

## MULTIMODAL ANALGESIA AFTER BARIATRIC SURGERY IN PATIENTS WITH MORBID OBESITY

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### ABSTRACT

Obesity is increasing in a global scale every year. From 1990 to 2022, obesity among adults more than doubled and among adolescents quadrupled. According to 2022 data, more than 2.5 billion adults worldwide were considered overweight, of whom approximately 890 million were obese. Obesity is a chronic complex disease characterized by an increase in excess fat stores, which in turn impairs health. Obesity is considered a global pandemic, increasing the risk of type 2 diabetes and cardiovascular disease, affecting musculoskeletal and reproductive health, and increasing the risk of certain types of cancer [12].

### INTRODUCTION

According to WHO, the average body mass index in Uzbekistan is 26.5 kg per square meter of body surface area, which ranks first in Central Asia in this indicator. According to analyses, by 2060, the economic cost of obesity could reach \$21.6 billion, or 4.7 percent of GDP [7].

Scientifically proven treatments based on a history of obesity, body mass index (BMI), and comorbidities include: lifestyle changes, a low-calorie diet, medications, and bariatric surgery [11].

Strong evidence suggests that in patients with  $TVI \geq 40$  or  $TVI \geq 35$  and serious comorbidities, surgical intervention significantly improves outcomes compared with other methods [1].

Because obstructive sleep apnea syndrome is common among morbidly obese patients, such patients are at increased risk of respiratory depression after bariatric surgery [5, 8]. In addition, postoperative nausea and vomiting (PONV) is common in such patients [4, 6]. This evidence suggests the need for non-opioid anesthesia (NOA) for such patients [3].

Opioid analgesics are widely used in the preoperative period. However, the use of opioid analgesics during this period increases the need for opioids in the postoperative period due to hyperalgesia, and increases the risk of complications related to the PONV and respiratory system [2, 9, 10].

Despite numerous scientific studies on this topic, there is mixed and conflicting evidence that multimodal analgesia in bariatric surgery can reduce opioid requirements and related complications in the early postoperative period, i.e. within 24 hours. Therefore, we consider our current research to be relevant.

#### **Purpose of research:**

The aim of this study is to reduce the need for opioids and related complications in the early postoperative period in morbidly obese patients undergoing bariatric surgery by using a combination of intraoperative and postoperative medications.

**Materials and methods:**

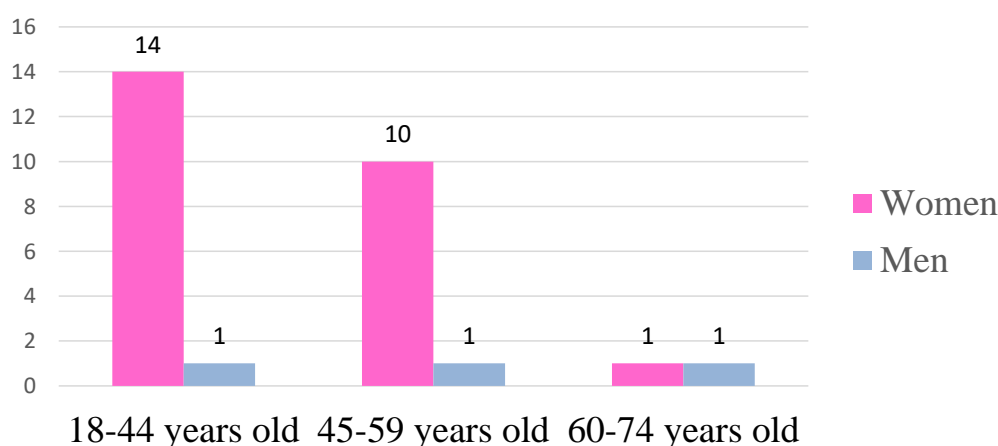
The study was conducted at the Surgical Resuscitation Department No. 1 of the Multidisciplinary Clinic of the Tashkent Medical Academy from March to October 2024 and included 28 patients who underwent bariatric surgery. Of these, 3 were male (10.7%) and 25 were female (89.3%). All of these patients received multimodal anesthesia, meaning 50 mg of Ketamine intramuscularly, 1 g of Paracetamol intravenously 30 minutes before the end of the surgery, and 400 mg of Ibuprofen intravenously after the patient was extubated and transferred to the intensive care unit. The next dose of ibuprofen was not scheduled but was taken as directed. In the early postoperative period, i.e. within 24 hours, all patients were in intensive care unit. All patients underwent pain intensity assessment using the VASH scale every 6 hours. If the pain intensity was up to 5 points on the VASH scale, an anti-inflammatory medicine (Ibuprofen) was used. If the score on the scale was 6 or higher, opioids were used.

**Patient inclusion criteria:**

1. Patients aged 18 years and older with morbid obesity, i.e. body mass index (BMI)  $\geq 40$  kg/m<sup>2</sup>, or BMI  $\geq 35$  kg/m<sup>2</sup> and obesity-related comorbidity;
2. Level III according to the ASA (American Society of Anesthesiologists) classification.

**Exclusion criteria from the study:**

1. Patients with hypersensitivity and contraindications to the agents used for the study.
2. Patients with BMI  $\leq 35$  kg/m<sup>2</sup>.

**Distribution of patients by age and gender****Research stages:**

All patients received a combination of inhalation and non-inhalation anesthesia. Propofol 1-1.5 mg/kg, Fentanyl 100 µg, were used for induction and Pipecuronium bromide 40 µg/kg is used to facilitate tracheal intubation. To ensure adequate oxygen saturation of arterial blood during anesthesia, the oxygen content in the gas mixture administered to the patient was 40-50%. The inhalation anesthetic Sevoflurane/Isflurane was administered only during the "basis" period of anesthesia, ensuring that its concentration in the gas mixture was 1.5-3.5% or a minimum alveolar concentration (MAC) of 1.0±0.3. Fentanyl was administered at a dose

of 50-100 mcg every 20 minutes to maintain adequate pain relief during anesthesia. Subsequent doses of pipecuronium bromide were administered as directed.

### 1. Intraoperative multimodal analgesia:

30 minutes before the end of the surgical procedure, 50 mg of Ketamine was administered intramuscularly and 1 g of Paracetamol was administered intravenously.

### 2. Postoperative pain relief:

After the operation, the patient was extubated and transferred to the intensive care unit, was given 400 mg of Ibuprofen intravenously. The remaining dose of anti-inflammatory medication was administered as directed.

### 3. Evaluation of results and effectiveness indicators:

- Number of complaints of pain in the early postoperative period and its intensity according to the VASH scales;
- Demand for narcotic analgesics.

## RESULTS AND CONCLUSIONS

Our study results showed that the use of complex agents for multimodal analgesia during and after surgery significantly reduced the need for postoperative opioids. That is, 13 out of 28 patients did not require opioids. Retrospective analyses show that the demand for opioids was 100%. However, our study results show that with multimodal anesthesia, this percentage was reduced to 53.6%.

As a result of our study, we can conclude that multimodal analgesia used during and after surgery reduces the need for opioids and related complications by almost 2 times.

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