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CLINICAL AND MORPHOLOGICAL CHARACTERISTICS OF AN ARTOFACIAL VAGINA FORMED FROM THE COLON (LITERATURE REVIEW)

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Abstract:

The article is devoted to the clinical and morphological characteristics of the transformation of the epithelial walls of the artificial vagina. The researchers note that the study of literature data indicates that the clinical and morphological criteria for the transformation of the epithelial walls of the artificial vagina created from the sigmoid colon are not sufficiently developed. The existing information in scientific publications is very diverse and not systematized. It is noted that the majority of scientific researches are given in foreign sources. At the same time, there is an increase in the frequency of appeals of citizens about this pathology.

Keywords: Malformations of the genital organs, girls, artificial vagina, clinical and morphological characteristics.

INTRODUCTION. According to WHO, malformations are more common in families and countries with inadequate resources. It has been estimated that about 94% of severe malformations occur in middle- and low-income countries, where women often do not have access to sufficient and good enough food and may be exposed to an agent or factor, such as infection or alcohol, that provokes or exacerbates abnormalities in prenatal development [1,16]. Moreover, motherhood in adulthood increases the risk of chromosomal abnormalities, including Down syndrome, while motherhood at a young age increases the risk of some congenital malformations [12,19].

Female genital abnormalities account for 4% of all congenital abnormalities and occur in 3.2% of women of reproductive age. Malformations of the uterus are found in every 3 women with infertility and in every 6 woman with pregnancy failure or abnormal deliveries. The most frequent anomalies are those of organs developing from the uterine ducts: uterine and vaginal malformations (uterine doubling, bicornuate uterus, intrauterine septum, unicornuate uterus). The incidence of these malformations is 0.1-3.8% in the general population of women (Krugliak D.A. et al., 2018)[9]. The incidence of intrauterine septum development ranges from 1:200 to 1:600 newborn girls. The incidence of falloplasia of the fallopian tubes and unilateral agenesis of 16 gonads, which is difficult to estimate, may be 1:24,000 newborn girls according to the literature. One in 4000-5000 newborn girls has uterine and vaginal aplasia, and bladder ectrophy or cloacal malformation occurs at a rate of 1:50,000 newborns. According to the Kulakov Research Centre for Obstetrics, Gynaecology and Perinatology. The incidence of uterine and vaginal malformations is 6.5% among girls with gynaecological pathology. The frequency of uterine and vaginal doublings with partial aplasia of one vagina reaches 11.5% of the total number of patients with uterine and vaginal malformations. In recent years, there has been a 10-fold increase in the incidence of genital malformations in girls [11].

In particular, Mayer-Rokitansky-Kuester-Hauser syndrome (MRCS) is a disorder of intrauterine ductal development leading to total vaginal and uterine aplasia, diagnosed in 1 in 4500-5000 newborn girls (Committee on Adolescent Health Care, 2018; Nakhal R.S., Creighton S.M., 2012) [21,33]. The etiology of the syndrome is poorly understood. According to world statistics, the role of hereditary factors in the formation of malformations of the reproductive system ranges from 10 to 25%. The significance of occupational hazards in the follow-up of parents (contact with chemical agents and radiation), as well as specific teratogenic

factors remain unclear, which prevents the development of preventive measures aimed at minimising uterine and vaginal malformations.

The vast majority of these abnormalities manifest and are diagnosed in adolescence. An important clinical step in the treatment of patients with vaginal aplasia is the creation of an artificial vagina - colpopoesis (from the Greek colpos - vagina, poesis - to create), aimed at enabling these girls to have a full

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sexual life. There are two types of treatment: non-surgical colpoelongation (bloodless colpopoiesis) and surgical - creation of a vagina from peritoneum, skin, a piece of intestine or alloplastic or synthetic materials.

Given the emotional consequences of psychological distress (loss of opportunity to be a biological mother, feeling abnormal, lack of equality with peers) and the compassion of others after diagnosis, professional psychological support should be an integral part of medical care at all stages of treatment, which also serves as a guarantee of success (Deans R., Berra M., Creighton S.M., 2010) (22). Adequate counselling and timing of vaginal establishment, which should be individualised and gentle with regard to age and psychological readiness to initiate therapy, are therefore important (Committee on Adolescent Health Care, 2013) (20). It should be understood that vaginal length alone cannot be a parameter quantifying treatment and its success (Liao L.M., et al., 2011) (27). Group communication with adolescents suffering from the same disease improves psychological outcome. In this regard, there is a need for a team approach and adequate psychosocial support for the lifelong management of such patients with reproductive issues (Edmonds D.K., et al., 2012; Callens N., et al., 2012; McQuillan S.K., Grover S.R., 2014) [24,18,31].

