ESTUDOS ARQUEOLÓGICOS DE OEIRAS

Volume 17 • 2009

CÂMARA MUNICIPAL DE OEIRAS
2009

Estudos Arqueológicos de Oeiras é uma revista de periodicidade anual, publicada em continuidade desde 1991, que privilegia, exceptuando números temáticos de abrangência nacional e internacional, a publicação de estudos de arqueologia da Estremadura em geral e do concelho de Oeiras em particular.

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ESTUDOS ARQUEOLÓGICOS DE OEIRAS
Volume 17 • 2009 ISSN: 0872-6086

Editor científico – João Luís Cardoso
Desenho e Fotografia – Autores ou fontes assinaladas
Produção – Gabinete de Comunicação / CMO
Correspondência – Centro de Estudos Arqueológicos do Concelho de Oeiras
Fábrica da Pólvora de Barcarena
Estrada das Fontainhas
2745-615 BARCARENA

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Orientação Gráfica e
Revisão de Provas – João Luís Cardoso e Autores
Montagem, Impressão e Acabamento – Europress, Lda. – Tel. 218444340
Depósito Legal N.º 97312/96

VOLUME COMEMORATIVO DO XX ANIVERSÁRIO

do

Centro de Estudos Arqueológicos do Concelho de Oeiras

(Câmara Municipal de Oeiras)

1988 - 2008

Editor Científico:
João Luís Cardoso

CÂMARA MUNICIPAL DE OEIRAS
2009

Estudos Arqueológicos de Oeiras,
17, Oeiras, Câmara Municipal, 2009, p. 117-131

VIOLENCE AND DEATH RITUALS AMONG MESOLITHIC MEN FROM MUGE (PORTUGAL): EVIDENCE FROM MOITA DO SEBASTIÃO

Miguel Telles Antunes*

1. INTRODUCTION

Human skull and mandible material from well-known Mesolithic (*ca.* 7800 to 6500 BP) sites near Muge, Portugal has been dealt with (ANTUNES & CUNHA, 1992-1993).

Although anthropological studies on Muge have been published since the 19th century, crushing and other modifications undergone by many specimens were ascribed to the weight of overlying sediments. This was refuted by us (*loc. cit.*). It had become evident that these modifications are indeed spectacular lesions resulting from high violence at death, most related to death rituals. Forensic Medicine methods have been most useful. For anatomical nomenclature, see Schwartz (1995).

Our interpretation was corroborated by the obvious distortion of the age at death spectra for the Cabeço de Arruda and Moita do Sebastião sites (idem) which show an unexpected prevalence of young adult males. The sites do not therefore correspond to normal cemeteries. They may instead be regarded as ritual killing areas.

Our results were further corroborated by biochemical evidence. Ferruginous stains on some skull bone surfaces around important traumatic lesions were ascribed to spectacular hemorrhage that certainly occurred (*loc. cit.*). Or, some protein compatible with blood ones has been preserved, as shown by several methods (Antunes *et al.,* in print). Aggression, collective in several cases, became still more evident.

However, our previous studies mainly dealt with the largest collection, that from Cabeço da Arruda. This paper presents complementary, hitherto unpublished results concerning Moita do Sebastião.

The concerned specimens were collected by our late Friend, Octávio da Veiga Ferreira, whose field excavation research, carried on during his holidays, was generously and near entirely supported by the late Olga, Marchioness of Cadaval, landlord of the Muge domain where the sites lay. She not only supplied the workers but granted Veiga Ferreira, as well as the Archeologist Jean Roche, full hospitality in her Mansion at Muge. Veiga Ferreira retained the concerned specimens that later on were granted us by him. All are deposited at the Museum of the Academia das Ciências de Lisboa.

The study presented here was accomplished by the author and our Friend and Colleague Armando Santinho Cunha, whose serious health and other personal problems unfortunately led him to cease his collaboration.

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2. DESCRIPTION

The present study concerns four skulls from Moita do Sebastião that have been referred along with other specimens (ROCHE, 1972; FEREMBACH, 1974):

- male adult skull and mandible, M 5 according to Roche (id.) and to Ferembach (id.), "Maurício" as his nickname by Veiga Ferreira;
- female adult skull and mandible 12 F, idem;
- young child skull, mandible and cervical vertebrae, no number;
- very young child skull cap, no number.

As verified by our observations as well as by X-Ray, all the specimens were carefully restored, apparently for exhibition purposes.

Excellent as it was, the preparation work also led to very negative results. It indeed entirely masked lesions and other features under a thick plaster covering, apparently mixed with bone powder. Such covering was often very difficult to discriminate from bone. This masking induced in error: in previous anthropologic works, some much modified characters as the skull profile were regarded as if all was correct. We (M.T.A.) therefore had to clean off the plaster excess.

Cranial and dental characters will subsequently described. We will try to characterize sex and age at death and search for archaisms, pathologies, violence or traumas in lifetime, death causes, as well as lesions at death or immediately after.

M5 male skull and mandible (Fig. 1, 3 skull prior to cleaning; Fig. 2, 4-7 the same after cleaning; mandible, Fig. 8-10).

A robust male; Cro-Magnoid type according to Ferembach (1974, p. 43). Large parts were hidden by plaster prior to cleaning.

Coronal suture dentate in the external third from the right side; the remaining portion is lacking. Sagittal suture is mutilated on the anterior third and dentate elsewhere, and partly synostosed on some parts. Lambdoid suture dentate; left and right small wormian bones.

The frontal is rather oblique and shows a supra-orbital torus.

Mastoid processes are well developed. The posterior branch of the zygomatic process goes beyond the *porion.* Bone rugosities for the *pterygoideus internus* are very marked on the left side, and less so on the insertion areas for the other masticator muscles. The back neck rugosities for muscle insertions (including in special the superior and inferior curved lines, the crest, and the occipital protuberance) are rather weak. Malar bones prominent. Piriform opening is wide. Oval, large-sized orbits. Nasal bones high and antero-posteriorly curved.

