MODERN APPROACHES IN THE DIAGNOSIS AND TREATMENT OF NODAL DEFECTS OF THE ANTERIOR ABDOMINAL WALL IN NEWBORN

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Annotation: The study of special literature on the problem of diagnosis and treatment of gastroschisis and omphalocele showed that clear criteria for the preservation or removal of a fetus with this disease have not yet been created. Gastroschisis and omphalocele are the main diagnostic methods, ultrasound and molecular genetic methods for examining the fetus. But the existing diagnostic methods do not have high specificity, which requires their improvement. The practice of surgical treatment of children born with gastroschisis and omphalocele and the rehabilitation of children with such defects also needs to be improved. This indicates a high interest in the problem of gastroschisis and omphalocele in young children.

Keywords: malformations, newborns, gastroshizis, omphalocele, diagnosis, treatment.

Congenital developmental defects of newborns have gained great medical and social importance in recent years. Congenital developmental defects of the anterior abdominal wall such as gastroschisis and omphalocele are of primary importance. Therefore, despite the progress achieved in improving the quality of modern surgical care, the results of the treatment of these developmental defects are not always satisfactory.

Modern views on the diagnosis and treatment of gastroschisis.

Gastroschisis is a modern international term that refers to a paraumbilical defect involving everything to the right of the normally formed umbilicus, usually with inversion of abdominal organs in newborns [7, 39, 94, 90, 112 , 17, 2, 101, 106, 116, 57, 58, 41]. According to various authors, the prevalence of these defects in newborns ranges from 1:1,200 to 1:21,000 [8, 27, 2, 122, 106, 116], with an average of 1 per 6,000 births. constitutes a situation. However, in recent years, an increase in the number of developmental defects (up to 1:4000 and, according to some literature sources, up to 1:2900) has been noted [4, 8, 15, 94, 90, 92, 2, 106 , 116, 123]. At the same time, gastroschisis is more common than omphalocele.

The causes of gastroschisis have not yet been determined [7, 39, 17, 41]. However, there is information about the risk factors for the development of gastroschisis in the fetus: the young age of the mother, insufficient nutrients in the diet, especially the lack of amino acids (glutathione) and alpha-carotene, the effect of radiation on the embryo during the preimplantation stage, taking medications during the first three months of pregnancy. (aspirin, ibuprofen, phenylpropanolamine), drug use, smoking, alcohol consumption [39, 86, 122, 125, 57, 58]. According to literature, gastroschisis occurs in early embryogenesis, between 5 and 8 weeks. Embryopathogenesis of gastroschisis is based on the local violation of blood flow in the area of vascularization of the right umbilical vein or

omphalomesenteric arteries, with lysis and infarction of embryonic structures, resulting in the formation of a defect of the anterior abdominal wall and its rupture in the future, and inversion of the midgut into the amniotic cavity [4 , 39, 112, 129, 122, 101, 125, 100, 41]. One of the theories suggests that gastroschisis is the result of the rupture of the membranes of the umbilical hernia during the fetal period. Examples are given to confirm this theory, i.e., an umbilical hernia was detected during an ultrasound examination conducted before the 27th week of pregnancy, and "gastroschisis" was diagnosed at a period greater than 35 weeks. Children were born with a diagnosis of gastroschisis [25, 7, 94, 131, 129, 125, 57, 58, 100, 41]. Presuming a developmental delay of 37-52 days of pregnancy makes it possible to logically explain the presence of other anomalies and defects in the umbilical hernia, because rapid and diverse development occurs in this early period [25, 92, 129, 122]. In the literature available to us, the reason for the development of gastroschisis is considered to be an intra-fetal vascular anomaly related to the right omphalomesenteric artery, in which the rupture of the umbilical ring and the event of the contents of the abdominal cavity are observed later [25, 83, 123]. Due to the process of changes in blood vessels, the left omphalomesenteric artery undergoes regression, and the one on the right begins directly from the aorta. The proximal part of the right omphalomesenteric artery becomes the superior mesenteric artery. In turn, the distal part accompanies the omphalomesenteric canal through the umbilical ring and ends in the yolk sac located on the right side of the fetus. If the development of the distal part of the right omphalomesenteric artery is disturbed, infarction and necrosis of the base of the umbilical cord, as well as prolapse of the intestine through this infarcted area, adhesion and resorption of tissues along the edges of the defect at birth occur. This defect is explained by the usual localization of the navel on the right side in gastroschisis. In very rare cases, the defect is located on the left side of the umbilical system [25, 7, 94, 83, 90, 131, 2, 57, 58, 41]. A hernia sac never develops in gastroschisis. Due to a defect in the abdominal wall, a short, untwisted part of the midgut descends, which is supplied with blood from the superior mesenteric artery. The duodenum is parallel to the upper mesenteric vessels, right next to them, and adjacent to the middle part of the transverse colon. These three structures form a junction in which the rest of the small intestine and the ascending colon are located [8, 112, 131, 17, 122, 116]. The middle intestine is often injured by torsion. The intestine, as a rule, is shorter, its diameter is 3-4 times larger than usual, it is covered with gray-green dense connective tissue, which is the result of fetal peritonitis. The sheath is so thick that it is difficult to distinguish the intestines under it. The presence of this shell determines the specific color of the eventrated organs - from gray-yellow to purple-cyanotic. In some cases, this color is the cause of a diagnostic error, and the morphological state of the inverted organs is considered necrosis caused by compression [8, 7, 99, 2, 101, 106]. Up to 40% of children with congenital defects of the anterior abdominal wall are born prematurely. Gastroschisis and hernia of the umbilical system are accompanied by many combined defects of other vital organs and systems. In gastroschisis, unlike omphalocele, several development points are less common [25, 94, 92, 30, 44, 129, 2, 116, 100, 41, 123]. Thus, defects together with gastroschisis occur in 21% of cases. They are mainly expressed by an anomaly of the intestinal tube: atresia of the small or large intestine, Meckel's diverticulum, atresia of the biliary tract. Defects of other organs and systems are much less, urinary system defects occur in 6% of cases, heart and central nervous system defects

