

## On the Subject of the Dog in Everyday Life and Sustenance of the Prehistoric Population Inhabiting Bulgarian Territory

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Osteoscopic and osteometric studies have been carried out in two fractionally preserved skeletons of dog's crania found in the archaeological Neolithic bone material from the prehistoric settlement mound in the vicinity of the town of Kazanluk. In both skeletons, a big left lateral opening of an oblong shape was established. A thorough description and measurement was performed on each of them. It was also established that the zygomatic arches in both skeletons have been destroyed in one and the same manner. A conclusion was made that the perforation of the cranium has probably served for taking the brain out and the destruction of the zygomatic arches has yielded a good opportunity for the easy removal of the eye out of the orbit, as well. A suggestion is forwarded that the brain, the eyes, as well as the entire head have been probably used for definite purposes by the pre-historic population.

*Key words:* dog, cranium, trepanation.

### Introduction

As the first domesticated animal, the dog has played quite a significant role in the life of the pre-historic man. It is assumed that it had got accustomed to living with the human at the beginning of the Mesolithic or toward the beginning of the Neolithic epoch [8]. Canine bones have been found in almost all our prehistoric sites regardless of the epoch to which each of them is dated. The data from the studies on the bone material from dogs have helped to clarify a number of items concerning its role in everyday life of the prehistoric man (6, 7, 9). The presence of whole bones or bone fragments from dogs in the sewer pits as well as the establishment of traces on them caused by acts of chopping, slashing and burning have given grounds to a variety of authors for the assertion that dog's meat has been used as a food by the pre-historic human [1, 2, 3, 4, 5].

In the animal skeletal material from the settlement mound near the "Bulgaria" plant in the region of the town of Kazanluk amidst the variety of dog's bones found,

among the ones dating back to the early Neolithic period two fractionally preserved cranial skeletons were discovered with a typical left-lateral opening of the skull and zygomatic arches totally destroyed. This has led us to undertaking this study aiming at establishing the possibility for the brain and the eyes of the dog to have been removed from the cranial cavity, the orbit respectively and eventually used for different purposes.

## Material and Methods

Osteoscopic and osteometric studies have been carried out on both cranial skeleton. The affected bones have been osteoscopically defined. Measurements of the openings have been made, the following parameters being recorded:

- a) Average sagittal length — lines at intervals of 5 mm, parallel to one another and to *Crista sagittalis externa*;
- b) Average height — lines perpendicular to the lines of "a" distanced by 5 mm from the another;
- c) Cranial length — from *Protuberantia occipitalis externa* to the distal end of the nasal bones;
- d) Cranial height — the perpendicular line from the base of *Processus retroarticularis* to the base of *Crista sagittalis externa*;
- e) Basal length of the cranial skeleton — from the ventral edge of *Foramen magnum* to the front edge of *Facies palatina* of the incisor bone.

Apart from that the ratios a:b; a:c; and a:d have been calculated.

## Results

From the osteoscopic studies carried out it was established that the cranial skeletons belong to adult dogs of the dolichocephalic type. The shape of the perforation in skeleton No 1 was irregularly oval and in No 2 it was longitudinally oval (ellipsoid) (Figs. 1, 2). In both skeletons under study parts of the four cranial bones have been broken — the front parietal, temporal and mastoid bones together with one of the face bones — the zygomatic one. The colour of the opening edges was identical with the one of the bones from the other parts of the skeleton of the head.

In head skeleton No 1 destructions have been found in the almost entire parietal bone, a small portion of the distal part of the front bone, the dorsal side of the temporal bone as well as in small portions of the wing and the base — presphenoid. The edges of the opening were situated at one and the same distance from the corresponding surface regions. The hole was located almost centrally in the left half of the skull.

In the head skeleton of head No 2 destructions have been established in a small portion of the ventral surface of the parietal bone, the distal part of the front bone, the wings of the base — and presphenoid. The hole engaged almost the entire ventral half of the skull, its dorsal edge being found at a much greater distance from *Crista sagittalis externa* compared with the same edge in skeleton No 1.

