

Defects on Cranial Bones from Tomb №1, Sofia, Janko Sakazov Str.

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On a preliminary state of investigation two bone fragments out of 32 frontal and one out of 17 occipital bones present defects – pits, after trauma on the frontal fragments and perforation on the occipital. They could have been caused by a battle incident or could have been obtained after complete or incomplete trepanation/cauterization.

Key words: Middle Age, cranial trauma, trepanation

Introduction

A tomb from the Late Antiquity period is excavated in 2020 in the periphery of the East necropolis of Serdica (Yanko Sakasov Str., No 6, of modern Sofia). It is constructed with bricks, has a rectangular plan and possibly had a barrel vault. All four walls of the tomb bear disturbances from XX c. constructions [15].

The tomb was full with a thick layer of human skeletal remains of about 0,70 – 0,80 m, mixed with soil, fragments of bricks and stones (**Fig. 1**). Under the upper layer of bones and bone fragments, disarticulated and mixed, are discovered skeletal parts, which remained in primary anatomical order (**Fig. 2**). Most of the skulls and skull fragments are found at a lower position. Most convenient explication of the uncovered situation is that many dead bodies were placed one over another without soil layer in-between in the hollow area of the tomb. After decomposition of the soft tissues some parts of the skeletal remains became mixed, while others remained in partially anatomical position. Archaeological materials as well as AMS dating of four bone samples, proceeded in the Scottish Universities Environmental Research Centre place the date of the accumulation of skeletal remains in X-XI c AD.



Fig. 1. Tomb 1 with filling of human skeletal remains; stage of investigations



Fig. 2. Tomb 1, human skeletal remains, partially in anatomical position, lower limbs from three individuals, adults

Very reduced portion of uncovered human skeletal remains has been studied up to date. It provides fragments from 32 frontal and 17 occipital bones. Among them on two frontal and one occipital bones are recognized specific defects (**Figs. 3-5**).

Material and Methods

The two fragments from frontal and the one from the occipital bones are studied. Sex of the individuals is achieved after discrete traits of skull, preserved on the studied fragments [22], while age is assessed after the obliteration of preserved segments of cranial sutures based on the methods of Olivier-Simpson [1]. Defects are accurately measured, documented and compared to published materials.

Results and Discussion

The examined skull bones present two pits and a perforation, as follows:

Frontal bone, relatively completely preserved (**Fig. 3**). Right orbital margin reconstructs after fragmentation, only a small part on the right parietal border remains missing. The coronal suture is relatively completely preserved and small fragments of both parietals are also registered remaining on their places. The coronal and the first segment of the sagittal sutures obliteration ascertains the age of the individual at about 30-40 years at death. Based on the relief development of glabella region and superciliary arches and upper orbital margin the sex of the individual ascertains as male. On the outer table of the bone is found a pit, which intercepts the outer table and deepens into the diploe layer. The pit is situated on the sagittal plane above the

