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THREE TREPHINED EARLY BRONZE AGE SKULLS FROM BOHEMIA

ABSTRACT: Trepanations of Únětice-Culture skulls from the Early Bronze Age are relatively rare in the anthropological literature. In this study, three new finds of trephined skulls of Únětice Culture (Early Bronze Age) from Bohemia are described, constituting another contribution to the palaeopathological study of Bohemian prehistoric populations. The first skull was found at the site of Hřiby near Kolín. The trepanation hole is located on the left side of the frontal bone. It is round and measures about 2.2 cm in diameter. The edges of the trepanation hole exhibit clear traces of healing. The second skull comes from Polepy near Kolín. An oval trepanation hole showing advanced traces of the healing process was found on the right parietal bone in the region of the bregma. The size of the hole is 1.0×1.8 cm. The third skull was also found at Polepy near Kolín (skull No. 22). A round trepanation hole of 1.5 cm in diameter is located in close proximity of the right frontal boss. Unfortunately, its surroundings, including the edges of the hole are somewhat corroded so that we cannot decide with certainty where there were traces of the healing process on the bone or whether the patient survived the operation or not. On the endocranial surface, however, we noticed 2 cm wide belt in which the bone structure is slightly changed, apparently as the result of an inflammatory process, which we have to regard as evidence that the patient survived the operation at least for a short time. This article is a reprint of a previously published article (Jelínek J., 1968: Anthropologie (Brno) 6, 2: 25–32).

KEY WORDS: Trepanation – Early Bronze Age – Únětice Culture – Bohemia

By courtesy of the Museum in Kolín I received three trephined skulls dating from the Early Bronze Age for treatment. These skulls belong to the Únětice Culture. Two come from the burial-grounds at Polepy by Kolín

which were investigated till 1925 by Dr. F. Dvořák (1926). The third skull stems from the finding-place of Hřiby and is the only one that was preserved from this locality.

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HŘIBY

The skull from Hřiby was kept in a small wooden box buried in the clay in original position. Its surface is slightly corroded. The skull itself was found in a rather defective condition, the cranial bones were cracked and broken into a large number of smaller pieces (*Figure 1*). The face skeleton was so much destroyed that it was clear it would be beyond reconstruction. After the removal of the wooden wrapper it was found that the better preserved half of the skull had been deeper in the earth, while the right side must have been closely under the surface exposed to all influences of both an atmospheric and a mechanical character, as the numerous little roots in the earth point to.

The skull was spoiled with a layer of glue, evidently an attempt at preparing and preserving the bony relicts. As the glue had been applied to the skull in situ, without the latter having been cleaned from earth, it was necessary at first to consolidate the bony relicts to be better protected against damage. Only after consolidation with polyvinyl dissolved in toluene was it possible to take the individual fragments out of the earth, to clean them from both the clay and the glue, and to put them together. Here it was found that almost the entire right half of the skull lying closest to the surface was destroyed. Similarly, the larger part of the skull base, the face skeleton, and a larger part of the lower jaw are also missing.

Intact remained a larger part of the frontal bone, the entire left and a part of the right parietal bone, a part of the left temporal bone, and a larger part of the temporal squama. Furthermore, a smaller fragment of the right ascending branch of the lower jaw with a preserved markedly everted angle (gonion). In addition, the left cheek bone, a fragment of the right temporal bone with the zygomatic process and eight individual teeth have been preserved.

On the whole we can say that the larger part of the right half of the skull was not preserved.

Description of the skull

In *norma lateralis* (*Figure 1:A*) we can see a high very well arched forehead with pronounced supraorbital arches. Depression of the nasion is not particularly deep. No postcoronal depression is found. The parietal bones are long, slightly vaulted in this view. In the region of lambda there is a weak flattening extending to both parietal bones and also in the upper part of the occipital bone. In general, this flattening is of course, not distinct. The entire upper part of the occipital bone is somewhat protruding. In inion, the squama is sharply angled and

passes over into the almost flat *planum nuchale* with pronounced tuberosities for the muscle insertions. *Protuberantia occipitalis externa* is of the third degree according to Broca. The temporal squama is medium high and mediocre arched (understand the edge of the temporal squama). The mastoid process is large and strong, the strong zygomatic arch passes over into the mediocre large supramastoidal crest. *Linea temporalis* is not pronounced.

