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An unusual case of prone position in the Punic/Roman necropolis of Monte Luna in Sardinia (Italy): A multi-disciplinary interpretation of Tomb 27

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ABSTRACT

Sardinia (Italy), noted for its wealth and strategic position, has been conquered through time by different populations and each one of them instilled their specific culture, ritual behaviour, and customs. Sometimes a clearcut distinction is evident between these cultures, while other times it is more of a natural progression with no marked moment of change evident. This study discusses a single grave from the Necropolis of Monte Luna, established by the Punic people, with depositional chambers and pits carved on a rockhill in front of the city settlement (Acropolis). Among the 120 tombs, Tomb 27 contained a young woman (T27.2) buried in an atypical prone deposition, having disturbed an earlier burial (T27.1), a subadult around 15 years of age. T27.2 suffered two distinctive types of perimortem trauma, a possible diastatic blunt force trauma to the occipital bone and a small quadrangular-shaped lesion reminiscent of a Roman era square shaped nail. The grave goods allow a quite specific dating to the period of transition between Punic and Roman cultures. These, and other characteristics of the young woman's skeleton, are of significance in understanding funerary and cultural behaviour at the time of this transition.

1. Introduction

In the last few decades, the highly detailed analysis of human skeletal remains, and the individuals they represent has seen a significant surge of interest (Buikstra and Beck, 2006). The creation of individual osteobiographies of past people has provided a nuanced understanding of individual lives, as well as adding data to the population perspective potentially allowing larger social phenomena to be examined (Binford, 1971; Domett et al., 2016). Key to the understanding of past people's lives based on their biological evidence, is the consideration of the context in which they lived, their social and physical environment, and died - a truly bioarchaeological approach (Gowland and Knusel, 2006).

A re-examination of an old photograph of Tomb 27 (Fig. 1), excavated from the Punic/Roman Necropolis of Monte Luna (Senorbì) in Sardinia, stimulated the present study. The photograph shows the individual in a prone deposition and surrounded by grave goods. An individual buried in a prone position is often considered deviant (Murphy,

2008, pp 12 – 17) if it is different than the norm for the period and/or populations on which the examination is focused. It has been widely observed that, regardless of culture, period and geographical area, humans tend to bury some individuals in their society in particular ways, differentiating them in death from others. These usually reflect specific circumstances such as an individual guilty of criminal behaviour, women who died during childbirth, and people affected by dangerous and inexplicable diseases or disabilities (Tsaliki, 2008). While each case reflects specific social and religious beliefs, they can generally be interpreted as an apotropaic way to prevent the person's return from the world of the dead, ensuring their permanent exile from the living community. There are testimonies from the Roman age to Medieval times, both in Italy and in Sardinia (Piga et al., 2015; Quercia, Cazzulo, 2016), that provide a basis for understanding the case presented here, however, there are some aspects that differ from the common profile of such deviant burials. The aim is to examine all the available archival evidence, the current literature, alongside a detailed archaeological

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Fig. 1. Tomb 27 (Costa, 1980, tab. XCIII). First layer of excavation exhibiting a prone deposition (red oval); in the right corner, representing a lower layer, is the cranium (yellow oval).

analysis of the region, the time period and grave goods, and the biological data from the skeletal remains themselves. All aspects may have relevance to the interpretation of the symbolic behaviour useful to reconstruct a story of a single individual to understand the ideology of the community that buried them.

2. Archaeological context

2.1. Geographic and historical background

The site of Monte Luna is in the central-southern part of Sardinia, near the town of Senorbì, which is 30 km north from Cagliari (Fig. 2). The necropolis is thought to be linked to the urban settlement of Santu Teru, a Punic-Roman town active from the 6th century BCE until mediaeval times, probably as a direct emanation of the city of Cagliari (KRLY in Punic language and Caralis/Carales or Karalis/Karales during the Roman phase). During the Punic phase KRLY was possibly in charge of the entire area where Santu Teru is located. In fact, this settlement is linked to an agricultural economy managed by the city of KRLY under the direction of the main Punic centre of the Western Mediterranean, Carthage. The town of Santu Teru was possibly one of the main urban settlements linked to the management of cereal production, probably wheat, for the Punic city of KRLY and it demonstrated a high level of wealth, as suggested by the majestic funerary artefacts found in the Monte Luna necropolis active from the end of the 6th century BCE to the Roman Republican age (Todde, 2020). More is known about the settlement of Santu Teru during the Republican and Imperial ages, attested by an inscription (Forci, 2011) which states that the city was active

during the first Imperial age. Information regarding the Imperial age phases is disjointed and incomplete. However, Santu Teru seems to have survived beyond the end of the Roman Empire dated to the 6th century CE as is evidenced by some Late Antique and mediaeval pottery (7th – 8th c. AD) found near the site of the so-called *acropolis*. The *acropolis* was a place where some scholars had hypothesised the existence of the mediaeval village attested by the agiotoponym of *Santu Teru*, which is linked to a church related to the worship of Saint Theodorus that gives name to the whole area (Costa and Usai 1990).

2.2. The necropolis of Monte Luna

The necropolis of Monte Luna (Fig. 3) was investigated archaeologically during the late 1970s to the early 1980s by Antonio Maria Costa as *Ispettore onorario* (Honorary Inspector) for the local *Soprintendenza ai Beni Culturali* (Superintendent for Cultural Heritage). Only a portion of the necropolis was excavated but at least 120 tombs were partially documented, though there is a significant lack of contextual information recorded (Costa, 1980; 1983a; 1983b; 1983c; Costa and Usai 1990).

