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MODERN VIEWS ON THE TREATMENT OF INGUINAL HERNIAS

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ABSTRACT

The main forms of classification of inguinal hernias are described. The most reasonable classification of L. M. Nyhus inguinal hernias is presented, which allows comparing the results of hernioplasty performed by domestic and foreign authors. The history of traditional hernia repair techniques is reflected. Attention is focused on the most effective methods (Shouldice, Lichtenstein, endoscopic methods), which have gained worldwide fame and have significantly improved the quality of life of patients. It is indicated that the method of hernioplasty should be determined by the degree of destruction of the posterior wall of the inguinal canal (and the inner inguinal ring). It has been established that the extensive experience of hernia surgeries performed by foreign and domestic authors raises concerns about the implantation of synthetic materials that have a negative effect on the patient's quality of life.It is indicatedthat the search for new methods of reconstruction of the inguinal canal remains an urgent medical problem.

1. Principles of classification of inguinal hernias. The classifications of inguinal hernias adopted by domestic and foreign authors in the first half of the XX century were based on the anatomical features of inguinal hernias, included oblique inguinal hernias, which in turn were divided into congenital and acquired, direct inguinal hernias, and supravesical inguinal hernias . [1, 8, 13, 18, 20, 23]. In 1970, Halverson and McVay identified five groups of inguinal hernias:; - medium oblique; - large oblique and straight lines; - femoral; combined. In 1987 Lichtenstein I. L. based on the analysis and treatment of 6,000 hernias divided direct inguinal hernias into five categories: - the entire posterior wall of the inguinal canal; - the medial part of the posterior wall of the inguinal canal; - its lateral part; - diverticular; - others. In the late 80s of the XX century , Gilbert divided inguinal hernias into five types. Rutkow and Robbins expanded this classification in 1993, introducing the sixth and seventh types of hernias. Классификация Gilbert-Rutkow-Robbins (1993) classification: **oblique**: I-small; II-medium; III-large; **straight**: IV with destruction of the entire posterior wall of the inguinal canal; **V- diverticular; VI – combined** (oblique and straight); **VII-femoral.** In 1995 , Schumpelick and Arit published a classification of inguinal hernias known as the Aachen Classification. This classification combines the principles of the traditional classification of inguinal hernias, and methods for measuring abdominal wall defects. Hernias are also classified according to the size of the hernial defect: less than 1.5 cm-type I, from 1.5 to 3 cm-type II, more than 3 cm-type III. In the work of the I International Conference "Modern methods of hernioplasty and abdominoplasty using polymer implants", held in Moscow (2003), in the report " Modern view on the problem of treatment of inguinal hernias. On the issue of classification of inguinal hernias " it was noted that it is necessary to adopt a new classification of inguinal hernias for the possibility of comparing the results of domestic surgeons with the materials of foreign authors. The conference decided to recommend the classification of inguinal hernias proposed by L. M. Nyhus as a working classification [2, 12, 19, 21]. Classification by L. M. Nyhus (1993). Type of hernia: I-small oblique, II-medium oblique, III A-direct, III B-large oblique, III C-femoral, IV A-direct recurrent, IV B-oblique recurrent, IV C-femoral recurrent, IV D-combination A, B, C recurrent.

2. Methods of hernia sections. Surgical treatment of inguinal hernias was impossible without major anatomical work bySooreg, who published a manual on