occur only in 1% of cases. With hernia of the umbilical cord, many combined birth defects of other vital organs and systems (heart, central nervous system, urinary system), as well as hereditary diseases (Down syndrome, Beikwit-Wiedemann, William-Osler syndrome, trisomy of chromosomes 13 and 18) occurs in 54% of cases [25, 94, 99, 92, 96, 30, 91]. Wide introduction of antenatal screening in medical practice allows not only early diagnosis of congenital pathology, but also helps to improve surgical technologies in neonatal surgery [7, 12, 21, 112, 9, 19, 77, 16, 104, 119, 100]. Currently, special attention is paid to prenatal diagnosis of congenital defects of the anterior abdominal wall. Gastroschisis and umbilical hernia are very easy to detect using ultrasound. The accuracy of prenatal diagnosis is on average 70-80%. Until the 10th week of intrauterine development, the intestine is outside the abdominal cavity of the embryo, that is, in the state of physiological hernia - exophallus. In the 13th week, the intestines of the fetus should return to the abdominal cavity. From that period, gastroschisis and omphalocele can be diagnosed [128, 2, 28, 104, 101, 125, 123]. This condition should be taken into account when examining a woman in the first three months of pregnancy. M.A. Estetov (2001) proved the necessity of the first ultrasound examination at 10-14 weeks of pregnancy and justified the comparative diagnostic signs of gastroschisis and omphalocele [39, 19]. Prenatal diagnosis of gastroschisis is based on the following: 1) determination of the size of the formation attached to the front wall of the abdomen; 2) the absence of a limiting membrane in the organs of the hernia; 3) a separate path of the umbilical vessels that is not related to the hernial organs; 4) unchanged connection area of the umbilical system with the anterior wall of the abdomen [94, 128, 104, 119, 106]. Determination of alpha-fetoprotein in the mother is a very informative test, and its level increases in congenital defects [39, 3, 119].

Gastroschisis has uneven contours sonographically, and the defect of the anterior abdominal wall is located at a certain distance from the umbilical system [25, 15, 12, 99, 9, 17, 28, 104]. Omphalocele has smooth contours due to the echogenicity of the hernia sac, from which the umbilical ridge emerges. Gastroschisis has uneven contours sonographically, and the defect of the anterior abdominal wall is located at a certain distance from the umbilical system [99, 128, 104, 119]. At the same time, the general condition of the fetus, as a rule, does not suffer, which is confirmed by the indicators of fetal blood flow [8, 119]. In addition to ultrasound research methods, maternal serum markers are used for early detection of developmental defects. The study of alpha-fetoprotein and human chorionic gonadotropin is the most convenient and widely used [25, 7, 12, 21, 112, 128, 9, 19, 77, 2, 119, 106, 78]. Early detection of these defects allows to create the most optimal algorithm for managing pregnancy and childbirth. Almost all researchers admit that it is possible to treat congenital defects of the anterior abdominal wall, and accordingly, it is recommended to terminate pregnancy in cases where research has revealed any genetic diseases or multiple combined defects of other organs and systems [25, 7, 94, 33, 67, 104, 116]. However, due to the high risk of injury and infection of the inverted organs in gastroschisis, some authors recommend planned operative delivery in all cases [20]. The issue of the delivery method remains controversial [67]. The criteria for performing a cesarean section with congenital defects of the anterior abdominal wall detected prenatally have not been fully developed. Some authors claim that surgical treatment of gastroschisis is easier when it is diagnosed by ultrasound before the

thickening of the intestinal wall, and early delivery is recommended in such cases [25, 9, 93, 104, 101, 100]. Although many researchers do not report a reduction in mortality during cesarean delivery, obstetricians prefer this method after prenatal diagnosis of gastroschisis [25, 7, 128, 9, 19, 2, 93, 42, 43]. The clinical appearance and severity of the condition of a baby born with developmental anomalies of the anterior abdominal wall depends on the size of the defect of the anterior abdominal wall (it plays a role in patients with omphalocele), the severity of viscero-abdominal disproportion, the maturity of the fetus, other depends on the presence of developmental defects in organs and systems [25, 99, 17, 33, 101]. However, these data are not important in gastroschisis. Gastroschisis is such an obvious and obvious defect that its diagnosis does not cause any difficulties [88, 2, 93]. Clinical signs of gastroschisis include intussusception of abdominal organs and a paraumbilical direct defect of the anterior abdominal wall, usually 1.5-4 cm in diameter, located to the right of the normally formed umbilical system [39, 116]. The edges of the defect have clear boundaries and the hernial sac is completely absent, the liver is always located in the abdominal cavity, anatomically correctly formed. The organs that are everted are usually the stomach, small intestine, and large intestine. In rare cases, the bladder, in girls - the uterus, ovaries and fallopian tubes, in boys - if the testicles have not descended into the womb before birth, they can be [39, 92, 119]. In gastroschisis, intestinal loops are expanded, atonic, infiltrated, covered with a thick layer of fibrin, sometimes attached to a conglomerate and malrotated [4, 15, 39, 94, 88]. The lining of the intestines, or "peel," is formed as a result of peritonitis, a chemical passed inside the fetus, and is often the result of inflammation. Most authors emphasize that it is not possible to differentiate between the small and large intestines located on the common mesentery. The duodenum is located in the abdominal cavity, to the right of the superior mesenteric vessels. The root of the handle is quite narrow and its width corresponds approximately to the diameter of the defect in the anterior abdominal wall. In the fibrinous form, there is a relative shortening of the intestine due to folding, and it is straightened due to absorption [39, 128, 122]. The formation of a pathologically underdeveloped abdominal cavity in a child with gastroschisis is one of the leading symptoms of this defect. World studies have shown that the volume of the abdominal cavity in gastroschisis is 1.5-2 times less than normal [116]. The inconsistency of the volume of the inverted organs with the small volume of the abdominal cavity represents the manifestation level of the viscero-abdominal disproportion syndrome [39, 26, 92, 96].