In *norma verticalis* (*Figure 1:B*) the entirely preserved metopica suture is most striking. Postorbital constriction is averaging. The overall shape of the skull is ellipsoid. The parietal bosses are not pronounced, the occiput is slightly protruding. For corrosion of the skull surface the formation of *foramina parietalia* cannot be followed. On the inner side of the brain-case all the sutures are already entirely closed. On the exocranial side the frontal suture (*sutura metopica*) is well to be seen. The coronal and sagittal sutures are almost entirely closed. The lambdoid suture, noticeable in its negligible remains, indicates that originally it was rather complicated, displaying the tendency to form small wormian bones. For its defectness, neither the skull breadth, nor the skull height can be measured. Yet, it is clear in the vertical view that the skull was dolichocranial. If we compare its shape with the known Bohemian and Moravian Únětice skulls, it surely belongs to the upper part of the index values (length-breadth cephalic index) of this population.

In *norma occipitalis* (*Figure 1:C*) the skull is narrow and high, ranking undoubtedly among the bulk of Únětice skulls, whose breadth-height index exceeds the value of 100. It obviously is higher than broad. The top of the skull in this view is roundly arched, the side walls of the skull are gently diverging in the direction of the skull base, so that the region of the maximum skull breadth is located relatively low. Besides the already mentioned weak lambdoid and praelambdoid flattening, the protruding upper part of the occipital squama and remains of the complicated lambdoid suture are well to be seen. *Protuberantia occipitalis externa* is pronounced and beak-shaped, the archlike vaulted distinct nuchal lines, gradually petering out sideways. It forms the boundary between the upper part of the occipital squama and *planum nuchale*. The mastoid process, preserved on the left side of the skull is also in this view well seen and of large size.

In *norma frontalis* (*Figure 1:D*) the complete metopic suture is seen on the high, very well arched frontal bone. The supraorbital arches are strong, separated in the middle by a rather shallow depression (glabella 3)