the anatomy and treatment of inguinal hernias in 1804. He first defined the transverse fascia, the deep inguinal ring, and gave a clear concept of the inguinal canal. The first attempt at radical surgery was made in 1881. LucasChampionniere, who opened the aponeurosis of the external oblique abdominal muscle and removed the hernial sac to the level of the deep ring of the inguinal canal. Hesselbach in 1808 described the inguinal triangle, as well as the ilioplonal cord. Surgical intervention, referred to as hernioraphy or hernioplasty, is the only treatment for hernias [3, 14]. Many methods of hernioplasty with tissue tension have been developed, and there are many modifications of these methods. Detailed descriptions of these techniques can be found in surgical textbooks. Marcy plastic surgery was developed in 1892 and is used only for oblique inguinal hernias. This technique involves the reduction of hernias, as well as in order to prevent protrusion of organs through the inner inguinal ring [17].Most recurrent hernias are direct, with the hernial gate fibrotic and thickened. Such hernias are easier to close with an obturating implant, also developed by I. L. Lichtenstein. The author described an obturating implant made of polypropylene mesh, which is first folded in the form of a triangle, and then rolled into a cylinder [21, 23]. Rutkow and Robbins made popular the technique of "plugs and patches" in the treatment of oblique and direct inguinal hernias. Such an obturator has a larger size and lower density than the previously described I. L. Lichtenstein obturator. The appearance of the Rutkow and Robbins operation site after it ends is the same as for the Lichtenstein operation, described above. The relapse rate using this technique was also less than 1% [19]. Gilbert described "seamless" hernioplasty. The flat polypropylene mesh is folded into an umbrella-shaped plug and inserted through the inner inguinal ring. This technique was also described by Moran and was widely used in clinical practice at the National Outpatient Hernia Institute, located near Los Angeles. Since 1992, постепенно была пересмотрена the traditional concept of inguinal hernia treatment has been gradually revised. The methods of laparoscopic hernioplasty according to J. D. Corbitt (1992), hernioplasty "without tension" according to I. L. Lichtenstein (1996), hernioplasty according to E. E. Shouldice (1998)were introduced. Patients with large oblique (often inguinal-scrotal) and direct inguinal hernias, in which the posterior wall of the inguinal canal is destroyed, are accompanied by a large percentage of relapses, which in summary statistics increases the frequency of failures to 10% or

more. Most often, these are patients with a long period of herniarepair, patients with congenital connective tissue weakness and bilateral lesions, or the elderly [17]. In case of oblique inguinal hernias with the expansion of the inner inguinal ring, but the posterior wall of the inguinal canal is preserved, it is advisable to use methods of plastic surgery with your own tissues.Such hernias are more common in young men of physical labor. Well-known methods in Russia plastics according to Bassini and N. I. КукуджановуKukudzhanov are considered reliable in such cases. Abroad, in such cases, the method of choice is plastic according to E. E. Shouldice. The use of modern mesh prostheses made of polypropylene and extensive accumulated experience make surgeons wary of implanting synthetic materials. The reason for this is the negative consequences of the installed endoprostheses [16, 22]. A special place is occupied by patients with recurrent and bilateral inguinal hernias. The former are distinguished by the complexity of anatomical relationships and the lack of their own tissues suitable for plastic surgery. The latter often have a congenital or acquired weakness of the connective tissue and need to perform surgery on both sides, which is very traumatic when using conventional plastic surgery methods . In case of recurrent hernias, the use of traditional methods of plastic surgery did not justify itself. The frequency of relapses exceeds 10%, in addition , methods based on the elimination of the inguinal canal (Postempski) dramatically change the anatomy of the inguinal region, which makes it difficult to perform repeated operations in case of recurrent hernia [16, 22]. Nyhus L. M. in 1959 proposed extraperitoneal access to the posterior wall of the inguinal canal, which made it possible to close the hernial spaces. gate, leaving intact the scar-altered anterior wall of the inguinal canal. This method has found wide support in the United States, but has not taken root in Russia, primarily due to the lack of high-quality synthetic material and sufficient technical complexity. Since the late 80's, various laparoscopic techniques for strengthening the posterior wall of the inguinal canal have been developed. The most widespread method due to its physiological validity and reliability was J. D. Corbitt (1993). The relapse rate in most statistics does not exceed 2%. With the introduction of laparoscopic technologies, simultaneous implementation of bilateral hernioplasty and other combined interventions has become commonplace [7, 8, 10, 12, 20]. It is the low injury rate and short rehabilitation periods that have made laparoscopic hernioplasty popular, and some

