bowen 2002) and Dayr abu Matta (Bowen 2012), and surface-scattered human remains were also found during survey of the church at Dayr al-Malak (Bowen 2015). The West Church at Kellis revealed two burials (Bowen 2002) and 13 complete burials were recovered from the church at Dayr abu Matta (Bowen and Dupras forthcoming). Initial comparisons illustrate that the individuals at Dayr abu Matta are strikingly different in terms of their dental wear than that identified on the remains from Kellis or Amheida. It should be noted that the church at Dayr abu Matta has been tentatively dated to the 4th to 5th century, based on recently discovered archaeological evidence (Bowen 2012); however, at the moment we do not know when the burials occurred in that time frame, so they still may not be contemporaneous with those at Amheida. Certainly, the practice of burying the deceased within—or in the close proximity of—churches is testified to by evidence that is not only limited to Dakhleh and Egypt, but encompasses all regions of the Mediterranean world since Late Antiquity (Davies 1999).

The question still remains as to who these individuals were, and what circumstances led them to being buried within the church complex. Why were these individuals not buried in the extensive necropolis located in the southern portion of Amheida? Or why were they not buried in the mortuary complex associated with the impressive pyramid tomb structure in the proximity of the church (Bagnall et al. 2015; Warner 2012)? Evidence revealed that burial within the church complex was not exclusively reserved for male individuals. Furthermore, an assumption that

the area closer to the sanctuary might have been reserved for members of the clergy does not stand up against the available evidence. Our analyses show that the individual who was buried closest to the apse is a female (Burial 2) who died at approximately 15 to 17 years of age. In addition, an older female (Burial 3) was also buried in the northeast part of the church. Other excavations in the Dakhleh Oasis have revealed a 6-month-old infant buried directly in front of the apse in the West Church in Kellis (Bowen 2002; Molto et al. 2003). Obviously they were not all members of the clergy.

The skeletal evidence itself challenges perceptions of who would likely be buried in a church. Burial 1, for example, presents some interesting pathological conditions that may have been associated with the individual's occupation. Many of his traumatic injuries are similar to those documented in cases of military combat in ancient Egypt. A spiral fracture of the humerus is commonly associated with throwing, and parry fractures are considered to be defensive wounds, both of which could be associated with military combat. Dabbs and Schaffer (2008) discuss the remains of an adult male skeleton from the New Kingdom site of Amarna, Egypt that displayed similar, although not as extensive, injuries to those discussed in association with Burial 1. This individual had an unhealed fracture of the sternum, at least 19 healed and unhealed rib fractures, two projectile injuries to the left ilium, and a healed parry fracture of the left ulna. Dabbs and Schaffer (2008) hypothesize that this individual was most likely a soldier who suffered these injuries during combat. Ruffer (1921) documented the pathological conditions of Alexander the Great and Ptolemy I's Macedonian soldiers (ca. 300 BCE) buried at the site of Chatby, Egypt. Although the remains of several individuals were very poorly preserved and commingled, Ruffer (1921) describes the fusion and development of syndesmophytes throughout the cervical, thoracic, and lumbar regions on these individuals (although no absolute numbers are provided), and documents two cases of sacroiliac fusion. These similarities suggest that the individual buried in the church at Amheida may have been a soldier. Substantial evidence attests to a strong military presence in the area of Amheida during the 4th century. The *Notitia Dignitatum*, a document reflecting the situation ca. 400 CE, lists Trimithis/Amheida as the location of a Roman military unit. An ostrakon (piece of broken pottery with writing on it) from Amheida mentions a military officer and a unit that is most likely the same listed in the *Notitia* (Bagnall & Ruffini 2012:48). Additional documentary evidence suggests that in fact, detachments of different units may have been stationed in the area (Bagnall et al. 2015). No archaeological evidence of a fort has yet been detected at the site. However, it is generally accepted that the above-mentioned military force was stationed at the nearby site of El Qasr, which depended on the city of Trimithis and where substantial remains of a Roman fort were found (Bagnall et al. 2015; Kaper 2012; Kucera 2012).

It is possible, however, that individuals who do not fit a typical clergy profile may have been related to the clergy that officiated at the church of Amheida. The available documentary evidence does not reveal if women held particular roles within the Christian community of 4th century Dakhleh; therefore, it is not possible to speculate with any degree of certainty that the female individuals buried in the church held specific functions in relation to this church. As mentioned above, another possibility is that the burials (or, at least, some of them) belonged to members of the local elite, following a custom that is known elsewhere in Egypt (Grossmann 2002). Some of the individuals buried in the church complex at Amheida may have been members of wealthy, influential Christian families, who were somehow involved (e.g., as financial benefactors) in the life and management of the church and might have therefore wished to be buried here after death.

Undoubtedly, there are still several questions to be answered, in relation to both the nature of the church of Amheida and the identity of the individuals buried in it. The research presented here, however, has already revealed new and important aspects of funerary practices during the 4th century in the Dakhleh Oasis. This includes the discovery of the first known funerary crypt in the Oasis, and the particular demography of those buried in the church complex. Further archaeological work in the church and in the crypt, paralleled with bioarchaeological analysis of all the individuals and comparative study of the evidence from other sites, is necessary to provide a more thorough understanding of early Christian funerary customs in the Dakhleh Oasis.

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