

TENSIONED HERNIOPLASTY AND ABDOMINOPLASTY IN PATIENTS WITH MORBIDE OBESITY

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Abstract: surgical treatment of hernias of the anterior abdominal wall remains an urgent problem, since hernia-bearing occurs in 4-7% of the world's population and there is no tendency to reduce the number of such patients. The aim of the study is to conduct a comparative analysis of traditional and non-tight methods of hernioplasty with hernias of the anterior abdominal wall, improve hernioplasty methods, the frequency of relapses and complications in the near and long-term postoperative periods.

The problem associated with overweight has existed for a very long time, but nevertheless, advances in the treatment of obesity are very small and the number of patients with morbid obesity is growing. According to the WHO, over 30% of the world's population suffers from overweight. All factors causing excess body weight lead to a weakening of the muscular aponeurotic framework with subsequent formation of abdominal ptosis. For plastic surgery of the anterior abdominal wall in modern surgery in patients with morbid obesity, non-tensioning methods are more preferable, since according to the studies of many authors with stretch hernioplasty, the recurrence rate reaches 20-63%, while in non-tension plastic surgery it is 8-30.3%.

The material of this study was 62 patients with morbid obesity who were hospitalized in the period from 2010 to 2019 in the surgical department No. 2 of the Republican Clinical Hospital in Nalchik on the basis of Hospital Surgery of KBSU. In our work, all patients had ptosis of the anterior abdominal wall of III (n = 44) and IV (n = 18) degrees of obesity. The patient underwent surgery to eliminate the skin-fat apron and non-tension abdominoplasty using a polypropylene mesh, in the presence of cholelithiasis, a cholecystectomy was performed.

As the results of the study showed, in 38.5% of patients there were some complications of an inflammatory nature, with somewhat more complications such as seromas, lymphorrhea and, as a result, purulent-inflammatory complications. This is due to the fact that patients underwent abdominoplasty in which a wide mobilization of the subcutaneous fat layer is performed and, accordingly, the risk of developing seromas and lymphorrhea is increased. Patients were hospitalized from 16 to 28 days. All patients were discharged in satisfactory condition with recommendations. In terms of the functional effect, due to the optimal scheme of preoperative preparation and abdominoplasty, an improvement in external respiration was noted, and there were no complications from the cardiovascular system. All patients were satisfied with the obtained aesthetic result.

Keywords: classical transverse abdominoplasty, non-tension hernioplasty, diastasis of the rectus abdominis muscles, umbilical ring hernias, giant hernias, morbid obesity.

НЕНАТЯЖНАЯ ГЕРНИОПЛАСТИКА И АБДОМИНОПЛАСТИКА У ПАЦИЕНТОВ С МОРБИДНЫМ ОЖИРЕНИЕМ

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Аннотация: хирургическое лечение грыж передней брюшной стенки остается актуальной проблемой, так как грыженосительство встречается у 4-7% населения Земли и тенденции к снижению количества таких больных не отмечается. Целью исследования является проведение сравнительного анализа традиционных и ненапряжных методик герниопластики при грыжах передней брюшной стенки, совершенствование методов герниопластики,

снижение частоты рецидивов и осложнений в ближайшем и отдаленном послеоперационных периодах. Проблема, связанная с избыточной массой тела, существует очень давно, но тем не менее успехи по лечению ожирения очень малы, и все больше растет количество больных с морбидным ожирением. По данным ВОЗ избыточной массой тела страдают около 30 % всего населения Земли. Все факторы, вызывающие избыточную массу тела, приводят к ослаблению мышечно-аponeвротического каркаса с последующим формированием птоза живота. Для пластики передней брюшной стенки у пациентов с морбидным ожирением в современной хирургии более предпочтительны ненапряжные методики, так как по исследованиям многих авторов при натяжной герниопластике частота рецидива достигает 20-63%, в то время как при ненапряжной пластике 8-30,3%.