clinics consider it the method of choice for almost any type of inguinal hernia [10]. Until a few years ago, this position seemed legitimate, but the parallel development of other minimally invasive techniques in recent years has refuted this opinion. Relapse rates of up to 6% or more have been reported for long-term follow-up. In addition, the method is technically complex and requires special training; complications are rare, but when they occur, they are very serious; the method is expensive and requires general anesthesia. These factors limit the use of laparoscopic hernioplasty to strict indications: for recurrent and bilateral hernias, as well as when it is necessary to perform combined laparoscopic operations in the abdominal cavity. G. M. Rutenburg and A.V. Protasov describe a new method of endoscopic plastic surgery of the deep inguinal ring for large inguinal hernias (defect more than 3 cm). They review the experience of using this technique in 18 patients of different ages. Wide application of the new methodology allowed significantly expand the indications for laparoscopic hernioraphy [19]. A congenital inguinal hernia has a negative effect on the testicle. As a result of the conducted studies, most patients with congenital inguinal hernia showed pronounced changes in seminal fluid up to oligospermia of the third degree and azoospermia .Thus, both oblique and direct inguinal hernias have a negative effect on the spermatogenic function of the genital gland. The degree of suppression of spermatogenic function is determined by the period of existence of a hernia, in which morphological signs of testicular atrophy already exist before surgical treatment. While recognizing the adverse effect of an inguinal hernia on функциональноесостояниетesticular function, researchers agree that a traumatic hernia repair can cause significantly more damage to the sex gland than the inguinal hernia itself. Disorders of arterial circulation after inguinal canal plasty by traditional methods are characterized by chronic ischemia and according to Doppler studies of the spermatic cord vessels in 25% of cases are accompanied by a decrease in testicular blood flow by 2.2-2.5 times A decrease in blood and lymph outflow from the testicle at the level of the spermatic cord aggravates hypoxia of the genital gland, causes changes in scrotal thermoregulation and, along with other factors , contributes to violation of the morphofunctional state of the testicle. At the same time, in 2.5 – 3% of cases, chronic orchitis occurs. Maturing spermatids and especially sperms have antigenic properties. Therefore, violation of the hematotesticular barrier leads to the formation

of antibodies to the spermatogenic epithelium of the seminal tubules in the blood with the development of autoimmune infertility. The hematotesticular barrier performs both protective and trophic functions. Violations in its structure make the barrier permeable not only for T-lymphocytes and antibodies, foreign and toxic substances, but also sharply worsen the trophism сперматогенногоof spermatogenic cells. Contact with immunologically competent cells leads to the appearance of antibodies with cytotoxic properties to testicular tissue in the blood serum. Therefore, if the spermatic cord is injured , autoimmune aspermatogenesis with germinal tubular aplasia may occur. Some researchers believe that testicular atrophy develops against the background of impaired venous and lymphatic outflow. The frequency of this complication and the severity of clinical manifestations depends on the method of plastic surgery, the technique and trauma of the manual performed, as well as the tension of the stitched tissues and the degree of compression of the spermatic cord. Testicular edema after hernioplasty leads in 50% of cases to testicular atrophy on the side of the performed operation. Actively implemented laparoscopic inguinal hernioplasty has a lower percentage of complications. However, serious complications are possible in the form of internal bleeding (in 2-2.5% of cases), persistent neuralgia due to damage to the femoral-genital nerve (up to 3%), infectious complications in the allogeneic region graft (in 2-4% of cases). Thus, surgical treatment of inguinal hernias should be carried out taking into account the possible negative impact on the blood supply and innervation of the sex gland, its thermoregulation, exocrine and endocrine function, and the structure of the vas deferens. It follows that when searching for new methods of reconstruction of the inguinal canal after herniation, it is necessary to take into account not only the possible relapse, but also the risk of infertility, being an actual medical problem that affects the patient's quality of life.

Conclusion 1. The development of herniology follows the path of increasing the reliability of the applied methods of inguinal canal plastic surgery while reducing the injury rate of the techniques. It is generally accepted that the choice of surgery is primarily determined by the degree of destruction of the posterior wall of the inguinal canal, the age of the patient, the duration of the hernia, the nature and size of the hernia. 2. The use of modern mesh prostheses made of polypropylene and the extensive accumulated experience alert surgeons to the implantation of synthetic

materials. The reason for this is the negative consequences of the installed endoprostheses. 3. Endoscopic techniques, due to their complexity, high cost and not always sufficient reliability, are mainly used for recurrent and bilateral hernias, as well as for performing combined laparoscopic interventions. 4. When searching for new methods of reconstruction of the inguinal canal, it is necessary to take into account first of all the possible relapse and the risk of relapse after herniation, which is an urgent medical problem affecting the quality of life.the patient.

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