

# Postoperative Anesthesia After Simultaneous Operations in Gynecological Patients

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**Annotation:** The work is based on the material based on the experience of simultaneous operations on the organs of the abdominal cavity and pelvis, accumulated in the 1st SamMI clinic from September 2018 to March 2021 inclusive. In total, simultaneous operations were performed in 190 patients during this period.

**Keywords:** postoperative analgesia, simultaneous operations, postoperative pain syndrome.

## Relevance:

Increasing life expectancy, improving diagnostic studies, the development of modern technologies for surgical intervention have led to an increase in the relevance of simultaneous surgical procedures. The need for such surgical interventions dictates an increase in the number of identified associated diseases in women. In the structure of extragenital surgical pathology in patients with diseases of the small pelvis, the main place is occupied by hernias of the anterior abdominal wall - 35.1%, diseases of the gallbladder - 27.1%, diseases of the appendix - 25.3%. According to other authors, the surgical pathology of the abdominal organs is 18.2%, inguinal hernias - 15.5%, 19.6% - simple renal cysts. Very often, diseases of the internal genital organs (both benign and malignant) are combined with obesity - about 20% of cases.

"Simultaneous operation" is a simultaneous intervention for two or more independent diseases, etiologically unrelated to each other, equally threatening the life and health of the patient. The operation is performed in one day, from one or several approaches, by two or more teams of surgeons of various profiles. The work examined 190 patients admitted to the SamMI-1 clinic in a planned manner for surgical intervention for surgical and gynecological pathology.

All patients underwent a simultaneous operation under conditions of endotracheal anesthesia with ketamine and fentanyl (myoplegia with arduan in standard age-specific dosages). At the end of the operation, the patients were extubated and transferred to the intensive care unit with spontaneous breathing. Depending on the type of postoperative analgesia, the patients were randomly divided into 3 groups: the 1st group consisted of 27 patients who received postoperative analgesia with the use of non-steroidal anti-inflammatory drugs; Group 2 consisted of 68 patients who underwent traditional opioid analgesia in the postoperative period. In 95 patients of the 3rd group, before the operation, a catheter was inserted into the epidural space at the T12-L1 level according to the standard technique.

The effectiveness of the studied methods of postoperative anesthesia was assessed according to the structure of the pharmacological scheme, the state of the main parameters of hemodynamics, gas exchange, as well as compliance with the conditions for maintaining effective gas exchange in the postoperative period. It was determined that all the methods of postoperative anesthesia considered in the work are sufficiently effective in terms of anesthetic protection in patients who underwent simultaneous operations.

## Postoperative Anesthesia Analysis Results

The analysis of quantitative indicators of systemic hemodynamics in the study period showed that in the 1st group there were no significant changes in parameters. In group 2, in most cases, hemodynamic reactions appeared in the form of an increase in SBP by 19% ( $p < 0.05$ ) and an increase in heart rate by 10% from the initial level. In group 3 patients, there was a tendency to hypotension (decrease in ABP by 12% from the initial values), which in 5 patients required correction by reducing the dose of anesthetic, increasing the rate and volume of infusion of solutions and the introduction of sympathomimetics (Table 1).

Dynamics of the main indicators

Index	patient group	before surgery	Day 1	Day 2
mean arterial pressure (mm.Hg)	Group 1	104,4±3,2	105,7±4,5	104,8±3,2
	Group 2	106,3±2,6	126,5±5,2**	124,3±3,2
	Group 3	104,9±1,8	92,32±5,3	98,6±4,6
Heart rate (bpm)	Group 1	80,2±4,5	82,1±5,1	81,1±5,5
	Group 2	83,1±3,3	89,1±3,4	92,2±4,2*
	Group 3	79,1±4,1	81,1±2,1	80,1±3,2
Lung vital capacity (L)	Group 1	3,4±0,4		3,1±0,5
	Group 2	3,52±1,2		2,9±1,4**
	Group 3	3,39±0,7		3,1±0,9
SpO2 (%)	Group 1	96,3±0,2	96±0,3	94±0,3
	Group 2	97,2±0,2	94,3±0,2	92,2±0,12
	Group 3	96,5±1,1	91,8±0,9	92,0±0,4
Cortisol (mmol / L)	Group 1	595,7		3110,9
	Group 2	687,3		2867
	Group 3	704,0		1273,6
Blood glucose (mmol / L)	Group 1	4,3±0,6	4,6±0,2	4,3±0,3
	Group 2	4,3±0,2	5,6±0,4*	5,4±0,4**
	Group 3	4,4±0,1	6,2±0,3	5,9±0,2

Note: the differences are significant (p = 0.031): \* - compared with the initial values, \*\* - significant changes at the stage between the groups (p = 0.04).

In the postoperative period, the average level of glycemia in the 1st and 2nd group exceeded normal values or approached the upper limit of the norm (from 5.8 to 11.0 mmol / l). The concentration of sugar in the blood of patients of the third group was more stable (from 3.7 to 5.96 mmol / l). After 24 and 36 hours, in patients receiving traditional postoperative analgesia, blood glucose was higher than normal values and its level significantly differed (p<0.05) from the group of patients receiving postoperative pain relief using prolonged EA.

A comparative analysis of the adequacy of various types of anesthesia based on the dynamics of plasma cortisol indices indicated a high activity of stress-realizing mechanisms in the group that used narcotic analgesics 24 hours after the operation, the level of cortisol was delivered (p<0.1) 6 times higher than in the group. 3rd group. The maximum average level of cortisol in this group was 3110.9 nmol / L, while in the 3rd group it did not exceed 1273.6 nmol / L. A significant increase in blood cortisol concentration after 24-36 hours in patients receiving narcotic analgesics can be explained by tolerance to narcotic analgesics after prolonged use.