Материалом данного исследования стали 62 больных с морбидным ожирением, находившиеся на стационарном лечении в период с 2010 по 2019 гг. в хирургическом отделении № 2 Республиканской клинической больницы г. Нальчика на базе Госпитальной хирургии КБГУ. В нашей работе все больные имели птоз передней брюшной стенки III (n=44) и IV (n=18) степени ожирения. Больным выполнены операции по ликвидации кожно-жирового фартука и ненапряжная абдоминопластика с использованием полипропиленовой сетки, при наличии ЖКБ производилась холецистэктомия.

Как показали результаты исследования, у 38,5% больных имели место те или иные осложнения воспалительного характера. Чаще имели место такие осложнения, как серомы и лимфорей, приводящие впоследствии к гнойно-воспалительным осложнениям. Это объясняется тем, что при выполнении абдоминопластики производится широкая мобилизация подкожно-жирового слоя, что существенно повышает риск развития сером и лимфорей. Больные находились на стационарном лечении от 16 до 28 дней. Все больные выписаны в удовлетворительном состоянии с рекомендациями. В аспекте функционального эффекта, благодаря оптимальной схеме предоперационной подготовки, выполнения абдоминопластики, отмечалось улучшение показателей внешнего дыхания, а осложнений со стороны сердечно-сосудистой системы не было. Все больные остались довольными полученным эстетическим результатом.

Ключевые слова: классическая поперечная абдоминопластика, ненапряжная герниопластика, диастаз прямых мышц живота, грыжи пупочного кольца, гигантские грыжи, морбидное ожирение.

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Introduction: The problem associated with overweight has existed for a very long time, but nevertheless, success in the treatment of obesity is very small, and the number of patients with morbid obesity is increasing. According to the WHO, overweight affects about 30% of the total population of the Earth [1, 2]. The causes of obesity are a sedentary lifestyle, overnutrition, pregnancy, which often leads to diastasis of the rectus abdominis muscles, age-related changes, malfunction of the endocrine system, genetic predisposition, postoperative giant ventral hernias. All these factors cause a weakening of the musculo-aponeurotic frame with the subsequent formation of abdominal ptosis. Excess weight not only harms health, but also causes aesthetic discomfort to the patient, which makes him resort to surgical methods of body shaping [26,27,28,29]. A special place is occupied by abdominoplasty - this is a volumetric surgical intervention aimed at the excision of excess skin and fatty tissue, to restore the aesthetic proportions of the abdomen [4, 5, 6, 30]. Practice has shown that patients with obesity often have hernias of the anterior abdominal wall, requiring simultaneous surgical correction. The advantages of this method of surgical intervention are convenient access to all organs of the abdominal cavity, especially with giant hernias. Surgical treatment of hernias of the anterior abdominal wall remains an urgent problem, since hernias occur in 4-7% of the world's population and there is no trend towards a decrease in the number of such patients [7, 8, 9, 10, 11, 30, 33, 36]. This is due to the rapid development of surgery and an increasingly active surgical intervention on the abdominal organs, complicated by incisional ventral hernias in 7.5 - 24% of cases [12]. For plastic surgery of the anterior abdominal wall in modern surgery in patients with morbid obesity, tension-free methods are more preferable, since according to the studies of many authors, the recurrence rate reaches 20-63% in tension hernioplasty, while in tension-free repair, 8-30.3% [13, 14, 15]. Thus, the combination of tension-free hernioplasty and abdominoplasty remains a hot topic and has medical, social and economic significance [16]. While with tension-free plastics 8-30.3% [13, 14, 15]. Thus, the combination of tension-free hernioplasty and abdominoplasty remains a hot topic and has medical, social and economic significance [16, 18, 20, 22, 29]. While with tension-free plastic 8-30.3% [13, 14, 15, 17, 18, 19, 20, 21, 22]. Thus, the combination of tension-free hernioplasty and abdominoplasty remains a hot topic and has medical, social and economic significance [31, 32, 34].

Research objectives. To improve the quality of life and the results of complex treatment of patients with morbid obesity.

Materials and research methods. The material for this study was 62 patients with morbid obesity who were hospitalized in the period from 2010 to 2020 in the surgical department of the 1st clinic of SamMI.

The patients were distributed by age and sex, which is presented in Table 1 and Fig. one.