The zygomatic arch was missing bilaterally in both skeletons. In both skeletons the caudal part of *Crista sagittalis externa* and the occipital squama have been entirely preserved. The occipital condyls in skeleton No 2 were intact while in skeleton No 1 the right one was missing completely.

The data from the metric studies are of the following values, Table 1.

The ratio a:b; a:c and b:d is as follows Table 2.

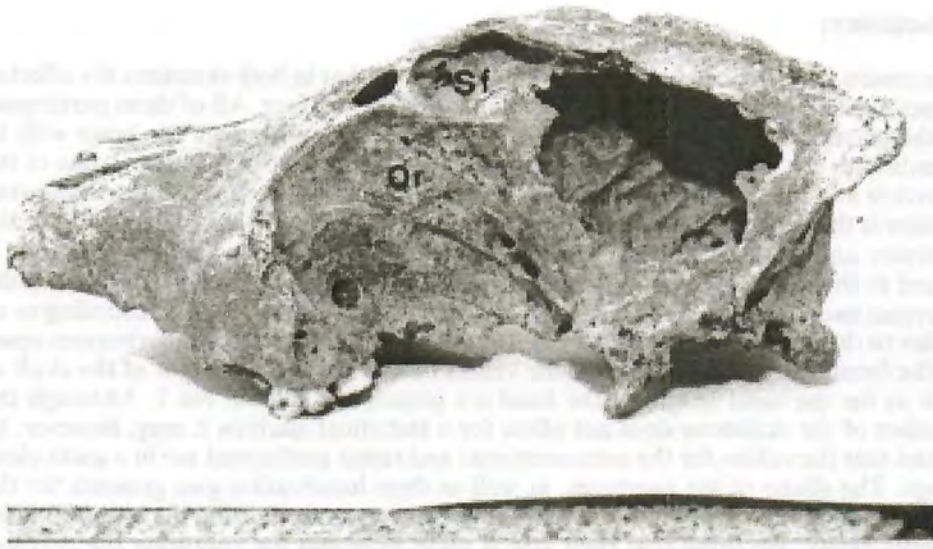


Fig. 1. Skeleton of a dog's head with a centrally located opening of the cranial cavity;  
Or — orbit; Sf — frontal cavity