During the investigation, Costa describes two different funerary areas. The first, Monte Luna, active from the 6th – 2nd century BCE, located immediately in front of the hill of Santu Teru, with its wealthy tombs and the second, the *necropoli romana* (Costa and Usai, 1990), a few metres north-west from Monte Luna, which was active from the 2nd – 1st century BCE until the 4th – 6th century CE. The original funerary area of Monte Luna is composed of chamber tombs with an access pit similar to the ones used in the necropolis of Tuvixeddu in Cagliari, pit-tombs, like Tomb 27, along with other types such as cist tombs and *enchytrismoi* (jar burials) (Costa, 1983c). Some of the tombs, such as Tomb 87, also known as the *tomba principesca*, suggests a number of the inhabitants of Santu Teru were wealthy as they were buried with funerary goods including masterpieces of Magna Graecia jewellery (Usai, 1981; Pisano, 1996). As to the rituals, there is evidence for both inhumation and cremation, but the former is the more common rite (Costa, 1983c). The *necropoli romana* instead is little known and only 10 tombs were excavated. This funerary area is composed of simple rectangular graves and cist tombs and were probably in use after the necropolis of Monte Luna.

2.3. The archaeological framework of the Tomb 27

Tomb 27 is a pit-tomb (Fig. 3) carved into the stone of the hill of Monte Luna. The funerary artefacts found in this tomb include a pitcher, a *balsamarium* (ointment jar) of Punic-era production, and a jug and cup of Punic Black gloss-ware, providing evidence of the chronology of the deposition. Two coins and some glass beads that were part of a necklace were also found (Fig. 4). Fig. 5.

The pitcher may be an example of the last evolution of the Cintas 61 type vase, which dates to the 3rd-2nd century BCE. One has clear similarities with some of the vessels from the necropolis of Tuvixeddu (Bartoloni, 2000, pp. 91) and could be considered to suggest a direct commercial, and perhaps cultural, connection between Cagliari and Santu Teru. The coins, one of Sardo-Punic era and one Roman emission overstruck on an earlier Sardo-Punic coin, are of particular interest (Hersch, 1953). The latter helps to date the context to between the last decade of the 3rd century BCE and the beginning of the 2nd. Even more precise, from a chronological point of view, is the Punic Black gloss pottery cup, identified as a Lamboglia 28F/Morel 2648 form, dated from the end of the 3rd until the 2nd century BCE (Morel, 1981, pp. 200-201). The funerary artefacts of Tomb 27 all confirm that the burial context dates from at least the last decades of the 3rd century BCE but, given the presence of the other artefacts, a more precise chronology into the early 2nd century BCE, perhaps from the very first decades, is suggested.

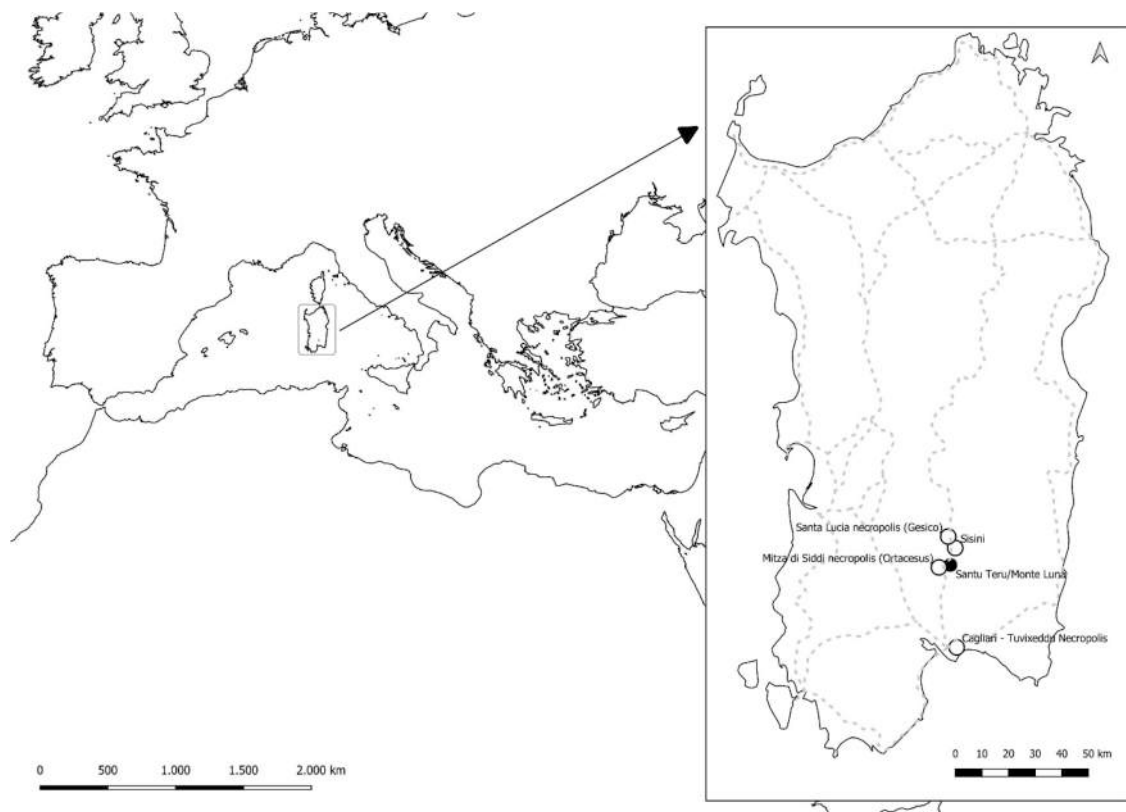


Fig. 2. General map of South-East Sardinia (Italy) with the archaeological area of Monte Luna (Senorbì) and other main sites mentioned in the present paper. (Map: D. D'Orlando).

