

**МІНІСТЕРСТВО ОХОРОНИ ЗДОРОВ'Я УКРАЇНИ  
БУКОВИНСЬКИЙ ДЕРЖАВНИЙ МЕДИЧНИЙ УНІВЕРСИТЕТ»**



## **МАТЕРІАЛИ**

**104-ї підсумкової науково-практичної конференції  
з міжнародною участю  
професорсько-викладацького персоналу  
БУКОВИНСЬКОГО ДЕРЖАВНОГО МЕДИЧНОГО УНІВЕРСИТЕТУ  
06, 08, 13 лютого 2023 року**

Конференція внесена до Реєстру заходів безперервного професійного розвитку,  
які проводитимуться у 2023 році №5500074

**Чернівці – 2023**

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### **3D MODELLING OF STAB WOUNDS OF PARENCHYMAL ORGANS**

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**Introduction.** The research examines the possibilities of using photogrammetric methods followed by 3D modeling of the wound channel and acute traumatic object during forensic medical examinations of stab wounds of soft tissues and parenchymal organs.

**The aim of the study.** To investigate 3d modeling of puncture wounds of parenchymal organs.

**Material and methods.** The study has been conducted on a series of 15 experimental and practical cases of stab wounds. Experimental wound channels were manufactured using alginate imprint mass with rubber-like effect "Hydrogum 5" ("Zhermack", Italy) and piercing tool with the one-sided sharpening of the blade.

**Results.** During the program of the investigation of 3D models of experimental wound channels, the linear dimensions of individual morphological parts of the wound channel were obtained with an accuracy of 0.001 cm, which allowed us to identify the instrument which had caused the injury with a high probability. Taking into account the reliable results obtained in course of the experiment, this technique was used during the forensic medical examination of stab kidney wound, which allowed identifying the injury-causing instrument from among the ones provided by the investigating authorities for forensic examination of cutting and piercing tools.

**Conclusions.** The obtained results show the important diagnostic value of the study with the use of such methods as: separate morphological characteristics of injuries and retrospective identification of fragments of the wound channel with the instrument which caused a trauma. At the same time, forensic investigating authorities have obtained a modern objective tool for selecting and identifying the used piercing and cutting tools from among the retaken others. Besides, the use of modern 3D modeling methods for forensic medical examinations allows improving accuracy and visualization, which brings the conducted examination to a new modern and higher level.

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### **THE TOPOGRAPHICALLY FEATURES OF THE PAROTID GLAND STRUCTURE**

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**Introduction.** Formation of the organs is a very complicated process which is not definitively studied nowadays. It is very important to study the structure of the organs and systems in association with the basic processes of morphogenesis on the basis of the findings of embryogenesis. The study of the development and forming of the topography of the parotid gland during the prenatal period human ontogenesis is of great importance for integral understanding of the structural – functional organization of the salivary apparatus and the oral cavity on the whole. The analysis of scientific literature dealing with the parotid gland anatomy is indicative of a fragmentariness and discrepancy of the data, pertaining to the syntopy and chronology of the topographic-anatomical changes during the fetal period of human ontogenesis.

**Aim.** The objective of the study was to investigate variant anatomy and topographic-anatomical peculiarities of the human parotid gland and surrounding structures in fetuses.

**Material and methods.** The parotid gland was examined on 25 human fetuses, 130,0-375,0 mm of the parietal-coccygeal length (PCL). The following methods were applied in the course of the study: thing section of the parotid gland and parotid-masticatory area under the control of a binocular magnifying glass; macro- and microscopy; morphometry; computed 3-D design.

**Results.** The parotid gland is found to be located in fetuses with 130,0-375,0 mm of PCL in a deep depression posteriorly the branch of the lower jaw, in the posterior mandibular fossa. A greater part of the gland is located between the mandible and sternocleidomastoid muscle penetrating deeply between these structures. The skin of this particular region is thin, movable. The subcutaneous pot is thin and fused with the skin. The structure of the parotid gland of 4-10 month