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Review Article

The Role of Enhanced Recovery (Eras) in Surgery

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ABSTRACT:
The article examines the role of the enhanced recovery after surgery concept — Enhanced Recovery After Surgery (ERAS) — in modern surgical practice. ERAS is a comprehensive, evidence-based, and multidisciplinary approach to perioperative care of patients, aimed at reducing surgical stress, preventing postoperative complications, early recovery of physiological functions, and reducing the length of hospital stay. The main components of ERAS protocols at the preoperative, intraoperative, and postoperative stages are considered. Special attention is paid to preoperative patient preparation, nutrition optimization, rational fluid therapy, multimodal analgesia, prevention of postoperative nausea and vomiting, early enteral nutrition, and mobilization. The advantages of ERAS compared to the traditional model of perioperative care, as well as the challenges of implementing protocols into clinical practice, are analyzed. Current evidence indicates that the effectiveness of ERAS is determined not by an individual intervention, but by the consistent implementation of a set of interrelated elements.

Keywords: ERAS, enhanced recovery, surgery, perioperative care, postoperative complications, multimodal analgesia, early mobilization, surgical stress, rehabilitation, evidence-based medicine.

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INTRODUCTION:

Modern surgery is developing not only in the direction of improving surgical techniques, but also toward optimizing the entire perioperative period. Even a technically successful surgery may be accompanied by severe pain syndrome, metabolic stress, gastrointestinal dysfunction, restricted motor activity, and other consequences that can delay patient recovery.

For a long time, the traditional model of surgical care provided for prolonged preoperative fasting, relatively late initiation of postoperative nutrition, prolonged bed rest, and widespread use of opioid analgesics.

The development of evidence-based medicine has led to a revision of several such approaches.

One of the outcomes was the Enhanced Recovery After Surgery concept — enhanced recovery after surgical intervention.

ERAS should be considered not merely as a method of early patient discharge, but as a comprehensive system of perioperative care. Its primary goal is to reduce the physiological and psychological impact of surgical intervention while maintaining treatment safety.

The ERAS concept and its core principles

ERAS is a standardized set of measures covering the entire treatment period of a surgical patient — from preparation for surgery to recovery and discharge.

A fundamental feature of this concept is its multidisciplinary nature.

The implementation of the program involves the surgeon, anesthesiologist, nurses, nutritionists, rehabilitation specialists, and other healthcare professionals.

The patient also becomes an active participant in the treatment process.

ERAS is based on several interrelated principles: reducing the surgical stress response, maintaining physiological functions, adequate analgesia, early nutrition, early physical activity, and preventing complications.

At the same time, the program must be adapted to the type of surgery, the patient's condition, and the capabilities of the medical facility.

Preoperative stage

One of the key components of ERAS is high-quality preoperative preparation.

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Prior to surgery, it is necessary to evaluate risk factors that could adversely affect postoperative recovery.

Special attention is paid to the presence of anemia, nutritional deficiency, comorbidities, unhealthy habits, and functional limitations.

Patient awareness is equally important.

It is necessary to explain to the patient the anticipated course of treatment, methods of analgesia, timing of nutrition initiation and motor activity, as well as the expected discharge criteria.
This helps reduce anxiety and increases patient involvement in recovery.

The modern model also involves avoiding unreasonably prolonged preoperative fasting where it is safe and permitted by specific guidelines.

Thus, the preoperative period transforms from passive waiting for surgery into active preparation of the body for surgical stress.

Surgical stress and the importance of its minimization

Any major surgical intervention is accompanied by a bodily stress response.
It includes neuroendocrine, metabolic, and inflammatory changes.

A moderate response is necessary for adaptation; however, excessive stress can contribute to the development of insulin resistance, catabolism, organ dysfunction, and delayed recovery.
Therefore, one of the fundamental tasks of ERAS is to reduce the excessive surgical stress response.

This is achieved comprehensively.

Minimally invasive surgical approaches are used where clinically justified, along with adequate anesthesia, maintenance of normothermia, rational fluid therapy, and effective analgesia.

Consequently, enhanced recovery begins not after the completion of surgery, but before the surgical intervention and continues directly during it.

Intraoperative stage

The intraoperative strategy of ERAS is aimed at maintaining the patient's physiological equilibrium.
One of the important components is rational fluid management.
Both hypovolemia and excessive fluid loading can adversely affect postoperative recovery.

Therefore, fluid therapy should match the clinical situation and the individual needs of the patient.

The prevention of hypothermia is of vital importance.

Maintaining normal body temperature promotes the proper functioning of the hemostatic system and metabolic processes.

Another principle is minimizing the unnecessary invasiveness of treatment.

The use of nasogastric tubes, surgical drains, and urinary catheters must have clear indications, and the duration of their use should be as short as necessary.

Multimodal analgesia

Adequate postoperative pain control is one of the central elements of ERAS.

Severe pain impairs the patient's respiratory effort, hinders early mobilization, disrupts sleep, and increases the stress response.

Traditional postoperative analgesia has often relied heavily on the widespread use of opioids.