Dentition is well preserved. Void 24 and 25 alveoli *(post mortem);* linear hypoplasies on the radicular third part, and from the middle third of the vestibular surface from 13 to 23; no caries; heavy abrasion on the palate surface and on the border of upper incisors; 37 has but two small abrasion areas with exposed dentin, none in 38; 47 and 48 only show enamel abrasion facets, as in the corresponding upper incisors.

No *ante mortem* lesions with survival were observed. On the other hand, there are several lesions that it seems possible to recognize in their chronologic sequence as follows:

- three contusing lesions on the right parietal bone that seem enough as *causae mortis,* all produced by means of a pointed implement with diverse angles of incidence – the somewhat oblique uppermost one was oriented

downwards and rearwards, the quite vertical middle one was downwards directed, and the lower lesion from the rear and slightly upwards (see NEVES, 1906, p. 249-352).

- another lesion was produced on the mounting branch (nasal process) of the right maxilla, reaching the right orbit. It was produced by violent impact of a downwards-directed pointed, contusing implement that also produced linear fractures extending to the nasal bones and even to the nasal process of the left maxilla (PUEYO *et al.,* 1996, p. 215-236).
- one small, non-piercing lesion on the left parietal bone, with wedge-shaped borders and no bone remodeling, obliquely directed downwards and forwards.
- lesion on the right parietal and on a small area of the temporal bones: it resulted into the dehiscence of the temporal-parietal suture, and to the over thrust of the temporal endocranial surface on the lower anterior part of the right parietal external table. The piercing contusion is oval-shaped, with its oblique axis directed upwards and forwards. The upper border is wedge-shaped. The other borders of the lesion are vertical. Behind the posterior border there is a rectangular area where the diploe is exposed.
- a lesion similar to the preceding one is present on the left parietal.
- a large piercing lesion concerning the frontal and partly the right parietal, obliquely directed rearwards and inwards. Much bony matter was lost.
- another lesion on the frontal, obliquely-directed leftwards and downwards, also with much loss of bony matter, exposes the diploe. It irradiates linear fractures that extend to the glabella and to the right side of the coronal suture.
- crushing lesion with destruction of the ethmoid and sphenoid bones, both the pterygoid apophyses, and most of the palate.
- lesion with the destruction of the *foramen magnum* and over thrust by the occipital on the temporalia and part of the parietals; there are losses of part of both the zygomatic processes with leftwards deviation of the whole face.

The brain cavity is filled by many shell and charcoal fragments.

The mandible is very robust. The lower border is angular. The chin is prominent. Goniac angle 120 degrees (right side) and 118º (left). Insertion surfaces for masticator muscles are very strong. All teeth are preserved on the dental arch. There are *post mortem* fractures on 31, 41 e 42. Abrasion is weak on all teeth except 36 and 46. These teeth (36 and 46) are of a 5-cusp type with five small abraded areas corresponding to the cusps. Vestibular surfaces of 43, 44, 33 and 34 show linear hypoplasies.

F 12 feminine skull and mandible (Fig.11-16; Fig. 17-19 mandible)

This feminine specimen was so much plaster-covered that several features were hidden prior to cleaning. The skull is rather weak, in contrast to the very robust M5 skull.

Superciliary ridges are not much prominent. The frontal is nearly straight. The posterior branch of the zygomatic process does not go beyond the porion. Mastoid apophyses and external occipital protuberances are moderately developed. Antero-posterior diameter of the *foramen magnum* exceeding the transversal one. Osteophytoses are present on the posterior half of the same foramen.

Canine crest is not prominent. Coronal suture obliterated except in a portion of the left third part, where it shows a labyrinth aspect. Left pteric bone is triangular. There is no right pteric bone. Sagittal suture obliterated, showing remnants of a dentate pattern. Lambdoid suture is of a dentate type; there are several wormian bones on both sides of this suture at *lambda*'s level. Nasal bones are high and antero-superiorly concave. Pyriform opening is narrow. The waving palato-maxillary suture is slightly convex posteriorly.

Void 21 and 25 alveoli. Heavy abrasion of all teeth. Occluso-proximal (OM) caries on 16 and 26. Only one root is preserved in 28. There are some bone remodelling areas in the former 18 alveol – loss of roots in lifetime, except for the partly preserved distal root. There is a palatine torus at the level of 27 and 28. Punctiform hypoplasies on the vestibular surface of 24. Additional hypoplasies may have been present, being later eliminated by abrasion. Large-sized infraorbital foramina.

On the right frontal there are parallel, slightly rearwards and upwards oblique cut marks. On the left frontal, a nearly symmetrical cut mark is present. Even if vascular grooves are present in a few modern skulls (i.e. in a minority of individuals), as we verified, there are some unmistakably cut marks on many Mesolithic Muge skulls. This evidence points out to scalping.

An important, 6 by 5.5 cm contusing-piercing lesion, exposing the diploe concerns the right side of the frontal and the right parietal. Contusing-piercing lesions are present on the floor of both orbits, two on the right one, four on the left orbit. The nasal septum is broken and mutilated, and presents a marked rightwards deviation. At the right orbit's inner part there is one penetrating alien body exposed for about one centimeter. The left orbit presents a heart-shaped formation that extends into the optic foramen. Radiate fractures are numerous on the parietals, right temporal, right occipital condyle, and both malar bones. There has been dehiscence of the temporal bones, more marked on the right side. The occipital surface shows a pigmented stain.

