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SAINT ATTINIA AND SAINT GRECINIANA:  
OSTEOARCHAEOLOGY OF TWO PALEOCHRISTIAN  
SAINTS FROM VOLTERRA (CENTRAL ITALY)

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SUMMARY

*OSTEOARCHAEOLOGY OF TWO PALEOCHRISTIAN SAINTS FROM VOLTERRA*

*The skeletal remains of Saints Attinia and Greciniana are preserved in a glass box in the Cathedral of Volterra. According to the tradition the two Saints suffered martyrdom by spear and sword around 303 AD, at the time of the Diocletian persecution of Christians. The Division of Paleopathology of the University of Pisa performed an anthropological and paleopathological examination of the skeletal remains attributed to Attinia and Greciniana, which in the Modern Age were arranged in an artistic manner, with several flower decorations and with the long bones tied together. The study demonstrated that the remains belonged respectively to a female individual aged 25-30 years and to a mature female aged 50-55 years, and that the two women showed no anthropological evidences of childbirth. No alterations were observed, except for dental pathologies in both skeletons and degenerative arthritic changes in Saint Greciniana. The bones showed signs of extensive past restorative interventions.*

*Introduction*

“... because in Volterra there were two virgins at that time, who always served God ... they said intrepidly to be Christian ... one had

*Key words:* Saints - Attinia - Greciniana - Paleopathology - Tuscany - Paleochristian Age

the name Attinia and the other Greciniana”. So begins the story of Lodovico Falconcini (1524-1602)<sup>1</sup>, an illustrious “Volterrano” who wrote about these two women, who faced death because they refused a life dedicated to pagan rituals.

The event occurred around 303 AD, the year of the first Christians persecutions promulgated by the Emperor Diocletian (244-313 AD). The edict opened a decade of oppression also in Etruria, and did not spare the city of Volterra.

Attinia and Greciniana were born in the territory of Casole d’Elsa, in the diocese of Volterra; the religious tradition depicts them as young girls, little more than children, and virgins; they were declared sisters, who courageously and faithfully proclaimed and witnessed the Gospel to the Etruscan city, which at that time was part of the Roman Empire. According to the hagiographic tradition, the remains of the two women, who had suffered martyrdom with spear and sword, were buried on the slopes of Monte Volterrano, near the chasm of the Balze. After several centuries of oblivion, the bodies of the two saints were found in 1140 during an excavation by the Camaldolese Monks of the Badia of San Giusto, which had been built in that area. A marble inscription and a lead plate identified the mortal remains of the two Saints, which were immediately translated under the Altar of the Abbey. In 1814, when the Camaldolese monks were about to leave the Abbey, the relics of the Saints were solemnly transferred to the Cathedral, where they still rest today<sup>2</sup>.

Since the discovery of the bodies to date, the cult of Attinia and Greciniana has been strengthened through the centuries, also thanks to their representation in valuable works of art, paintings and sculptures, attributed to local artists and to famous masters such as the Florentine Ghirlandaio (1448-1494) and Cosimo Daddi (before 1575-1630).

In 2005 the Diocese of Volterra entrusted the Division of Paleopathology of the University of Pisa to study the skeletal remains of the two Saints.

*Materials and methods*

The skeletal remains of Saints Attinia and Greciniana were arranged in two glass boxes, in which the long bones were crossed and tied together and the skulls were decorated with flower crowns (Fig. 1). The boxes were opened and the bones examined macroscopically. The age at death was assessed on the basis of cranial sutures<sup>3</sup>, dental wear<sup>4,6</sup>, and morphology of the auricular surface of the coxal bone<sup>7</sup>. The sex was determined on the basis of the morphological features of the pelvis<sup>8</sup> and of the skull<sup>9</sup>.

The stature was calculated by using the formulas of Trotter and Gleser<sup>10</sup>. For non-metric traits, reference was made to the works of various authors<sup>11</sup>. For the enthesal changes we used the work of Robb<sup>12</sup>.

