

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



## **МАТЕРІАЛИ**

**105-ї підсумкової науково-практичної конференції  
з міжнародною участю  
професорсько-викладацького персоналу  
БУКОВИНСЬКОГО ДЕРЖАВНОГО МЕДИЧНОГО УНІВЕРСИТЕТУ  
присвяченої 80-річчю БДМУ  
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Матеріали підсумкової 105-ї науково-практичної конференції з міжнародною участю професорсько-викладацького персоналу Буковинського державного медичного університету, присвяченої 80-річчю БДМУ (м. Чернівці, 05, 07, 12 лютого 2024 р.) – Чернівці: Медуніверситет, 2024. – 477 с. іл.

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У збірнику представлені матеріали 105-ї підсумкової науково-практичної конференції з міжнародною участю професорсько-викладацького персоналу Буковинського державного медичного університету, присвяченої 80-річчю БДМУ (м. Чернівці, 05, 07, 12 лютого 2024 р.) із стилістикою та орфографією у авторській редакції. Публікації присвячені актуальним проблемам фундаментальної, теоретичної та клінічної медицини.

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**Results.** According to the technology of obtaining and preparing digital images of a series of consecutive sections, which are loaded into the software for further stages of creating a 3D-reconstruction, we divided the material into three groups: 1) microphotographs of a series of consecutive histological sections; 2) a series of microphotographs of the paraffin block's surface; 3) DICOM CT files of fetuses.

3D-reconstruction of series of consecutive histological sections is effective for the study of embryo specimens, organ complexes of fetuses and certain microscopic structures of human fetuses due to easy identification of histological structures, however, it is necessary to improve the methods of alignment histological sections both in the correct sequence of the series and in the natural position in two-dimensional coordinate system.

3D-reconstruction of histotopographic sections (images of the surface of the paraffin block) is advisable to use in the study of specimens of organocomplexes of human fetuses and fetuses, since it allows identification of individual parenchymal and hollow organs and blood vessels, especially if their injection is performed before fixation of the specimen. 3D-reconstruction of CT sections is an effective and highly accurate tool for the study of X-ray contrast anatomical structures in the fetal period of the human development (bone tissue, contrasted blood vessels). The method allows, when using a certain research algorithm, to detect and measure ossification centers and syntopy of blood vessels with bones.

The choice of the technique of 3D-reconstruction of microscopic structures in the prenatal period of human ontogenesis depends on the age period of the material for research, which is caused by certain technological limitations of the specific technique: 3D-reconstruction of a series of histological sections is advisable to use when studying embryos and fetuses, as well as individual structures and organs of the fetuses; 3D-reconstruction of a series of histotopographic sections – for the study of organocomplexes of human fetuses and fetuses; 3D-reconstruction of CT-slices – for the study of individual structures of human fetuses.

**Conclusions.** For wide application in morphology, the method of 3D-reconstruction requires technical improvement of the software-hardware complex for reconstruction, namely: automation of segmentation of sections, as well as improvement of methods of polychrome marking of anatomical structures for their clear differentiation.

**Grynkevych A. Yu .**

## **PECULIARITIES OF MORPHOGENESIS OF THE STOMACH AT AN EARLY PERIOD OF THE HUMAN ONTOGENESIS**

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**Introduction.** The relevance of the study of the stomach morphogenesis peculiarities at an early period of human ontogenesis is determined by the requests of surgeons, gastroenterologists, and pediatricians. Embryological and anatomical studies of the main stages of organogenesis of the stomach, syntopic changes of this organ during intrauterine development will create a foundation for the development of new and improvement of existing methods of early diagnosis and treatment of organs of the gastrointestinal tract. Morbidity of organs of the human digestive system is one of the most important medical and social problems of our time. That is why the morphological study of the organogenesis of the stomach in relation to age, sex, and individual typological morphological features will allow to identify and justify the critical periods of the organ's development and to provide a scientifically based morphological basis for the improvement of therapeutic measures in practical medicine.

**The aim of the study** is to find out the peculiarities of morphogenesis, microscopic and variant anatomy of the stomach in the dynamics of the prenatal period of human ontogenesis.