The mandible shows a rounded profile. Chin is not prominent. Goniac angle, 120 degrees (right side) and 123 (left side). Bone rugosities are not marked. Dental arch still presents all teeth but 38 and 48, whose loss in life is compatible with partial bone remodelling. Abrasion is much accentuated in all teeth; in their occlusal surface, enamel is reduced to a peripheral fringe and dental crowns became much shortened. Vestibular surfaces of 44, 35 and 36 show linear hypoplasies. 31 and 41 underwent recent fracturing.

Not numbered ca. 16 month infant skull, mandible and six associated cervical vertebrae (Fig. 20-25)

This specimen is from a 16 month child.

Most of the linear type coronal suture is wanting. The dentate sagittal suture is also much incomplete. Dentate lambdoid suture with wormian bones on both sides. Linear metopic suture, abnormally short for the presumed age. Nasal bones straight and directed slightly downwards. Broad pyriform opening.

The mandible defines a very obtuse angle. The symphysial suture is obliterated. The mandible condyles show growing striae.

Teeth are in occlusion: 52 to 62, and 72 to 82. The 73 and 83 were erupting, while 53 and 63 are still in their crypts. The destruction of the bone cortex exposed the germs of 54, 55, 64, 65, 74 and 84. The 52 to 62 show thermoclastic effects. No hypoplasies were seen. Occlusion Class 1, according to Angle. The upper incisors were used. The 53 and 83 germens are brownish red-colored, this being compatible with hemorrhage.

The brain cavity is filled by a firm, white to grayish substance composed (according to Prof. Celso Gomes) by particles of calcite, quartz and K-feldspar, by that decreasing order, with tiny black or brown spots. Most of the frontal and right parietal have been destroyed. Both parietal bones are much broken close by the sagittal suture and have been upwards displaced. There are multiple, differently sized contusing-piercing lesions on both temporal bones, sphenoid, frontal, left parietal, nasal and malar bones, maxillaries, as well as on the mandible.

The neck of the left condyle of the mandible is broken and penetrates into the glenoid fossa. The right condyle was displaced into under the temporal bone.

Alien bodies similar to that already referred to in the F 12 skull are present in the left orbit and the nasal opening.

The nasal septum has been destroyed.

Brown stains are present on the frontal, left parietal, and occipital bones, as well as on the left side of the mandible.

The anterior and posterior arches of all the cervical vertebrae are broken; the fragments have been displaced. The whole mass of cervical vertebrae has also been displaced, and is lodged between the two mandible branches.

Not numbered new-born skull cap (Fig. 26-28)

There is also a much deformed, incomplete new-born child's skull cap.

Linear coronal, sagittal and lambdoid sutures are obvious. There are small wormian bones on the lambdoid suture's right side, but no metopian suture. At the bregma's level there is a lozenge-shaped opening, two of its sides being incomplete; this opening is compatible with the bregmatic fontanel. Most of the brain cavity is empty, although it still contains some charcoal and shell fragments. Part of the left orbit is filled with gangue. Yellow to light brownish pigmentation is present on both the parietals and on the occipital bones.

There are multiple, linear fractures on the frontal and parietal bones (see PRANGE *et al.*, 2003, p. 143-145).

3. DISCUSSION

In this chapter we will successively discuss age at death, sex, morbidity, trauma and death causes, morphologic types and archaic features.

Age at death

We only studied four individuals' remnants whose ages at death are as follows:

– a new born;
– a 16 month child;
– an adult male about 30 to 40 years old at death;
– an adult female, 40-50 at death.

Age was estimated considering synostosis as well as dental abrasion as far as adults were concerned. For the child, dental development and the absence of diploe were taken into account, as for the new-born the skull cap dimensions and the presence of a large bregmatic fontanel.

Sex

Sex cannot be identified as far as children are concerned.

The M 5 skull is recognized as masculine because of its robustness, the obliquity of the frontal, the strong occipital rugosities, and the posterior branch of the zygomatic process that extends rearwards beyond the *porion*.

The F 12 skull is from a female for its weakly developed superciliary ridges, near vertical front, weak mastoid apophyses and external occipital protuberance, as well as weak canine crests.

Morbidity

The M 5 skull shows dental hypoplasies and abrasion, but no caries.

On the other hand, in the F 12 specimen there are not only severe dental abrasion and hypoplasies, but also caries and osteophytoses.

Milk teeth are abraded in the child. No caries or hypoplasies were seen.

Trauma

In all cases, traumatic lesions may have been causes of death. We cannot ascertain the pertaining chronologic order as performed on each individual. All the specimens show ferruginous stains close by the traumatic lesions (but not elsewhere) and compatible with hemorrhage. The aggression implements were contusing or cutting-contusing, and are compatible with deer-point axes as those known from Cabeço da Arruda.

The crushing lesion shown by the M 5 skull was performed by means of a strong, thick and heavy implement, probably a cudgel.

Penetrating alien bodies are present in both adult skulls.

After cleaning, the adult skulls show what has been interpreted as cut marks on the frontal, either on both sides (M 5) or only on the right side (F 12). Such marks have tentatively been regarded as related to scalping.

This is prone to discussion. In human skulls there are sometimes oblique sulci on either both sides of the frontal or just on one side that correspond to superficial veins. Of course, these sulci are not related to trauma or scalping actions.

Nevertheless, we carefully observed features like these whose sections seem to point out to cutting implements as the small flint blades that are common at the concerned localities. Another Epipalaeolithic skull from the same Muge area but from Cabeço da Arruda clearly shows it through parallel, right cuts on the upper part of the skull, as observed by Antunes & Santinho Cunha.

Furthermore, there is evidence of typical enough transversal cuts on the frontal that cannot at all be confused with vessel tracks They instead are compatible with scalping, as it seems by comparison with a "classical" scalped skull from the United States (HASS [Org.], 1994, p. 102, fig. 71a – specimen from Burial 72, Norris Farm 36, central Illinois).

Morphologic types and archaic features

There is some variability as far as adults are concerned. The pyriform opening is broad in the M 5 skull, but narrow in the F 12.

