



**ORIGINAL RESEARCH PAPER**

**Obstetrics & Gynaecology**

**COMPARATIVE STUDY OF ERAS PROTOCOL WITH CONVENTIONAL PROTOCOL FOR GYNECOLOGICAL SURGERY**

**KEY WORDS:** ERAS, early recovery, early discharge.

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**ABSTRACT**

**Background** Enhanced Recovery After Surgery (ERAS) have been proposed to improve the quality of in-hospital care by reducing functional capacity loss and fasten the recovery in gynecological patients. **Objective** The aim of this study was to compare the ERAS protocol with conventional protocol in post-operative outcome following gynecological surgery. **Method** A prospective, comparative study was done at Geetanjali medical college and Hospital, Udaipur between January 2020 to January 2021. 40 patients, each in group of ERAS and Conventional protocol group having patients of elective gynecological surgery, were compared for demographic profile, Pain assessment, Time of oral intake, bowel bladder function, hospital stay and post-operative complication. **Results** In this study, Mean VAS postoperatively in ERAS group was much lower than conventional group ( $p < 0.001$ ). In ERAS and conventional group, oral intake was  $7.30 \pm 1.49$  hours, and  $24 \pm 0.001$  hours respectively ( $p < 0.01$ ). The mean de-catheterization time was  $18.60 \pm 1.03$  hours in ERAS group as compared to  $45.90 \pm 2.07$  hours in conventional group ( $p < 0.01$ ). The length of hospital stay for ERAS group patients were very low compared to Conventional group. There was no significant difference in both group regarding age, weight, height, BMI and parity, post-operative complications and readmission rates. **Conclusion** ERAS is helpful in reducing the length of hospitalization, early return of bowel function, cost effective with very fewer complications compared to conventional group. The properly implemented ERAS protocol leads to faster recovery and discharge with improved patient satisfaction and quality of life.

**INTRODUCTION**

Fast-track or enhanced recovery after surgery (ERAS) have been proposed to improve the quality of in-hospital care by reducing functional capacity loss and speeding up the recovery process<sup>(1)</sup>. By reducing surgical stress and maintaining postoperative physiological function, the ERAS pathways help to speed up recovery after major abdominal surgeries.

The inception of the ERAS programme is becoming standard protocol of surgical care in the hospital environment. This concept was first explained in 1990s by European anaesthesiologists and surgeons who challenged the traditional paradigms of perioperative care, most remarkably the Dutch professor Henrik Kehlet<sup>(2)</sup>.

Basic principles of ERAS includes<sup>(4)</sup>

- 1) Preoperative counselling and nutritional strategies.
- 2) Avoidance of prolonged perioperative fasting.
- 3) For fluid balance and maintenance of normothermia, ERAS focus on non-opioid use of analgesia,
- 4) Encouraging postoperative recovery strategies, like mobilization early and early de-catheterisation.

When ERAS pathways was implemented for benign gynaecologic oncosurgeries, results were encouraging. Benefits of ERAS pathway are, decreased postoperative pain, less need of analgesia, faster resumption of bowel function, minimal complications and shorter duration of hospital stay thus directly or indirectly increased patient satisfaction and decreased complication.<sup>(3,4)</sup>

**AIMS AND OBJECTIVE**

**Primary objectives:**

To compare the efficacy of implementation of a predefined ERAS protocol on postoperative pain management, duration of hospital stay and readmission rate due to SSI with conventional protocol.

**Secondary objectives:**

To compare traditional protocol with ERAS protocol in terms of Time of ambulation, Postoperative fluids requirement, Tolerance to oral intake, Return of bowel function, SSI rate, time of de-catheterisation

**MATERIAL AND METHODS**

After approval from Institutional Research Ethical board and written informed patient consent, this study was conducted at Geetanjali Medical College and Hospital (GMCH), Udaipur from January 2020 to January 2021.

It was a Prospective, comparative, clinical study having All the patients admitted for gynecological surgeries.

Considering exclusion and 10% of dropouts, thus the total no of subjects i.e.  $36 + 4 = 40$  to an ERAS protocol (40 Group 1) another was continue with the existing traditional protocol and was serve as control group. (40 Group 2)

Inclusion criteria-ASA grade I-II patients admitted for elective gynaecological surgery are included.

**Exclusion criteria-**

- Pre-existing cardiac disease, Diabetes, Autoimmune disorder, Severe Uncontrolled hypertension, Severe uncontrolled/Asthma, Uncontrolled hypo/hyperthyroidism, Severe renal or hepatic dysfunction, Neurological/psychiatric illness
- Contraindication for spinal anesthesia like: Coagulopathy and known allergy to any of the study protocol drug.