Children with gastroschisis are often born with signs of prematurity and fetal hypotrophy. Children with gastroschisis are characterized by hypothermia, hypovolemia, hypoproteinemia, pain syndrome, and infection [5, 2, 33]. The presence of ventral intestinal loops leads to rapid loss of fluid and heat, so it is important to prevent hypothermia before surgery. In newborns, hypothermia causes severe disturbances in metabolism, cell and tissue metabolism, development of metabolic acidosis, and bleeding in the brain and ventricles. These complications sometimes frustrate all efforts to treat children with gastroschisis. After birth, the inverted organs are immediately immersed in a sterile plastic bag, on top of which several layers of cotton are placed and fixed to the body to prevent bending and compression of the organs [99, 44, 113, 2, 119, 106] . Covering the intestines with wet gauze is not recommended, as this increases heat loss. The child is placed in an incubator at a temperature of 37 °C and humidity close to 100%. Do not forget to

decompress the stomach with a nasogastric tube (diameter not less than 8) [20, 2]. Gastroschisis is characterized by intrauterine damage to the ventral organs (intestines) and significant immaturity of the abdominal cavity, which forms a viscero-abdominal disproportion syndrome, leading to safe access of the organs to their intended location and closure of the anterior abdominal wall defect. is a set.

Treatment of newborns with defects of the anterior abdominal wall should be carried out from the moment of birth. Anesthetization is performed in the delivery room, the inverted bowel loops are wrapped using sterile napkins moistened with furacillin solution or placed in a sterile synthetic bag. Antibacterial and infusion therapies are initiated [25, 111, 5, 38, 13, 96, 107, 68, 113, 2, 120, 101]. The main method of treatment for gastroschisis and omphalocele remains surgical treatment. However, surgical procedures in these diseases are accompanied by a high percentage of complications, disability and high mortality. Therefore, surgical treatment of children with gastroschisis remains one of the most urgent problems of the neonatal period in pediatric surgery [31, 11, 1, 5, 7, 53, 105, 107, 130, 68, 2, 33, 24, 120, 54]. Preoperative preparation begins from the first minutes of life: infusion and antibiotic therapy, anesthesia and hemostatic therapy. Due to the need to immediately correct the defect, transfer to a specialized department is carried out as soon as possible (urgently) [20, 107, 29, 106].

In the last decade, there have been reports in foreign publications about the use of specially manufactured silicone bags with an elastic spring ring called "spring-loaded silo". In this method of treatment, without the use of general anesthesia, it was possible to carefully submerge the intestinal loops in a container, and then to glue the loop, which is adjustable and firmly fixed, under the anterior abdominal wall. [31, 111, 15, 99, 105, 107, 117, 2, 37, 120, 89]. There is a publication by A. Bianchi et al in 1998 of selective slow bowel resection without general anesthesia as a minimally invasive technique for the treatment of gastroschisis [87, 6, 9]. With the accumulation of treatment experience using the Bianchi method, separate reports on the direct results of treatment appeared [6, 65, 117]. According to some authors, the data on the discussion of the results of the treatment of gastroschisis by the Bianchi method are insufficient to evaluate the quality and effectiveness of this treatment method. Indications and contraindications for the procedure, nature and number of complications, causes of death, and long-term follow-up results after the use of the method of ventralization remain insufficiently studied [6]. In order to prevent the occurrence of high abdominal pressure syndrome, Bisaliyev and co-authors conducted monitoring of abdominal pressure by measuring bladder pressure in 2015. There was no critical increase in bladder pressure [6, 2]. When analyzing the complications occurring in the treatment of gastroschisis, it was found that sepsis, thrombosis of mesenteric vessels, necrotic enterocolitis, adherent bowel obstruction, polyorgan failure syndrome are the most characteristic [11, 38, 96, 24, 120]. The placement of the intestine not under the skin or synthetic patch, but only under the peritoneum helps to quickly eliminate the consequences of aseptic fibroplastic peritonitis. The Bianchi immersion technique differs from other methods of treatment in the absence of septic complications in the postoperative period. According to the data of Bisaliyev and others in 2015, polyorgan failure developed and led to death after Gross operation and Bianchi method. The development of this condition after the Gross operation is due to the traumatic nature of the operation, insufficient pre-operative preparation, and the