3. Anthropological setting

The necropolis of Monte Luna contained 120 tombs, but human remains were recovered from only 70 tombs. The majority of these 70 tombs were also re-used, containing between two to 12 adults within one tomb. When subadults and young children are present in a tomb, there is only ever a maximum of two individuals (subadult included) within that tomb. Tomb 27 is located near two analogous tombs, Tomb 25 and 28, that each, like Tomb 27, contain two individuals, one adult female and one subadult. In addition, the individuals within Tomb 28 also have the same non-metric traits and presence of grave goods as Tomb 27. It is possible that within the necropolis, burials were located based on familial lineage. Whether the people in each tomb are family, will hopefully be confirmed through DNA analysis in further studies.

Due to poor preservation and comingling of the human remains within tombs, the recording of each tomb is undertaken in a systematic manner as follows: each element is sorted by anatomical region and side, and, where possible, upper limb bones (humerus, radius and ulna) are matched to an individual, as are lower limb bones (ilium, femur, tibia, fibula); for each bone, morphology is described and measurements are taken; then, following standard methods, age-at-death and sex are estimated, and pathology and trauma are described (Buikstra and Ubelaker, 1994; White and Folkens, 2005; Schaefer, Black and Scheuer, 2009).

The minimum number of individuals (MNI), based on the same repeated element within tombs, in the 70 tombs studied has been calculated at 226 adults over 15 years (Brothwell, 1981; Lovejoy, 1985) and 59 subadults between 1 and 15 years (Schaefer, Black and Scheuer, 2009). No subadults less than 1 year have been found, which suggests the possible presence of a Tophet, a designated funerary area for unborn and newborn perinates, that was common in Phoenician and Punic times (Xella, 2013).

3.1. Human remains from the Tomb 27

Given that the excavation diary was missing, the analysis of the 1977 excavation photograph (Fig. 1) was essential in understanding the deposition of Tomb 27. In fact, from the image, it is possible to observe a deep grave (2.10 × 0.8 m), showing two distinct excavation levels. It shows the prone deposition of one articulated skeleton which occupies the entire space of the tomb located in the upper layer, and the location of another deeper deposition, a non-articulated skeleton in the upper right corner. Based on the articulated nature of the prone skeleton (ML_T27.2), it is evident that this individual was the second deposition. The cranium located in the upper right corner of the pit (Fig. 1) was the first deposition (ML_T27.1), that was disturbed by the burial of ML_27.2; the postcranial remains of ML_T27.1 were found at a deeper level. Seventy-five per cent of the skeletal remains were recovered for both individuals.

The former deposition (ML_T27.1) was estimated to be aged 15 years ± 3 years based on tooth eruption and epiphyseal fusion. All second permanent molars were erupted, while the crowns of the third permanent molars were only half formed and unerupted. In addition, non-fusion is recorded at the proximal and distal epiphyses of both humeri, the right radius and the left ulna; the acromion process is partially fused, and the coracoid is unfused in the right scapula; the three bones of the pelvis are unfused; the unfused distal epiphysis of the right femur is also present (Schaefer, Black and Scheuer, 2009). Sex was estimated through pelvic and cranial morphology (Schaefer, Black and Scheuer, 2009), but given the very young age, skeletal sexual dimorphism may not yet be fully developed, and this estimation awaits further study, such as through enamel peptide analysis (Stewart et al. 2017).

The prone deposition (ML_T27.2) was estimated to be a young adult female, based on pelvic and cranial morphology (Buikstra and Ubelaker, 1994), aged between 18 and 22 years (Schaefer, Black and Scheuer, 2009). Age at death was estimated using a multifactorial approach

UNUSUAL CASE OF PRONE POSITION IN PUNIC/ROMAN ERA



Fig. 3. Aerial photography of Monte Luna at present. Red arrow indicates Tomb 27 (Aerial photo and planimetry: R. Paba).

including dental eruption, dental wear, and epiphyseal fusion. The femoral head femur and iliac crest were partially fused. Stature and weight were estimated respectively as 153.0 cm and 49.2 kg (median on a CI of 95 % (Manouvrier, 1893; Pearson, 1899; Ruff, 2012)). The stature

and weight calculations used here are based on generic European populations, as there are no formulae based on Italians, nor Sardinians. The mean stature of the people buried in the Necropolis of Monte Luna, based on measurements of 32 adult long bones is 157.27 cm for women



Fig. 4. Tomb 27 grave goods. (D. D'Orlando). Licensed by MIC – Soprintendenza Archeologia, belle arti e paesaggio per la città metropolitana di Cagliari e le province di Oristano e Sud Sardegna; reproduction is prohibited.

and 160.62 cm for men.

3.2. Genetics factors

The cranial vaults of T27.1 and T27.2 both have a retained metopic suture and Wormian bones at the intersection of the lambdoidal and sagittal sutures (Fig. 6). These traits are not common in the necropolis. In other calvaria with ossicles they are located in other places, such as along the sagittal suture, and not associated with metopism. These 'primary' discrete traits (Buikstra and Ubelaker, 1994) in both individuals and in the aforementioned Tombs 25 and 28, suggest that there are family areas within the necropolis.

The metopic suture usually closes by 2 years of age, though it can close later in childhood (Coppa, and Rubini, 1996) or adulthood (Zdilla et al. 2018). While some individuals with metopic sutures have been reported to have larger transverse, cranial dimensions suggesting this feature may be related to morphogenesis (Bolk, 1917; Schultz, 1929),

this is not the case in T27 and T28 crania. Further support to a more genetic aetiology is the persistence of the metopic suture into adulthood, which can be hereditary and is more common in some ethnic groups than others (Berry & Berry, 1967). There are some external factors, such as frontal sinus abnormalities, or pathological conditions, such as hydrocephaly, that may also cause it to persist (Zdilla et al. 2018) but the above conditions are excluded in T27. In this case, according to the studies of Torgensen (1951) and Sjøvold (1984), metopism is considered to be a hereditary trait.