As archaic characters, there is a torus in M 5 skull that also shows a very clear, 5-cusp pattern in the molars.

4. CONCLUSIONS

New observations carried on the cleaned skulls and mandibles from a 30 to 40 man and a 40 to 50 years old woman, plus the skull and mandible from a 16 month child and the skull cap of a new-born child, all from Moita do Sebastião, as well as comparisons with Cabeço da Arruda specimens support the following conclusions.

1. No *ante mortem* lesions with survival were seen.
2. As at Cabeço da Arruda, there was violence that had not been recognized before, as shown by:
   - multiple, differently-sized contusing-piercing lesions, resulting into the dehiscence of bones and sutures, and the over thrust of bone elements;
   - multiple, linear impact fractures, sometimes in an radiating pattern, or exposing the diploe with much loss of bony matter;
   - parallel, oblique cuts that may be related to scalping; indeed scalping is obvious on a Cabeço da Arruda specimen and may have been performed in other cases;
   - penetrating alien bodies;
   - crushing lesion with destruction of the ethmoid and sphenoid bones;

- in both adult skulls, the nasal septum was broken and became mutilated with a marked rightwards deviation;
- lesion with the destruction of the *foramen magnum* and over thrust by the occipital on the temporals and part of the parietals;
- in all cases, unevenly distributed traumatic lesions made at death, many of which are enough or in excess to be *causa mortis.*
- in all specimens there are ferruginous stains close by the traumatic lesions but not elsewhere that are compatible with hemorrhage.

3. Violence was performed on individuals since the childhood and on both sexes.
4. The contusing or cutting-contusing aggression implements are compatible with deer-point axes as those known from Cabeço da Arruda.
5. At least in some cases, scalping has been performed at Cabeço da Arruda, as previously recognized by Antunes and Santinho Cunha. The eventual occurrence of scalping among the Epipalaeolithic populations from Muge area is thus most probable, although evidence from Moita do Sebastião is not apparently so conclusive.
6. Violent, crushing lesion shown by the M 5 skull was performed by means of a strong, thick and heavy implement, probably a cudgel. However none of the scarce Moita do Sebastião specimens is so much crushed as certain Cabeço da Arruda ones.
7. Data recognized now for Moita do Sebastião are nearly identical to those about Cabeço da Arruda; hence the situation is closely similar in both cases. This corroborates our previous interpretation of ritual killings that were carried on these two sites and maybe at other Mesolithic ones in the same area.
8. No differences in ritual behavior, in pathologies, violence and death rituals have been detected. We may therefore conclude that the whole data point out, even more strongly than before, to populations from the same ethnic group.

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All specimens and especially M5 have been cleaned by M. Telles Antunes from much added material (plaster plus ?bone powder) during reconstruction work. Although more nice for exhibition purposes, this reconstruction did not depict the true aspect of the specimen. It significantly modified the skull's shape and profile and concealed spectacular, traumatic modifications.
Photos by J. L. Cardoso and F. Ladeira (n.º 1, 3).

M5, male skull and mandible

Fig. 1 and 3 – The M5 skull as formerly reconstructed with much material (plaster, etc.) added as studied by Ferembach (1974), who ascribed it to a "cromagnoide" (idem, p. 45) without taking into account the reconstruction-induced modifications:
- 1, *Norma frontalis.*
- 3, *Norma lateralis.*

Compare with new photos after cleaning (fig. 3-8).

Fig. 2, 4-7 – The M5 skull after cleaning. Compare with Fig. 1 and 3.
- 2, *Norma frontalis.* Broad, piriform nasal opening, maybe of racial interest. Remark the bulging frontal torus. Lesions: bilateral holes in both the ascending processes of the maxillaries, loss of the zygomatic processes, loss of the skull lateral wall including parts of the parietal and malar bones at the level of the lower part of the right parietal.
- 4, *Norma lateralis,* left side. Male sex characters are obvious, as the posterior end of the zygomatic process extending rearwards beyond the *porion,* and the large mastoid process. Very large, traumatic lesions are very important: the sinking of the occipital bone and the loss of large parts of the temporal and malar bones. The larger hole is (as well as other ones) is fulfilled by ashes, sand and small coal and shell fragments. An oblique, downwards and anteriorwards very strong blow by a contusing implement (compatible with a deer-antler pointed ax) resulted in the loss of bony material from the parietal with successive, wedge-shaped exposure of cortical bone, of the diploe and the internal table.
- 5, *Norma verticalis.* Heavy lesions by a contusing-perforating implement, probably a deer-antler pointed ax and/or a cudgel on the frontal and both parietals are shown, as well as a lesion with comminutive fracturing and bone sinking on the right parietal as a result of an intensive blow.
- 6, *Norma basilaris.* Loss of part of both maxillaries, the horizontal part of the palatines, of both zygomatic processes, the temporals and the occipital. The remaining part of the occipital is sunk into the cranial cavity with luxation of the lambdoid suture. There are a few wormian bones. The left premolars have been lost *post mortem,* the corresponding alveoli being empty. The incisors and canines show heavy attrition. The last molars (M^3) only show wear facets on the lingual side.
- 7, *Norma occipitalis.* The rear part of the sagittal suture is synostosed. Lambdoid suture is preserved. Wormian bones can be seen in both left and right sides. The left parietal has partly been lost. The displaced occipital is sunk into the cranial cavity.

Fig. 8-10 – The masculine, very robust M5 mandible. Chin is prominent, and the insertion surfaces for masticator muscles very strong. All teeth are preserved except for some missing parts as a consequence of *post mortem* fractures.
- 8 – *Norma frontalis.*
- 9 – *Norma lateralis,* right side.
- 10 – Occlusal view.

