Journal of Advanced Zoology

ISSN: 0253-7214

*Volume **45** Issue **01 Year 2024** Page **217:221***

Enhanced Recovery After Surgery (ERAS) Protocols In General Surgery: A Review Of Implementation And Outcomes

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Abstract

ERAS is a group of protocols that aim at affecting positively patients & surrounding lives. surgeons, nurses, physiotherapists, anesthetists, and even healthcare centers hospitals, labs, and pharmacies. Reducing the cost for both hospitals &patients, decreasing the duration of residency in hospitals, and improving patient compliance, developing performance & increasing teamwork between medical staff and patients all fall under the advantages of ERAS. Since it affects the 3 stages of any operation (preoperative-intraoperative-perioperative) it was necessary to implement a suitable protocol for each patient to achieve the best results mostly quitting smoking, fasting for a period before surgery, maintaining body temperature, pressure, and glucose level and the postoperative instructions , care & nutrition to guarantee success and avoidance to recurrence or complications.

Keywords: ERAS, protocol, outcomes

Introduction

Around 310 million patients have surgery each year, According to the Global Operational Results Study, perioperative problems occurred in 26.8% of patients who received major surgery and 24.3% of patients who received low abdominal procedures worldwide It has been proven that perioperative complications following major surgery elevate the duration of residence, expense, and death [1]. Enhanced recovery after surgery (ERAS) It was originally presented in 1997 by Professor Henrik Kehlet [2]. Also known as enhanced recovery programs/protocols ERPs or fast-track[3] it is a healthcare protocol aiming at quickening patient recovery, minimizing operational distress response, and improving assessment of the postoperative phase these protocols are both multidisciplinary & multimodel. Multidisciplinary as it requires cooperative care from surgeons, nurses, physiotherapists, patients, relatives, and anesthetics. ERAs have 3 stages before surgery, during, and after surgery which consist of beforehand admission counseling, nutrition monitoring, medical improvement of chronic disease treatment, avoiding regular use of mechanical bowel digestion, no long fasting periods, carbohydrate treatment, no hypnotics used regularly before operations, maintaining normal body temperature, avoiding salt & water overloading and prevention of nausea and vomiting [2]. Multimodel is an opioid analgesic avoidance because EARs optimize localized nonopioid analgesic to reduce the use of opioids &improve the patients' recovery postoperation, so it uses analgesics such as NSAIDs, gabapentin, ketamine, tramadol, and acetaminophenons. Usually, it aims to focus on using techniques like peripheral nerve blocking like TAP, paravertebral, brachial plexus, sciatic, and femoral nerve blocks, and neuraxial epidural or spinal [4].

ERAs Implementation in Surgeries

Surgery for head and neck tumors, hepatic surgery, weight reduction surgery, rectal pelvicsurgery,pancreaticduodenectomy,cystectomy,gastrectomy,and gastrointestinal surgery are examples of surgeries developed by ERAS guidelines [5].
A study published in year2020 in Spain to determine whether the ERAS protocols' adoption is associated with problems in patients having elective total hip THA and total knee arthroplasty TKA concluded that even though only a small number of ERAS items were individually linked to better outcomes, a higher rate of ERAS program adherence was associated with a reduction in postoperative complications.[6]
There are a few phases needed to start an effective ERAS protocol [7],

1- Start a cooperative team of surgeons, nurses, physiotherapists, nutritionists, and anesthetists.
2- Define a protocol to be used in many and variable surgerie.
3- Provide good education & knowledge to patients & relevant to postoperative care.
4- Provide monitoring of the pre-operative phase carefully nutrition, smoking, and analgesic administration.
5- Performing all the tests required pre-operative.
6- Contentious improvement of the system.
7- Provide the patient with suitable routine postoperation.

In China, ERAS was presented by Professor Jieshou Li in various general surgeries such as colorectal, it was very valuable that it was used in tertiary hospitals which are the highest level for 10 years, and it was proven that implementing protocols can reduce the cost, residency and pain without escalating the problems and 30-day rate of readmission and now it is used successfully in other general surgeries. however, variations in implementing ERAS cause limitations in the application and popularization of ERAS, also since ERAS Is carried out by a cooperative medical team it is a risk factor affecting the implementation which according to past studies was poorly affected by the shortage of participants, bad patient compliance, lack of unified assessment & protocols of the team . in a recent study in china performed to a thorough examination of the viewpoints and beliefs of multidisciplinary members in various regions regarding the implementation and improvement of the ERAS protocols, as well as an investigation of the obstacles that prevent its effective implementation, to lay the groundwork for the development of an ERAS quality evaluation system that can aid in the growth of ERAS protocols in China. This study examined the obstacles to the ERAS program's execution in the SPO dimensions from the viewpoint of interdisciplinary participants. Although a lot of evidence has demonstrated the benefits of the ERAS protocol, this study demonstrates that there are still numerous barriers to its implementation, and it is necessary to enhance implementation outcomes in China by enhancing funding and streamlining processes. All the hospitals participating in this multicenter qualitative research project are located in southern China. so, our findings may only slightly indicate the southern region's ERAS application status. The current ERAS implementation, in general, is still more grounded in