Lambdoidal Wormian bones are the result of extra ossification centres, but their aetiology is not fully understood (Bellary et al., 2013). In some cases, they are a normal anatomical variation, associated with mechanical stress and the environment (Sanchez – Lara, 2007). For example, in some populations sleeping in a supine position places pressure on the occipital area that can lead to expansion of the occipital suture and brachycephaly (Sanchez – Lara, 2007). This can be excluded in the case of T27.1 and T27.2 because their skulls are not brachycephalic. In other cases, Wormian bones may be related to specific pathology, such as hydrocephaly or craniosynostosis, but these conditions are usually associated with numerous, more than 10, and large, Wormian bones and arranged in a mosaic pattern and size larger than 6 mm by 4 mm (Bellary et al. 2013). Other factors suggested to be correlated with the development of Wormian bones include epigenetic factors, cranial deformation, craniosynostosis, and premature suture closure, none of which are observed here. Other conditions, such as additive polygenic complex or osteogenesis imperfecta may have Wormian bones associated with them (Coppa and Rubini, 1996; Goto et al. 2004; Semler et al. 2010; Bellary et al., 2013). Wu et al. (2011) reported that geographic and ethnographic patterns in frequency suggest a possible genetic basis, with a low frequency in Europe populations.

The presence of both these variations in both these individuals and the absence of mechanical stress and cranial deformation, may suggest T27.1 and T27.2 were related to each other, but further evidence, such as DNA, would be required to be certain.

Interestingly, in the necropolis the same condition is present in Tomb 28, although the female adult (18–22 years old) has only a thin line of metopism, while the subadult (9+/-3 years old) has a complete opening through the frontal bone up to the coronal suture similar to both

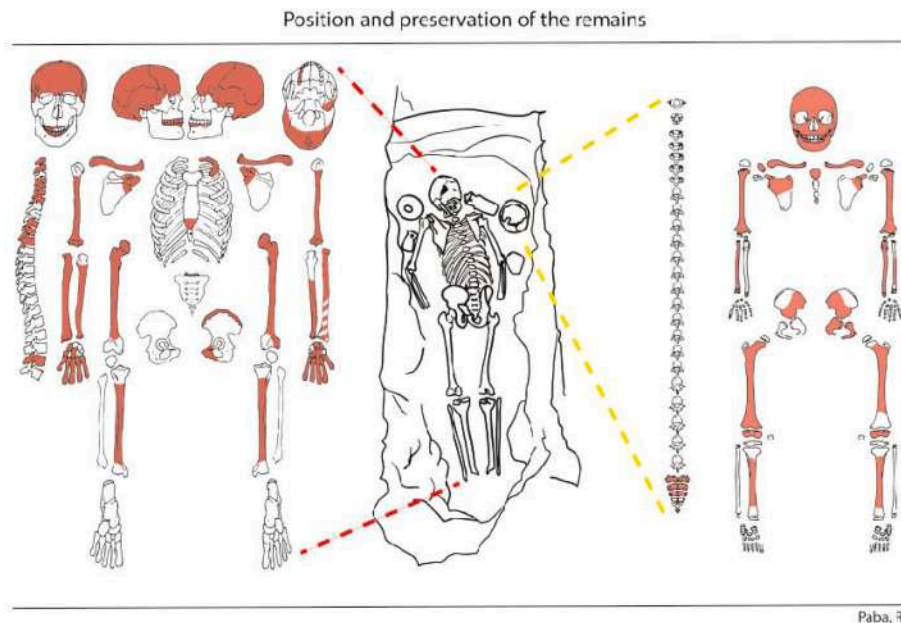


Fig. 5. Graphic representation of position and conservation of the human remains from Tomb 27. The yellow lines indicate the cranium around which was found the postcranial remains of T27.1. The preserved remains are indicated in the skeleton schema to the right. The red lines indicate the location of T27.2, found in the prone position, and represented by the preserved remains shaded in the skeletal diagram to the left. (Paba, R.).

