



polarimetry and microscopic images phasemetry). As the objects of study optically thin (geometrical thickness  $l = 15\mu\text{m}-35\mu\text{m}$ , attenuation  $\tau < 0.1$ ) layers of fetuses BR soft tissue histological sections of all ontogenesis ages have been used. From a physical point of view most of histological sections of human biological tissues are optically anisotropic non-depolarizing medium that change the value of azimuth and polarization ellipticity, and thus form polarizationally heterogeneous microscopic images.

In our study, parametric indices of polarization-nonuniform microscopic images and their comparative characteristic of the age dynamics have been determined. The comparative analysis of polarization-filtered microscopic images indicates a predominantly amorphous structure of the material of all samples, which is consistent with the features of buccal region morphological structure - the large number of fat and increase of its share in the age dynamics.

The comparative analysis of data, obtained by the phasemetry of polycrystalline substance structure, has found marked differences between statistical phases distributions in the plane of microscopic images of preparation histological sections of buccal fat pad and BR subcutaneous adipose cellule tissue in the fetuses of all ages, which are characterized by disordered amorphous structure. Chronological (5-10 months of fetal development) change dynamics of such a morphological structure manifests itself in the formation of greater fat tissue substance crystallization.

The representation of the BR soft tissue histological sections of the 7 months of fetal development (320 mm crownrump length) human fetus compared with the BR preparations of the 5 months of fetal development (245 mm crownrump length) human fetus has a slightly larger range of variation values phase, which can be associated with a higher the degree of crystallization and thus structure growth of its morphological substance structure, due to the formation of fat particles, the development of muscle fibers.

So the research of thin sections of human fetus buccal tissue regions using laser polarimetry (phasemetry of polycrystalline substance structure with the next phase wavelet analysis of microscopic images phase maps) has shown the growth of substance morphological structure in the age developmental dynamics. These data correlate with the results of traditional methods of morphological studies on the fat phase development, the formation of fat particles, muscle fibers development that collectively change the optical properties of tissues. The established pattern may be related to the fact that along with disordered fat cells larger clusters of fat cells, which are grouped mainly in landscaped clusters, are formed. In the later stages of the development a number of such crystallized clusters increases and the adipose tissue becomes more vivid crystallized properties.

The laser polarimetry methods are informative for polarizational mapping of multi-layered biological tissues in the prenatal period dynamics which can be used to assess the degree of fetal maturation and to forecast the body viability, early detection of morphological preconditions of deviations from normal development and formation of face defects.

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#### **THE FORMATION OF PARTICULAR STRUCTURES OF THE ORAL AREAS OF HUMAN EMBRYOS**

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The formation of structures in the oral area of human embryonic period of ontogenesis was studied on 18 biological human objects by means of morphological methods. Due to the rapid proliferation of the main parts of embryos 5,0-5,5 mm CRL the oral fossa is not found to be noticeable. The oral fossa is limited by frontal protuberance extension above, on the sides - by the germs of maxillary processes, and below - heart protuberance. The oral entrance is supplemented by paired germs of mandibular arch directed to the midline from behind. The latter ones are caudally connected to the germs of the maxillary processes. The floor of the oral fossa is lined with dermal ectoderm. The germs of the maxillary and mandibular processes are seen as homogeneous clusters of mesenchymal cell mass. The germs of processes of the jaws in embryos of 6,8-7,9 CRL are gradually directed to the midline, but do not merge with each other. Due to breakthrough of the oral plate the oral fossa appears to be connected to the principal intestine. The process of differentiation of jaw processes, especially their caudal parts begins. On the inner surface of mandibular lateral protuberances the germs of the tongue are seen, located between the odd median protuberance. At the end of the embryonic period mandibular processes fully merge with each other and the mandibular arch is formed. In the upper section of the primary oral cavity, the paired of the nasal cavity penetration is seen. The developmental processes in the region of the tongue germ continue.

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#### **TOPOGRAPHIC-ANATOMICAL INTERRELATIONS OF THE SIGMOID-RECTAL SEGMENT IN 4-6-MONTH FETUSES WITH U-SHAPED SIGMOID COLON**

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Congenital defects of the digestive tract development may occur in the second trimester of the intrauterine development due to the effect of various external and internal environmental factors on the body of a pregnant woman. Having analyzed literary data concerning structural-functional rebuilding of the sigmoid-rectal segment during perinatal period of human ontogenesis, we have not found a single opinion concerning this issue. Due to this facts and considering the topicality of this problem both for theoretical and practical medicine, we have conducted its careful examination.