**Preoperative preparation**

VAS Score was explained to all the patients in both the protocol for postoperative pain assessment.

**Enhanced recovery protocol: Day prior to surgery**

1. Glucose drink (100 gm in 800 ml of water)-was given to patient at 10pm.

- clear liquids were allowed till 2hrs before surgery
- High carbohydrate rich diet -50 gm of glucose dissolved in 200ml of water was given to the patient.
- Tab gabapentin 1200mg just 2 hours before surgery

Fasting after 12:00 am night before surgery was in traditional protocol.

**Analgesia**

Paracetamol 1 gm 6 hourly was resumed at 6:00 hrs after spinal anaesthesia.

- Inj. Ketorolac 30mg 6 hourly
- Tab Gabapentin 300mg BD

**Resumption of oral intake was done by** Lozenges at 2 hrs, Clear fluid at 4 hours, Semisolid at 8 hours after surgery.

**Post-operative analgesia in traditional protocol**

Inj Paracetamol 1 gm 8 hour  
 Inj Diclofenac sodium 75mg 8 hour  
 Clear fluids 6-8 hour and semisolids 24 hour after surgery.

Early de-catheterization was attempted the next morning in ERAS protocol. Ambulation was done Within 6-8hrs in ERAS protocol

Incidences of Hypotension, Bradycardia, Nausea, Vomiting, Shivering, and Respiratory depression, Urinary retention and Recatheterization was assessed throughout in both protocol

**Discharge criteria for ERAS protocol**

Patients were declared fit for discharge if patient is Ambulatory, Accepting, Afebrile for last 24 hrs Passed urine

**Statistical Analysis:**

The demographic data were analysed using Statistical Packages for Social Sciences (SPSS). For descriptive analysis, mean standard deviation, ratio and proportion with percentages was utilized. The quantitative data was analysed using Independent Student's T test.

**Observations**

Patients under age of 30 years were 2(5%) in Eras group, 1(2.5%) in Traditional group. Patients in the age group of 31-40 years were 12(30%) each in and Traditional group.

Patients in the age group of 41-50 years were 18(45%) each in Eras, and Traditional group. Patients above 51 years were 8(20%) in Eras group and 9(22.50%) in Traditional group.

**Table 1: Baseline characteristics**

S. No.	Parameter	ERAS (n=40)	Traditional (n=40)	P-Value	
1	Age (years)	Mean ±SD	45.23±8.86	45.60±9.03	>0.05
		Range	26-65	30-73	
2	Weight (kg)	Mean ±SD	62.1±6.7	61.81±7.32	>0.05
		Range	50-78	45-80	
3	Height (cm)	Mean ±SD	152.47±6.72	154.46±6.54	>0.05
		Range	140-162	140-167	
4	BMI (kg/m <sup>2</sup> )	Mean ±SD	25.76±3.43	25.62±3.74	>0.05
		Range	20-34.2	20.4-34.5	
5	Parity	Median	3	3	-
		Range	0-6	0-7	

Above table shows the baseline characteristics between the two groups.

Patients in both the groups had almost same mean age, weight, height, BMI and parity.

**Table 2: Comparison of Pain Assessment Score (VAS) between ERAS and Traditional Protocol**

Protocol		VAS				
		2hrs	4hrs	8hrs	12hrs	24hrs
ERAS	Mean	6.55	6.58	5.03	3.85	2.53
	±SD	1.60	1.38	0.77	0.70	0.85
Traditional	Mean	8.33	7.40	8.03	5.40	5.08
	±SD	0.92	0.67	1.27	1.17	1.25
	P value	<0.001	<0.001	<0.001	<0.001	<0.001

This shows there was less pain in patients of ERAS group as compared to traditional group 2-24 hours postoperatively. (P <0.001)

A significant difference (p<0.01) was seen in the oral intake in the ERAS group compared to the traditional group. In the ERAS group, oral intake was 7.30 ± 1.49 hours, and in the traditional group, it was 24 ± 0.001 hours.

The mean de-catheterization time was 18.60 ± 1.03 hours in ERAS group as compared to 45.90 ± 2.07 hours in traditional group.

There were only 2 cases (5%) who had SSI and 1 case (2.50%) of UTI in the ERAS group. There were 4 cases (10%) each who had SSI and UTI in the traditional group.

**Table 3: Comparison of Return of Bladder and Bowel Function between ERAS and Traditional Protocol**

	RETURN OF BOWEL FUNCTION IN HOURS	
ERAS	Mean	19.43
	SD	2.46
Traditional	Mean	49.88
	SD	1.38
	P value	<0.001

ERAS group was noted to have earlier return of bowel function. Time to tolerate oral intake was sooner in the ERAS group with almost 92% of patients starting on oral feeds from the postoperative day zero (POD 0). In the traditional group, oral feeds were started as per the surgeon's discretion.