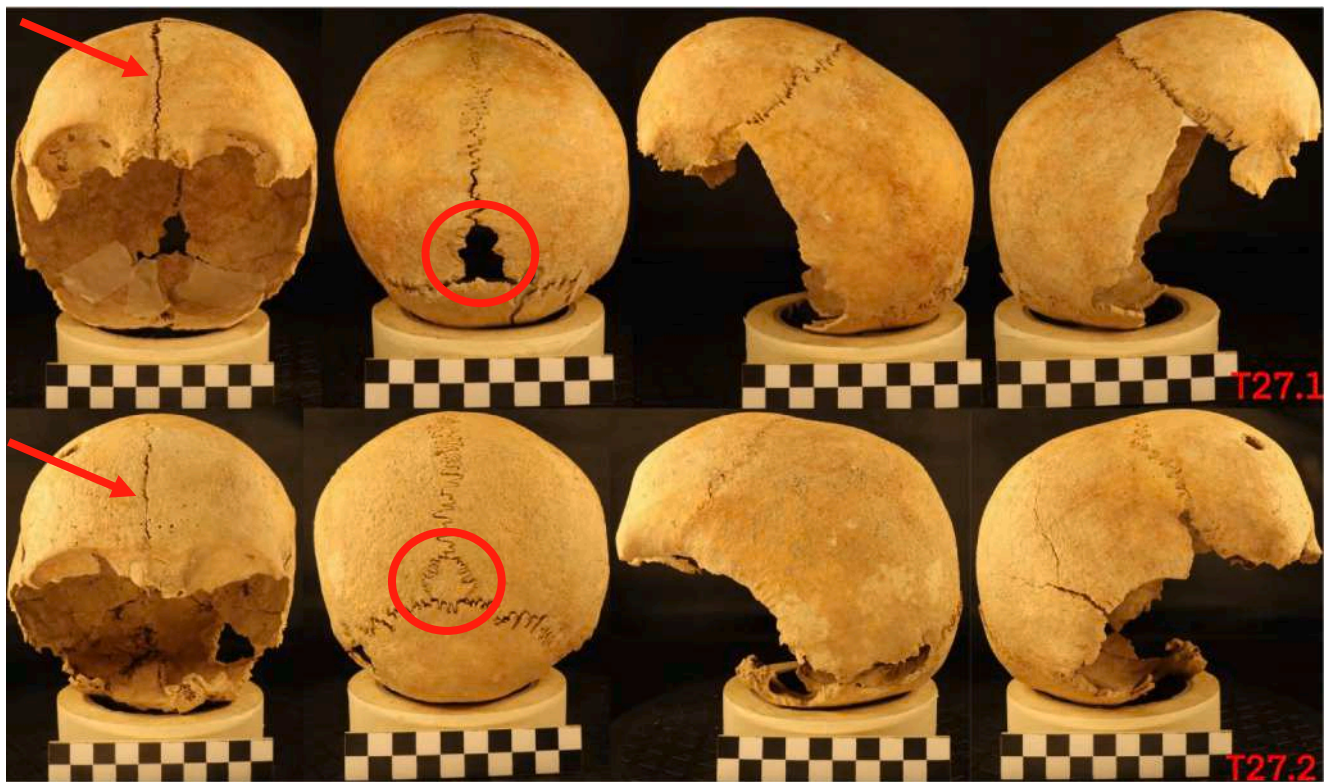


Fig. 6. Evidence of metopism (Red arrows) and Wormian bones (Red circles) in T27.1 and T27.2 calvarium (Paba, R.).



Fig. 7. Evidence of healed trauma in the midshaft of the right clavicle of T27.2. Superior view (A) with focus on the healed trauma in red rectangle, and posterior view (B), red arrow points at the trauma. (Lai, G.).

individuals in Tomb 27. The Tomb 28 individuals also have Wormian bones located in the lambdoidal suture, with the same shape and number of ossicles (2).

3.3. Trauma

Individual T27.2, the young adult female, presents with multiple traumatic lesions (Figs. 7, 8, 9), suggesting the presence of both antemortem and perimortem trauma.

There is a healed fracture in the midshaft of the right clavicle (Fig. 7). Healing has resulted in a thickened middle half of the clavicle. These types of fractures often occur in childhood and typically result from axial, longitudinal compressive forces (Nunn et al. 1989) commonly associated with a fall onto the shoulder or the outstretched hand, or from a direct blow to the humerus, either of which could be accidental or the result of intentional violence (Blount 1955; Thornton and Gyll 1999).

Two traumatic injuries are evident on the cranium, possibly occurring *peri* or postmortem. One triangular-shaped lesion, measuring 41 × 19 mm, is located on the inferior aspect of the left occipital bone, just posterior to the lambdoidal suture (Fig. 8) inferior to the hat brim line which is not consistent with an intentional blow (Kremer, 2009). Endocranially, there is an ‘exfoliation’ of a bone flake (Fig. 8D/E) which is commonly seen with blunt force trauma as the force moves from the external aspect, inwards (Wedel and Galloway, 2004). There is also evidence of two short radiating fracture lines out from the medial aspect of the lesion usually associated with a moderate- or high-velocity impact

on a common point (Kieser et al., 2014) (Fig. 8B).

This traumatic lesion is possibly a short radiation fracture along the suture, leading to a possible diastatic lesion which caused the left lambdoid suture, at the point of trauma, to disarticulate (White et al, 2012, p.434). This suggestion is supported by the observation that most of the other sutures (coronal, sagittal, and right lambdoid) are slightly more fused than the left lambdoid (Buikstra and Ubelaker, 1994). In Fig. 8C, it is possible to see where the disarticulation has occurred as there is a change in the surface of the suture to a rounded and pitted area possibly as a result of osteoclastic reaction within the first week of the trauma (Barbian et al. 2008) though could also be remodelling from normal suture closure with aging. Considering the location of the lesion, the radiating fractures, and the opening along the lambdoid suture, this is likely blunt force trauma either from an object or a fall onto this area of the head.

The second cranial lesion was located on the right side of the frontal bone showing a penetration from the outside inward (Fig. 9). The shape (9.5 mm × 9.5 mm) of the lesion suggests a sharp force injury was inflicted using an object with a quadrangular section (Fig. 9). Intentional trephination is unlikely as there are no associated cut marks extending out from the lesion that would be consistent with the usual trephination practice in the Roman Era (Tullo, 2010; Giuffra and Fornaciari, 2017). There is a depression and exfoliation around the area of impact in the outer table due to the force of impact, and there is also bevelling of the inner table edges of the lesion (Fig. 9) (Barbian et al., 2008; Facchini et al. 2008; Amadasi et al. 2016); both are characteristic of penetrating