Table 1. Distribution by gender and age

Floor	Age groups				Amount	%
	41-50	51-60	61-70	71-80		
Men	five	12	2	one	20	32.2
Women	fifteen	18	6	3	42	67.7

Total	20	thirty	8	4	62	100
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As can be seen from Table 1, the overwhelming majority are women aged 41 to 60 years. As you know, this is due to hormonal changes in the body of women in this age period, a decrease in the amount of estrogens, age-related and degenerative changes in the ovaries.

The generally accepted classification of obesity distinguishes 4 stages of the disease, depending on the excess body weight in relation to the ideal (calculated using special formulas). I degree is characterized by an excess of 10-29%, II degree - up to 49%, III degree - up to 99%, IV degree - more than 100%. In patients with obesity of III-IV degree, and in some cases with extreme variants of II degree, the so-called morbid obesity occurs, accompanied by changes in the cardiovascular system, lungs, and digestive organs.

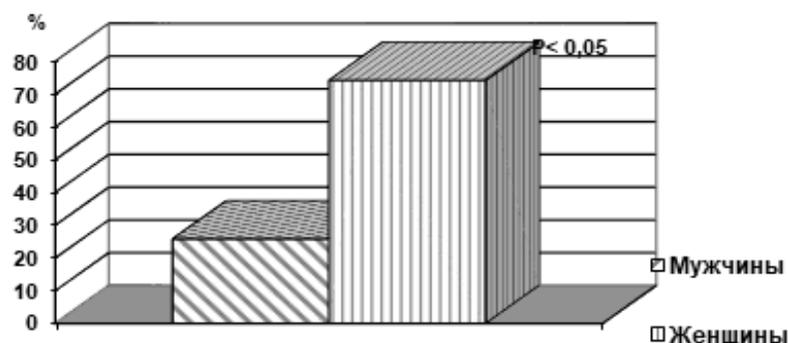


Fig. 1. Distribution of patients by gender

Tachycardia, muffled heart sounds, high arterial hypertension are often observed. Due to the high standing of the diaphragm, respiratory failure occurs (it can manifest itself as sleep apnea syndrome).

According to the degree of obesity, the patients were distributed as follows:

Table 2. Distribution of patients by degree of obesity

Obesity rate	Number of patients	%
III	44	70.9
IV	18	29.1
Total	62	100

Considering that, in fact, plastic surgery - abdominoplasty - was performed, the classification of ptosis of the anterior abdominal wall A. Matarasso (1989) was also used: minimal, medium, moderate, pronounced.

Grade I - minimal ptosis: minimal relaxation of the musculo-fascial system, there is practically no ptosis. In this case, liposuction of the anterior abdominal wall is indicated.

II degree - moderate ptosis: moderate relaxation of the musculo-fascial system in the lower abdomen, slight ptosis of the skin.

III degree - moderate ptosis: moderate relaxation of the musculo-fascial system in the lower and (or) in the upper abdomen.

IV degree - severe ptosis: significant relaxation of the musculo-fascial system and pronounced ptosis of the skin of the anterior abdominal wall.

In our work, all patients had ptosis of the anterior abdominal wall of III (n = 44) and IV (n = 18) degrees.

The patients underwent surgery to eliminate the skin and fatty apron in case of morbid obesity. The nature of the interventions performed is shown in Table 3.

Table 3. The nature of the interventions performed

Type of abdominoplasty	Amount	%
Classic	36	58.1
Tensely lateral	fifteen	24.2
Mini abdominoplasty	eleven	17.7
Total	62	100

The technique of classical transverse abdominoplasty with a Greisler navel transplant was used by us most often. The mobilization of the skin-fat flap to the xiphoid process was carried out with the transition to the sides to the median axillary line with lipectomy in order to create smooth contours in the area of the lateral apex of the wound, where protruding pieces are usually formed and to remove folds on the sides (Fig. 2, 3, 4).

Then the fat-skin flap is stretched and on the midline a place is marked for a new location of the navel on the skin, 10 cm from the edge of the skin, while the previous location is either sutured or leaves with the resected flap. To facilitate the reimplantation of the navel, the following technique is used: on the sides of the navel skin, 2 sutures are applied with a Vicryl or Prolene 5.0 thread from the edge and passed through the new location of the skin in order to seal its skin with the skin of the navel.