development after the Bianchi method of bowel intubation, possibly in the elimination of enteritis, despite the fact that the intra-abdominal pressure is brought to a possible level. explained by the child's inability to adapt to sudden changes in intra-abdominal pressure. However, long-term results of gastroschisis treatment using the Bianchi method have shown complete recovery in 90% of children, quality of life and social utility in all patients [92, 96, 6, 130, 123]. To date, there are many methods of surgical treatment of the uncomplicated form of this disease, which can be combined into two groups: primary radical correction and gradual immersion of intestinal loops into the abdominal cavity, followed by abdominal plastic cavity. Each of the methods has its advantages and disadvantages [31, 36, 117, 2, 37]. Three main methods are used in the surgical treatment of congenital defects of the anterior abdominal wall: a) one-stage autoplasty; b) two-stage autoplasty; c) plastic surgery of the anterior abdominal wall using synthetic materials [25, 11, 111, 7, 61, 38, 105, 107, 112, 9, 36, 117, 130, 37, 24, 89]. When primary radical plasty of the anterior abdominal wall is used, the function of the gastrointestinal system is restored much faster and the treatment time is significantly reduced [11, 1, 7, 15, 53, 66, 107, 117, 37, 54]. In this case, the inverted organs can be immediately lowered into the abdominal cavity. After that, the muscles of the front wall of the abdomen and the skin above them are sutured. However, this method of surgical treatment can be used only in cases of minimal viscero-abdominal disproportion [26, 32, 107, 9, 117]. Otherwise, a significant increase in intra-abdominal pressure leads to the development of respiratory and subsequent cardiovascular failure [32]. If primary radical plasty of the anterior abdominal wall is not possible, methods of alloplasty of the anterior abdominal wall are performed using patches made of plastic materials or an extracorporeal bag for siloplasty [111, 7, 3, 105, 107, 117]. The use of the siloplasty method is technically simple, convenient, and in cases with sufficient experience, it may not require the patient to be taken to the operating room and completely anesthetized. With clear advantages over other treatment methods, syloplasty may become the method of choice in the treatment of gastroschisis with severe viscero-abdominal disproportion [111, 26, 61, 38, 66, 105, 107, 65, 36,117, 37].

Thus, antenatal diagnosis and treatment of gastroschisis remains one of the most important problems of neonatal surgery. The analysis of the existing methods of surgical correction shows that today none of them has absolute effectiveness in the treatment of gastroschisis. Each method has its advantages and disadvantages. A stable trend of increasing the number of radical operations in children with defects of the anterior abdominal wall was noted, which is associated with the improvement of resuscitation care for children, significant improvements in the methods of care of newborns in the postoperative period [79, 107, 104 , 101].

Modern views on the diagnosis and treatment of omphalocele.

Another severe congenital defect of the anterior abdominal wall is omphalocele, which in some literature is also called umbilical system hernia, embryonic hernia, and the defect in the anterior abdominal wall states that these changes occur at 4-10 weeks of pregnancy. according to the information of other scientists, it happens in 5-11 weeks [7, 124, 128, due to the thinning of the tissue of the initial part of the umbilical system, its internal organs come out. In this case, through the defect formed in the front wall of the abdomen, the displacement of the internal organs from the primary primitive peritoneum and the thin transparent or semi-transparent membrane - under the shell covered with Vartonov's

substance - is observed. This membrane covering the organs of the abdominal cavity passes directly to the umbilical system [94, 88, 90, 112, 17, 35, 2, 97, 115, 106, 100, 41]. Disruption of embryogenesis and occurrence of omphalocele by some scientists, 9, 10, 131, 132, 41]. The cause of the umbilical hernia is the failure of the bile duct to close in time, which causes the primary intestine to be caught at the base of the umbilical cord and prevents the normal closure of the anterior abdominal wall. In cases where the physiological twisting of the intestines does not take place, the abdominal cavity does not develop to the appropriate size, or the anterior wall of the abdomen is damaged, some organs of the abdominal cavity are located in the umbilical membrane and cause a hernia of the umbilical system [4, 94, 109 , 90, 131, 17, 132, 106, 100]. According to the review of the literature of recent years, a number of scientists put forward ideas about the violation of the growth coordination of the anterior abdominal wall and abdominal organs, as well as the violation of the rotation and development processes of the intestinal tube based on the formation of omphalocele [7 , 128, 2, 114, 106, 133]. Also, according to another theory of the occurrence of omphalocele, disruption of the midgut during pregnancy leads to the occurrence and development of omphalocele. As a result, a part of the organs is located outside the abdominal cavity and is covered with elements of the umbilical system consisting of amnion, vartonov substance, primary peritoneum, forming a hernia sac [7, 94, 109]. There is information about the risk factors for the development of omphalocele in the fetus: taking medications during the first trimester of pregnancy (aspirin, ibuprofen, phenylpropanolamine), drug use, smoking, alcohol consumption [76, 128]. According to the results of scientific research of some authors, such hernias are divided into three types depending on the period of occurrence: embryonic hernia, fetal or umbilical hernia, and hernias of mixed form. Embryonic hernia develops if the anterior wall of the abdomen and intestines lag behind the development in the third month of pregnancy. In children with embryonic hernia, the membrane of the hernial sac is closely attached to the liver, because the mesoblast that forms the Glisson capsule of the liver does not develop sufficiently, and as a result, the membrane is directly attached to the liver parenchyma. Such hernias play an important role in the high mortality rate. Because an attempt to remove the hernia membrane attached to the liver parenchyma during the operative treatment stage often leads to liver parenchyma damage and bleeding [7, 109, 9, 10, 17, 35, 97, 114, 115, 132, 101, 41] .

According to the analysis of some literature, in 40-60% of cases, omphalocele is accompanied by many joint defects, and in some cases in 80% of cases. These include external cardiac ectopy, bladder exstrophy, epispadias, biliary atresia, anorectal atresia, and Beckwith-Wiedemann syndrome with rectal-bladder fistula [92, 96, 10, 64, 19 , 47, 91]. Also, in 1-6% of cases, omphalocele in children occurs with chromosomal aberrations or trisomy chromosomal diseases, and only the intestine is preserved in the hernia [94, 99, 124, 17].