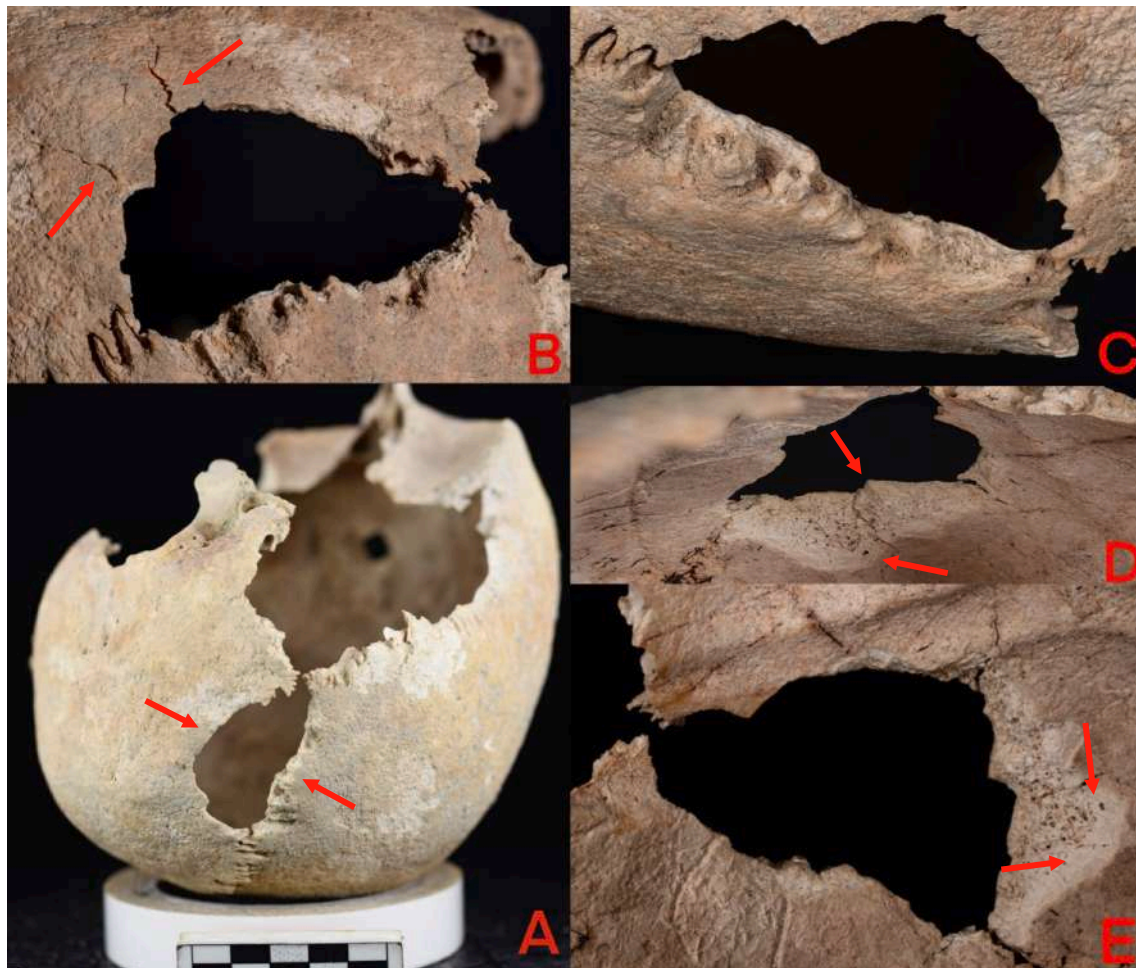


Fig. 8. Evidence of trauma on the occipital bone adjacent to the left lambdoid suture (A) (Paba, R.). (B) ectocranial surface with radiating fractures (red arrows). (C) the lambdoid suture (ectocranial view, showing remodelling likely from partial suture closure with normal aging) indicating a disarticulation due to a diastatic fracture along the suture has occurred. (D) and (E) show flaking is evident on the endocranial surface. The flake was not found.. (Lai, G.).