Clinical manifestations of respiratory dysfunction with inadequate analgesia after thoracotomy are hypoxemia, hypercapnia, impaired drainage function of the bronchi, followed by the formation of atelectasis. Reduction of VC is the main and most reliable functional diagnostic symptom of pulmonary restriction. The results of measuring VC in patients in the 2nd group showed a decrease in this parameter by 17% compared to the preoperative period, in the 1st group this indicator was 12%, in the 3rd group - 9% (p = 0.042). Saturation indicators in the 1st group after 48 hours decreased by 4.4%, in the 2nd group - by 5.2%, in the 3rd - by 3%.

There was a decrease in pain in the 1st group at rest by the end of the 2nd day by 58.2%, in the 3rd by 62%, and in the 2nd group by 40.1% (p = 0.008) (Fig. one). By the end of the 2nd day, patients of the 1st and 3rd groups noted a decrease in pain when coughing by 50.9% and 54.3%, respectively, and in the 2nd group by 41.1% (Fig. 2)

Table 2.

Dynamics of pain intensity according to a visual analogue scale in examined patients, mm (M ± m)

The stages	First group		Group two		Third group	
	At rest	In a cough	At rest	In a cough	At rest	In a cough
1 h	45,6±0,9	65,5±1,3	45,3±0,8	64,1±1,6	44,9±0,8	63,8±1,5
3 h	21,2±0,8	41,1±0,9	21,1±0,9	37,3±0,9	20,8±0,7	37,6±0,9
6 h	13,6±1,2	38,7±1,1*	12,6±0,8	26,7±0,8	12,3±0,8	26,2±0,7 ***
12 h	13,1±0,7*	38,5±1,2*	11,4±0,6 ** *	21,9±0,6*	9,2±0,5	17,4±0,7 ***
24 h	11,7±0,5*	31,1±0,8*	9,6±0,3	18,3±0,5	9,2±0,3***	18,7±0,7 ***

Notes: \* - significant differences between 1 and 3 (p < 0.05), \*\* - significant differences between 2 and 3 (p < 0.05), \*\*\* - significant differences between 1 and 2 (p < 0.05)

Despite the fact that, at first glance, all three modes of postoperative analgesia make it possible to adequately control the pain syndrome after surgery at rest, at stages 6, 12 and 24 hours after the onset of anesthesia, the intensity of pain in the group of patients receiving epidural analgesia was lower than in the NSAID and NA groups. However, after 6 hours, despite the low intensity of pain at rest in all groups, significant differences appeared with the patient's activation. Thus, the intensity of pain during coughing in the 1st group was  $38.7 \pm 1.1$ , in the 2nd and 3rd groups  $26.2 \pm 0.7$  and  $26.7 \pm 0.8$ , respectively (p < 0.05). After 12 hours, there was a significant difference in the intensity of pain and at rest. In the NSAID group, it was  $13.1 \pm 0.7$ , in the extended epidural anesthesia group (3)  $9.2 \pm 0.5$  (p < 0.05), and in the NA group (2)  $11.4 \pm 0.6$ , which is less than in the 1st (p < 0.05), but more than in the 2nd (p < 0.05). After 24 h, the quality of pain relief in groups 3 ( $9.2 \pm 0.3$  at rest,  $18.7 \pm 0.7$  with cough) and 2 ( $9.6 \pm 0.3$  at rest,  $18.3 \pm 0.5$  with cough) did not differ significantly, but exceeded similar indicators in the 1st group (p < 0.05) (Table 3.2). The criterion for the effectiveness of postoperative analgesia is considered to be a decrease in the intensity of pain syndrome less than 3 points out of 10. The time when the intensity of pain syndrome when coughing was decreased to values less than 30 mm was  $5.6 \pm 0.3$  hours in the group with permanent epidural analgesia and  $5, 9 \pm 0.2$  h in the HA group and did not differ significantly between the groups. In the NSAID group, the severity of pain when coughing according to the VAS throughout the observation period remained above 30 mm, which required additional administration of morphine to patients in this group.

Thus, the use of EA for postoperative analgesia has shown its high efficiency and made it possible to reduce the use of opioids in the postoperative period. This led to a decrease in the frequency and risk of complications associated with the systemic administration of opioids and postoperative hypokinesia, improved the quality of postoperative rehabilitation and, accordingly, reduced the duration of hospitalization. The obtained results of the study indicate that combined anesthesia with the use of EA has the most favorable effect on the course of the early postoperative period due to an earlier recovery of the intestine. Combined anesthesia with EA allows it to be carried out at a sufficient depth level, to maintain adequate analgesia in the postoperative period, showing a comparable efficacy of postoperative analgesia with EA. Thus, the treatment of postoperative pain syndrome should be multimodal and based on the principles of preventive analgesia. Prolonged epidural analgesia with the combined use of local anesthetics and opioids seems to be the most adequate method of postoperative analgesia and should be considered as the most important therapeutic factor that has a significant impact on the outcome of surgical treatment in general.

Based on the material obtained by us, it can be assumed that EA methods provide effective pain relief in patients after a simultaneous operation in comparison with the traditional methods of opioid analgesia. The presented EA technique for anesthetizing patients after a simultaneous operation provides reliable antinociceptive protection and adequate analgesia, does not lead to hemodynamic disturbances, has a positive effect on the restoration of ventilation and perfusion processes in the early postoperative period, reduces the severity of stress reactions to surgical trauma and shortens the time of psychosomatic rehabilitation of patients.

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### Conclusions

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The use of EA for postoperative analgesia improved the quality of postoperative rehabilitation and, accordingly, reduced the length of hospitalization.

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