The skulls and long bones were submitted to a radiological study performed with a portable device Gilardoni X GIL S.G. (voltage 220 V, frequency 50 MHz). X-rays were taken at 90 cm focus-film distance. The film used was Du Pont, CRONEX 4 Blue Base, 30x40 cm, and 3M R2, 30x24 cm. All films were manually processed *in situ*.

No samples were taken for further analyses, so as to preserve the total integrity of the remains.



Fig. 1. Glass box with the skeletal remains of Saint Attinia (on the right) and Saint Greciniana (on the left)

*Saint Attinia*

Anthropological analysis confirmed that the individual belonged to the female sex, with a sexual index of -1 for the skull and of -1.36 for the pelvis. The preauricular sulcus was weakly outlined. The anthropological age was that of a young adult, between 25 and 30 years.

A lacuna had been restored on the left parietal bone; it was not possible to ascertain whether it was a post-mortal loss or the evidence of a trauma.

The study of the dentition revealed that the teeth were covered with a thin patina of wax, which had acquired a dark color with time. The third left maxillary and mandibular molars were agenetic, whereas the right maxillary canine and the left mandibular canine had gone lost post mortem. Two non-penetrating caries were observed at the level of the cemento-enamel junction of the first and second left mandibular molars.



Fig. 2. Dentition of Saint Attinia (a) and skull in AP projection (b)



Fig. 3. Arrangement of the bones of Saint Attinia in the box (a) and her long bones (b)

Interventions on the teeth were evident: a first maxillary incisor was inserted in place of the second maxillary left incisor. The other maxillary incisors could not be identified since they were covered by a thick layer of resin and it was therefore impossible to check whether they had been properly inserted into the alveoli. Even the maxillary molars did not correspond to the dimensions and shapes typical of the molars. Similarly, the mandibular central incisors and the second left mandibular premolar did not correspond to the usual size of the incisors and premolars (Fig. 2a). The intervention on some teeth was even more evident owing to some traces of grinding. It can be hypothesized that some of these teeth were false. The radiological AP projection confirmed that several teeth were artificial, as they showed a different radiopaque appearance compared to natural teeth (Fig. 2b). The stature, calculated on the basis of the maximum length of the left humerus and of the femurs, was 151 cm.

As for the non-metric traits, in the skull the bregmatic bone, the epipteric bone on the right and several lambdoid ossicles on both sides were present; in the post-cranial skeleton the left calcaneus had the anterior double facet.

Some bones were tied and glued together (Fig. 3a-b), so that it was impossible to measure some bones and to detect the ergonomic characters. The muscular attachment of the *pectoralis major* and of the



Fig. 4 Dentition of Saint Greciniana (a) and skull in AP projection (b)

*latissimus dorsi* in the left humerus were particularly evident (grade 3); the most evident muscular markers in the left femur were those of the *gluteus maximus*. The other muscular insertions were not particularly marked.

No other lesions were observed in the skeletal remains of Attinia.

### *Saint Greciniana*

Anthropological analysis confirmed that the individual belonged to the female sex, with a sexual index of -0.62 for the skull and of -0.85 for the pelvis. The preauricular sulcus was absent. The anthropological age was that of a mature adult woman, between 50 and 55 years. Analysis of the dentition revealed that the second right maxillary molar was affected by a destructive caries. The third mandibular molars were agenesic, while the left mandibular canine and the first premolar had gone lost *post-mortem*. Also in this case the teeth were covered with a thin patina of wax, which had acquired a dark yellow color



Fig. 5 Arrangement of the bones of Saint Greciniana in the box (a) and her long bones (a)

with time. The third right molar had not reached the chewing plane because it was malpositioned (disodontiasis). Manipulation probably due to aesthetic reasons was observed: the first left molar was inserted into the alveolus of the second left premolar, creating a space between the first and second molars (Fig. 4a). X-ray AP projection evidenced different radiopaque appearance of some elements in comparison to natural teeth, demonstrating that they were artificial (Fig. 4b).