F 12 feminine skull and mandible

Fig. 11-16 – The F 12 skull after cleaning. Specimen regarded as "protoméditerranéen" by Ferembach (1974, fig. 14 – sagittal profile). Important impact lesions were concealed by added plaster plus ?bone powder.

- 11, *Norma frontalis.* Remark the presence of alien matter corpuscles in the nasal aperture and the orbits. The maxillaries (and the mandible) show distinct, not remodelled linear fractures; this points out to fracturing just prior to/or at death. The left first incisor (I^1) was lost *post mortem* but not during excavation or later. All the heavily worn teeth have tartar deposits.
- 12, *Norma lateralis,* left side. Loss of the zygomatic process.
- 13, *Norma lateralis,* right side. A very large, previously unaccounted perforating lesion became exposed after cleaning. It exposes the diploe on the right parietal and irradiates into the squamosal suture. It is a typical radiating fracture. There are two more or less parallel, oblique marks on the lateral surface of the frontal, closely similar to other ones in skulls from Cabeço da Arruda (Antunes & Cunha, 1992-1993). Although in some skulls there are vascular grooves on the lateral parts of the frontal's surface, careful observation seems to point out to cuts. This may be open to discussion. This feature is common among the Cabeço da Arruda and Moita do Sebastião populations which certainly were closely related.
- 14, *Norma basilaris.* Note the dental attrition and the impact-fracturing of the occipital condyles. The left and right 1st molars (M^1) show occluso-proximal (OM) caries. The left last molar (M^3) was destroyed in life except the roots, probably by caries. The right M^3 was lost in life.
- 15, norma verticalis.
- 16, *Norma occipitalis.* Parts of the sagittal and lambdoid sutures are synostosed. There are a few small left and right wormian bones, as well as many small holes that may be compatible with osteitis.

Fig. 17-19 – The F 12 mandible, much weaker than the preceding one. It shows a rounded profile and the chin is not prominent. Noi marked bone rugosities. Dental arch presents near all teeth, that are strongly abraded.

- 17 – *Norma frontalis.*
- 18 – *Norma lateralis,* right side.
- 19 – Occlusal view.

Not numbered, ca. 16 month infant skull, mandible and six associated cervical vertebrae

Fig. 20-25 – Infant skull & mandible after cleaning. Not described nor figured by Ferembach (1974).

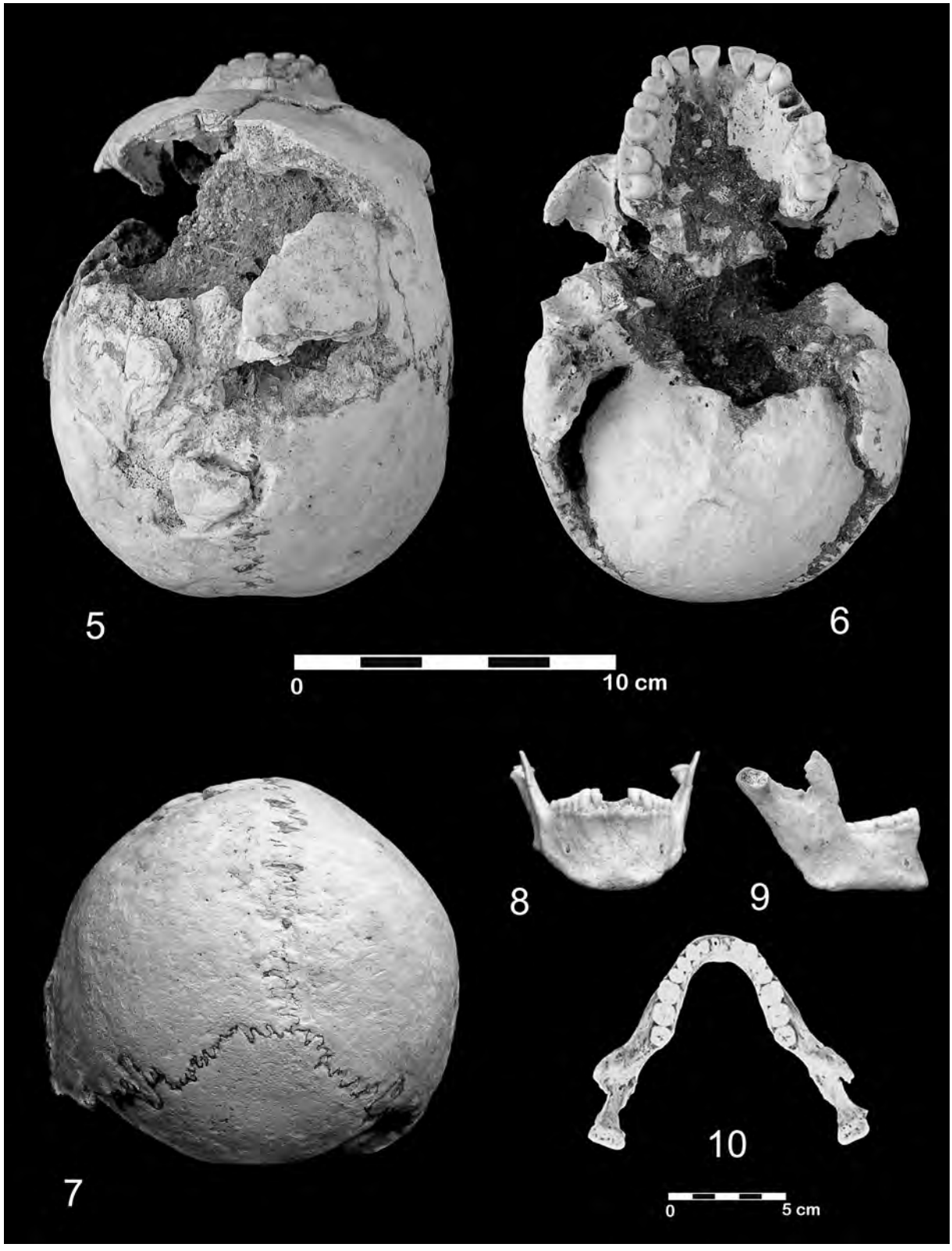
- 20, *Norma frontalis.* The fore teeth show a centered occlusion pattern. An alien matter corpuscle is placed in the left orbit. Metopic suture is barely distinct, but is could have been lost along with a large part of the frontal. There is evidence of traumatic lesions and intense fracturing with bone displacement.
- 21, *Norma lateralis,* left side. Loss of the zygomatic process; contusion lesion on the left temporal.
- 22, *Norma lateralis,* right side. There are traces of contusions on the temporal, and on the mandibular ramus. Much parietal bony matter has been lost at death.
- 23, *Norma verticalis.* There are brownish (darker) stains on the left parietal and on the right part of the frontal. The anterior and right lateral parts of the skull cap are mutilated. Both parietals show comminutive fractures.
- 24, *Norma basilaris.* Sinking of the first cervical vertebrae's anterior and posterior archs between the branches of the mandible can be seen. Loss of the occipital condyles.
- 25, *Norma occipitalis.* Brownish pigmentation (darker stains) on the preserved bone surfaces. Extensive mutilation. Numerous small wormian bones are shown along the lambdoid suture.