A simultaneous operation was performed due to the presence of concomitant surgical pathology. The distribution of patients by type of simultaneous intervention is shown in Table 4.

The size of the aponeurosis defect varied from 2 cm to 25x27 cm. For tension-free hernioplasty in hernias of various localization, LINTEKS mesh polypropylene endoprosthesis with sizes from 6x11 to 30x30 cm were used. The plastic was performed according to the onlay technique and according to Ramirez with the intraperitoneal mesh prosthesis. Since the intraperitoneal location of the mesh prosthesis creates direct contact with the abdominal organs, it can lead to the development of intestinal fistulas when the serous membrane of the intestine is traumatized by the mesh. Also, a serious complication of the use of prostheses is their possible destruction with the subsequent migration of parts of the prosthesis into the cavity of the gastrointestinal tract. To solve this problem, a hernial sac flap or a part of the greater omentum on the feeding pedicle was sewn to the visceral surface of the prosthesis. To prevent the formation of seromas, active or passive drainage of subgaleneurotic, supaponeurotic spaces was performed using a silicone tube and a negative pressure wound treatment device RENASYS™ GO! Drainage from the subaponeurotic space was removed for 3-2 knocks, from the supraaponeurotic space for 7-6 days. The time for removing drainage also depended on the volume of the separated fluid.

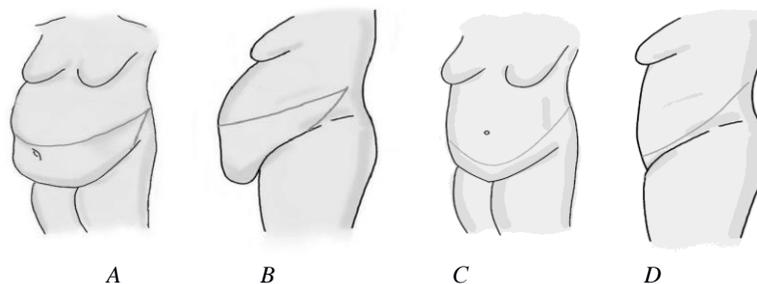


Fig. 2. Mobilization of the skin and fat flap to the xiphoid process with the transition to the sides to the mid-axillary line. A-cut borders in antero-lateral projection; B-cut boundaries in lateral projection; C-view of the patient after removal of the skin and fatty apron in the anterior-lateral projection; B-view of the patient after removal of the skin and fat apron in the lateral projection

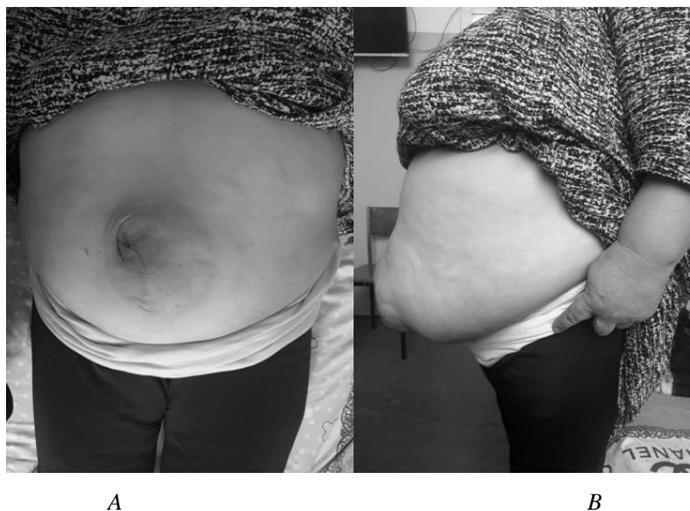


Fig. 3. View of the patient before surgery in anterolateral (A) and lateral (B) projections