The stature, calculated on the basis of the maximum length of the left humerus, femurs and right tibia, was 148 cm.

As concerns the non-metric traits, the complete supraorbital foramen was present on the left of the skull, while the septal aperture of the left humerus was observed in the postcranial skeleton.

It was not possible to measure some bones and to detect the ergonomic characters because they were tied and glued together (Fig. 5a-b). In the right scapula the muscular marker of the *triceps brachii* was clearly evident (grade 3); in the left humerus the most evident muscular markers were those of the *pectoralis major*, of the *latissimus dorsi*, and of the *anconeus* (grade 3), whereas the muscular insertions of both femurs and of the right tibia were not particularly evident (grade 2).

In the joints, only the auricular surface of the right coxal bone presented evident degenerative changes; cribrosities were present on

the right acetabular cavity. The post-cranial bone showed no evidence of osteoporosis.

No other lesions were observed in the skeletal remains of Greciniana.

### *Discussion*

The skeletal remains of Saints Attinia and Greciniana were moved several times over the centuries. According to the tradition, after the martyrdom the bodies were transported out of the city and secretly buried together with two inscriptions, one on marble and the other on lead, in order to preserve the memory of the two martyrs<sup>13</sup>. Until the year 1000 all traces of the two Saints had gone lost but an unexpected discovery was made during some works carried out by the Camaldolese monks of the Badia of S. Giusto. While they were searching the relics of S. Clemente, they found a stone inscription with the names of Attinia and Greciniana and soon after their skeletal remains were brought to light. According to different sources<sup>14</sup>, the discovery occurred in 1140 or in 1200, after which the relics were positioned under the major altar of the Church of SS.mo Salvatore in Badia. In 1572 restoration works executed in the Church offered the opportunity to create a more suitable space for the remains of the two martyrs, which were arranged in the posterior part of the altar. With time the urn containing the relics began to deteriorate and was substituted on 29 April, 1600. In 1619 the presence of the remains of Attinia and Greciniana are recorded in the Monastery of S. Caterina delle Ruote in Radicondoli, which had just been constructed; this translation may be explained by the fact that it was a common custom to enrich a new church with relics of local saints. Soon after the relics were taken back in Badia. On January 14, 1648 the box containing the remains was opened and examined during a recognition of all the relics of the Saints of Volterra. In 1721 a portion of the ulna of Saint Attinia and a vertebra of Saint Greciniana were extracted from the box to be donated to the Granduke of Tuscany Cosimo III



(1642-1723). Finally, in 1814 the urn was moved to the Cathedral of Volterra, under the altar of Ss.mo Sacramento, so that the relics could be located in a place more favourable to the devotion of the inhabitants of Volterra<sup>15</sup>.

The skeletal remains attributed to Saints Attinia and Greciniana are not complete, since several bones are missing; the circumstances of their burial and their discovery, as well as their multiple translations can explain the lack of several skeletal elements. The bodies of the two saints were buried at the beginning of the 4<sup>th</sup> century AD and brought to light about nine centuries later. We have no information about the type of soil in which they had been buried and about the conditions of preservation, so that we can only hypothesize that some bone elements were lost or not properly collected during the discovery. Furthermore, during the different translations, some bones were probably donated as relics to religious institutions or to illustrious personages; the donation of two bones to Cosimo III, Grand Duke of Tuscany, was recorded in 1721, but other similar events may have occurred without there being any mention.

The anthropological study revealed that the two skeletons belong to female individuals, aged 25-30 and 50-55 years. The interval in the age at death of Saint Attinia and Greciniana has led to rule out the possibility that these two individuals were real sisters. The work by Fei “*Memorie dei Santi, delle reliquie ed altri particolari della Città di Volterra*” written between 1608 and 1614, never published but preserved as a manuscript in the Library of Volterra and in the Real Library of Bruxelles, states that both Attinia and Greciniana belonged to the Taviozzi family, thus testifying that the two women were relatives<sup>16</sup>. A tombstone of 1617 explicitly qualifies Attinia and Greciniana as sisters<sup>17</sup>. However, this statement belongs to a late tradition, which may have assigned a kinship not corresponding to reality; in fact, the two martyrs may have belonged to the same family without being blood sisters but sisters in faith.