It is important to note that timely sexual desire and need for sexual activity in women with vaginal and uterine aplasia serve as a traumatic mental factor, leading to the subsequent formation of neurosis-like disorders: depression, anxiety, as well as

Mistrustfulness with obsessive-compulsive symptoms, feelings of inferiority. The patients are characterised by delayed thought operations: they solve problems of comparing and classifying objects mainly at the pre-adolescent level. These findings, in the opinion of psychologists, indicate a lack of formal logical connections which should be present as early as 15-16 years of age. Patients with this pathology are characterized by low self-esteem on the femininity scale; self-identification with younger individuals, lack of differences in the description of male and female gender roles and a clear idea of their own gender identity (Adamyan L.V. et al., 1998) [2].

Surgical neovagina formation in such patients is recommended by the international community if the woman expresses a desire to be sexually active (Bezhenar V.B., et al., 2012) (4). Surgery is a contingency method if primary therapy fails or if the patient persists. Currently, a unified surgical approach has not been developed. Due to the extremely complex technique of surgical treatment in this rare pathology and the need to equip the operating theatre with high-tech equipment, the methods of creating a neovagina by surgery differ depending on both the clinic and its location. (Ugryumova L.Y., 2008; McQuillan S.K., Grover S.R., 2013) [13,30]. All surgical techniques have a treatment success rate of 80 to 90%, but this does not exceed the success rate of non-surgical approaches (Edmonds D.K., 2003) [23].

Clearly, a differentiated approach to the prognosis of the engraftment of an arterial vagina formed from the colon and the development of complications is necessary, assessing the individual risks of the patient.

Conservative and operative methods of treatment have been developed and established over a long period of time with possible modifications. Surgical techniques are divided into tractional and transplantation techniques. The Vecchietty, Abbe-McIndoe and Davydov methods are considered the most commonly used and recognised all over the world.

Vecchietty method: With this technique, acrylic sutures are passed from the vaginal fossa through the vaginal-vaginal space into the pelvic cavity and then onto the anterior abdominal wall to a traction device. The Abbe-McIndoe method is the formation of a vagina from tissue taken from the thigh or buttocks. The disadvantages are a cosmetic defect (scar), scarring, and vaginal hair growth. An interesting modification of the Abbe-McIndoe method was proposed by a team of authors, where autologous vaginal tissue cultured in vitro was used as a graft (Benedetti Panici P., et al., 2015) [17].

Twenty-three patients are known to have received this treatment, and 12 months after surgery, satisfaction with their quality of sexual life has been reported using the Female Sexual Function Index questionnaire. Autologous cell lines from the vaginal mucosa are currently being investigated for autografts. This is a promising technique with prospects in this field For intestinal vaginoplasty, the sigmoid, ileum or jejunum have been used. With this technique, there is no problem of shortening the vaginal length and the need for prolonged use of dilators, dry neovagina (sometimes excessive discharge with intestinal odour), but this method of treatment requires laparotomy (in rare cases, laparoscopic) surgery (Mane S.B., et al., 2010) (29). The length of the vagina in intestinal vaginoplasty is greatest with the lowest subjective estimates of sexual satisfaction (McQuillan S.K., Grover S.R., 2014) [31], which means that the percentage of complications is high (prolapse of the neovaginal walls, including during sexual intercourse, abscesses and

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intestinal obstruction, scarring of the neovaginal walls) (Strizhakova M.A., 2005) [10]. The most frequent complications after surgical treatment were rectal trauma and obliteration of the neovagina (Willemsen W.N., Kluivers K.B., 2015) (38). According to a group of researchers, the best results are achieved in the treatment of patients with vaginal aplasia using minimally invasive surgery and a multidisciplinary approach to restore quality of life indicators, both physical and psychological and sexual functioning (Torres-de la Roche L.A., Devassy et al., 2016) [36].

In Russia, conservative (bloodless) colpopoiesis is performed using the technique proposed by B.F. Sherstnev, using a device with a retractable bougie - the colpopoelongator (1965). The action of the device is based on the ability of tissues to stretch at a constant regular pressure, not exceeding the limits of their elasticity and adaptive capacity [14].

The 2018 American Congress of Obstetricians and Gynaecologists resolution also states that non-operative vaginal distension should be paramount, and with competent counselling and emotional preparation, almost all patients (90-96%) can achieve anatomical and functional success. Vaginal dilatation is widely considered as a first-line therapy in different countries of the world (UK, Australia, USA and some regions of Russia) (Callens N., et al., 2012; ACOG Committee Opinion. No. 274, July 2002) [18,15]. The method proved to be optimal, as it is not associated with the risks of surgical intervention, the technique is easily performed by the patient, the method is cost-effective and clinically effective, and safe (Routh J.C., et al. 2010) [35]. These aspects have been confirmed by researchers on the basis of extensive experience with dilatation. The creation of neovaginal vagina of 5.0-7.0 cm in length, up to 10 cm (when performing 2-3 times a day for 20 min, the duration of treatment is 5.5 months) is considered to be a functional success of the treatment. No correlation between vaginal length and sexual satisfaction has been observed (Gargollo P.C., et al., 2009) (25).

