



**СЕКЦІЯ I**  
**ОСНОВИ МОРФОЛОГІЇ ОРГАНІЗМУ ЛЮДИНИ І ТВАРИН, АКТУАЛЬНІ ПИТАННЯ**  
**ПАТОЛОГІЧНОЇ АНАТОМІЇ ТА СУДОВОЇ МЕДИЦИНИ**

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**MORPHOFUNCTIONAL CHARACTERISTICS OF ILIUM ATRESIA IN NEWBORNS.**

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Ileal atresia incidence is 1:1600 in newborns. This malformation is equally common in males and females. The proportion of ileal atresia and that of the jejunum is approximately equal, the proximal part of the small intestine and distal portion of the ileum are mainly affected (31 and 36% of cases respectively). In approximately half of the cases the intestinal atresia occurs in the form of free diverticula; atresia with taenia occurs in less than 40% of cases; membrane form of atresia in this place as opposed to the duodenum can be observed only in 13-20% of cases. Intestinal stenoses occurs by almost 20 times less frequently than atresia. In 6% of cases atresia is characterized by its multiple nature. Ileum atresia is a topical issue of Gastroenterology, that requires surgery in infants and young children. In atresia with fibrous taeniae the preatresic area of the ileum ends with diverticula, in certain areas there are some intestinal segments on both sides. The closed intestinal segments are connected with a mesentery and its fibrous taeniae (type II), which are thin stringlike formations, going from one enclosed segment of intestine to another. These taeniae form a free edge of the mesentery and is actually a thickened free edge of the visceral peritoneum duplication. In complete atresia (type III) the segments of the bowel are completely apart, not only along the intestinal tube, but also along the mesentery. In this case we can observe some disorders in both the intestinal angiogenesis and in the dorsal mesentery.

In the preatresic segment of the ileum on the side of its mucosa, shortening of villi and crypts enlargement are observed. In some areas of the mucous membrane there is no epithelium. The cells become cubic, the epithelial cells get shorter. There is a significant hypertrophy of the muscular layer in the muscular membrane of preatresic segment of the ileum. In morphological studies of the preatresic segment of the ileum on the side of mucous membrane the villi become shorter and the crypts get larger. In the preatresic segment of the ileum in the muscular membrane, there is a significant hypertrophy of the circular muscular layer compared to longitudinal one, hyperplasia of smooth myosites, areas of fibrosis, areas of polymorphonuclear leukocyte infiltration along the blood vessels. In preatresic segments of the ileum there are significant changes in the nerve cells and their processes. There is an increase and change in the shape of neurocytes, thickening of their processes, significant thickening at the ends of dendrites was found too. Nerve fibers that have not undergone decay, have rare residual effects of dyschromia and local edema. Around the middle third of the ileum segment, the vascular glomeruli of ganglia are formed with a dense grid. The areas with atresia undergo the most destructive changes both in the nervous system and in hemocirculatory stream. In the segments of the ileum that has undergone them, significant changes in hemomicrocirculatory stream and its intramural nerve plexuses were found. Intramural arteriolar diameters in most cases are narrowed to 16.70  $\mu$ m. Their contours are winding. The capillaries that surround nerve cells near the atresia segment are dilated and tortuous. Compared with the norm, diameter of the venules in the preatresic and postatresic segments increased by almost twice. The number of arteriolo-venular anastomoses increases.

In the postatresic segment of the ileum morphological changes occur, such as: mucous membrane with submucosa base is in a state of edema, it is removed in some areas. There are some multiple areas of epithelial desquamation. The muscular membrane is thinned, there is a decrease in myositis sizes when their number increased, which is indicative of muscular layer hyperplasia. There are numerous subepithelial swellings and inflammations in the mucosa and submucosal layers.

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**MORPHOLOGICAL AND FUNCTIONAL CHARACTERISTICS OF JEJUNAL ATRESIA IN  
PRENATAL PERIOD OF HUMAN ONTOGENESIS**

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Morphological and functional examination of the intestine that was affected by atresia is quite relevant from the point of view of theoretical research in general and morphology in particular, as well as from the point of view of surgical treatment of intestinal atresia.

The changes in the structure of the atresia, proximal and postural (distal) segments of the intestine have been studied for greater consistency and systematization. The largest expansion of the small intestine reaches 6-8 mm, in a norm in 2 times less. The wall of the empty intestine is thickened by 1.6 times (a norm is 2-3 mm). Atresia with bands of fibrous tissue, the type of villi is shortened, flattened in places, and the lateral surfaces of the tops are covered with epithelium with goblet cells. The height of epithelial cells transforms from high prismatic to low. Somewhere in the apex of the villi the exfoliation of the epithelium is observed, which loses its connection with its own plate of the mucous membrane. There is a transition from desquamation of the epithelium to the adhesion of the tops of the villi. The affected areas are characterized by significant changes in anatomical structure. The muscle membrane of the organ undergoes almost complete fibrotic degeneration (a significant number of fibroblasts, lymphocytic and polymorphic-