**Material and methods.** The study was conducted on histological specimens of 12 human embryos aged from 4 to 6 weeks of intrauterine development (embryos 4.0-13.5 mm of parietal-coccygeal length). A complex of morphological research methods (morphometry, microscopy, three-dimensional reconstruction, statistical analysis) is applied.

**Results.** Our material revealed that the source of the stomach rudiment is a segment of the foregut, which during the 4<sup>th</sup> week changes its shape from cylindrical to spindle-shaped, and is located between the bronchopulmonary and hepatic buds. The inner lining of the stomach is represented by the endoderm of the primitive intestinal tube, the middle layer by condensed mesenchyme. The rudiment of the stomach is surrounded by a serous membrane, which originates from the mesoderm of the splanchnopleura and transfers in the form of a duplicate to the posterior wall of the embryo. On 3D-reconstructions of consecutive histological sections of embryos of the 5<sup>th</sup> week of intrauterine development, a dorsal mesogastrium is clearly visible, among the mesenchyme of which a primitive abdominal trunk passes to the posterior surface of the organ in the form of the most proximal unpaired branch of the aorta. In the same period of embryogenesis, heterochthonous growth of the walls of the stomach rudiment is observed, as a result of which the posterior wall of the organ (the future greater curvature of the stomach) increases and seems to grow into the mesenchyme of the dorsal mesentery. In the 6<sup>th</sup> week of intrauterine development, there are rapid changes in the holotopia of the stomach, which are explained by syntopic transformations and organogenesis of adjacent organs – the liver, pancreas, and spleen. In other words, around the stomach, in the ventral mesogastrica, the liver is intensively developing, increasing in size and moving to the left. Also, in the dorsal mesogastrium, the spleen develops intensively and moves to the left. So, the stomach in the 6<sup>th</sup> week of intrauterine development makes a 90° clockwise rotation. The processes of organogenesis and syntopic changes of the stomach are accompanied by the formation of its connections and, in general, the definitive configuration of the abdominal cavity.

**Conclusions.** The sources of the rudiment of the stomach are the endoderm and mesoderm of the splanchnopleura of the lateral plate, which correspond to the segment of the primitive intestinal tube between the bronchopulmonary and hepatic buds. From the 4<sup>th</sup> to the 6<sup>th</sup> week of intrauterine development, topographic transformations of the shape of the stomach and its position in the abdominal cavity occur, which is manifested in the appearance of a greater curvature and rotation of the organ relative to the longitudinal axis of the embryo by 90° clockwise, as well as the formation of gastric ligaments. The critical period of stomach morphogenesis should be considered the 6<sup>th</sup> week of intrauterine development, which may be the time for the appearance of variants of the structure and the disappearance of congenital defects of the organ.

**Khodorovska A.A.**

## **MORPHOLOGICAL STRUCTURE AND TOPOGRAPHY OF THE WALLS OF BRONCHI IN HUMAN EMBRYOS**

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**Introduction.** Elucidation of the regularities of the organogenesis of the respiratory system will allow a better understanding of the etiopathogenesis of birth defects. Therefore, it is important to study the patterns of development of the structural organization of the human respiratory system organs.

**The aim of the study.** Therefore, the purpose of this study was to examine the peculiarities of the intrauterine formation of the bronchial wall and topography of lung structures in human embryos.

**Material and methods.** The study was performed on human embryos of 56, 65 and 76 mm parietal-coccygeal length (PCL).

**Results.** In embryos with PCL from 56.0 mm and 65.0 to 76.0 mm, there is an increase in the structure of the bronchial wall, the shape of the lung structures and further differentiation. The longitudinal size of the right lung reaches 5.56 mm, the transverse - 3.96 mm, the left - 6.38 and 3.41 mm, respectively in the embryo of 56.0 mm. At this age, there is a further complication of the branching of the bronchial tree, as a result of which the epithelial tubules occupy a slightly larger area of the organ lining than its mesenchymal part. Interlobular septa are expressed much better and are represented by delicate fibrous connective tissue. The length of the right main bronchus is 2.20