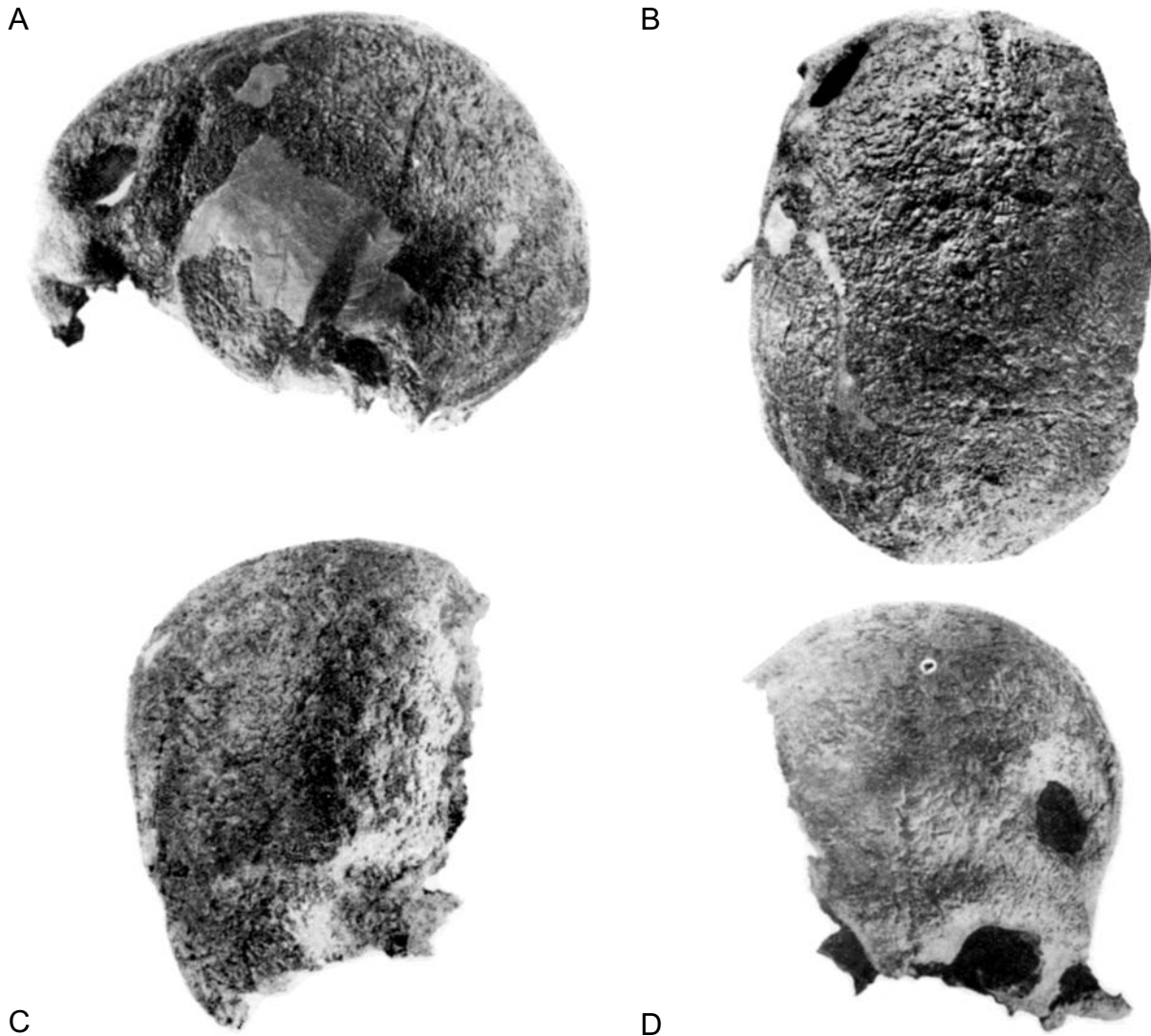


FIGURE 1. Trephined skull from Hřiby by Kolín (Únětice Culture, Early Bronze Age). A, *norma lateralis*; B, *norma verticalis*; C, *norma occipitalis*; D, *norma frontalis*, on the left side of the frontal squama a circular trepanation hole is to be seen. In Jelínek (1968), the figure is labelled as Table I.

through which runs the preserved sutura metopica. The glabella connects both supraorbital arches. On the preserved left side, this arch goes over laterally into a large and flat supraorbital trigone. Over the supraorbital trigone is found a round trepanation hole. The left cheek bone is strong with poorly indicated marginal process.

Of the lower jaw a part of the relatively low and broad left ascending branch with a markedly everted angle and with mediocre tuberosities for the insertions of *m. pterygoideus lat.* on the inner and for the insertions of *m. masseter* on the outer side of the jaw has been preserved.

Eight isolated teeth, for the most part, markedly worn deep to the dentin and pulp cavities so that the greater part or also the entire crown was worn, have been preserved. The teeth do not display any caries.

In general, we can assess the skull to be that of an adult robust man of the dolichomorphous (protomediterranean) type (Table 1), aged 40 to 50 years, a typical representative of the Early Bronze Age Únětice population.

Trepanation

The trepanation hole is located on the left side of the frontal bone between the left frontal boss and the coronal

TABLE 1. Cranial measurements of the trephined skull from Hřiby by Kolín (Únětice Culture, Early Bronze Age).

Measurement	Value (mm)
Bregma-lambda arch	145
Bregma-lambda chord	129
Transversal arch	336
Auricular height	108

suture and above the left *trigonum supraorbitale* (Figures 2, 3). It is round and measures about 2.2 cm in diameter. Its contour is not quite regular. It is bordered by a 0.6 to 1.0 cm wide inscribed circle, representing an obliquely cut bone. The edges of the trepanation hole, similarly as the mentioned cut surface, exhibits clear traces of healing. Diploe is no more anywhere to be seen and it is clear that the patient survived the trepanation and that between the performance of the operation and the death of the individual a longer time must have elapsed. On the inner side of the skull, no changes can be macroscopically detected in the neighbourhood of the trepanation hole. The cause of trepanation cannot be established.



FIGURE 2. Detail of trepanation hole in the skull from Hřiby by Kolín in Bohemia (Únětice Culture, Early Bronze Age). The healed edge of the opening and the corroded surface of the bone are to be seen. In Jelínek (1968), the figure is labelled as Fig. 1.



