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Optimization of Anesthesiological Approach for Recurrent Ventral Hernia in Obesity Patients

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Abstract: The analysis of the safety and efficacy of anesthetic treatments in obese patients with recurrent ventral hernias has been carried out. Patients undergoing treatment in the departments of general surgery and surgical diseases No. There were 70 obese patients with recurrent ventral hernias aged 18 to 60 years. All patients were divided into 2 groups: the first main group of 40 patients who received general anesthesia in combination with epidural anesthesia. The second control group consisted of 30 patients who received multicomponent general anesthesia.

Key words: ventral hernias, abdominal cavity, obesity, epidural anesthesia.

Topicality. Currently, obesity affects a significant part of the adult population of economically developed countries. The number of people suffering from obesity is progressively increasing. Obesity is recognized by WHO as a new chronic non-infectious "epidemic" of our time. Obesity is becoming an increasingly relevant pathological condition worldwide. The World Health Organization estimates that by 2025, more than 700 million people on the planet will be obese to some degree (WHO, 2013). The impact of obesity and associated metabolic disorders on the human body (diabetes mellitus, chronic heart failure, coronary heart disease, hypertension, disorders of cerebral blood flow and reproductive function, etc.) much attention is paid in contemporary literature (Castro A. V. et al., 2014; Shimizu I. et al., 2015).

Purpose of the study

Study of the safety and efficacy of anesthetic aids in obese patients with recurrent ventral hernias.

Material and methods of research

An analysis of the safety and efficacy of anesthetic aids in patients with obesity with recurrent ventral hernias was carried out. Patients treated in the departments of general surgery and surgical diseases No. 1 of the first clinic of the SamGosMI for the period from 2018 to 2021 were examined. In total, there were 70 obese patients with recurrent ventral hernia aged 18 to 60 years All patients were divided into 2 groups: **the first main** group of 40 patients who underwent general anesthesia in combination with epidural anesthesia. **The second control** group consisted of 30 patients who underwent multicomponent general anesthesia.

Evaluation of the resultsof the operational examination.

The effectiveness of the studied methods of anesthesia was assessed by the structure of the pharmacological scheme, the state of the main parameters of hemodinmika, gas exchange, the level of stress hormone (cortisol), as well as the compliance with the conditions for maintaining effective gas exchange at the main stages of anesthesia and surgery.

It has been determined that all the methods of anesthesia considered in the work are sufficiently effective in terms of anesthetic protection in patients suffering from obesity.

However, significant features associated with anesthesia in overweight patients have been identified. In both groups, initially, 68 people (97.1%) had arterial hypertension of varying degrees (Table 3.1)

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Table. 1.
Characteristics of patients of the main and control group, depending on the degree of arterial hypertension

Degree of hypertension	Core group		Control group	
	Call -4	%	Qty. to Use	%
Hypertension of the 1st degree (140-159/90-99 mmHg)	9	22,5	10	33,3
Hypertension of the 2nd degree (169-179/100-109 mmHg)	21	52,5	16	53,3
Hypertension of the 3rd degree (180/110 mm Hg)	10	25	4	13,4

In patients ofthe main group, high numbersof blood pressure were noted and these indicators were comparedwith the indicatorof blood pressure of the control group.
We found out the timing of the appearance of postoperative hernias, and at the same time it turned out that most of the operated postoperative ventral hernia (POG) appeared in the first three years after the operation. The timing of the appearance of hernias is given in Table 2

Table 2.
Timing of the appearance of hernias

Time	Altogether	
	Core group	Control group
Up to 1 year	5	4
From 1 to 3 years	7	3
From 3 to 5 years	11	9
From 5 to 10 years	9	8
More than 10 years	8	6
Altogether	40	30

All those admitted for a long time did not dare to have an operation and only after the deterioration of the condition and the occurrence of complications turned to the surgeon. Of all patients with irreparable hernias, there were 50 (71.4%), strangulated 8 (11.4%) and recurrent 12 (17.2%), with relapsed 9, twice 2, three times 1. In all, the hernial gate plastic was performed at the expense of the tissues of the abdominal wall and relapse occurred in the first year after the operation, which indicated an inadequate choice of plastics.

