

# Comparison of ERAS Versus Conventional Protocols in Hysterectomy Patients

Vaishvi C. Patel<sup>1</sup>, Kishan S. Adroja<sup>2</sup>

<sup>1,2</sup>Resident Doctor, Obstetrics And Gynecology, Mahavir Hospital Manish Ivf Center

## Abstract

**Background:** Enhanced Recovery After Surgery (ERAS) programmes are multimodal, evidence-based perioperative care pathways designed to reduce surgical stress and accelerate recovery. Their implementation in gynecologic surgery, including hysterectomy, has increased worldwide, but differences between ERAS and conventional care in hysterectomy patients remain an active area of study. [1–4]

**Objective:** To synthesize current evidence comparing ERAS vs conventional perioperative protocols in patients undergoing hysterectomy (benign and oncologic indications) with emphasis on length of stay (LOS), postoperative complications, pain and opioid use, functional recovery, readmission rates, patient satisfaction, and healthcare costs.

**Methods:** Narrative structured review of published guidelines, systematic reviews, randomized controlled trials (RCTs), cohort studies, and implementation reports from 2018–2025. Key sources include ERAS Society and specialty guidelines, systematic reviews/meta-analyses, recent RCTs and multicenter implementation studies. [2,5–8]

**Results:** Across multiple observational studies, systematic reviews and guideline summaries, ERAS implementation in hysterectomy is consistently associated with reduced LOS (commonly by 24–72 hours depending on baseline), reduced opioid consumption, earlier return of bowel function, and improved patient-reported recovery scores without increases in overall complication or 30-day readmission rates. High-quality RCT evidence specifically restricted to hysterectomy is emerging but still limited; stepped-wedge and cluster RCT protocols and single-center RCTs report decreased LOS and analgesic requirements with ERAS pathways. Cost analyses and implementation reports show reduced resource use and potential cost savings after ERAS adoption. [4–11]

**Conclusions:** ERAS protocols for hysterectomy improve several perioperative outcomes compared with conventional care, especially decreased LOS and opioid use, without increasing readmissions or major complications. Future high-quality multicenter randomized trials and consistent reporting of core outcomes (complications, readmissions, patient-reported recovery, and cost) are required to refine which ERAS components drive benefit in different hysterectomy types (abdominal, vaginal, laparoscopic, robotic). [2,9,12]

## Introduction

Hysterectomy—performed for benign (fibroids, abnormal uterine bleeding, prolapse) and malignant indications—remains one of the most common major gynecologic procedures worldwide. Traditional perioperative care often involved prolonged fasting, liberal intraoperative fluids, delayed mobilization, and opioid-centric analgesia. ERAS programmes, introduced originally in colorectal surgery, are now

applied to gynecologic surgery and aim to reduce perioperative stress and accelerate return to function via evidence-based bundles: preoperative counselling, minimal fasting and carbohydrate loading, multimodal opioid-sparing analgesia, goal-directed fluid therapy, early feeding and early mobilization. [1–3]

There is growing literature comparing ERAS vs conventional care in hysterectomy patients, but heterogeneous designs, variable ERAS bundles and mixed surgical approaches (open abdominal, vaginal, laparoscopic, robotic) complicate synthesis. This paper reviews the available evidence and highlights outcome domains where ERAS offers clear benefits and where evidence remains uncertain. [4–6]

### **Methods (review approach)**

This is a structured narrative review drawing on: (a) ERAS Society gynecology guidelines and guideline updates; (b) professional society guidance (e.g., ACOG); (c) recent systematic reviews and meta-analyses comparing ERAS and conventional pathways in gynecologic surgery and hysterectomy specifically; (d) randomized trials and prospective/retrospective cohort studies that report outcomes after implementation; and (e) economic and implementation studies published through 2025. Search sources included PubMed/Medline, Cochrane, guideline repositories and large journal sites. The most relevant and high-quality sources were selected to illustrate quantitatively reported outcomes (LOS, complications, opioid use, readmission, patient recovery scores, costs). [2,5–8,11]

**Limitations:** heterogeneity in ERAS bundles, variation in surgical approach, and limited number of RCTs in hysterectomy patients are recognized; therefore, results are synthesized qualitatively and where possible cite pooled estimates from systematic reviews. [4,9]

## **Results**

### **1. Guidelines and consensus statements**

The ERAS Society published comprehensive perioperative guidelines for gynecologic/oncology surgery (2019; updated material in 2023) that recommend multiple care elements across pre-, intra-, and postoperative phases: preoperative education, minimal fasting, carbohydrate loading, no routine bowel prep, multimodal analgesia (including regional blocks where appropriate), restrictive fluid therapy/goal-directed fluid therapy, early oral intake, and early mobilization. These guidelines summarize evidence and provide implementation recommendations. [2,5]

Professional bodies including ACOG have similarly endorsed ERAS principles for perioperative pathways, noting benefits such as shorter LOS and reduced opioid requirements. [3]