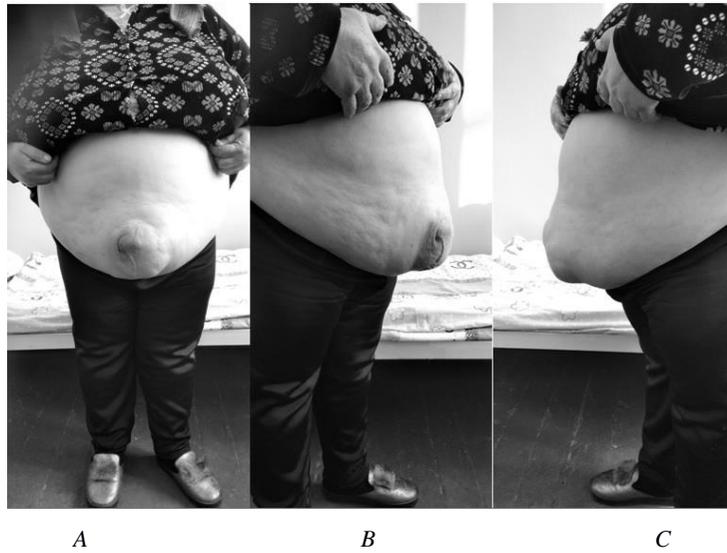


Fig. 4. View of the patient before surgery in anterolateral (A) and lateral (B, C) projections

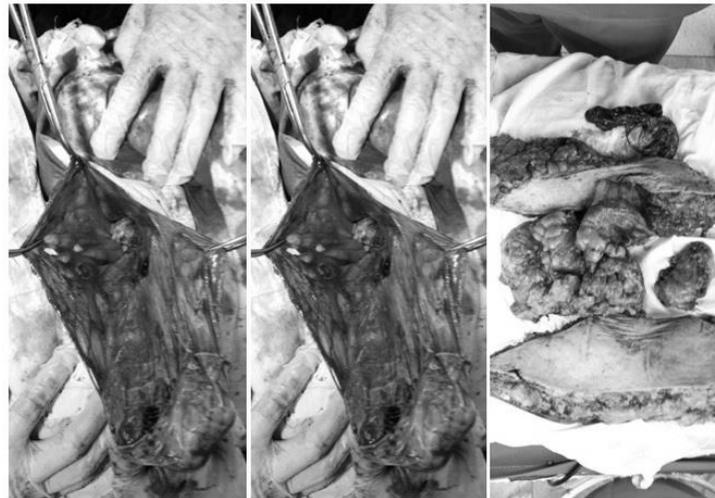


Fig. 5. Removed fatty skin flap

Classical transverse abdominoplasty according to Grezler. Hernia repair with tension-free hernioplasty with lining of a part of the greater omentum on the feeding pedicle in the region of the visceral surface of a polypropylene mesh.



Fig. 6. View of patient G. during the operation. Diagnosis: Obesity grade 4. Saggy belly. Discrepancy of the rectus abdominis muscles



Fig. 7. A - View of the patient after surgery, B - removed skin and fat flap. Classical transverse abdominoplasty according to Grezler. Hernia repair with tension-free hernioplasty with suturing a hernial sac flap to the visceral surface of a polypropylene mesh

Table 4. Distribution of patients by type of simultaneous intervention

Type of surgery	Number of patients	Indications for surgery	Number of surgical approaches	Type of anesthesia
Classic Grezler transverse abdominoplasty + tension-free hernioplasty using polypropylene mesh	41	Obesity grade III + Hernia of the anterior abdominal wall.	one	Endotracheal anesthesia
Classic Grezler transverse abdominoplasty + tension-free hernioplasty using polypropylene mesh	nine	Obesity grade IV + Hernia of the anterior abdominal wall	one	Endotracheal anesthesia
Grezler classical transverse abdominoplasty + tension-free hernioplasty using polypropylene mesh + cholecystectomy	12	Obesity III-IV degree + Cholelithiasis + Hernia of the anterior abdominal wall	one	Endotracheal anesthesia

All patients underwent preoperative antibacterial preparation (PAP) by the introduction of 2 grams of ceftriaxone intravenously drip 30 minutes before the operation, followed by the introduction of this drug and in the postoperative period for 5 days 2 times a day. Also, for the prevention of thromboembolic complications, heparin was administered 5 thousand units immediately before surgery, elastic bandaging of the limbs. In the postoperative period, patients were taught to wear elastic underwear, bend the head and trunk forward in an upright position, bend the knee and hip joints in the supine position to prevent diastasis of postoperative sutures in the first 6-7 days.