Upon admission, the size of the hernias was determined and at the same time the classifications of Yanov V.I. (1978) lived: small (up to 5 cm), medium (5-10 cm), large (10-30 cm) and giant (more than 30 cm). among those admitted with small hernias, there were no patients with average 24 (34.3%), with large - 35 (50%) and giant hernias were established in 11 patients (15.7), their distribution is given in Figure 1.

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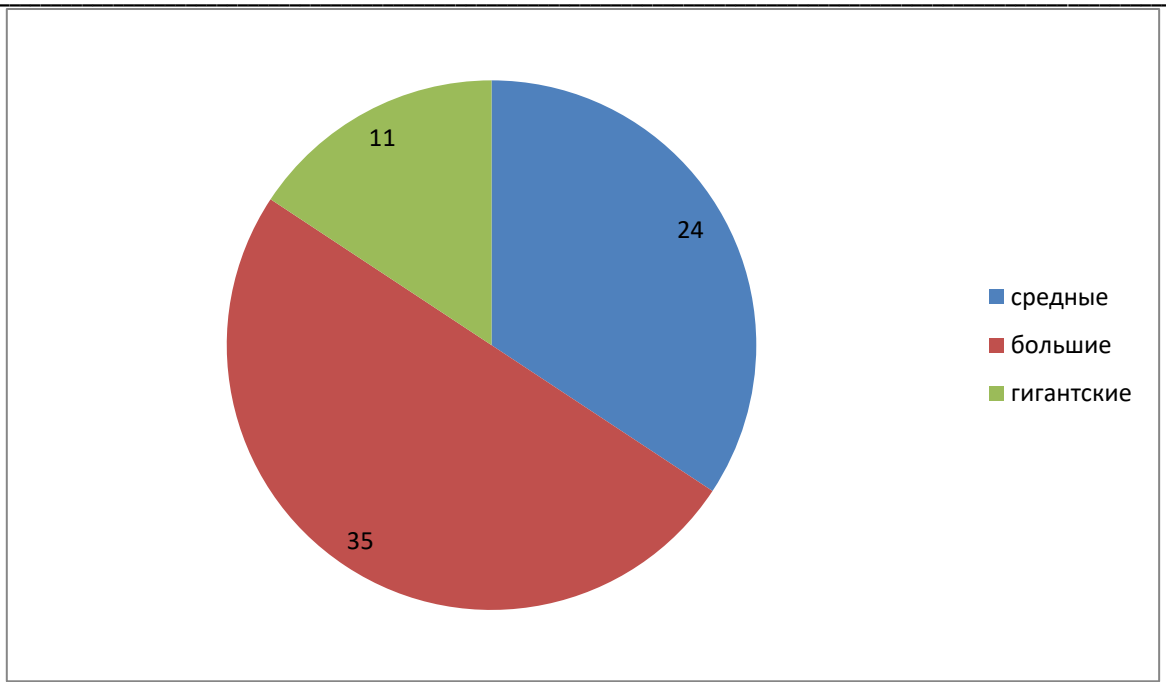

In patients of both groups at the stages of treatment, the level of intra-abdominal pressure was measured in dynamics. Based on the data obtained, natural changes in the indicators of intra-abdominal pressure in the direction of their increase were revealed.

Results of the analysis of anesthesia techniques.

In the 1st group of patients, for whom the relief of the pain syndrome in the postoperative period was carried out by the introduction of local anesthetics in the EP, an improvement in spirometry parameters was noted, and violations of the gas composition of the blood were much less pronounced. And there was also a tendency to reduce the frequency of pulmonary and hemorheological postoperative complications. Patients of group 2 who received narcotic analgesics were in a state of excessive sedation, while the quality after surgical anesthesia was below sufficient. They had severe hypoxemia within 2-3 days after the operation, which is associated with the formation of microatelectases against the background of ventilation. Formally, the most appropriate task for the early activation of the patient is anesthesia based on propofol, as the most controlled hypnotic. But due to the fact that propofol does not have independent analgesic activity, when using it, an additional administration of fentanyl was required 2-3 times greater than when conducting anesthesia based on other hypnotic agents. In addition, the use of propofol as the main hypnotic required additional administration of ketamine in order to compensate for the hypotensive effect at the induction stage and, on the other hand, limits the anesthesiologist in the choice of vegetative-stabilizing drugs (droperidol) due to their synergistic with propofol hypotensive effect on hemodynamics.