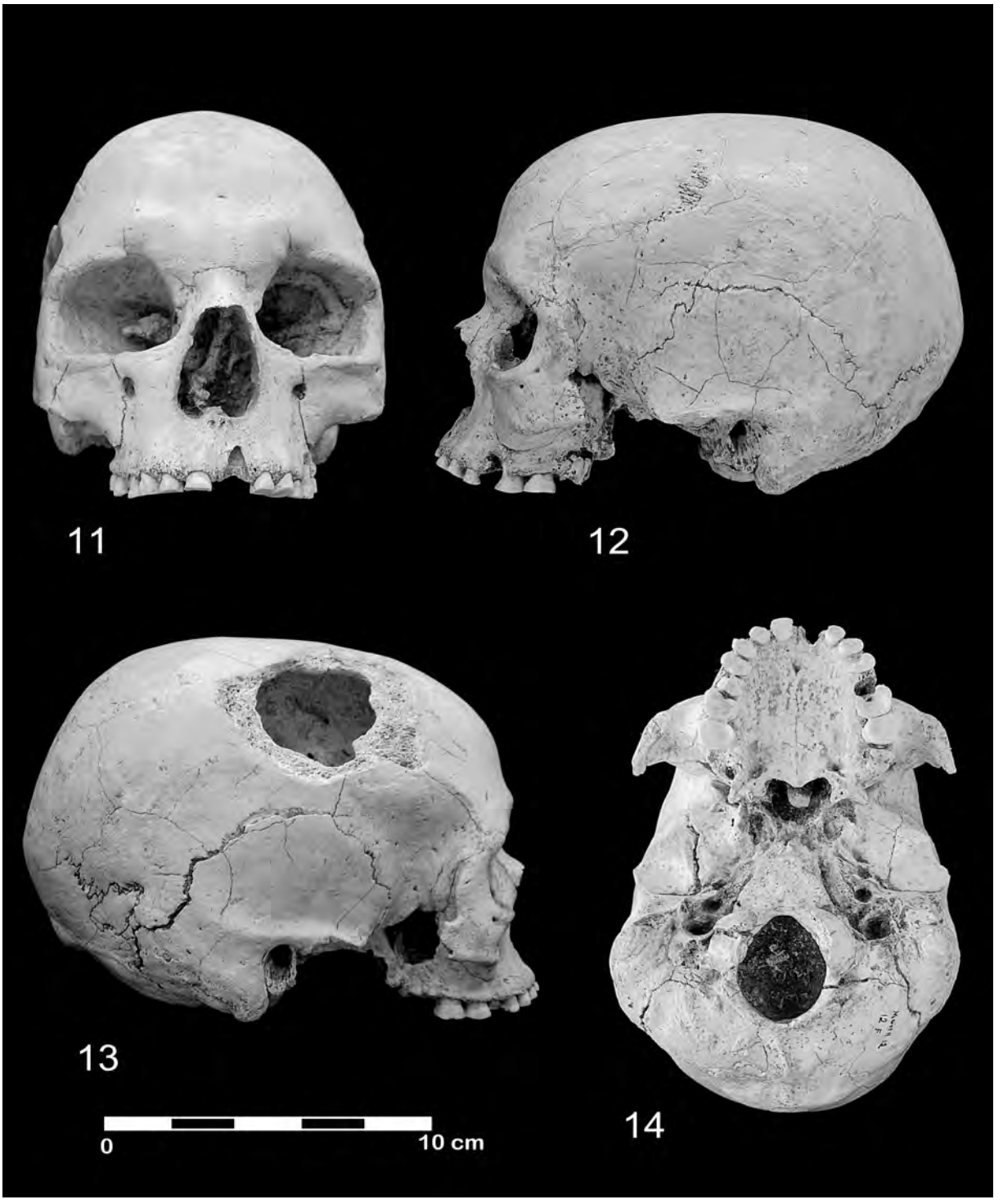
Not numbered new-born skull cap

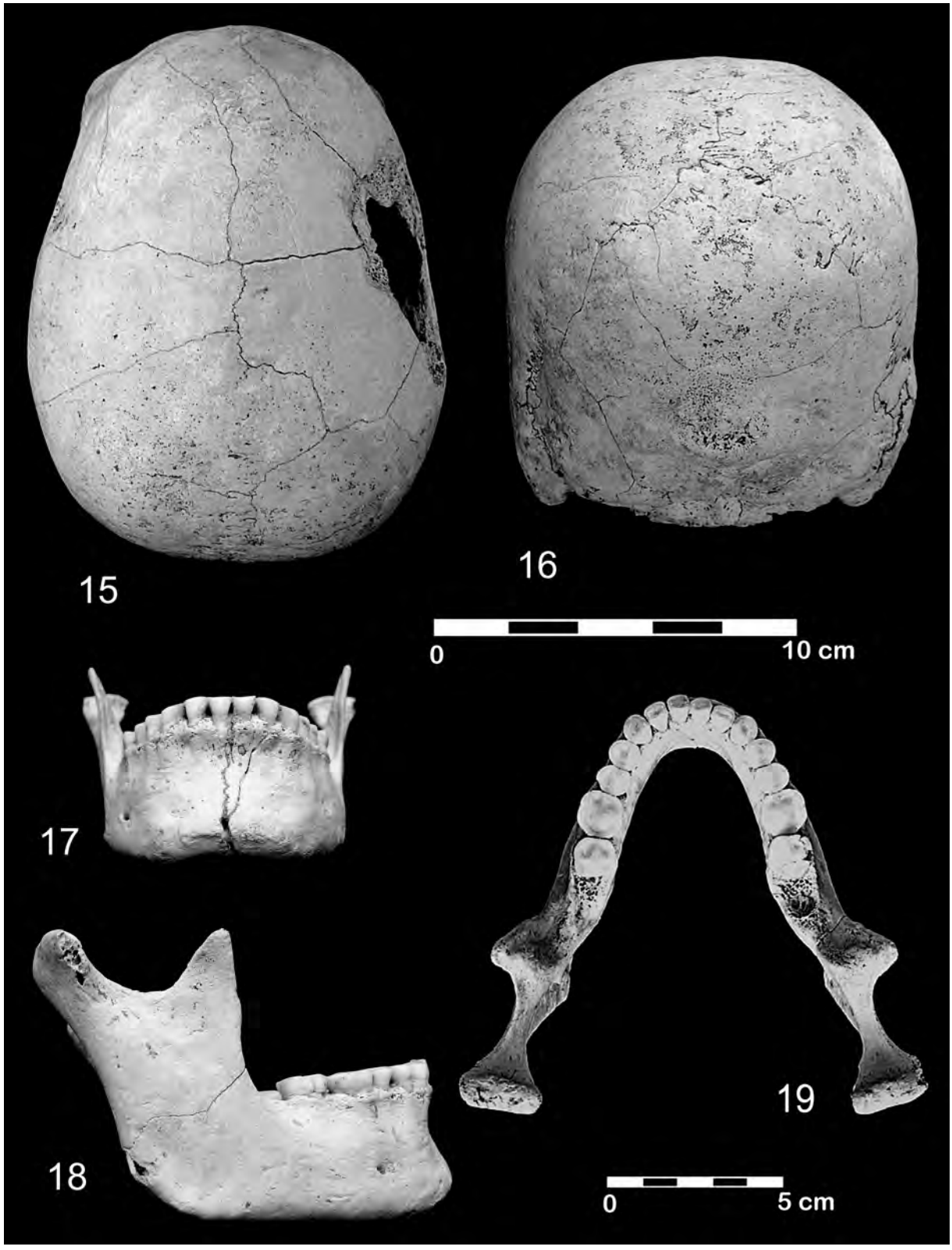
Fig. 26-28 – A deformed, incomplete new-born child's skull cap. Linear coronal, sagittal and lambdoid sutures. Small wormian bones on the right side. At the bregma's level there