The choice of treatment is always a compromise between the individual needs of each patient and the experience of the surgeon. There are sporadic studies in comparative aspects of surgical correction and conservative management. For example, N.P. Willemsen et al. (2015) retrospectively compared 2 techniques: conservative - Frank and operative - Davydov. The average vaginal length after dilatation was 6.7Ґ}0.5 cm, with the Davydov method a 7.4Ґ}2.1 cm. A vaginal length of 5.0 cm or less was considered by the authors to be a negative treatment result. Complications reported include dilatation into the urethra, wall prolapse in the Frank method, bowel perforation and fistula formation in the Davydov method [38]. For intestinal vaginoplasty, the sigmoid, ileum or jejunum have been used. With this technique, there is no problem of shortening the vaginal length and the need for prolonged use of dilators, dry neovagina (sometimes excessive discharge with intestinal odour), but this method of treatment requires laparotomy (in rare cases, laparoscopic) surgery (Mane S.B., et al., 2010) (29). The length of the vagina in intestinal vaginoplasty is greatest with the lowest subjective estimates of sexual satisfaction (McQuillan S.K., Grover S.R., 2014) [31], which means that the percentage of complications is high (prolapse of the neovaginal walls, including during sexual intercourse, abscesses and intestinal obstruction, scarring of the neovaginal walls) (Strizhakova M.A., 2005) [10]. The most frequent complications after surgical treatment were rectal trauma and obliteration of the neovagina (Willemsen W.N., Kluivers K.B., 2015) (38). According to a group of researchers, the best results are achieved in the treatment of patients with vaginal aplasia using minimally invasive surgery and a multidisciplinary approach to restore quality of life indicators, both physical and psychological and sexual functioning (Torres-de la Roche L.A., Devassy et al., 2016) [36].

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D.K. Edmonds et al (2012) identified several factors for non-acceptance of the Frank technique: cultural, social and psychological. The main factor was social: lack of conditions and equipment in the country to perform dilation. A number of authors noted nuances that hinder dilation, such as non-compliance, pain during dilation, fear of vaginal damage, and lack of awareness of the technique. And an effective motivation is a previous attempt at sexual intercourse (24).

The intercellular matrix of connective tissue is a multicomponent system, with elastin, collagen, glycosaminoglycans being the main structures. Elastin and collagen fibers determine tissue extensibility. Elastin fibers are components of the extracellular matrix and give elasticity (Liu X., et al., 2004) [28].

Elastin, which is a part of the connective tissue, gives it the property of elasticity - reversible stretching without additional energy consumption (Kamoeva S.V. et al., 2013) [6].

The formation of elastin fibers is catalyzed by the enzyme lysyloxidase (LOX). Flexible elastin fibers are not formed solely by elastin, they consist of a core proper built from the rubber-like protein elastin, and the outside is protected by microfibril glycoproteins which include fibrillins (FBL1, FBN3 genes), fibulins (FBLN1, FBLN2, FBLN5 genes) and emilins (EMILIN1, EMILIN2, EMILIN3, EMILIN4) (Kesova M.I, 2012; Kamoeva S.V., 2015; Veropotvelyan P.N., et al., 2016) [8,7,5].

Elastin production is unique among other connective tissue proteins in that elastin biosynthesis is limited to a short period of development in most organs. Production of fetal elastin fibers in intact tissues in the third trimester of intrauterine life may suffice from the beginning to the end of human life. Production of elastin, necessary for elastin fibre formation, practically stops after puberty, and fibre assembly is completed by maturity, when tropoelastin synthesis ceases. Later on, with age, degradation of these fibres occurs, leading to loss of elasticity of vascular and lung walls, as well as skin. In spite of all the above, until now it has not been possible to estimate the density of the tissues of the "vaginal fossa" (Yanagisawa H. et al., 2002) [39].

These planned studies in combination with other clinical and morphological characteristics of sigmoid vaginal epithelial wall transformations are likely to provide new information important both for understanding the fundamental aspects of complications and for improving clinical staging and identification of patients with genital malformations suitable for surveillance or active therapy, as well as for timely prevention of complications.

The studied literature data indicate that clinical and morphological criteria for transformations of the epithelial walls of the artificial vagina created from the sigmoid colon are underdeveloped. The existing information in scientific publications is very diverse and not systematized. It should be noted that almost all scientific information is from foreign sources. There are no statistical data concerning the problem under study in Uzbekistan, although there is an increase in the frequency of citizens' appeals concerning this pathology (Alimbayeva G.N., 2012) [3].

CONCLUSION. Therefore, all the above findings indicate the need for purposeful research to study the nature and pathogenesis of morphological changes in patients with arterial vagina formed from the large intestine. The findings will undoubtedly influence the quality and validity of medical care for patients with genital malformations.

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