cell infiltration are localized in the spinal muscle layer), multiple sites of necrosis are present. These are the most severe manifestations of atresia, the complete exhaustion of the compassionate mechanisms. Directly the areas of atresia represent the alternation of foci of fibrosis and necrosis, where it is difficult to assess the condition of any elements of the intestine. However, it is known that fibrosis and stenosis caused by it with the transition to complete atresia may be due to local ischemia and the resulting hypoxia. At a complete atresia a type in the segment of empty intestine increases the number of cells, especially in the lateral surfaces of the villi. The epithelium in the wall of the intestine is preserved, but the number of goblet cells increases. This is due to the increased functional activity of the epithelial cells, as well as their permeability, due to edema of the wall.

The shortening of villi takes place that are in some places are inclined in one direction and flattened while atresia with type of bands of fibrous tissue in the preatretic segment of the intestine. The lateral surfaces of the villi are covered with a large number of goblet cells, at the top of the villi the epithelium is exfoliated. In the area of atresia of the empty intestine, of the villi, there are significant dystrophic morphological changes that are characterized by complete degeneration of the muscular membrane, especially in the pivotal muscle layer, where a significant number of fibroblasts, lymphocytic and polymorphocyte infiltration are detected, that are characterized by multiple sites of necrosis. In places of atresia, the blood vessels are much dilated, adhesion of red blood cells to the vessel wall is observed. In the area of atresia of the empty intestine, the villi are shortened, crypts are enlarged, in many places the walls of the intestine of the epithelium is absent, the goblet cells are slightly enlarged. Lumen of the empty intestine is narrowed.

The wall is represented by focal shortened and deformed villi of the mucous layer with dystrophic changes in enterocytes, and an increase number of goblet cells. There is swelling of all layers of the wall, diffuse infiltration of the mucous membrane and submucosal layer with lymphocytes and plasmocytes, a significant increase in the proportion of fibrous tissue in the submucosal layer with focal sclerosis. There are no external and internal muscle layers and submucosal layer in the entire segment (and in the place) where the intestine ends blindly. There is a vaccine dystrophy of enterocytes, infiltration of the stroma of the villi and submucosal layers with lymphocytes, plasmocytes and focal hemorrhages.

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#### **VARIANT FEATURES OF BRANCHING OF THE LEFT GASTRIC ARTERY IN FETUSES AND HUMAN NEWBORNS**

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Expansion of possibilities and amount of surgical interventions on the stomach specifies the necessity of perfect study of variant features of the left gastric artery. Surgeons can face different variants of topography of this artery that makes them use special methods which help to provide success of the operating intervention in every individual case. Interest to the operative interventions on the stomach has grown considerably due to increasing of number of people in the world who suffer from considerable body weight and extremely need the operative correction of stomach sizes.

The aim of this work is to determine individual variability of the left gastric artery and its branching. This work became the result of researches analysis of 83 preparations of organocomplexes of the fetuses and human newborns after macropreparation.

Permanent discoveries of new variants of branching of the left gastric artery indicated that the research of this topic is relevant and requires forming of the convenient classification of them for practical application.

Blood supply of the stomach is carried out by the branches of the abdominal trunk. In most textbooks of anatomy typical branching of the abdominal trunk on three arteries is described: the left gastric, general hepatic and splenic. However, such branching is not always observed. In our preparations the left gastric artery was the branch of the abdominal trunk in 75 cases arising directly from the aorta in 5 cases and from the general hepatic artery in 3 cases.

The variants of the indicated artery are related not only to the place of its arising, but also to the topography. So, in 67 observations the left gastric artery approached to the cardiac part of the stomach and gave 2-3 oesophageal branches, after that it curved accurately and directed to its small curvature. In 14 preparations the basic branch approached to the proximal one third of the small curvature of the stomach. And only in 2 cases - below the level between its upper and middle one thirds. Not far from the small curvature of the stomach on 2,8-5,5 mm, the left gastric artery forms a bend, that is returned to the right and downward and then it passes between the sheets of the small omentum along small curvature ( in the distance 0,8-1,5 mm from the last one ) and, as a rule, divides into the anterior and posterior branches. According to the data of own researches and taking into account data from literature, it is possible to distinguish the following forms of branching of the left gastric artery in fetuses and human newborns: 1. Unicellular (5 observations)-the basic trunk becomes the same name right artery without a clear limit; 2. Bifurcation (76 preparations) – the artery was divided into two branches which passed to the front and back walls of the stomach; 3. Three-furcation (2 cases) – the left gastric artery having come to the small curvature of the stomach divided into 3 branches different in the diameter. One of them was anterior, another – posterior and the third one – posterior intramural. Improvement of data which are related to the variant anatomy of the vascular system of the stomach, in