However, opioid medications can cause nausea, vomiting, sedation, respiratory depression, delayed recovery of bowel motility, and other adverse effects.

ERAS involves a multimodal approach to pain management.

Its goal is to utilize various modalities and pharmacological mechanisms in a way that provides adequate analgesia while minimizing the need for opioid use.

The specific pain management regimen is determined by the type of surgical intervention, the patient's condition, and any contraindications.

Early enteral nutrition

Another fundamental distinction of ERAS from several traditional approaches is the commitment to early resumption of nutrition, provided clinical circumstances allow.

Prolonged, unjustified dietary restriction after surgery can contribute to catabolism and loss of muscle mass.Early nutrition helps maintain energy and protein balance and promotes the recovery of bodily functions.However, ERAS does not imply the routine assignment of the same nutritional regimen to all patients.

The timing and nature of nutrition must take into account the type of surgery, the functional status of the gastrointestinal tract, and individual patient risks.Thus, the key principle remains the

early yet clinically justified recovery of normal physiological functions.

Early mobilization

Prolonged immobilization following surgical intervention is associated with a number of adverse consequences.Muscle strength decreases, pulmonary ventilation deteriorates, and the risk of complications associated with limited physical activity increases.

ERAS regards early mobilization as an essential part of the treatment process. The patient should return to physical activity as early as their clinical condition allows.

However, effective mobilization requires other components of ERAS.

A patient experiencing severe pain, dizziness, fluid overload, or burdened by unnecessary catheters will physically be unable to mobilize fully.

Therefore, early mobilization is the outcome of appropriately organized comprehensive perioperative care.

Clinical efficacy of ERAS

The accumulated evidence base demonstrates the benefits of ERAS across various surgical specialties.

A large meta-analysis of randomized clinical trials, encompassing 74 studies and 9,076 patients, demonstrated a reduction in length of hospital stay by an average of approximately 1.9 days and a decreased risk of postoperative complications when using ERAS compared to standard care.

At the same time, no significant increase in readmissions or postoperative mortality was observed.

This is of fundamental importance.

The goal of ERAS is not to discharge the patient at all costs.

The reduction in hospital stay should result from faster functional recovery rather than compromised safety standards.

The effectiveness of the concept is confirmed not only in abdominal surgery. Favorable outcomes have also been studied in orthopedics, gynecology, urology, neurosurgery, and other surgical fields.

ERAS in various surgical specialties

Historically, the enhanced recovery concept was widely developed in colorectal surgery. Subsequently, its principles began to be adapted to other surgical procedures.

Today, specialized guidelines exist for various areas of surgical practice, including colorectal, bariatric, gynecological, orthopedic, vascular, thoracic, hepatic, and several other fields.

This demonstrates an important feature of ERAS.

There is no single universal protocol that can be applied without modifications to all surgical procedures.

The general principles remain the same, but individual elements must correspond to the specifics of the intervention.

For example, strategies for nutrition, analgesia, or drain placement following colorectal surgery may differ from approaches used after joint replacement.

Therefore, the standardization of ERAS must be combined with clinical individualization.

The Role of the Multidisciplinary Team

One of the most important conditions for the successful implementation of ERAS is the coordinated teamwork of healthcare personnel.

If a surgeon adheres to the principles of enhanced recovery, but postoperative care is provided according to the traditional model, the effectiveness of the program is significantly reduced.

Therefore, the implementation of ERAS requires the establishment of a unified clinical pathway.

The surgeon is responsible for optimizing surgical strategy.

The anesthesiologist plays a key role in pain management, hemodynamic control, fluid therapy, and the prevention of postoperative nausea and vomiting.

Nurses ensure the implementation of many elements of early recovery.

Rehabilitation specialists help safely mobilize the patient.

Thus, ERAS represents not only a medical protocol, but also an organizational model of interdisciplinary collaboration.

The Patient as an Active Participant in ERAS

Modern surgery is gradually moving away from a model in which the patient is viewed solely as a passive recipient of medical care.

ERAS involves their active participation.

Prior to surgery, the patient should understand that after the procedure, they are expected to participate in early mobilization, perform breathing exercises, adhere to dietary recommendations, and inform staff about pain and other symptoms.

Such an approach enhances the predictability of the recovery process.
However, active patient participation is possible only with high-quality education.
Therefore, communication between healthcare staff and the patient is an essential component of the ERAS program.

Economic Significance of Enhanced Recovery
Reducing the length of hospital stay is of both clinical and economic importance.
Faster, safe recovery allows for a more rational use of bed capacity and healthcare facility resources.
At the same time, cost-effectiveness should not be considered the primary goal of ERAS.
If the desire to reduce costs begins to take precedence over clinical safety, the concept itself becomes distorted.
The primary goal remains improving treatment outcomes.

The economic impact should be a consequence of reduced complications, rational resource utilization, and the reduction of medically unjustified hospital stays.

Challenges in the Implementation of ERAS
Despite the benefits, implementing ERAS into real-world clinical practice can be challenging.
One of the barriers is resistance to changing traditional approaches.

Some elements of perioperative care have been performed routinely for decades, so transitioning to new protocols requires staff training and a change in organizational culture.