Another detail about the age of the martyrs is disproved by anthropological analysis. In the work of Falconcini it is stated that “They were very beautiful, young and not adult women, as is visible also by the teeth, which I saw by myself in their translation”<sup>18</sup>; again, Fei reports that “who has seen their relics, affirms that from the small dimensions of the teeth it could be conjectured that they were martyred at a young age”<sup>19</sup>. However, Raffaello Maffei in the *Historia S. Actinae et Greciniana in senas lectiones diducta* of 1519 is the only author who does not express himself with regard to the age at death of the Saints, as he cautiously affirms that it is not clear whether they were young girls or adult women<sup>20</sup>. Indeed, our study confirmed a relatively young age for Saint Attinia, but demonstrated a mature age for Saint Greciniana. Also in this case, the attribution of a young age to both Saints could be the erroneous information of a late tradition, likely to have been reinforced by the fact that all sources defined Attinia and Greciniana as virgins. In this respect, the pelvic bones of both skeletons showed no marked preauricular sulci, attesting that the two women had not had any deliveries; this is compatible with the tradition according to which Attinia and Greciniana were virgin, taking into account that in the past married women of that age generally had children.

According to the tradition the two young women were submitted to martyrdom, one was decapitated with a sword and the other killed with arrows<sup>21</sup>. In his work Fei argues that “Attinia had the head cut and Greciniana had the chest pierced”; and then “on the body of Attinia the traces of the decapitation were observed; and the ribs of Greciniana appeared randomly damaged by deep incisions”<sup>22</sup>; this same version is reported by most of later texts. However, on an inscription found in the Badia Camaldolese and now preserved in the Etruscan Museum Guarnacci it is reported that Attinia was killed with a spear and Greciniana was decapitated with a sword<sup>23</sup>. However, the written sources are discordant about who was killed through de-

capitation and who with a weapon in the chest. Paleopathological examination did not evidence any signs of trauma in the preserved cervical vertebrae and ribs of the two saints, giving no support to the historical sources. However, as not all the bones are preserved, absence of evidence cannot be considered evidence of absence, and a violent death of these individuals cannot be ruled out.

### *Conclusions*

The anthropological examination of the skeletal remains attributed to Saints Attinia and Greciniana, housed in the Cathedral of Volterra, revealed that they belonged respectively to a female individual aged 25-30 years and to a mature female aged 50-55 years. These results, in particular the age of Greciniana, contrast with the tradition that described the Saints as being very young, little more than children; furthermore, owing to the difference in age they were unlikely to be sisters. On the other hand, the tradition about the Saints is very ancient, and dates back to the 4<sup>th</sup> century BC, which makes the veracity of the information about their lives doubtful in some details. However, the two individuals showed no anthropological evidence of childbirth, which does not contradict the possibility that they were virgins. The detailed observation of the bones was prevented by the extensive restorative interventions, which consisted in repositioning of the teeth, substitution of teeth with false elements, use of wax to cover some teeth and to close a bone lacuna, gluing and tying together of the bones. Both individuals showed evidences of dental pathologies, and Saint Greciniana also of degenerative osteoarthritis of the right hip. No evidence of traumas, referable to the martyrdom and reported by the historical sources, was detected.

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Acknowledgements: We thank Prof. Gino Fornaciari for his revision of the text and Marcello Gambini for his technical support.

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*The study of two Saints from Volterra*

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19. Ref. n. 2.
20. Ref. n. 2.
21. Ref. n. 1.
22. Ref. n. 2.
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Revised: 19.03.2019  
Accepted: 25.05.2020