During the analysis of the criteria for the adequacy of anesthesia in the groups starting from the 2nd stage of the study and at subsequent stages, a significantly lower level of DBP in the 1st and 2nd groups was recorded in comparison with the initial stage of the study. In addition, there was a significant increase in the indicators of SpO2, a-vDO2 in both groups in comparison with the 1st stage of the study. At further stages of the study, there were no differences between the groups in these indicators, but there was a difference in the rate of diuresis, which in patients of the 1st group was significantly higher from the 2nd and at the next stages in comparison with the 2nd group (Table 3).

Table 3. Comparative characteristics of anesthesia adequacy parameters between groups

Indicators under study	Groups under study	Stages of the study				
		1st	2nd	3rd	4th	5th
ADS, mmHg Art	Core group	134,8±12,6	138,4±11,5	126,2±9,7	121,6±8,2	122,1±9,3
	Control group	137,3±15,2	141,6±16,1	138,1±17,3	148,1±12,8	137,5±11,9
	Core group	82,2±10,2	82,8±8,1	76,8±4,8	75,3±5,8	76,3±6,1

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Add, mmHg. Art.	Control group	89,6±11,2	82,4±12,9	91,5±11,3	89,1±10,1	82,4±9,6
heart rate, in 1 min	Core group	76,1±5,7	98,5±4,9*	79,3±8,2	77,8±5,6	76,3±5,1
	Control group	72,9±8,1	98,8±10,1*	97,9±11,4*	91,6±8,7*	89,7±7,2
BE, mmol/L	Core group	-1,1±0,7	—	-1,8±0,3	—	-2,1±0,2
	Control group	-1,2±0,3	—	-3,1±0,8*	—	-3,7±0,4*
Diuresis, middle ± SD, ml/min	Core group	47,2 ± 2,7	58,4 ± 2,9	59,5 ± 2,8	58,9 ± 2,9	
	Control group	48,2 ± 3,2	48,1 ± 3,5	49,3 ± 3,2	48,6 ± 3,3	
SpO2, %	Core group	—	97,8±1,7	97,6±2,1	97,9±1,7	98,1±1,4
	Control group	—	96±3,8	95,6±3,4	96,8±2,1	96,6±2,3

Note: * is p<0.05 compared to the original data. 1st — initial data; 2nd - after premedication; 3rd - traumatic stage of the operation; the 4th is the end of the operation; 5th - a day after the end of the operation;

In the study of the effectiveness of post-anesthesia rehabilitation, there was no significant difference in the time after the end of the operation between patients of the 1st group - 12 (8.5-19.5) min and the 2nd group - 11 (7.5-18) (p = 0.125), extubation time in the 1st group - 14 (8.5-18) min, in the 2nd group - 14 (9.5-19) (p = 0.089), awakening time and reaching 10 points on the Aldrete scale in patients of the 1st group - 3 (2.5-6.5) min, Group 2 — 3.5 (3–7) min (p = 0.231).

The first ascent to the legs in the 1st group occurred significantly earlier - 186 (135-226) minutes in comparison with the 2nd group - 213 (144-258) minutes (p = 0.033). The first noises of intestinal peristalsis in patients of the 1st group appeared significantly earlier than in patients of the 2nd group - 207 (175-232) and 354 (305-441) min, respectively (p = 0.043), an earlier onset of gas discharge after surgery was also recorded in group 1 - 514.8 (481.7-555.1) minutes compared to the 2nd group - 596.1 (537.1-623.2) minutes (p = 0.039).

In addition, the hospital stay in patients of the 1st group - 27.3 (18.4-31.3) h was significantly less than in patients of the 2nd group - 42.5 (37.8; 51.9) h (p = 0.032).

Findings

1. Methods of anesthetic protection for patients with obesity, especially for patients with morbid obesity, should also be oriented according to the alternating principle of reproduction.
2. Evaluation of the effectiveness of anesthesiological protection by the pharmacological structure of anesthesia, the state of the main parameters of hemodynamics, the level of cortisol in the blood and compliance with the conditions for ensuring adequate gas exchange indicates the advantages of multicomponent intravenous techniques in combination with EA.
3. The main problems at the stage of induction into anesthesia are ensuring the patency of the respiratory tract. The most effective and safe methods of anesthesia approaches in reconstructive operations for recurrent ventral hernias in obese patients is considered EA with a combination of general anesthesia.