In most cases, omphalocele occurs as part of a group of genetic syndromes. If the hernia originates in the liver, in 96% of cases, a congenital heart defect is present, which has a negative effect on the treatment results. Also, omphalocele is a part of Beckwith-Wiedemann syndrome and comes with macroglossia, gigantism of internal organs, transient hypoglycemia [20, 94, 124, 92, 2, 115]. As a result of the karyotype examination of the fetus, it is determined that there is a high probability of omphalocele being born with

the above defects, which leads to the recommendation to terminate the pregnancy at an early stage. In such cases, the doctor will fully explain to the parents the characteristics of the defect, the severity of the complications resulting from it, the possibilities of their treatment, and how the next periods of the child's life will go, and based on this, the parents can terminate the pregnancy makes a decision [10, 35, 133]. In recent years, the improvement of modern examination methods has led to an increase in the importance of prenatal diagnosis in neonatal surgery [128, 33]. Prenatal diagnosis of omphalocele consists of three main methods, including UTT, detection of biochemical markers in maternal blood serum (fetoprotein, chorionic gonadotropin, free estriol) and invasively obtained (chorion biopsy, amniocentesis, cordocentesis) fetal tissue (chorion villus, placental cells, amniotic fluid, blood) included [94, 9, 71, 132, 133]. UTT has high sensitivity and complete information, it is convenient to use and relatively easy to conduct examination [12, 19, 71, 80].

Prenatal ultrasound diagnosis of omphalocele reveals a round or oval mass that fills the abdominal cavity and adheres to the front wall of the abdomen. In most cases, the elements of the hernia are formed by the intestinal loops and the liver. The navel is directly attached to the hernia sac. Omphalocele is diagnosed in the 1st trimester of pregnancy, according to some authors, in the 2nd trimester [7, 22, 94, 124, 21, 9, 19, 132]. In this case, it should not be forgotten that there is a normal physiological hernia at 10-12 weeks of pregnancy [128, 19, 106]. Schmidt and Kubli reported that omphalocele was first detected at the 13th week of pregnancy in 1982 (Medvedeva 2000). Medvedeva also writes that in 2000, early prenatal diagnosis of omphalocele was made at 12-13 weeks of pregnancy [128, 63]. Also, the effectiveness of detecting a defect using UTT in the antenatal period depends on the level of the medical institution. According to scientific studies, detection of omphalocele reaches 90% in perinatal centers, 55% in specialized treatment facilities, and 20% in peripheral non-specialized treatment facilities [21, 19, 35]. These data show the feasibility of establishing perinatal centers in all regions or providing non-specialized treatment facilities with modern medical equipment and retraining specialists. The implementation of three-dimensional ultrasound has increased the possibility of diagnosing omphalocele in the antenatal period up to 100%. In particular, three-dimensional ultrasound improves the detection of additional defects (microcephaly, polydactyly, upper lip closure, hydronephrosis) accompanying omphalocele [7, 12, 22, 9, 19, 63, 132]. Currently, in the medical centers of developed countries, determination of fetoprotein and chorionic gonadotropin in blood serum is carried out in the second trimester of pregnancy. First of all, great attention is paid to the diagnosis of Down syndrome, Edwards syndrome and defects of the central nervous system [79, 9, 77, 133, 78, 100]. The efficiency of this method is 60-70% and is not used for independent diagnosis. For this reason, this method is an additional examination method and is used to supplement the results of UTT [12, 132]. In the prenatal diagnosis of omphalocele, it is a perspective to determine the markers in the blood serum of a pregnant woman, not in the second, but in the third trimester of pregnancy. Because the detection of free estriol and 17-hydroxyprogesterone in the serum of a woman in the second trimester of pregnancy increases the efficiency of diagnosing omphalocele to 75-80% [4, 12, 22, 99, 124, 9, 2, 71, 132, 101, 133]. Examination of fetal cells obtained by an invasive method is the third group of methods used in prenatal diagnosis. This examination is carried out in the 7th week of pregnancy in women who are

considered a risk group. Biomaterial is obtained by chorionic biopsy in the early stages of pregnancy, later - by amniocentesis and cordocentesis. This method makes it possible to diagnose all manifestations of chromosomal pathology with 100% accuracy. This method is carried out mainly in women of the risk group with a sick child in the family and allows to prevent the birth of a second or third disabled child [7, 15, 12, 124, 9, 133]. But in many cases, pregnant women refuse to clarify the diagnosis through invasive methods, and this causes the birth of a disabled child. In some cases, even when diagnosed through invasive methods, only 80% of women agree to terminate the pregnancy [96, 9, 2]. In recent years, rapidly developing assisted reproductive technologies - in vitro fertilization, intracytoplasmic injection of spermatozoa, transfer of female and male gametes to fallopian tubes, and other methods increase the risk of developing omphalocele. Children fertilized with assisted reproductive technology have an increased risk of birth defects. The reason is that older women suffering from somatic, endocrine and gynecological pathologies are more likely to use these methods. Therefore, the use of assisted reproductive technologies is carried out only after comprehensive genetic testing of men and women planning pregnancy [7, 12, 9, 35, 106].