FIGURE 3. X-ray picture of trephined skull from Hřiby by Kolín in Bohemia. (Únětice Culture, Early Bronze Age). Round the circular trepanation hole in the frontal bone, a thinner structure of the bone is to be seen as the result of an inflammatory process. In Jelínek (1968), the figure is labelled as Fig. 2.



FIGURE 4. Trephined skull from Polepy by Kolín in Bohemia (Únětice Culture, Early Bronze Age). *Norma basalis*. In Jelínek (1968), the figure is labelled as Fig. 3.

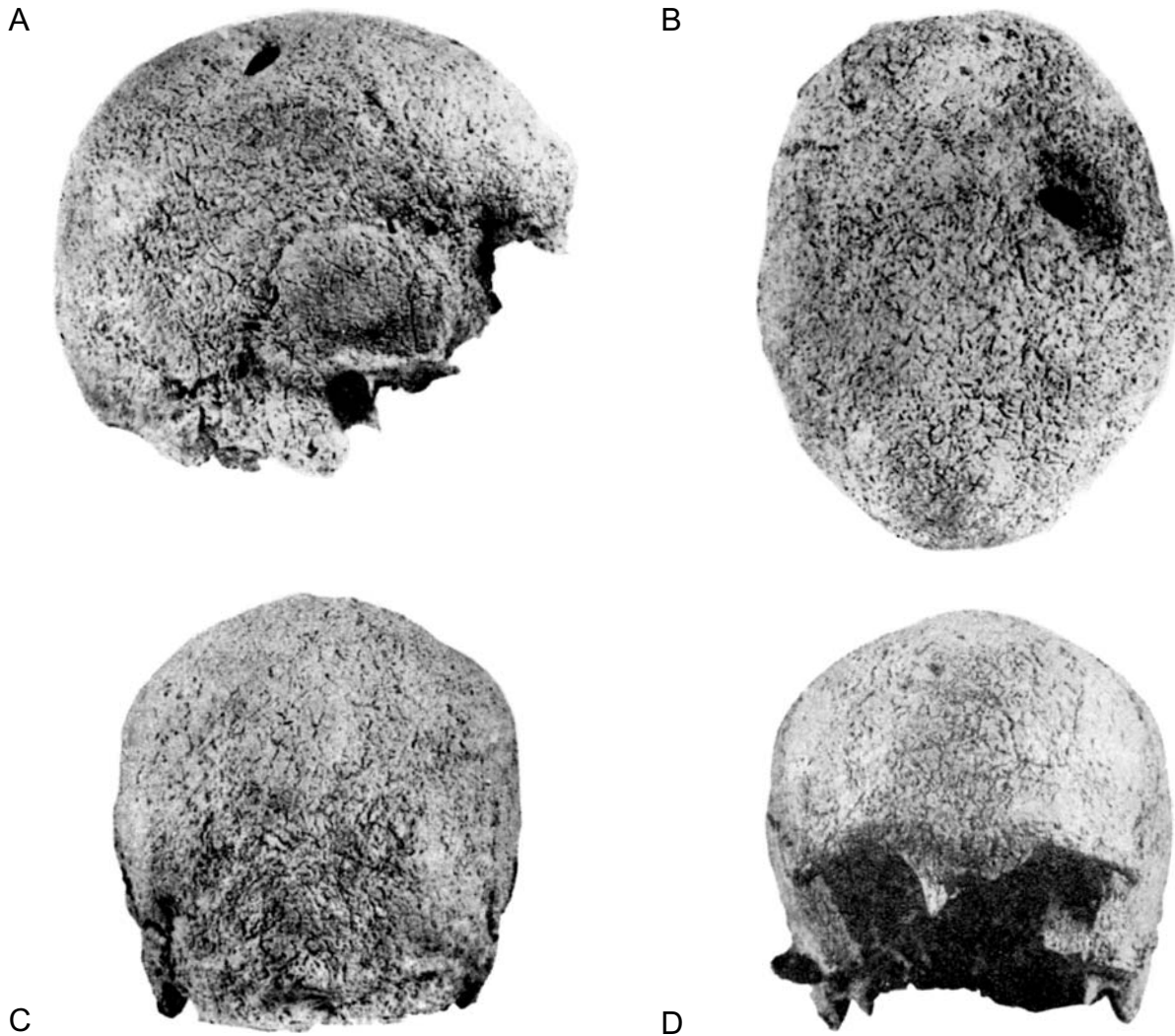


FIGURE 5. Trephined skull from Polepy by Kolín in Bohemia (Únětice Culture, Early Bronze Age). A, *norma lateralis*; B, *norma verticalis*; C, *norma occipitalis*; D, *norma frontalis*. In Jelínek (1968), the figure is labelled as Table II.

POLEPY

At Polepy by Kolín a skull with a trepanation hole in the parietal bone stemming from the Únětice burial grounds was found.

Only the brain-case of the skull has been preserved (Figure 4). The skull base is damaged in the neighbourhood of the large occipital opening; it is difficult to say whether secondary damage caused during archaeological excavation, or an intentionally opened skull base, as we sometimes can see it in prehistoric or also in recent evidence of anthropophagy, is involved.

In the lateral view (Figure 5:A) we can notice on the frontal bone strong supraorbital arches. The frontal squama is medium high and mediocre arched. No postcoronal depression is formed and the cranial vault passes over smoothly and evenly from the frontal to the parietal bone. The parietal bones in this view are markedly curved. Lambdoid flattening is not formed and the occipital squama is slightly projecting and somewhat angled in the external occipital protuberance (inion). The squama of the temporal bone is high and well arched. The mastoid processes are large and strong, and the supramastoid ridge located above them is pronounced.

In *norma verticalis* (Figure 5:B) the skull has an ellipsoid shape. The parietal bosses are only weak. In this view the fine general modelling of the skull is well to be seen. The cranial sutures are already altogether obliterated. *Foramina parietalia* are not to be seen.