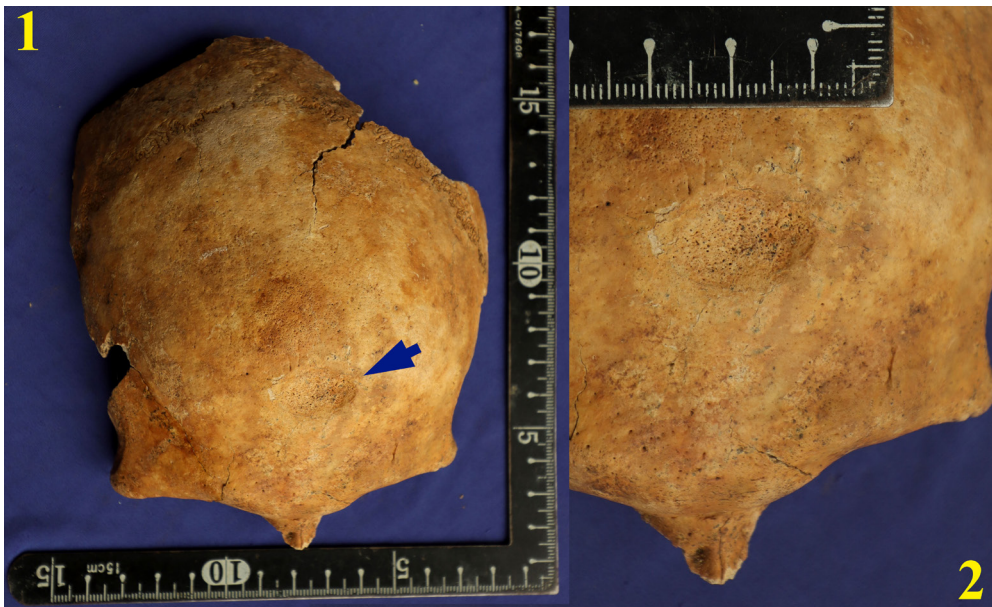


Fig. 3. Frontal bone, male, 30-40 years; defect on the sagittal plane, arrow

glabella. It has an oval form with diameters of 18,9 x 12,3 mm with bigger diameter, situated relatively horizontally. No bone reactions are found on the endo- or ectocranial surface, the defect presents a floor with smooth surface, after bone remodeling and only fair traces from the diploe can be recognized.

Frontal bone, relatively completely preserved (**Fig. 4**). A post-mortal destruction affects the glabella region and part from right orbital margin. The coronal suture is completely preserved, with no obliteration, ascertaining the age of the individual at about 18/20-25 years at death. After the development of the relief of superciliary arches and upper orbital margin (left side) the sex of the individual ascertains as male. On the outer table of the bone is found a pit, which intercepts the outer table and deepens into the diploe layer. The pit is situated on the right side, near to the center of the right frontal tuber. It has a form of a circle, or square with rounded angles, with diameter of 8,2 mm. No bone reaction is found on the endo- or ecto-cranial surface, the defect presents a floor with smooth surface after bone remodeling. The frontal sinus also presents a normal surface of bone.



Fig. 4. Frontal bone, male, 18/20-25 years; defect on the right side, arrow

Fragment from the occipital squama (**Fig. 5**). Poorly preserved endo and ectocranial surface after clear post-mortal destruction. No segments of cranial sutures are preserved and age of the individual ascertains generally as adult. Traces of relief of nuchal line makes it possible to be supposed a male sex of the individual. The fragment presents a round perforation, which intersects the whole breadth of the bone and reaches the occipital fossa. It has a diameter of 4,3 mm.

Similar defects to the ones found on both frontal bones are reported to get obtained after cuts with glancing directions, which affected the skull superficially and had been survived, documented in a sample from a mass grave of battle casualties from XIV c. in Naestved, Denmark [3]. On the other hand many similar defects to the studied ones are found in the materials from Middle Ages from South-East to Central Europe (Hungary), including North Black Sea Steppes and are interpreted as complete or incomplete trepanations [2, 4, 7, 10, 14, 16, 17, 21]. Such are also registered in Bulgarian material from XI-XII c. [6, 12, 19, 23, 24]. A case of complete trepanation, performed with round metal trepan is also known from V c. *Serdica*, [5].



Fig. 5. Occipital squama, fragment, endo and ectocranial surface male, adult

Trepanation has been known in the medical practice of the ancient classical tradition from Hippocrates [9, 13, 18]. A method of cauterization, in some cases with removal of the bone plate on the place, which would leave traces similar to the defects from incomplete trepanation is also described [2, 6, 11].

In some cases a trepanation with boring technique is performed, as in the finding from Monte d'Argento [8], where possible reason for the manipulation could be a depression in the right cerebral fossa of the inner table of the occipital squama, regarded as a result of endocranial hypertension. The finding is very similar to the one, found on the occipital fragment in studied material. In Bulgarian material similar is found in the Early Medieval necropolis from Balchik [20]. The use of trepanation as a treatment of psychological disorders during the Crusades is attested by a letter of sheikh Shaizara [14].

Conclusions

The studied fragments present defects with traumatic etiology. They could have been caused by a battle incident or could have been obtained after complete or incomplete trepanation/cauterization.

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