Thus, from the results of the analysis of the literature on prenatal diagnosis, the following conclusions can be drawn:

• prenatal diagnosis is one of the main ways of reducing infant mortality and childhood disability. Currently, the problems of increasing its effectiveness have not been fully resolved;

• it is necessary to improve the quality of conducting medical-genetic counseling among the population and medical staff, prenatal diagnosis (improvement of the qualifications of specialists, provision of high-quality equipment, expansion of the range of used methods);

• increasing the role of perinatal centers in providing quality prenatal diagnosis in the regions [7, 22, 95, 19, 100]. When an omphalocele is detected in a fetus, it is advisable to conduct a karyotyping examination to find out if there are placental defects. According to some literature, a combination of chromosomal aberration occurs in omphalocele and Cantrella pentad, Beckwitt-Wiedemann syndrome, cardiovascular pathology in 47% of cases; intestinal pathologies; urogenital system defects in 40% of cases; nervous system defects were found in 39% of cases [94, 60, 83, 92, 9, 82, 115, 84, 70]. Epidural anesthesia gives good results in these cases [29]. It is known that late diagnosis of omphalocele and long-term transportation of the patient negatively affects the general condition of the newborn. Many infants present with rehydration with hemorrhagic complications complicated by hypothermia and bowel perforation. This situation worsens the outcome of the treatment of the patient, whose general condition is already very serious. In the literature, the mortality rate increased in the group of infants with additional malformations with omphalocele in the group of improper postnatal transportation: upper intestinal obstruction - from 23% to 30%, esophageal atresia - from 14% to 23%. to [34, 7, 23, 92, 9, 115, 101, 43, 100]. The classification of omphalocele has been proposed by scientists in different ways and is based on different indicators of the defect. According to the classification proposed by S. Ya. Dolesky (1976), omphalocele is divided into three groups according to the size of the hernia and the defect of the anterior abdominal wall. The first group includes small hernias (the size of the hernia is up to 5 cm, the diameter of the anterior abdominal wall defect is up to 3-4 cm); the second group includes medium-

sized hernias (the size of the hernia is up to 5-10 cm, the diameter of the anterior abdominal wall defect is up to 4-7 cm); the third group includes large size hernias (the size of the hernia is larger than 10 cm and the diameter of the anterior abdominal wall defect is larger than 7-10 cm) [7]. Bairov G.A. According to the classification proposed by (1997) and supported by other authors, omphalocele is divided into the following types according to size: 1) small hernias (up to 5 cm in diameter, up to 3 cm in premature babies); 2) medium hernias (8 cm in diameter, up to 5 cm in premature babies); 3) large hernias (more than 8 cm in diameter, more than 5 cm in premature babies). Also, uncomplicated hernias in omphalocele (unchanged membrane); complicated hernias: rupture of the hernia membrane during pregnancy and congenital eventration; cardiac ectopy; accompanied by additional defects; It is divided into purulent destruction of the hernia sac membrane [4, 7, 94,]. Shabalov N.P. According to the classification proposed by (2004), hernia of the umbilical system is divided into small (diameter up to 5 cm), medium (diameter up to 8 cm) and large (diameter over 8 cm), as well as uncomplicated and complicated types. Complications include rupture of the membrane of the hernial sac with internal organ perforation, infection or suppuration of the membrane. Diagnosis is usually not difficult and is diagnosed at birth. When a large or abnormally shaped umbilical cord is detected in newborns, it should be examined with a transmission beam to rule out a small umbilical hernia [7].

Based on the classification proposed by Yu.F. Isakov (2011), omphalocele is divided into the following forms according to the size:

- Small omphalocele (up to 3 cm);
- Medium-sized omphalocele (from 3 cm to 5 cm);
- Large (giant) omphalocele (5 cm or more).

Also, the size of the defect varies from a few millimeters to 15 cm [15, 57, 58]. The classification of hernias in this case allows for the correct assessment of the general condition of the patient, making an accurate diagnosis, choosing the optimal operative treatment method, and also provides complete information about the volume of procedures performed in the pre-operative period.

The clinical course of omphalocele in babies is uncomplicated and complicated. When uncomplicated hernias develop, a round or oval tumor appears in the umbilical region, ranging in size from a "plum" to the head of a newborn baby and larger. This formation is covered with a smooth shiny, semi-transparent or clear gray membrane through which the abdominal organs can be seen. Based on this, it is possible to make a correct diagnosis when the baby is objectively examined [4, 7, 2, 121]. Omphalocele, like other hernias, consists of three components: a hernia gate with a defect in the skin and aponeurosis of the anterior abdominal wall; hernia sac consisting of peritoneum and umbilical membrane; internal organs of the abdominal cavity, which are part of the hernia formation. When such formation is seen objectively, there is no skin covering, in small and medium hernias, intestinal loops are visible inside the hernia formation, and in large hernias, liver and heart are visible in addition to intestinal loops. includes all the following elements: [4, 74, 2, 115, 70]. In uncomplicated fetal hernias, the thickness of their hernia sacs is almost the same. In some parts of the hernia, these curtains are very thin, colorless and clear, and in other places they reach a thickness of 1 cm, where they become stream-green. This type of difference of the hernia sac occurs due to the accumulation of vartanov material without