theory than in reality. This study discovered frequent roadblocks to ERAS MEMBERS using ERAS in China's three main regions and has offered workable solutions for each one. To enhance the application impact of ERAS in the future, more quality development research, assessment, and audit will be required. We anticipate that this study will serve as a springboard for future ERAS quality enhancements, improve the tool's clinical impact, and boost formalized ERAS usage [8].

Figure: A summary of the criteria for selecting hospitals. ERAS, enhanced recovery after surgery [8].

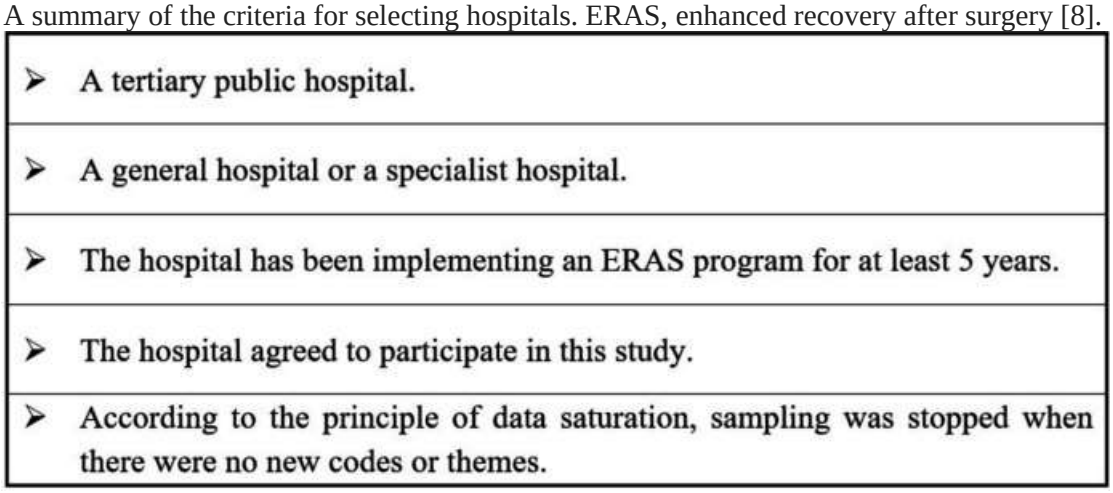

Figure 1 [8]

Barriers to Implementing Protocols

Before surgery consumption of food results in surgery cancelationSome patients are unlikely to have had the required 6 hours of fasting from solids and 2 hours without liquids for their surgery to begin, and surgeries may be - Altman, A. D., Helpman, L., McGee, J., Samouëlian, V., Auclair, M. H., Brar, H., & Nelson, G. S. (2019). Enhanced recovery after surgery: implementing a new standard of surgical care. Cmaj, 191(17), E469-E475.

1- postponed if a surgical list is running ahead of schedule or if the sequence of surgeries is changed. Thus, several hospitals have decided to increase their suggested fasting duration for solids to eight hours and advise patients to abstain from liquids for three to four hours before scheduled surgery. However, going beyond this point increases the danger of hypoglycemia and elevated insulin levels [7].
2- Contrary to local suggestions, venous thromboembolism prevention studying the prevention of venous thromboembolism in gynecologic oncology, it was discovered that a heparin dose that started before surgery reduced the incidence of postoperative deep vein thrombosis and mortality from deep vein thrombosis. Although prophylactic subcutaneous heparin therapy should be started during surgery 1-2 hours after the introduction of the epidural, American and European anesthesia guidelines recommend waiting until 12 hours after the last dose of low molecular weight heparin or 2 hours after the last dose of unfractionated heparin before placing or removing epidural catheters. The decision was made based on less than 10 reported cases of bleeding for prophylactic doses The surgeons should discuss their suggested strategy with the anesthetic team, and the need for neuraxil anesthetic should be carefully evaluated in each surgery. Many anesthesiologists are not familiar with delivering any venous thromboembolism prophylaxis for 1-2 hours after local anesthesia, including epidural [7].
3- forced perioperative nutrition Several ERAS protocols call for a regular diet to begin as soon as the evening following surgery, but forcing patients to consume foods they cannot handle won't improve their recovery. It is crucial to make it clear to patients that they should eat as long as they are well able to tolerate the diet [7].
4- Staff requirements for prompt mobilization Lack of specially trained employees to promote and oversee the exercise, without precise directions, and without sufficient staff support to guarantee control of accompanying discomfort, nausea, and vomiting, orders for patients to engage in activity as tolerated are unlikely to result in effective early mobilization. Numerous surgical units have discovered that adding more assistants and nurses to the workforce is necessary to accomplish early mobilization [7].
5- Refusing the early removal of the catheter early postoperative urinary catheter removal is usually desired by patients, it may increase the strain on nursing staff, particularly night personnel, who must assist patients in mobilizing to void urine. As a result, staff may reject or not enable early catheter removal [7].