In *norma occipitalis* (Figure 5:C) the skull displays a typical "Hausform" with a rooflike vertex and with side walls gently converging towards the base. The very poorly visible remnants of the lambdoid suture tell us that this suture was originally mediocre complicated. The upper part of the occipital squama is weakly projecting. In the inion there is a structure forming morphologically the transition between *torus occipitalis* and *protuberantia occ. externa*. On *planum nuchale* there are medium large tuberosities for the muscle insertions.

In *norma frontalis* (Figure 5:D) our attention is attracted by the strong supraorbital arches separated from each other in the region of glabella by a slight depression (Broca 3).

Nasion depression is mediocre deep. The lateral part of the supraorbital region is formed of a flat supraorbital trigone. The forehead is relatively broad, the frontal bosses are only weak.

By its general morphology the skull belongs to an elderly man (50 to 60 years) of the dolichomorphous type of a tall and robust constitution. Also morphoscopically it is to be seen that the skull is higher than broader (Table 2); this means that the breadth-height index, if the height of the skull could be measured, would exceed 100. Even though the length-breadth cephalic index does not reach the mean values of the Early Bronze Age (Únětice) skulls and is essentially higher (76.63), it nevertheless belongs among them and does not deviate from their morphological variability.

Trepanation

On the right parietal bone in the neighbourhood of the bregma is found an oval trepanation hole (Figures 6–8) showing advanced traces of the healing process. The size of the hole is 1.0×1.8 cm. This hole is bordered by an about 1.5 cm wide edge, representing originally the bone obliquely scaped off or cut off during the operation. Today, this area is healed and resembles altogether the other surface of the skull and only its oblique surface clearly points to the technique of the performed operation. In accordance with all signs the patient survived the operation and lived for a longer time after it. As to the location of the hole on the right parietal bone, the skull has an analogy in the Únětice skull found at Mikulov (Jelínek 1954), where, of course, the trepanation hole was

TABLE 2. Cranial measurements of the trephined skull from Polepy by Kolín in Bohemia (Únětice Culture, Early Bronze Age).