uniform distribution along the outlet of the umbilical system and along the umbilical vessels. In this case, the umbilical vein passes through the upper pole of the hernia, and two umbilical arteries pass through the lower pole [103, 106]. The diameter of the anterior abdominal wall defect is 12 cm or more in some cases. This defect is not always proportional to the size of the hernia. A sharply demarcated edge is formed at the transition of the skin to the hernial sac, the epithelial band is 2-3 cm wide, and in significant cases, it is bright red due to the skin capillaries ending in that area. Healthy skin can penetrate up to 2-5 cm into the leg of the bag [4, 75, 102, 103, 101]. The shape of fetal hernia is mainly three types: hemispherical, spherical and mushroom-shaped. The "hemispherical" form of the hernia is found in cases where the bulge and the defect are of the same size, and they are more common. "Spherical" hernias have a narrower base, and the size of the bulge is significantly larger than the defect. A "mushroom"-shaped hernia is characterized by a high skin leg. Most studies have not determined any relationship between the shape and size of the hernia, but a number of publications have confirmed the relationship between the size of the hernia and the volume of the abdominal cavity, mainly emphasizing their opposite ratio, or The larger the hernia, the more organs can fit into it and the smaller the abdominal cavity. This indicates that the size of the hernia has a great impact on the general condition of the child [7, 23, 101]. In cases where the hernia of the umbilical system is not large, the general condition of babies remains satisfactory as usual. In small hernias, intestinal loops are always included. In small hernias, it is possible to easily place the abdominal organs with a well-developed abdominal cavity, and there is no adverse reaction of the child to this procedure [94, 74]. A medium-sized hernia contains several loops of the small and large intestine and 1/3 of the liver. As a result of the cooling of these organs, as well as massive infection of the avascular membrane in the hernia sac caused by the environment, the general condition of the child significantly worsens. Such children come with frostbite, obvious cyanosis of skin coverings. On examination, the abdomen appears to be normally developed. However, the organs of the ventralized abdominal cavity enter the abdominal cavity completely, sometimes partially, with some difficulty. In some cases, babies have a negative reaction to these procedures [7, 94, 109, 95, 115]. Babies with large umbilical hernia are almost always hospitalized in critical condition. Usually, cyanosis is clearly visible in the skin of such children. Body temperature may also increase. Children are lethargic and less active. When examining the abdomen, it is necessary to pay attention to its small size, dark-brown color of the skin of the side surfaces, tension in the epigastric area when breathing. Large hernias always contain a large part of the liver outside the intestine [4, 75, 102, 2, 103, 115]. The location of the liver outside the abdominal cavity in the hernial sac is a consequence of the poor development of the abdominal cavity. In some cases, the heart and lungs can be located inside the hernial sac if diaphragmatic defects are present along with omphalocele. As a result of strong tension, the intra-abdominal pressure increases sharply, and as a result, the organs of the abdominal cavity are compressed, the diaphragm rises, and the organs of the chest are also compressed. From a clinical point of view, there are serious respiratory disorders (increased pressure in the lower cavity and portal vein system, tachycardia, bradyarrhythmia, asystole) [26, 108, 109, 69, 101]. These symptoms disappear only after the forced insertion of organs into the abdominal cavity is stopped [7, 26, 23, 74]. Among the complicated forms of omphalocele, rupture of the herniated amniotic membrane inside

the abdomen is a serious complication that threatens the life of the baby [108, 114, 80, 103]. Children are born with abdominal organs that are not covered by the peritoneum. Such children usually come to the surgical hospital after birth in a very serious condition, with obvious signs of frostbite and intoxication. They are very lazy, have little movement, and cry weakly. Skin coverings are pale, bruised, breathing is shallow, heart tones are muffled, abdomen is tense, not fully developed. Abdominal protrusion of the liver is rare. A defect of the anterior abdominal wall, usually no more than 5 cm. The protruding intestinal loops are bruised, the serous membrane is cloudy, rough, covered with fibrin. The folds are glued together in the form of paper. The wall and mesentery of the enteric intestine are swollen, their veins are enlarged and full. Most often, fragments of the hernial sac membrane and umbilical system pocket are preserved at the edge of the defect, and it is mainly located on the left side. Clinical appearance indicates severe peritonitis [59, 81, 13, 23, 36, 62, 102, 103]. Currently, three main methods of omphalocele treatment are used: conservative method; radical operation - one-stage plastic surgery of the anterior abdominal wall after removal of the hernial sac; palliative-radical operation: two-stage plastic surgery using synthetic prosthetic explants according to Shusters method; Two-stage plastic surgery using flaps according to the Gross method
[11, 126, 5, 7, 108, 53, 45, 107, 127, 9, 102, 117, 18, 46, 49, 114, 106, 54, 89]. In addition to the Shuster and Gross methods of palliative-radical surgery for the treatment of omphalocele, various modifications have been developed and published in recent years. These include plastic surgery with "vicryl" synthetic material prosthesis without cutting the amniotic membrane; It involves subcutaneous approximation of the edges of the fascial defect by fixing the "polyamide" synthetic material mesh (before skin plasty with flaps) on the skin and provides radical surgery at an early age [11, 1, 126, 108, 45, 56, 105, 107, 127, 72, 36, 50, 62, 102, 117, 18, 14, 33, 114, 51, 132]. Based on their experience and technical capabilities, many authors use one or another method in the treatment of omphalocele [11, 61, 105, 72, 98, 102, 18, 46, 73, 14, 103]. Proponents of operative treatment of omphalocele point out that the absence of blood vessels in the amniotic membrane above the hernia leads to their rapid necrosis and, as a result, the infection enters the abdominal cavity. Therefore, it is recommended to carry out the operation on the first day of the child's life, when there is no waste and air in the intestines, and when the amniotic membrane is not inflamed due to infection. Attempting to perform an operation on babies more than one day old, with medium and large omphalocele, with purulent-necrotic changes in the amniotic membrane can cause peritonitis, bleeding or shock in babies. ladi and leads to death. This situation shows that the treatment method should be selected individually in such patients [11, 5, 7, 108, 112, 9, 18, 77, 114, 121, 132]. At the stage of operative treatment of omphalocele, the intra-abdominal pressure should be carefully controlled (the pressure in the inferior vena cava should not exceed 20 mm Hg) [26, 108, 99, 107, 97, 114, 103, 101]. In case of small hernias, it is recommended to eliminate the defect in one-stage operation - plastic surgery of the anterior abdominal wall with reinsertion of the inverted organs into the abdominal cavity. The above method of treatment is also used for medium hernias without additional severe defects. In case of large omphalocele, step-by-step surgical procedure for correcting the abdominal organs in the abdominal cavity and plasticizing the defect with synthetic patches (silastic, reinforced dacron or biomaterials - tutoplast-pericardium) performed [111, 61, 108, 105, 107, 127, 117, 114, 118, 121, 132]. 44.4-100%