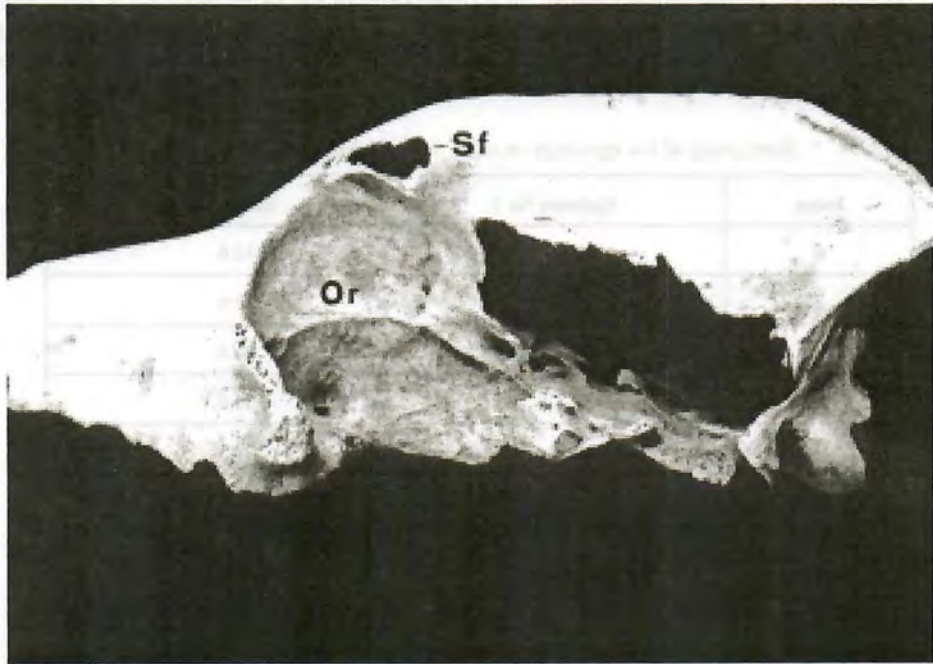


Fig. 2. Skeleton of a dog's head;  
Or — orbit; Sf — frontal cavity

## Discussion

The results from the osteoscopic studies have shown that in both skeletons the affected bones were identical — both from the skull and from the face. All of them participate in the encasement of the cranial cavity in which as is well-known the brain with its membranes are located. It is noteworthy that the ratio between the mean value of the aperture and the length of the skull in both skeletons shows close values. Somewhat greater is the difference in the ratio between the other index — the mean height of the aperture and the skull height. The greatest difference between the two skeletons is found in the ratio mean length/mean height of the aperture. Here by contrast to the previous two ratios the difference is in favour of skeleton No 1. This, according to us is due to the fact that in its rostral part the skeleton No 1 aperture incorporates a part of the frontal sinus, as well. Also, the values of the length and height of the skull as well as for the basal length of the head are greater in skeleton No 1. Although the number of the skeletons does not allow for a statistical analysis it may, however, be stated that the values for the measurements and ratios performed are in a quite close range. The shape of the apertures, as well as their localization give grounds for the assumption that they have been made with the purpose of removing the brain from the cranial cavity. We think that their size is quite sufficient for rupturing the cerebral membranes with the ensuing removal of the cerebrum. The reason for choosing such an unilateral access to the cranial cavity is most likely due to the circumstance that the bones here are comparatively thin and of an even surface relief which is quite suitable for making a sufficiently large hole so that the brain could be taken out.

The entirely removed zygomatic arch bilaterally in the same manner in both skeletons ensures a comfortable access to the orbit which leads to the thought that this was done for an unobstructed removal of the eye (the eye ball and the other accessory or-

**T a b l e 1.** Sizes (mm) of the openings on dogs' cranial skeletons

Index	Skeleton No 1	Skeleton No 2
<i>a</i>	40.9	42.6
<i>b</i>	23.6	27.9
<i>c</i>	104.8	96.4
<i>d</i>	58.2	56.6
<i>e</i>	168.1	157.3

**T a b l e 2.** Ratios between the sizes of the holes in dogs' cranial skeletons

Ratios	Skeleton No 1	Skeleton No 2
<i>a:b</i>	1.73	1.52
<i>a:c</i>	0.39	0.44
<i>b:d</i>	0.40	0.49

gans of the eye). It is noteworthy that in both skeletons the eye channels through which the nerve passes are intact. This inclines us to think that the cerebrum and the eyes have been separately taken out.

The osteoscopic studies showed that there are almost no damages in the occipital part of the skull which suggested that the head had been comparatively carefully severed from the spinal cord.

The data from the research performed give us grounds though with a certain degree of probability to assume that the head of the skeletons studied by us had been used for the removal of the brain from the cranial cavity and the eyes from the orbits. Taking into account known literature data, these, as well as the musculature of the head could have been used as food, for cult activities, sacrifice, superstitious rituals, etc.

The quite close and at times quite identical in character injuries on exactly the same bones and parts of the head skeleton unequivocally show that these had not been performed arbitrarily and are the result of a good knowledge of the head anatomy of the dog. As for our standpoint on the careful removal of the head and its further processing, the view of P e t r o v [8] that "no matter how mysterious the decapitation of the dog is it can be admitted that the dog's head as well as the horse's cranium display "a mighty force" for protecting the deceased from demons, evil spirits, intruders, etc." is of interest.

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