is an incomplete lozenge-shaped opening that is compatible with the bregmatic fontanel. There are multiple, linear fractures on the frontal and parietal bones.

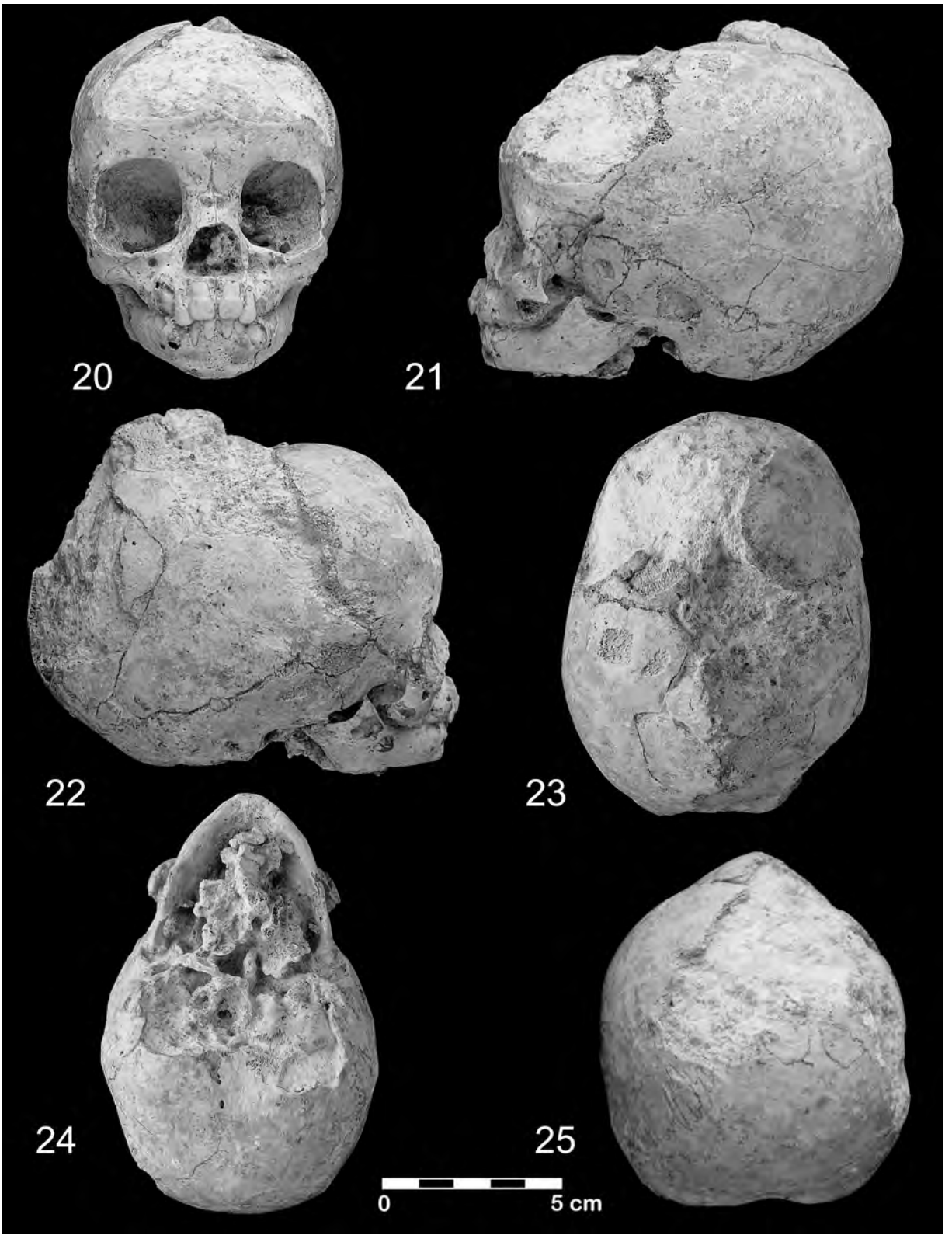
- 26, *Norma frontalis.*
- 27, *Norma lateralis,* left side.
- 28, *Norma verticalis.*

