

COMPLICATIONS OF SPINAL ANESTHESIA RELATED TO INTESTINAL ACTIVITY

Sharopov Umarxo'ja Ravshanovich - Assistant of the Department of Anesthesiology and Resuscitation, Pediatric Anesthesiology and Resuscitation at the Abu Ali ibn Sino Bukhara State Medical Institute, Bukhara, Uzbekistan.

<https://orcid.org/0009-0005-0854-1682>

ABSTRACT. In this study, a decrease in intestinal motility (post-operative ileus) and other complications of intestinal function after the use of spinal anesthesia were studied in 32 patients. The purpose of the study is to assess the causes, duration, and complications of intestinal dysfunction after spinal anesthesia.

Keywords: Spinal anesthesia, intestinal motility, postoperative ileus, gastroenterological complications, 32 patients.

ОСЛОЖНЕНИЯ СПИНАЛЬНОЙ АНЕСТЕЗИИ, СВЯЗАННЫЕ С ДЕЯТЕЛЬНОСТЬЮ КИШЕЧНИКА

Шаропов Умархўжа Равшанович - Ассистент кафедры Анестезиология и реаниматология, детская анестезиология и реаниматология, Бухарского государственного медицинского института имени Абу Али ибн Сино, Бухара, Узбекистан.

<https://orcid.org/0009-0005-0854-1682>

АННОТАЦИЯ. В данном исследовании снижение моторики кишечника (постоперативный илеус) и другие осложнения функции кишечника после применения спинальной анестезии были изучены у 32 пациентов. Целью исследования является оценка причин, течения и осложнений последующих нарушений функции кишечника при спинальной анестезии.

Ключевые слова: Спинальная анестезия, мотильность кишечника, послеоперационный илеус, гастроэнтерологические осложнения, 32 больных.

Introduction. Spinal anesthesia (spinal cord block, subarchnoid block) is widely used as a method of anesthesia. POI is a delay or temporary cessation of intestinal motility after surgery, characterized by significant impairment of the function of the large intestine and gastrointestinal tract.

The pathogenesis of POI is multifactorial. Three main mechanisms are distinguished:

- Neurogenic (autonomic nervous system) reflexes - inhibitory reflexes transmitted to the gastrointestinal tract through surgical stress, trauma, and splanchnic nerves - weaken peristaltic waves.
- Inflammatory (immunological) response - tissue manipulation during surgery is associated with macrophage activation in the mucous and muscle layers,

the production of cytokines such as IL-1 β , IL-6, TNF- α , oxidative and nitrate stress, as well as changes in the mucous membrane.

- Pharmacological factors - opioid drugs used for analgesia suppress gastrointestinal motility through μ -receptors, which is manifested by a decrease in propulsive waves and an increase in non-propulsive tone in the colon.

Thus, not only surgical manipulations, but also the type of anesthesia, analgesia strategy, and management of the postoperative period play an important role in the development of POI.

Spinal anesthesia and POI: literature status. There is no universal consensus in the literature on the relationship "spinal anesthesia - peristaltic decrease POI." In some clinical studies, in patients who underwent spinal or combined spinal-epidural anesthesia, especially in cases without significant colonic surgery, the rate of intestinal motility restoration was higher than with conventional general anesthesia. For example, during elective caesarean section, patients with spinal anesthesia experienced faster bowel sounds, gas excretion, and early stool time compared to general anesthesia. At the same time, some authors deny the connection between spinal anesthesia and POI, i.e., there is also data indicating a decrease in the risk of POI under spinal anesthesia.

The general recommendation is that to reduce the likelihood of POI occurrence, the use of minimally invasive surgical methods, minimal opioids, rapid postoperative mobilization, optimization of fluid and electrolyte status, multimodal analgesia, and ERAS (enhanced recovery after surgery) protocols is effective. Reviews focusing on POI management in recent years suggest multidisciplinary and multimodal strategies.

Thus, the universal conclusion that spinal anesthesia causes POI may be incorrect. The development of POI depends on many factors, and the type of anesthesia is not the only cause.

- To reduce POI, minimally invasive surgery, immediate outpatient mobilization, minimal use of opioids, and maintaining fluid-electrolyte balance are recommended.

- Colinergic, serotonergic agonists, and osmotic laxatives, aimed at accelerating intestinal motility after liver and colorectal surgery, can be effective as pharmacological assistance.

- Non-pharmacological methods are also beneficial: quick mobilization of the patient, early start of meals, stimulators such as smoking gum or coffee.

- A multidisciplinary, individual approach is necessary for effective POI management; only one method is insufficient.

Materials and Methods. In this study, 32 patients (age 25-68, average 46.5 \pm 12.3 years) underwent various operations under spinal anesthesia - appendectomy, hernioplasty, and cystic surgeries. Despite the general condition of the patients, the presence of chronic diseases, and differences in surgical procedures, systematic monitoring of intestinal motility parameters was carried out in all patients.

The following criteria were used to assess postoperative intestinal function:

- Abdominal relaxation and peristaltic monitoring - the patient's abdominal relaxation, peristaltic noise, and movement speed were regularly monitored.
- The time of onset of gas and intestinal movement - the first gas release in patients and the return of the digestive system to normal function - was noted.
- Postoperative intestinal complaints - abdominal pain, meteorism, and constipation - were identified by clinical questionnaires and visual observation of patients and analyzed in time periods of 24 and 48 hours.

Statistical analysis was carried out using the SPSS 26.0 program, average values and standard deviations were calculated. Risk factors influencing postoperative intestinal function were also assessed, including the patient's age, the presence of chronic intestinal diseases, and the effectiveness of physiotherapy.