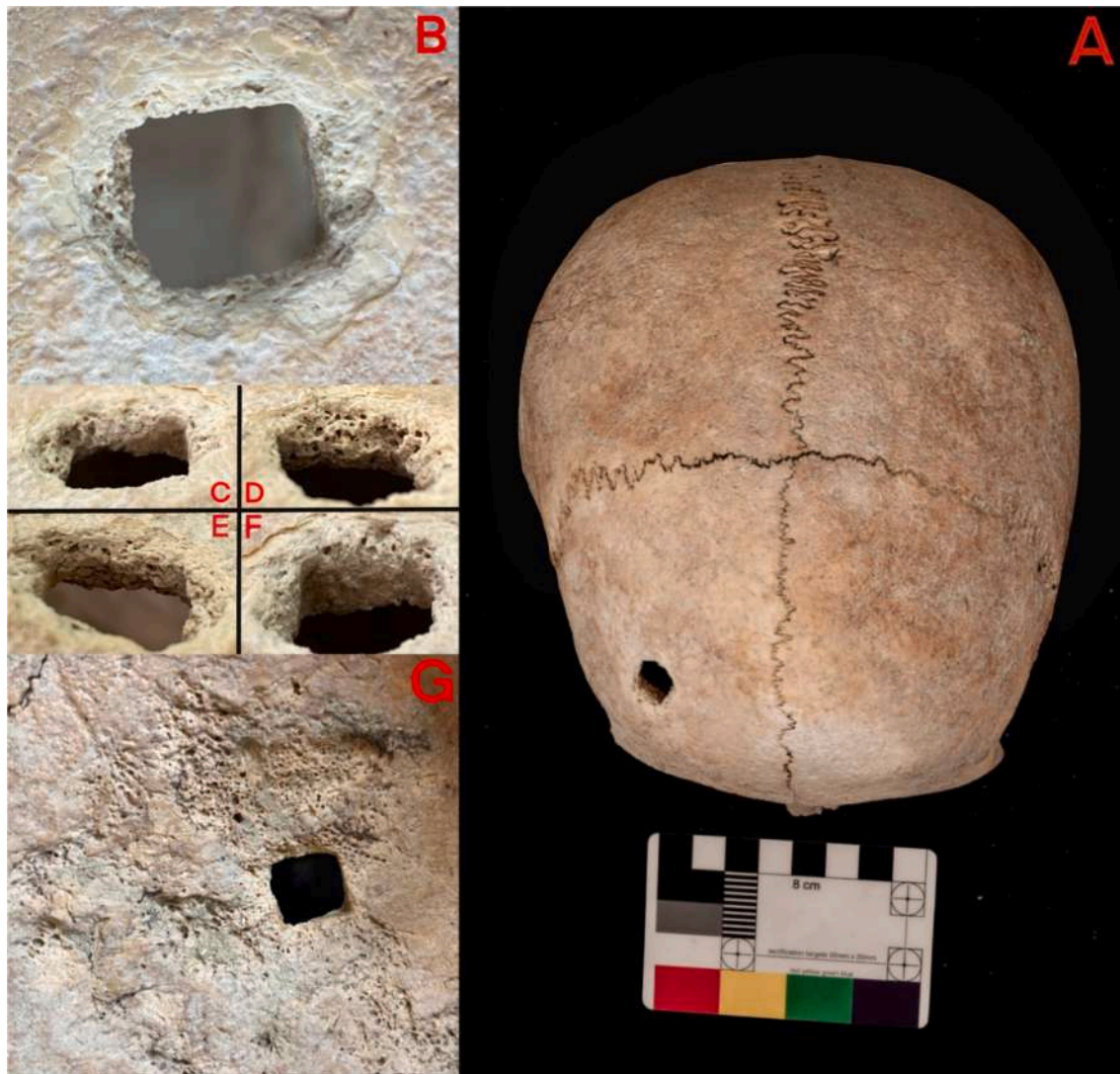


Fig. 9. T27.2 skull. Evidence of frontal trauma is shown (A) (superior view) (Lai, G.). (B-G) Close up of the right frontal bone trauma. (B) ectocranial view of the trauma showing bone flaking. (C - F) close up of the internal edges of the trauma (ectocranial view). (C) is the posterior side, (D) is the right side, (E) is the inferior and (F) the left. These edges show exposed diploe due to the perimortem trauma. (G) Endocranial view indicating bevelling of the inner table. (Paba, R.).

injuries with a highly localised point of impact associated with considerable power (Wedel and Galloway, 2004). There is no evidence of bone remodelling (Fig. 9), suggesting this incident occurred perimortem (Barbian et al., 2008). The shape of the lesion is similar to the cross section of ancient Roman nails. These nails are a common object in Roman settlements excavations in Sardinia (Fig. 10).

4. Discussion

The skeletal remains of T27.2, a young woman buried in a tomb at the Monte Luna necropolis, are noteworthy not only because of their unusual prone position, but also for the presence of perimortem trauma. The necropolis, and the people buried within it, is of significant interest from a cultural perspective as it provides an insight into a critical period of transition from the Punic period to the Roman dominion for the city of Santu Teru.

4.1. The trauma and its cultural significance

T27.2 presents with multiple traumatic lesions, one healed fracture of the right clavicle and two cranial, possibly perimortem, lesions.

The cranial lesions are in the posterior aspect of the lambda suture in



Fig. 10. Nail from Sisini. (Lai, G.).

the occipital bone and on the right frontal bone. The occipital lesion (Fig. 8) is typical of blunt force trauma most likely from a direct force such as from a fall, landing on the back of the head. Intentional cranial trauma is often associated with multiple traumatic lesions, often including facial trauma, and the lesions often occur on the left side (Guyomarc'h et al., 2010). T27.2 does have trauma on the left side and has another cranial trauma on the frontal bone, however this lesion does not fit the typical pattern of interpersonal violence-related trauma. In addition, the posterior fracture is within the 'hat brim line', suggesting the lesion is most consistent with an injury sustained from a fall (Kremer et al., 2009). It cannot be discounted, however, that the woman has fallen after being intentionally pushed.

The lesion on the right frontal bone, as discussed above, is quadrangular in shape and is typical of penetrating (sharp force) injuries (Wedel and Galloway, 2004; Amadasi et al. 2016; Facchini et al. 2008). The distinctive shape of this perimortem lesion is reminiscent of the square-shaped cross-section of nails commonly used in Roman times. Such nails can be directly compared to those found in the coeval and nearby site of Sisini (D'Orlando, 2019) (Fig. 10). The Sisini nail has a cross-section of 7.5 mm × 7.5 mm, which is consistent with the measurement of the trauma (9.5 mm × 9.5 mm). The nail length is 103 mm and this helps to exclude the possibility that the nail exited at the occipital lesion, as the sagittal measurement from the frontal trauma to the occipital lesion is 160 mm. The significance of a potential nail being used around the time of death is more fully discussed below.

Roman ballista bolts have a similar quadrangular cross section and size (Pental et al., 2014; Rossi et al., 2015). However, there are no findings of Roman ballista bolts in the area, and they tended to be used only during warfare. There is no evidence for siege or warfare at this time period or for the region around Santu Teru. In addition, the gender of T27.2 also makes it unlikely that a ballista bolt caused this injury as women presence as been reported as abnormal and transgressive (Boatwright, 2011).

4.2. The burial archaeology

Tomb 27 is a pit-tomb carved in the stone of the hill of Monte Luna. The funerary artefacts include burial objects from a transition phase between Punic and Roman cultures that date back to the Mid-Republican period of the Sardinian timeline. Based on the contemporary presence of the overstruck coin and the Punic Black gloss pottery cup, Tomb 27 is dated into the 2nd century BCE perhaps from the first decades of the 2nd century BCE.

The funerary artefacts also suggest that there was a widespread shared culture in the rural landscape of Cagliari and its hinterland during the Punic-Roman ages. A locally made *balsamarium* (ointment jar) found in Tomb 27, is similar to a form commonly found in the Tuvixeddu necropolis (Bartoloni 2000, p. 91) and in the Santa Lucia funerary area (Gesico, SU) (Tronchetti 1996, pp. 999-1000) (Fig. 1).

The entire funerary context of Tomb 27, including the placement of objects in the tomb, is more typical of a single deposition, rather than two interments. In the nearby necropolis of Mitza di Siddi, singular depositions such as Tomb 67 and 113 (with the same chronology as Tomb 27 of Monte Luna) (Cocco 2009, pp. 60-63; 80-83) contain a similar number of artefacts as Tomb 27, leading to the hypothesis that the prone individual, T27.2, may have been interred without any objects. As such, T27.2 may exhibit further evidence of deviancy (Shay, 1985). Therefore, there are multiple lines of evidence to support the case of Tomb 27 representing an unusual funerary rite: the prone position of the body, the perimortem cranial trauma, and the lack of artefacts.