Results. When talking about the results of treatment, the following categories should be analyzed:

- postoperative complications,
- aesthetic component,
- functional component.

We will look at each of these points.

The number and nature of complications in patients are presented in Table 5.

Table 5. The number and nature of postoperative complications

The nature of postoperative complications	amount	%
Seroma	five	12.8
Hematoma	one	2.6
Lymphorrhea	five	12.8
Purulent-inflammatory complications	4	10.3

Total	fifteen	38.5
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As can be seen from Table 5, 38.5% of patients had some kind of inflammatory complications, and there were a few more complications such as seromas, lymphorrhea and, as a result, pyoinflammatory complications. This is due to the fact that the patients underwent abdominoplasty, in which a wide mobilization of the subcutaneous fat layer is performed and, accordingly, the risk of developing seromas and lymphorrhea increases. Complications were found on the 6-10th day of the postoperative period. The patients were treated conservatively, evacuated the contents, by means of active drainage, installed during the operation, daily aseptic dressings with various antiseptics were performed, 2-3 times a day. Patients who developed the above complications were hospitalized for 16 to 28 bed-days. All patients were discharged in satisfactory condition with recommendations.

Aesthetic component. All patients who underwent abdominoplasty received an excellent aesthetic effect, the patients got rid of the skin-subcutaneous fold, the abdomen became flat, taut, the suture line runs along the "bikini" line and is practically invisible. All patients were satisfied with the received aesthetic result

Functional component. In the aspect of the functional effect, due to the optimal scheme of preoperative preparation, performing abdominoplasty, there was an improvement in the parameters of external respiration, and there were no complications from the cardiovascular system. Spirogram indices in comparison before and after surgery have improved, i.e. there was a stable increase in DO and VC in all patients.

Discussion. Despite the development of high-tech equipment, improvement of the professional qualities of surgeons and many years of experience in performing surgical correction of the anterior abdominal wall, it still remains one of the most difficult surgical interventions in plastic surgery [17]. In recent years, there has been the development and improvement of various methods of abdominoplasty. The doctors' efforts are aimed at obtaining optimal results. However, despite the fact that the number of complications is minimized, surgeons are cautious in making decisions about such operations [16, 17]. Surgical correction of the anterior abdominal wall is aggressive and may be accompanied by various complications. Complications are associated with the widespread mobilization of the skin-fat flap, the presence of concomitant somatic pathology (metabolic syndrome), depend on the reactivity of the organism and postoperative changes in some parameters of homeostasis. (Flageul G., 1999). The complication rate of surgical correction of the anterior abdominal wall reaches 30.8%. It is noted that in obese patients the number of complications increases in direct proportion to the degree of obesity. The emergence of complications indicates the ambiguity of the technique for correcting the anterior abdominal wall, the inadequacy of some of the technical techniques necessary to prevent complications (Grazer PM, 1989) [16, 18, 19].

Findings. The reasons for the development of complications of abdominoplasty are not only the initial state of the body (obesity, excessively developed thickness of subcutaneous adipose tissue, etc.), but also the technique of its implementation (non-compliance with the prevention complex, increased tissue trauma during the operation). Thorough preoperative preparation, including diet, wearing a bandage, breathing exercises and anticoagulant therapy, is an effective measure to prevent complications of the early postoperative period (thrombophlebitis of the lower extremities, PE, respiratory failure, etc.). Abdominoplasty in patients with grade 3 and 4 obesity and the presence of a skin and fatty apron is a justified operation that improves both the aesthetic and functional state of patients. Abdominoplasty allows for convenient access during tension-free hernioplasty and freer manipulation during operations on the abdominal organs. The combination of tension-free hernioplasty and abdominoplasty gives a more effective aesthetic and functional result. Mobilization of the skin and fat apron on the sides to the mid-axillary line in combination with liposuction allows for a more aesthetic effect.

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