Measurement	Value (mm)
Max. breadth of skull	141
Auricular height	111
Nasion bregma arch	124
Nasion bregma chord	107
Bregma lambda arch	150
Bregma lambda chord	129
Transversal arc	310
Max. frontal breadth	120
Min. frontal breadth	101
Horizontal circumference	518
Greatest occipital breadth	104
Bimastoideal breadth	101
Biauricular breadth	123
Length-breadth index	76.63
Auricular height-length index	60.32
Auricular height-breadth index	68.72
Frontoparietal index	71.63
Frontal index	84.16



FIGURE 6. Detail of trepanation hole in a skull from Polepy by Kolín in Bohemia (Únětice Culture, Early Bronze Age). The healed edge of the trepanation hole and the corroded surface of the bone are to be seen. In Jelínek (1968), the figure is labelled as Fig. 4.



FIGURE 7. Trephined skull from Polepy by Kolín in Bohemia (Early Bronze Age, Únětice Culture). X-ray picture in *norma lateralis*. In Jelínek (1968), the figure is labelled as Fig. 5.

round and positioned approximately in the middle of the parietal bone. Judging, moreover, the four trepanations from the Early Bronze Age (three of which are the subject of this study) in the territory of Bohemia and Moravia, the oval opening is an exception. The other skulls, as a matter of fact, displayed more or less round holes testifying to a different technique.

POLEPY 22

The third skull studied comes also from the burial grounds at Polepy by Kolín. In comparison with the previously studied skulls, it is least preserved (*Figure 9*). The larger part of the base and the left half of the cranial vault are missing. Preserved are the larger part of the frontal bone, the right parietal bone, and the larger part of the right temporal bone and the occipital squama. The external surface of the frontal bone is strongly corroded in the region of glabella and its neighbourhood so that diploe is bare. Therefore, the skull's maximum length cannot be measured, nor can the size of the formation of the supraorbital arches and the glabella be observed. On the preserved supraorbital trigone we, nevertheless, can notice signs of the formation of a supraorbital arch in the medial part. The morphology of the occipital bone and a very strong mastoid process point to a man. The open cranial sutures indicate that the studied individual had not surpassed forty years of age.



FIGURE 8. Trephined skull from Polepy by Kolín in Bohemia (Early Bronze Age, Únětice Culture). X-ray picture in *norma frontalis*. In Jelínek (1968), the figure is labelled as Fig. 6.

Fr. Dvořák writes about this skull in his paper (1926) the following words:

"Grave No. 22

A grave in bare ground, 160 cm long, 95 cm wide, and 98 cm deep. In the south eastern part of the grave was found a strongly crouched right limb. The left limb and the other bones of the woman buried here were found somewhat more to the north – in the position as we meet with in burials in the sitting attitude (*Fig. 12*). The grave also contained two vessels, i.e.,

a) a squat vessel with a handle below the edge, 10 cm high, of dark-brown colour, made of fine micaceous clay (*Plate V, No. 22*).

b) a little jug with a handle below the edge, 11 cm high, of dark-brown colour, moulded of fine clay. The ornament consists of two horizontal grooves and a number of short, vertical scratches, connected with vertical fringes (*Plate V, No. 21*).

The skull from this grave distinguishes itself by a round trepanation hole (1.5 cm in diameter) in the frontal bone."

In *norma lateralis* (*Figure 9:A*) we can observe a medium high well vaulted forehead. The volume of arching is enhanced through the fact that the surface layer is destroyed and therefore the supraorbital arches are not preserved. The vertex of the skull runs