Ethnographic sources suggest a wide range of reasons for the prone deposition of an individual including as punishment for a perceived fault. For example, the Merovingian King Pepin "asked to be buried face down for the sins of his father" (Taylor, 2008, cited in Gilchrist and Sloane, 2005, p. 154). But perhaps the most common explanation is related to *necrophobia*, mostly associated with a fear that the corpse

could disturb the living (Tsaliki, 2008). These transcultural superstitions across the Mediterranean region were linked to witches, werewolves, vampires, and other mythical creatures (Quercia, Cazzulo, 2016).

Atypical burial rites have also been associated with contagious diseases and epidemics in antiquity (Tsaliki, and Taylor, in Murphy, 2008, pp. 18-32; 102-123). For example, Pliny The Elder, in *Naturalis Historia* (AD 77), describes a connection between a cross-eyed person and beliefs about an evil eye. This led to Romans' beliefs around other misunderstood diseases such as epilepsy, or so called *morbo sacro*, that was previously described by Hippocrates of Coos (5th century BCE) in one of the first scientific treatises written on the topic (Hippocrates, *De Morbo Sacro*, 4). The disease was thought to include a powerful element of impurity both for the individual and for their community since they believed that epilepsy was contagious. For this reason, the treatment of the victims was mostly related to a purification rite dedicated to the divinity responsible for the sickness. Pliny the Elder wrote in the 1st century CE, that if a person died from an epileptic seizure it was suggested to nail the part of the body in which the trauma began to prevent the diffusion of the disease, miasma, into the community (Pliny the Elder, *Naturalis Historia*, 28 17, 63) and requires purification.

This raises the possibility that the frontal bone lesion in T27.2 was created by a ritual nail, though a nail was not left in this tomb. Elsewhere in the Mediterranean, sacred nails are usually left in the tomb, as attested in religious contexts. Sacred nails are usually marked with sacred symbols indicated as *charakteres*, letters and signs inscribed on a magic object, which are common in Graeco-Egyptian, Judeo-Christian, and other religious practices (Bevilacqua 2001). Such sacred objects were associated with auspicious and apotropaic functions. Nails were a powerful symbol in ancient times usually associated with the concept of *defigere*, meaning to fix down or fasten something. In a religious context, these objects are linked to specific rituals. The ritual of the *clavum figendi* (to nail) was used to celebrate recurring or official events, such as the foundation of a temple or the beginning of a new year. They are linked as well to the *tabulae defixionum*, curse tablets (usually made of lead), which were pierced by nails and hidden in places near to the underworld such as necropolises or wet places as the water was a useful medium to link the living and the dead (Dungworth, 1998). The practice described by Pliny is clearly linked to the power attributed to nails, which could prevent or avoid a particular occurrence (Bevilacqua, 2001, p. 133). The use of a ritual nail on a person usually occurred after death. Such is the nature of perimortem injuries, that it is impossible to determine whether the perimortem frontal lesion in T27.2 occurred just before or after death.

One such hypothetical explanation for T27.2 may be that they were suffered a series of epileptic seizures that could have first resulted in the clavicle fracture. A subsequent seizure may have led to the blunt force trauma to the occipital bone, perhaps occurring as the woman fell or knocked their head against something hard. In fact, as presented in contemporary clinic literature, people affected by epilepsy are three times more likely to injure themselves during seizures and among the most common types of injury (that might be seen on a skeleton) are head injuries, fractures, and dislocations (Nguyen et al., 2009; 2013; Camfield et al., 2015). The blunt force trauma after an epileptic seizure may have been the cause of death and the sharp force trauma was inflicted around this time to prevent the miasma associated with the epilepsy spreading to the community. The woman was then buried in the prone position, further symbolising her aberrant life and/or death.

There are, of course, other possible explanations for this collection of archaeological and biological evidence. For example, prone burials are sometimes carried out on people who have committed particularly harsh crimes (Tsaliki, and Taylor, in Murphy, 2008, pp. 18-32; 102-123). However, if this was the case it is unlikely that such a person would be buried in another person's grave, possibly a relative's grave, and within the community necropolis. Another interpretation could be considering the clavicle fracture unrelated to a seizure and the occipital trauma as cause of a seizure which led to the unusual nailing to release pressure in

the cranial vault.

4.3. Conclusion: Tomb 27 and its wider significance

The bioarchaeological analysis of a single tomb in the Monte Luna necropolis, Tomb 27, has detailed some striking possibilities around life and death and the cultural perception of these during a period of significant cultural change from Punic to Roman times. While, it is clear that T27.2, a young woman, suffered perimortem cranial injuries, the sequence of events and cause of these injuries is not conclusive but give clues and raise the possibility of a significant perimortem funerary rite associated with disease, a nail, and prone burial. This highlights the potential superstitious nature around death most similar to Roman Era culture, suggesting that Roman cultural practices had already been put in place at this early stage of the transition from Punic to Roman culture. Such analyses can focus on the nuances of life in the past, closer to the day-to-day realities of people in past communities in contrast to the larger scale histories of empires and battles.

CRedit authorship contribution statement

Rossella Paba: Conceptualization, Methodology, Formal analysis, Investigation, Visualization, Writing – original draft, Writing – review & editing. **Dario D’Orlando:** Conceptualization, Methodology, Formal analysis, Investigation, Visualization, Writing – original draft, Writing – review & editing. **Anna Willis:** Writing – review & editing. **Carlo Lugliè:** Methodology. **Kate Domett:** Conceptualization, Writing – review & editing.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

No data was used for the research described in the article.

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