References

1. *Le Huu Nho R., Mege D., Ouaïssi M., Sielezneff I., Sastre B.* Incidence and prevention of ventral incisional hernia. J. Visc. Surg. 2012; 149(5): 3–14. DOI: 10.1016/j.jviscsurg.2012.05.004
2. *Hernández-Granados P., López-Cano M., Morales-Conde S.,* et al. Incisional hernia prevention and use of mesh. A narrative review. Cir Esp. 2018; 96(2): 76–87. DOI: 10.1016/j.ciresp.2018.01.003
3. *Yamamoto M., Takakura Y., Ikeda S., et al.* Visceral obesity is a significant risk factor for incisional hernia after laparoscopic colorectal surgery: A single-center review. Asian J. Endosc. Surg. 2018; 19. DOI: 10.1111/ases.12466
4. *Parés D., Shamali A., Stefan S., et al.* Predictive factors for extraction site hernia after laparoscopic right colectomy.Int. J. Colorectal Dis. 2016; 31(7): 1323–1328. DOI: 10.1007/s00384-016-2610-x
5. *Silecchia G., Campanile F. C., Sanchez L., et al.* Laparoscopic ventral/incisional hernia repair: updated Consensus Development Conference based guidelines [corrected]. Surg Endosc. 2015; 29(9): 2463–84. DOI: 10.1007/s00464-015-4293-8

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Date of Publication:11-05-2022

6. *Khashimov B. B., Outlev K. M., Kruchinin E. Q.* Incidence of anterior abdominal wall hernia in patients with morbid obesity. Ural Medical Journal. 2017; 3: 107–110.
7. [*Hashimov B. B., Autlev K. M., Kruchinin E. V., et al.* The incidence of hernia of the anterior abdominal wall in patients with morbid obesity. Ural'skij medicinskij zhurnal. 2017; 3: 107–110.(In Russ)]
8. *Hebbard P, Fujiwara Y, Shibata Y, Royse C.* Ultrasound-guided transversus abdominis plane (TAP) block. Anaesthesia and Intensive Care 2007; 35: 616–617.
9. *Белоярцев, Ф. Ф.* Компоненты общей анестезии. М.: Медицина, 1997. [Beloyarcev F.F. Components of General Anesthesia. M.: Meditsina,1997. (In Russ)]
10. *Epstein S. A.* Perioperative anesthesia support for patients with morbid obesity. Regional anesthesia and treatment of acute pain. 2012; 4(3): 5–27.
11. [*Ehpshtejn S. L.* Perioperative anesthetic management of patients with morbid obesity. Regionarnaya anesteziya i lechenie ostroj boli. 2012; 4(3): 5–27.(In Russ)]
12. *Gaston-Johanson F., Albert M., Fagan E., Zimmerman L.* Similarities in pain description of four different ethnic-culture groups. J.Pain Symptom Manage.1990; 5(2): 94–100. DOI: //doi.org/10.1016/S0885–3924(05)80022-3
13. *Weiler R. V., Musaeva T. S., Trembach N. V., Zabolotskikh I. B.* Critical incidents during combined anesthesia in extensive abdominal surgery in elderly and senile patients: the role of preoperative level of wakefulness. Anesthesiology and resuscitation. 2016; 61(5). DOI: http://dx.doi.org/10.18821/0201-7563-2016-61-5-352-356
14. [*Vejler R. V., Musaeva T. S., Trembach N. V., Zabolotskih I. B.* Critical incidents during combined anesthesia during extensive abdominal operations in patients of elderly and senile age: the role of the preoperative level of wakefulness. Anesteziologiya i reanimatologiya. 2016; 61(5). DOI: http://dx.doi.org/10.18821/0201-7563-2016-61-5-352-356. (In Russ)]
15. Likhvantsev V.V. Critical incidents in modern methods of general anesthesia. Clinical anesthesiology and resuscitation. 2007; (4): 42.
16. [*Lihvancev V. V.* Critical incidents with modern methods of general anesthesia. Klinicheskaya anesteziologiya i reanimatologiya. 2007; (4): 42 (In Russ)]
17. *Anisimov M. A., Gorobets E. S., Yakushina I. A.* Effective anesthesia when performing oncogynecological operations in patients with concomitant morbid obesity. Bulletin of Anesthesiology and Resuscitation. 2015; 6: 46–52.