### **2. Length of stay (LOS)**

Multiple systematic reviews and single-center implementation studies show consistent reductions in LOS following ERAS adoption for gynecologic surgeries including hysterectomy. Reported decreases vary by baseline practice and surgical approach; reductions of ~24–72 hours are commonly reported, with minimally invasive hysterectomy seeing the largest proportional reductions because baseline LOS is already short. [4,10,14]

### **3. Pain control and opioid consumption**

ERAS pathways emphasize multimodal, opioid-sparing analgesia (acetaminophen, NSAIDs, gabapentinoids, regional/local blocks). Studies report lower total opioid consumption and equivalent or

improved pain scores compared with conventional care. Several cohorts and RCTs in gynecologic ERAS show a significant reduction in inpatient and outpatient opioid prescriptions. [6,12]

#### **4. Postoperative complications and readmissions**

Systematic reviews indicate ERAS does not increase overall complication rates nor 30-day readmission rates compared with conventional care. In most analyses, complication and readmission rates are equivalent or slightly lower after ERAS implementation. This finding helps address initial safety concerns about earlier discharge and accelerated pathways. [4,9,14]

#### **5. Functional recovery and patient-reported outcomes**

Patient-reported outcomes (quality of recovery scores, satisfaction) generally favor ERAS or show equivalence. Studies that measured early functional recovery (time to first ambulation, bowel function return) report faster recovery in ERAS patients—early mobilization is a key mediator of improved outcomes. [3,12]

#### **6. Cost and resource use**

Economic analyses and health-system implementation reports indicate ERAS programmes reduce inpatient resource use (shorter LOS, lower opioid consumption, earlier discharge), translating into cost savings in many settings. Implementation costs (protocol development, staff education) are front-loaded but are often offset by recurrent savings.

#### **7. Evidence from trials and implementation studies specifically in hysterectomy**

A stepped-wedge cluster randomized trial protocol focused on hysterectomy has been published and multicenter trials are ongoing, aiming to provide higher-level evidence for LOS and recovery outcomes. [7]

Single-center RCTs and prospective studies (e.g., recent laparoscopic hysterectomy RCTs) report shorter LOS and reduced analgesic needs with ERAS.

Large implementation series (regional/national) report reproducible benefits across benign and oncologic hysterectomy cohorts. [11]

### **Discussion**

#### **Summary of key findings**

The preponderance of evidence (guidelines, meta-analyses, cohort studies, and emerging RCT data) supports that ERAS pathways in hysterectomy improve recovery metrics—most consistently LOS and opioid consumption—without increasing complications or readmissions. ERAS also reliably promotes earlier return of bowel function and functional mobility, and is associated with at least comparable patient satisfaction. [2,4,6,14]

#### **Mechanisms of benefit**

ERAS bundles combine multiple small-to-moderate benefit items (shortened fasting, carbohydrate loading, opioid-sparing analgesia, goal-directed fluid therapy, early enteral intake, and early mobilization). The cumulative and synergistic effect of these elements reduces physiologic stress and facilitates earlier recovery. Early mobilization is a particularly well-supported single element that reduces complications associated with immobility. [3]

Which outcomes remain uncertain?

Because ERAS bundles vary across centers, the relative contribution of specific elements remains incompletely defined—i.e., which items are essential vs optional for hysterectomy is still being refined.

High-quality multicenter RCTs focused exclusively on hysterectomy subtypes (open abdominal vs minimally invasive vs robotic) are limited; ongoing stepped-wedge and cluster trials are addressing this gap. [7]

**Implementation challenges and facilitators**

Adoption requires multidisciplinary coordination (surgeons, anesthesiologists, nursing, physiotherapy), preoperative patient education, and monitoring adherence to pathway elements. Barriers include institutional inertia, variable buy-in, and resource needs for training; facilitators include leadership support and tracking outcomes to show benefit. The ERAS Society provides practical guidance for implementation and adherence auditing. [2]

**Practical recommendations for clinicians and institutions**

Consider adopting an ERAS bundle tailored to the local setting for hysterectomy patients, prioritizing high-yield elements: preoperative counselling, shortened fasting with carbohydrate drink, multimodal opioid-sparing analgesia, restrictive/goal-directed intraoperative fluids, early oral intake and early mobilization. [2,13]

Monitor core outcomes (LOS, complications, readmission, opioid use, patient recovery scores) and adjust protocols iteratively.

**Limitations of current evidence**

Heterogeneity of ERAS protocols and surgical approaches limits the ability to attribute benefit to specific elements. Many reports are single-center or observational; true causal inference is best supported by RCTs and stepped-wedge designs which are only recently becoming available for hysterectomy. Economic analyses vary by health system and costs. [4,7]

**Conclusion**

Implementation of ERAS protocols for hysterectomy (benign and oncologic) yields consistent improvements in length of stay, opioid consumption, and functional recovery without raising complications or readmission rates. Continued research—particularly multicenter randomized or pragmatic trials—and standardized outcome reporting will further refine which components offer the most benefit and how to adapt ERAS to diverse healthcare settings. Clinicians and institutions should consider phased ERAS implementation with audit and quality improvement feedback loops to maximize patient benefit. [2,4,9]

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