**Table 4: Comparison of Return of Bladder and Bowel Function between ERAS and Traditional Protocol in Hours**

Return of Bowel Function (Hrs)	ERAS		TRADITIONAL	
	No.	%	No.	%
16	3	7.50%	0	0.00%
18	20	50.00%	0	0.00%
20	6	15.00%	0	0.00%
22	10	25.00%	0	0.00%
29	1	2.50%	0	0.00%
45	0	0.00%	2	5.00%
50	0	0.00%	37	92.50%
55	0	0.00%	1	2.50%
Total	40.00	100.00%	40.00	100.00%

The average length of hospital stay for Eras group was 3.480 ±0.78 days. And for Traditional group was 5.30 0±0.72days. (p <0.001)

**DISCUSSION**

In our study maximum number of patients were in the age group of 41-50 years followed by 31-40 years. The mean age of patients in ERAS group was 45.23±8.86 years and in Traditional group 45.60±9.03 years.

Mean VAS postoperatively in ERAS group was much lower than the traditional group patients 2-24 hours postoperatively. The difference was statistically highly significant.

In the ERAS group there is improved quality of life in physical and psychological domains with no difference in social and environmental domains. Similarly, Yoong et al. assessed VAS

level with the ERAS program on the scale of 1 to 10, in patients of vaginal hysterectomy before (n = 50) or after (n = 50) ERAS implementation (after four weeks of surgery)<sup>13</sup>. In our study a significant difference (p<0.01) was seen in the time to start oral intake after surgery in the ERAS group compared to the traditional group. In the ERAS group, the time to start oral intake was 7.30±1.49 hours post surgery, and in the traditional group, it was 24±0.001 hours.

Minimizing the preoperative fasting period increases patient quality of life and satisfaction as prolonged preoperative fasting may increase patient anxiety (Charoenkwan and Matovinovic 2014)<sup>16</sup>. In our study requirement and removal of catheter time was much less in patients with ERAS protocol group as compared to traditional group. The mean de-catheterization time was 18.60±1.03 hours in ERAS group as compared to 45.90±2.07 hours in traditional group. The difference was statistically highly significant.

The ERAS group had a faster return to bowel function. The ERAS group also had a faster time to tolerate diet, with nearly 92 percent of patients on postoperative day zero (POD1) starts oral feeds. Mechanical bowel preparations should not be used, according to Periyanyaki J et al<sup>15</sup>. In gynaecological surgery, a recent meta-analysis of five RCTs found no benefit of bowel preparation in terms of surgical field visualization or operative time reduction. Patients undergoing bowel preparation, on the other hand, reported more discomfort (Siedhoff et al. 2014; Maund et al. 2011)<sup>17</sup>.

Wijk et al.<sup>28</sup> observed in their study that patient passed flatus on day one (0- 10) in ERAS (n=85)<sup>18</sup>.

In present study there were only 2 cases (5%) who had SSI and 1 case (2.50%) of UTI in the ERAS group. There were 4 cases (10%) each who had SSI and UTI in the traditional group. In one case sepsis and septic shock was also seen. In the ERAS group, one patient with urinary retention was treated with bladder catheterization for a few hours. In a study by Periyanyaki J et al, patients with nil complications were 30, accounting for 75% of total patients of which 16 patients were in test group and 14 patients in control group.<sup>14</sup>

In present study the average length of hospital stay for Eras group patients was 3.48 days. The average length of hospital stay for Traditional patients were 5.30 days. There is statistically highly significant difference between both groups.

The benefit of lesser duration of hospital stay found in the present study was consistent with studies conducted by Wijk et al<sup>18</sup>, where patients receiving ERAS protocol were discharged earlier.

Our results highlighted the merits of ERAS as reduced hospital stay, enhanced bowel motility, pain management without excess opioids use, more patient satisfaction, and with reduced complication and readmission rates. Ideally, patients treated with the ERAS protocol should be able to drink, eat, move around, and sleep on the same day of surgery.

**CONCLUSION**

ERAS is effective in decreasing stress effect and maintaining routine physiology in pre and post surgical period. The patient is early ambulized, feeding is started early, the Foley catheter is removed early, anti-emetics, and multi-modal analgesia at all stages of care all contribute to early discharge. Patients in the ERAS group tolerated their diet well and had a faster return of bowel function post operatively. This study shows ERAS is beneficial in reducing the length of hospital stay, cost effective with very fewer complications when compared with the conventional management of patient undergoing surgeries. Properly implemented ERAS programme leads to faster

recovery and discharge, as well as improved patient satisfaction and quality of life.

when properly implemented,

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