The second challenge is incomplete protocol adherence.

ERAS is a comprehensive program, so the selective application of a few convenient elements does not always yield the expected results.

It is also necessary to account for differences between healthcare facilities in staffing, technical capabilities, and the organization of postoperative monitoring.

Therefore, program implementation should be accompanied by clinical audits of outcomes, assessment of complications, readmissions, and protocol compliance.

Future Perspectives of ERAS
The further development of enhanced recovery is linked to the personalization of perioperative care.
Patients differ significantly in age, physical condition, comorbidities, and the nature of the surgical intervention.
Consequently, a standardized protocol must be combined with individualized risk assessment.
A promising direction is the development of preoperative prehabilitation, including the optimization of nutrition, physical

activity, and other modifiable risk factors prior to surgery.

Digital monitoring, post-discharge telemedicine surveillance, and standardized assessment of treatment outcomes are gaining additional importance.

At the same time, evidence-based medicine must remain the foundation of ERAS.

New components must be implemented not because they are technologically advanced, but after their safety and clinical efficacy have been confirmed.

Conclusion

The Enhanced Recovery After Surgery concept represents one of the most significant directions in the development of modern perioperative medicine. ERAS changes the traditional view of surgical treatment: the outcome of an operation is determined not only by surgical technique, but also by the quality of patient preparation, anesthetic management, and postoperative recovery.

The main advantage of ERAS is its comprehensive nature. In isolation, early mobilization, multimodal analgesia, or optimization of fluid therapy do not reflect the full essence of the program. The maximum effect is achieved through the consistent execution of interconnected measures across the preoperative, intraoperative, and postoperative stages.

Modern clinical studies indicate that the implementation of ERAS can reduce hospital length of stay and decrease the incidence of postoperative complications without a proven increase in readmission risk in pooled data.

An important principle is active patient participation. Preoperative education, early resumption of nutrition, and physical activity

transform the patient from a passive recipient of care into an active participant in the rehabilitation process.

At the same time, ERAS should not be viewed as a rigid, universal template. Specific elements must be tailored to the type of surgery, individual risk, and the patient's clinical status.

Thus, **the role of ERAS in modern surgery lies in the transition from an isolated surgical intervention to a comprehensive system of perioperative care aimed at reducing surgical stress, preventing complications, and ensuring the safest possible recovery of the patient's functional status**.

Further development of this concept involves improving protocol compliance, advancing prehabilitation, individualizing perioperative care, and conducting continuous audits of clinical outcomes.

REFERENCES

1. Ljungqvist O., Scott M., Fearon K.C. Enhanced Recovery After Surgery: A Review // *JAMA Surgery*. – 2017. – Vol. 152, №3. – P. 292–298.
2. Fearon K.C.H., Ljungqvist O., Von Meyenfeldt M. *et al.,*Enhanced recovery after surgery: a consensus review of clinical care for patients undergoing colonic resection // *Clinical Nutrition*. – 2005. – Vol. 24, №3. – P. 466–477.
3. Gustafsson U.O., Scott M.J., Hubner M. *et al.,*Guidelines for Perioperative Care in Elective Colorectal Surgery: Enhanced Recovery After Surgery (ERAS®) Society Recommendations: 2018 // *World Journal of Surgery*. – 2019. – Vol. 43. – P. 659–695.
4. Melloul E., Lassen K., Roulin D. *et al.,*Guidelines for Perioperative Care for Pancreatoduodenectomy: Enhanced Recovery After Surgery (ERAS) Recommendations 2019 // *World Journal of Surgery*. – 2020. – Vol. 44. – P. 2056–2084.
5. Low D.E., Allum W., De Manzoni G. *et al.,*Guidelines for Perioperative Care in Esophagectomy: Enhanced Recovery After Surgery (ERAS®) Society Recommendations // *World Journal of Surgery*. – 2019. – Vol. 43. – P. 299–330.
6. Nelson G., Bakkum-Gamez J., Kalogera E. *et al.,*Guidelines for perioperative care in gynecologic/oncology: Enhanced Recovery After Surgery (ERAS) Society recommendations // *International Journal of Gynecological Cancer*. – 2019. – Vol. 29. – P. 651–668.
7. Wainwright T.W., Gill M., McDonald D.A. *et al.,*Consensus statement for perioperative care in total hip replacement and total knee replacement surgery: Enhanced Recovery After Surgery (ERAS®) Society recommendations // *Acta Orthopaedica*. – 2020. – Vol. 91, №1. – P. 3–19.
8. Engelman D.T., Ben Ali W., Williams J.B. *et al.,*Guidelines for Perioperative Care in Cardiac Surgery: Enhanced Recovery After Surgery Society Recommendations // *JAMA Surgery*. – 2019. – Vol. 154, №8. – P. 755–766.
9. ERAS® Society. Guidelines for Perioperative Care and Enhanced Recovery After Surgery. – International ERAS Society.
10. Enhanced Recovery After Surgery Guidelines and Hospital Length of Stay, Readmission, Complications, and Mortality: A Meta-Analysis of Randomized Clinical Trials. – 2024.