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Comparative Efficacy of Enhanced Recovery After Surgery (ERAS) Protocols in Abdominal Wall Reconstruction: A Prospective Study

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Abstract: ***This prospective study evaluates the comparative efficacy of Enhanced Recovery After Surgery (ERAS) protocols versus conventional peri operative care in patients undergoing abdominal wall reconstruction (AWR). Sixty patients undergoing incisional, umbilical, or ventral hernia repair were randomised into two groups: ERAS (n=30) and conventional care (n=30). The primary outcomes assessed included length of hospital stay, time to oral diet, discontinuation of analgesia, and postoperative complications. ERAS patients exhibited statistically significant improvements in recovery parameters, including earlier ambulation, reduced hospital stay, and decreased complications. These findings support the adoption of ERAS pathways in abdominal wall surgery as a superior alternative to traditional care models.***

Keywords: Enhanced Recovery After Surgery (ERAS), Abdominal wall reconstruction, peri operative care, hospital stay, hernia repair, complications

1. Introduction

In the conventional peri operative model, surgical recovery was predominantly reliant on reactive clinical decision-making, often leading to prolonged hospital stays, delayed gastrointestinal function, and heightened postoperative complication rates. The Enhanced Recovery After Surgery (ERAS) protocol represents a paradigm shift in peri operative management by introducing a standardised, multidisciplinary, evidence-based approach designed to minimise physiological stress, optimise pain management, and accelerate functional recovery.

Initial Development and Application of ERAS Principles in Surgical Procedures

Initially developed for colorectal surgeries, the Extended Radical Abdominal System principles have been extended to various surgical domains, including gynaecological, urological, and gastrointestinal procedures. However, their implementation in abdominal wall reconstruction (AWR) — which encompasses intricate hernia repairs—has been comparatively under-researched. AWR presents unique challenges due to the elevated risk of surgical site infections, wound complications, and delayed healing, making it an ideal surgical domain to evaluate the efficacy of ERAS protocols. Despite the theoretical advantages, literature assessing ERAS in this field remains limited, necessitating prospective clinical studies to establish its utility.

2. Objective

This study aims to address this gap by conducting a prospective comparative study to compare ERAS with conventional peri operative care in patients undergoing AWR. The primary hypothesis is that ERAS can effectively reduce hospital stay, expedite recovery milestones, and minimise complications without compromising patient safety.

3. Materials and methods

Study Design: Prospective comparative study

Location: Department of General Surgery, Alluri Sita Rama Raju Academy of Medical Sciences, Eluru, Andhra Pradesh, India

Duration: January 2023 to November 2023

Sample Size: 60 patients (30 ERAS group, 30 conventional care)

Inclusion Criteria:
- Age: 20–75 years
- ASA physical status: I–III
- Elective procedure: midline, incisional, or flank hernia repairs

Exclusion Criteria:
- ASA grade IV–V
- Age >75 years
- Parastomal or bridged repairs
- Flap-based reconstructions
- Prolonged postoperative ventilation
- Randomization Method: Odd-even sequence

Outcome Measures:
- Primary: Length of hospital stay
- Secondary: Time to regular diet, analgesia discontinuation, pain scores, readmission rate, complication rate

Statistical Analysis: Data was analysed using SPSS v21. Significance level was set at $p < 0.05$.

4. Results

Demographic distribution showed no statistically significant differences between groups in terms of age, sex, or ASA grade. The ERAS group had a significantly lower mean BMI compared to the conventional group (22.25 vs 23.66; $p = 0.028$).

Clinical outcomes strongly favoured the ERAS group:

- Time to oral diet: Mean 1.8 days (ERAS) vs 3.1 days (conventional), $p < 0.05$
- Analgesia discontinuation: Mean 2.3 days (ERAS) vs 4.2 days (conventional), $p < 0.05$
- Length of stay: Mean 4.2 days (ERAS) vs 7.8 days (conventional), $p < 0.05$
- Readmission rate: 1/30 in ERAS vs 4/30 in conventional, $p = 0.02$
- Complication rate (e. g., seroma, infection): 10% (ERAS) vs 33% (conventional), $p = 0.03$

These findings support the hypothesis that ERAS significantly enhances postoperative recovery following Abdominal wall surgery

5. Discussion

The findings of this study align with international literature emphasising the benefits of ERAS across multiple surgical specialties. Notably, patients in the ERAS group achieved earlier resumption of oral intake, mobilisation, and discharge readiness. These milestones are crucial for reducing hospital-acquired infections, resource utilisation, and overall cost burden, particularly in high-volume surgical units.

The ERAS protocol's success is attributed to its integrated multimodal approach—minimally invasive techniques, optimal fluid therapy, early enteral nutrition, and preemptive pain control—all of which contribute to improved physiological recovery. This approach minimises stress-induced catabolic responses, enhances immune function, and accelerates wound healing, thereby lowering postoperative morbidity.

Another significant advantage observed in this study is its ability to standardise surgical care, reducing inter-practitioner variability. By enforcing uniform pre-, intra-, and postoperative protocols, ERAS ensures consistent quality of care, even in resource-constrained settings. Additionally, the lower readmission rates observed in the ERAS group reflect better immediate recovery and a lower incidence of preventable complication

6. Conclusion

This study elucidates that the implementation of the ERAS protocol in patients undergoing abdominal wall reconstruction yields enhanced clinical outcomes in comparison to conventional peri operative care. Notably, ERAS substantially reduced hospital stay and accelerated functional recovery, concomitantly leading to diminished rates of complications and readmissions.

Considering these advantages, it is strongly recommended that ERAS protocols be incorporated as the standard of care for elective abdominal wall reconstruction surgeries. Future multi centre randomised controlled trials are imperative to further validate these findings across diverse patient cohorts and surgical settings.

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