of omphaloceles with many additional defects, in cases where operative treatment is not possible, are treated conservatively [11, 1, 126, 7, 95, 96, 9, 50, 98, 102, 18, 46, 14, 55, 97, 118, 43]. Conservative treatment involves treating the amniotic membrane in the umbilical system with silver sulfadiazine, 0.5% silver nitrate, 70% alcohol solution, and 5% povidone iodine solution [134, 110]. Later, the first stage of gradual surgical removal of the defect is carried out after two weeks [1, 40, 18, 14, 55, 51, 103, 43]. Despite the rapid development of neonatal surgery in recent years, many of the proposed methods for operative treatment of omphalocele still have a number of shortcomings. For example, a large ventral hernia is formed after an operation performed according to the Gross method, which, in turn, causes a number of difficulties in caring for the child, and in this case, the plasticity of the aponeurosis defect often requires several stages. Synthetic plastic materials used in Schuster's operation are limited due to their high cost [7, 108, 53, 94, 96, 107, 50, 98, 73, 103]. It can be said that currently there is no universal method of treating omphalocele, but most researchers use two of them - primary and delayed closure [134, 127, 68, 132]. There is another moment related to the assessment of the size of the defect. The definition of a "giant" defect varies, with some surgeons using size alone to describe it, while others define "giant" size as the presence or absence of liver in the hernial sac [108, 48, 107, 52, 102, 117, 118]. The lack of a single point of view on the definition of "giant" omphalocele and causes problems in the comparison of treatment methods [126, 40, 48, 96, 107, 52, 98, 102, 117, 18, 14, 118, 101, 43]. Methods of treatment of children with omphalocele depend on the size of the defect, the gestational age of the child and the presence of accompanying anomalies. Defects with a diameter of less than 1.5 cm are considered as hernias of the umbilical system, and reconstruction (restoration) is carried out immediately after birth [126, 127, 98, 18, 97, 103]. Defects that are larger than 1.5 centimeters in diameter, but do not stretch too much when comparing the edges of the hole, can also be closed after birth. Primary omphalocele repair in these children consists of removal of the hernia sac and repair of the fascia and skin over the abdominal organs. There are several reports of successful primary treatment of giant omphalocele [126, 108, 107, 102, 114, 132]. Kozlov Yu.A. According to (2017y), one-stage plasty of omphalocele is a technique with less aggression, and compared to staged treatment, the results of postoperative recovery of patients are superior. Our study showed significant differences in the duration of artificial lung ventilation and the time of transition of patients to full enteral nutrition in favor of one-stage plastic surgery. After multistage treatment of omphalocele, patients have poor postoperative recovery and often suffer from late postoperative complications such as gastroesophageal reflux and ventral hernia [127, 102, 118, 115, 106].

Summary. According to the analysis of the literature, the cause of birth defects of the anterior abdominal wall in most cases is the failure of the bile duct to close in time. Prenatal UTT is important for solving the problem of saving or terminating pregnancy in cases of congenital defects of the anterior wall of the abdomen, identifying many developmental defects, determining the period of birth and methods of assisting the birth of babies with such defects. The minimum period of antenatal diagnosis of such defects is 12 weeks ± 3 days. The reason why defects are often not detected is that there is no clear scheme of antenatal diagnosis, pregnant women rarely turn to counseling centers, and specialists do not have complete information to identify these pathologies. The issue of choosing the optimal operative treatment method for congenital defects of the anterior abdominal wall has been the cause of

many discussions until now. This situation is related to the anatomical features of omphalocele and gastroschisis. Until now, the use of the radical plastic method, performed using local tissues, which has been recognized as favorable, is limited in cases of clearly expressed viscero-abdominal disproportion defects of the anterior abdominal wall. Performing these operations in patients with a pronounced viscero-abdominal disproportion leads to the development of the inferior vena cava compression syndrome, which is accompanied by serious complications and in many cases leads to death. Today, in order to prevent these situations, surgeons around the world use various methods of plastic surgery of the anterior abdominal wall using synthetic patches. The results of conservative and operative treatment of congenital defects of the anterior abdominal wall are not the same, that is, from good (in case of small omphalocele) to unsatisfactory in cases where it is impossible to eliminate the viscero-abdominal disproportion (in case of large hernias). results up to were observed. According to the analysis of the literature, now antenatal ultrasound diagnosis of congenital defects of the front abdominal wall is 100%, which has led to an increase in the number of babies with this pathology. However, in the prenatal diagnosis of congenital defects of the anterior abdominal wall, the complication or uncomplicated course of the disease in the fetus has not been sufficiently studied, and no clear guidelines have been developed for saving or terminating the fetus in the presence of severe multiple placental defects. In the postnatal period, reports and observation schedules are different, examination methods, transport service criteria and instructions for operative treatment are not the same. In particular, the methods of diagnosis of many severe placental defects accompanied by omphalocele and gastroschisis in babies in the postnatal period have not been fully elucidated. Also, as a result of insufficient knowledge of neonatologists about these defects in babies born with gastroschisis and omphalocele, there are a number of problems regarding the rules of transportation when transferring babies from the maternity ward to neonatal surgery departments. The reason is that the features of transporting babies and providing first aid in these pathologies are not widely covered in the literature. According to the analysis of the literature, in recent years, there are almost no fundamental studies devoted to radical surgical methods of large-sized omphalocele and gastroschisis in babies. In the existing literature on neonatal surgery, the problems of diagnosis and treatment of omphalocele and gastroschisis are usually covered from the point of view of a single defect, and there is little attention paid to the selection of the operative treatment method in the presence of multiple defects or concomitant somatic pathology. Therefore, it is necessary to diagnose omphalocele early and choose the optimal treatment method in this category of patients.

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