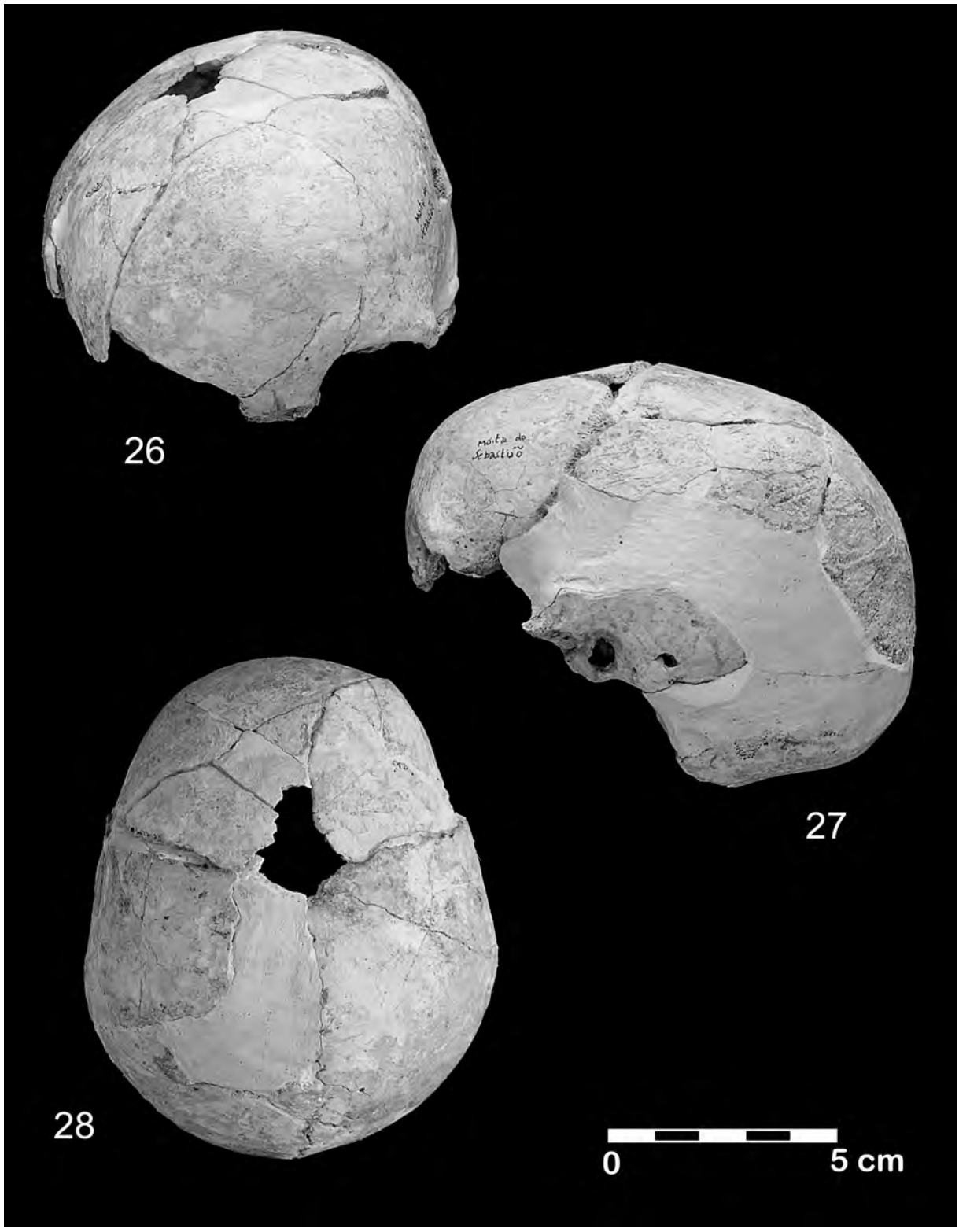

1
2
0
10 cm
3
4
0
10 cm


5
6
0
10 cm
7
8
9
10
0
5 cm


11
12
13
14
0
10 cm


15
16
0
10 cm
17
19
18
0
5 cm


20
21
22
23
24
25
0
5 cm


26
27
28
0
5 cm