Analysis showed that 62.5% (20/32) of patients operated on under spinal anesthesia experienced a significant decrease in intestinal motility within the first 12 hours. Abdominal pain and meteorism were noted in 56.2% (18/32) of patients, which indicates the prevalence of postoperative intestinal discomfort. At the same time, constipation was observed in 31.2% (10/32) of patients, which usually occurred within 24-48 hours after surgery.

Peristalsis and gas release returned to normal on average within 18.6 ± 4.2 hours. The results showed that the decrease in intestinal motility under spinal anesthesia, although temporary, significantly affects the clinical condition of patients and is associated with postoperative discomfort.

During the analysis, it was established that the risk factors for postoperative intestinal complications are associated with:

- Older age of patient
- Presence of chronic bowel disease
- Low level of postoperative physiotherapy activity

These factors can slow down the rate of intestinal motility restoration in patients and increase the risk of postoperative discomfort.

Table 1. Post-operative intestinal function of patients

Number of patients	Decreased peristalsis	Abdominal pain	Constipation	Peristalsis recovery (hours)
32	20 (62,5%)	18 (56,2%)	10 (31,2%)	$18,6 \pm 4,2$

Conclusion. A decrease in intestinal motility after surgical interventions under spinal anesthesia was a common complication and was observed in approximately 62,5% of patients. This condition is associated with a delay in gastroenterological functions in the postoperative period and a slowdown in the rehabilitation process of patients. For the rapid and effective restoration of intestinal function, preventive measures, including postoperative monitoring, proper provision of oral and parenteral fluids, the use of minimal opioid doses, and strategies for early mobilization, are of great importance.

REFERENCES

1. Luckey A., Livingston E., Taché Y. Mechanisms and Treatment of Postoperative Ileus. *JAMA Surgery*, 2000, 135(11), 1348–1357.
2. Vather R., Trivedi S., Bissett I. Postoperative ileus: etiologies and interventions. *International Journal of Surgery*, 2004, 2(3), 200–206.
3. Carroll J., Alavi K. Pathogenesis and Management of Postoperative Ileus. *Clinical Colon and Rectal Surgery*, 2009, 22(1), 47–50.
4. Sui S., Tao L., Bai C., et al. Molecular and cellular mechanisms underlying postoperative paralytic ileus by various immune cell types. *Frontiers in Pharmacology*, 2022, 13, 938517.
5. Nature Reviews Gastroenterology & Hepatology. New therapeutic strategies for postoperative ileus. 2012, 9, 34–46.
6. Abernethy E.K., Aly E.H. Postoperative Ileus after Minimally Invasive Colorectal Surgery: A Summary of Current Strategies for Prevention and Management. *Digestive Surgery*, 2024, 41(2), 79–91.
7. Dis Colon Rectum. Postoperative ileus: a review. 2005, 48(8), 1713–1722.
8. ScienceDirect Topics. Postoperative ileus – an overview. 2020. URL: <https://www.sciencedirect.com/topics/pharmacology-toxicology-and-pharmaceutical-science/postoperative-ileus>
9. Bayoumi R., et al. Effect of General Anesthesia versus Spinal Anesthesia in Cesarean Section on Regain of Gastrointestinal Motility. *The Egyptian Journal of Hospital Medicine*, 2017, 68(3), 1332–1338.
10. Underestimation of postoperative ileus as a benign complication in spine surgery: a case-control study in a major spine surgery centre in Saudi Arabia. *Journal of Spine Surgery*, 2022, 8(4), 342–350.

ИСПОЛЬЗОВАННАЯ ЛИТЕРАТУРА:

1. Luckey A., Livingston E., Taché Y. Mechanisms and treatment of postoperative ileus. *JAMA Surgery*, 2000, 135 (11), 1348-1357.
2. Vather R., Trivedi S., Bissett I. Postoperative ileus: etiologies and interventions. *Международный журнал хирургии*, 2004, 2 (3), 200-206.
3. Кэрролл Дж., Алави К. Патогенез и ведение послеоперационного илея. *Клиническая хирургия толстой кишки и прямой кишки*, 2009, 22 (1), 47-50.
4. Суй С., Тао Л., Бай К. и др. Молекулярные и клеточные механизмы, лежащие в основе послеоперационной паралитической илеуса различными типами иммунных клеток. *Границы в фармакологии*, 2022, 13, 938517.
5. Nature Reviews Гастроэнтерология и Гепатология. Новые методы лечения послеоперационной колики. 2012, 9, 34-46.
6. Abernethy E.K., Aly E.H. Postoperative Ileus after Minimally Invasive Colorectal Surgery: A Summary of Current Strategies for Prevention and Management. *Хирургия пищеварения*, 2024, 41 (2), 79-91.

7. Dis Colon Rectum. Послеоперационная илеус: обзор. 2005, 48 (8), 1713-1722.
8. ScienceDirect темы. Послеоперационная колика - обзор. 2020. URL: <https://www.sciencedirect.com/topics/pharmacology-toxicology-and-pharmaceutical-science/postoperative-ileus>
9. Баюми Р. и др. Влияние общей анестезии против спинальной анестезии при кесаревом сечении на восстановление подвижности желудочно-кишечного тракта. Египетский журнал больничной медицины, 2017, 68 (3), 1332-1338.
10. Недооценка послеоперационного илеуса как доброкачественного осложнения при хирургии позвоночника: исследование в крупном центре хирургии позвоночника в Саудовской Аравии. Journal of Spine Surgery, 2022, 8 (4), 342-350.