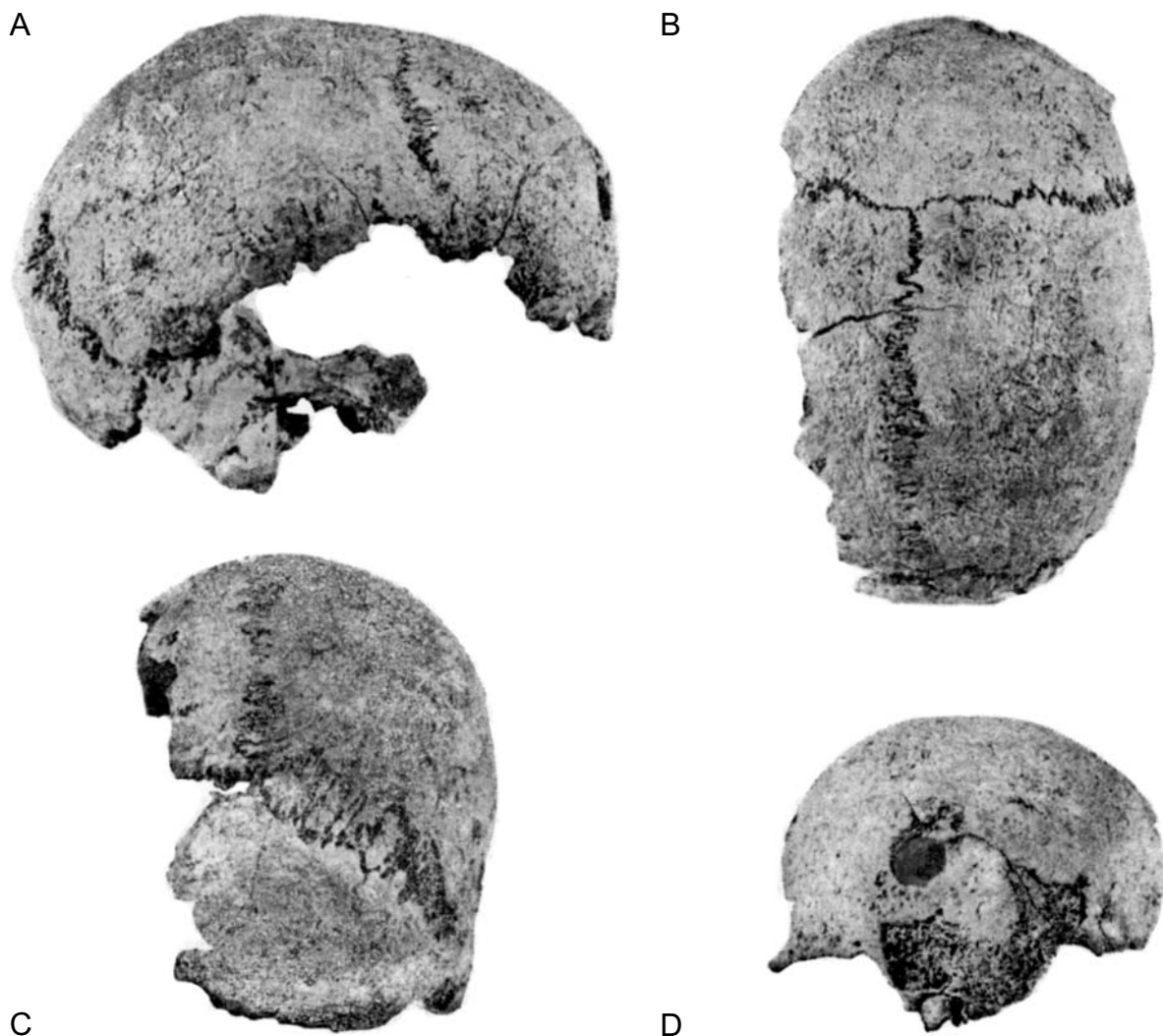


FIGURE 9. Trephined skull No. 22 from Polepy by Kolín in Bohemia (Únětice Culture, Early Bronze Age). A, *norma lateralis*; B, *norma verticalis*; C, *norma occipitalis*; D, *norma frontalis*. In Jelinek (1968), the figure is labelled as Table III.

horizontally for a long distance. The parietal bones are long and evenly curved. The occipital squama seems to be angled in its upper part in this view, which, however, is the result of weaker postmortal deformation and does not correspond to the original morphology of the squama being relatively evenly arched. The temporal bone squama is not preserved.

It seems – going by the parietal bone – that the temporal squama was originally slightly arched (its upper edge) and medium high. The mastoid process is very strong and large with a weak supramastoid ridge above it.

In *norma verticalis* (Figure 9:B) we can also see according to incomplete remnants that the skull was of

ellipsoid shape, markedly dolichomorphous, most likely hyperdolichocranial. The parietal boss is only very poorly indicated. The cranial sutures are open and mediocre complicated. *Foramina parietalia* are not to be seen.