The study was performed on 30 dead 4-6-month fetuses (161,0-290,0 mm of PCL) on the basis of Chernivtsi Regional Pathological-Anatomical Bureau (during planned sections) by means of the methods of macro- and micropreparation, morphometry, documentary photographing and injections of the arterial vessels. The projection of the sigmoid-rectal segment was found to be affected by the shape of the sigmoid colon. In case of U-shaped sigmoid colon its proximal portion was found to be detected in the left inguinal area, and the distal one – in the medial plane of the pubic area. At the beginning of the second trimester evaginations of the U-shaped sigmoid colon are not developed, and semilunar folds are absent. Mesenteric-colon and omental strips are not found macroscopically. A free strip passes along the anterior surface of the sigmoid colon. Adipose appendages are absent. To the end of the second trimester the U-shaped sigmoid colon looks like a “goffered tube” with clearly seen adipose appendages located along the free strip.

The components of the sigmoid-rectal segment are found closer to the median plane. The anterior surface of the sigmoid-rectal segment adjoins the urinary bladder, loops of the small intestine, touches the anterior abdominal wall. The right ureter is located backward from the sigmoid-rectal segment, and the right ovarian artery and vein are located laterally. The right ovary directly adjoins the sigmoid-rectal passage. At the beginning of the second trimester the sigmoid-rectal segment is a cylinder bent a little in the frontal plane and without clear borders it continues into the rectum. To the end of the 6<sup>th</sup> month in the place of the sigmoid-rectal passage the lumen located directly above the peritoneal portion of the rectum becomes narrower. Mesenteric-colon, omental and free muscular strips of the sigmoid colon form a continuous muscular layer on the level of the sigmoid-rectal passage. Adipose appendages are found along the free strip.

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#### **ASPECTS OF HUMAN LARYNX FORMATION IN THE DEVELOPMENT OF FETUS**

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The aim of the study was to comprehensively examine the chronological patterns of morphogenesis of larynx and its syntopic relationships with neighboring structures within 3-5 months of human fetal development with the following timing of the possible occurrence of congenital defects. The study was conducted on cadavers fetuses 3-5 months of age with the aid of anthropometry, macro-microscopy of series of consecutive histological and topographic anatomical sections, standard and thin preparation, radiography, reconstruction and stereo photography.

During the 3-5 months of fetal development larynx is located anteriorly to the level of bodies of II-III cervical vertebrae. Topical superiorly it is connected tightly to the hyoid bone inferiorly it is continues with the trachea, posteriorly adjacent to the laryngeal part of the pharynx, which forms a single morphological complex.

Its height varies from 4.8 to 8.6 mm, width - from 4.7 to 6.2 mm, ventrodorsal size - from 5.5 to 6.5 mm. Next to the larynx we observed not yet sufficiently developed infrahyoid neck muscles (sterno-hyoid, sterno-thyroid, thyro-hyoid), their fascia and skin. Externally lies a small laryngeal prominence, which is formed by plates of the thyroid cartilage. On each side of the larynx the right and left vascular nerve bundles of the neck are seen as well as lobes of thyroid gland.

The wall of the larynx, as a future voice-box is formed by three membranes: internal - mucous, middle - fibrous, cartilaginous and external - connective tissue. Epithelial mucosa and lamina propria are clearly seen. Mucous membrane is preferably lined with pseudomultilayer columnar epithelium with a great amount of goblet cells. The region of vocal cords and epiglottis are covered with stratified squamous epithelium. Lamina propria and submucosa are seen as loose connective tissue, with a certain amount of elastic fibers. In submucosa we have observed solitary, mainly located on the anterior wall of the larynx, secretory parts of mucous glands.

Blood supply is provided by two arteries: upper laryngeal artery that is a branch of the upper thyroid artery and lower laryngeal artery that goes from the lower thyroid artery. In the wall of the larynx they are divided into the first and the second order's branch. Innervation is carried by fibers of the upper and lower laryngeal nerves, that are branches of the vagus nerve.

Thus, during the period of fetal development the formation and building processes of larynx continue. The formation of cartilages is almost complete, but muscles are still not developed. Vocal cords are distinct. However, the formation of the topography of the larynx continues after birth. Upper laryngeal nerve fibers innervate ring-thyroid muscle and mucous membrane of the larynx above the glottis. Lower laryngeal nerve fibers enter other muscles of the larynx and mucosa below the glottis.

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#### **THE INTERDEPENDENCE OF STRUCTURAL ORGANIZATION OF OSSEOUS BASE OF THE SKULL AND MORPHOMETRIC PARAMETERS OF THE VISCEROCRANIUM**

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The role of the bone structures in the manifestation of facial asymmetry is practically unstudied. The data on the current asymmetry of the face, obtained as the results of the study, are of a high importance for cosmetologists, maxillofacial surgeons, forensic experts, anthropologists, and can be used for person's identification, elaboration of surgical accesses in the plastic face surgery and restoring bone fragments.