Outcomes & Benefits of ERAS on Patients

Some studies have looked at the effect of implementing an ERAS protocol on the standard of life or health financial results in the months following surgery. If the costs are merely passed to the community or if patients suffer a higher degradation in quality of life than with traditional medical care, the positive effects of ERAS will be significantly diminished. King and colleagues reviewed data on in-patient days, out-patient and general practitioner visits, and usage of community services, as well as anticipated expenses based on national published figures. The ERAS group had much reduced primary healthcare and secondary non-medical expenses. Similarly, Sammour and colleagues reported a cost analysis of ERAS in colorectal surgery recently. They assessed whether the savings from reduced postoperatively use would offset the expense of establishing and running an ERAS protocol. In the ERAS group, there was a substantial decrease in total hospital residence, intravenous fluid use, problems, and length of epidural use. The cost of implementing an ERAS protocol is around $102 000, however, this is offset by savings in postoperative resource consumption, for an overall cost-saving of approximately $6900 per patient [3].

A follow-up examination of prospectively acquired data was performed on all patients who received spinal surgery and followed the ERAS protocol in our clinic between January 2017 and January 2018. A prevalence score was used to match a control group. The two groups were compared in terms of length of hospital stay (LOS), complications, admissions rate, pain following surgery, function, and comfort. The study showed When compared with usual monitoring, the ERAS approach reduced hospital LOS without causing further negative outcomes such as problems or hospitalizations. One of the advantages of the ERAS protocol was that it allowed us to reconsider our previous ideas and behaviors to provide better treatment for our patients [9].

In an umbrella review to assess the impact of accelerated recovery after surgery (ERAS) on all types of surgical patients. Because it was a systematic review and did not involve patients, the article didn't need ethical approval. According to the most recent meta-analysis, ERAS pathways can significantly reduce morbidity (RR: 0.620; 0.545 to 0.704), [LOS (MD:2.349; 2.740 to 1.958), hospital cost (MD:639.06;933.85 to 344.28), and time to first flatus (MD:13.119;17.980 to 8.257) for surgical treatment patients, while not affect death and recurrence resulting in The ERAS systems prove secure, practical and effective in the majority of surgeries, particularly orthopedic surgery. However, precautions must be taken to avoid adverse effects while using ERAS routes for stomach cancer surgery, especially in elderly patients. Furthermore, more RCT is required to validate the viability and efficacy for patients [2].

EARS Protocol in Cardiac Surgery

In order to acknowledge evidence-based EARS protocols nonprofit organization ERAS Cardiac Society they use evideance based programmes to standerdize patient surgery through Guidelines, professional agreements, cooperative discovery, and assessment by cooperation between The ERAS Cardiac Society with the ERAS Society the first study of evidence-based CS ERAS methods conducted by experts in agreement Was performed resulting in By combining postoperative treatments, a fast-track project to enhance performance was first started in CS.Despite the fact that ERAS is relatively new to CS, we believe that programs will find its suggestions useful as they create procedures aimed at reducing needless variability and enhancing patient importance, protection, and performance. A sizable team of clinicians collaborates during every stage of cardiac surgery patient care. To put best practices into practice, nurse coordinators and specialty champions must lead systemwide involvement and patient and caregiver education [10].

Conclusion

The medical field is evolving daily and ERAS has since presented in 1990 was improved greatly and popularized due to its effectiveness and assessment as it facilitated, improved, and enhanced the lives of many patients making a lot of medical staff jobs a lot quicker and easier while maintaining quality of their work. It also has improved the outcomes of general surgeries making patients' experience more comfortable and less painful. Implementing protocols that are recently updated and evidence-based helped in the development of ERAS

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