In *norma occipitalis* (Figure 9:C) the skull exhibits a slightly rooflike vertex (Hausform). We can infer that it was higher than its maximum breadth. The lambdoid suture is very complicated, with four little wormian bones. The occipital squama is roundly arched in the upper part. *Protuberantia occipitalis externa* is medium large (Broca 3) and on both sides reinforced *lineae nuchales*, reminding of *torus occipitalis*, run out laterally; from the upper portion of the occipital squama,

TABLE 3. Cranial measurements of the trephined skull No. 22 from Polepy by Kolín in Bohemia (Únětice Culture, Early Bronze Age).

Measurement	Value (mm)
Max. length	194
Auricular height	121
Nasion-bregma arc	125
Nasion-bregma chord	113
Bregma-lambda arc	133
Bregma-lambda chord	119
Transversal arc 1/2 17.3	346
Auricular height-length index	62.37 ^a

^a Orthocranial

this formation is separated by a shallow transversal depression.

In *norma frontalis* (Figure 9:D) we can observe a medium broad, roundly vaulted, medium high forehead. Postorbital constriction is medium large.

By its overall morphology this skull is typical of the Early Bronze Age Central European population, its

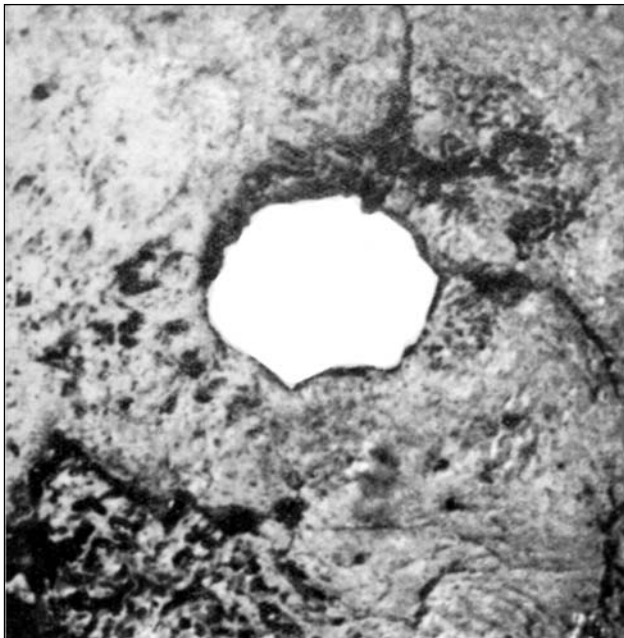


FIGURE 10. Detail of trepanation hole in the frontal bone from Polepy by Kolín in Bohemia (Early Bronze Age, Únětice Culture). In Jelínek (1968), the figure is labelled as Fig. 7.

gracile hyperdolichomorphous and acrocranial type (Table 3).

Trepanation

In close proximity of the right frontal boss, somewhat medially from it, is found a round trepanation hole of 1.5 cm in diameter (Figure 10). Unfortunately, its surroundings, including the edges of the hole are somewhat corroded so that we cannot decide with certainty where there were traces of the healing process on the bone and whether the patient survived the operation or not. Two fractures in the frontal bone running out from the trepanation hole are most likely of postmortal origin. In exocranial respect our observations are greatly handicapped just for the mentioned corrosion of the bone surface. A different picture presents itself in endocranial respect, where the bone is perfectly preserved. Here we can notice that the round hole is followed by an about 2 cm wide belt in which the bone structure is slightly changed, apparently as the result of an inflammatory process which we have to regard as a consequence of the operation and as evidence that the patient survived the operation at least for a short time.

Trepanations of Únětice-Culture skulls from the Early Bronze Age are relatively rare in the anthropological literature. From South Moravia (Milovice by Mikulov) comes a find, published in 1954 (Jelínek 1954). In this Early Bronze Age skull typical for its morphology is found a round trepanation hole of 1.9 cm in diameter situated roughly in the middle of the right parietal bone. Matiegka (1918) reports in his study on trephined and cauterized skulls from Bohemia and Moravia a total of nine Bohemian finds belonging to the Únětice Culture. The three skulls found at Polepy by Kolín and at Hřiby thus constitute another contribution to the palaeopathological study of Bohemian prehistoric populations.

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