



## IMPLEMENTATION OF ERAS PROTOCOLS FOLLOWING ELECTIVE CAESAREAN SECTION BY OBSTETRICIAN IN SOUTH INDIA

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**ABSTRACT** **Objective:** Enhanced Recovery After Surgery (ERAS) is one of the new concepts in the post operative care in which multidisciplinary approach has implemented for the speedy recovery of the patients. In the present study, ERAS protocol was followed in the C-section patient. **Materials & Methods:** In this observational study, 55 patients were recruited, and counselling was given to the patients about the ERAS protocol. In the preoperative wards, parameters such as hypertension, glucose, haemoglobin levels were checked. In Obese patient care has taken place for not gaining much weight during the pregnancy period. In the Intra operative ward care was taken in the following sections. Prophylactics antibiotics were given to the patient, in the surgical site antiseptic solution were used to clean the area, IV fluids less than 3 litres were given to maintain the normothermia and euvoolemia. Warm IVF were given to the patients to prevent hypothermia. To minimize the hypotension induced by spinal anaesthesia, antiemetics and vasopressin were given. After the surgery the patients were reviewed for early oral intake, bowel movements, blood glucose control for wound healing, early mobilisation, and ambulation within first 8 hours, time for removal of urinary catheter and mother infant bonding. The study showed that more than 75% of the patients showed early mobilisation, ambulation and urinary catheter was removed within 6-12 hours for 76% of the patients. ERAS protocol increased the bonding between the mother and the infant (96%). Thus adapting ERAS protocol in OBG ward will provide improved recovery following surgery.

**KEYWORDS :** ERAS, C-section, Mobilisation, Ambulation.

### INTRODUCTION

Enhanced Recovery After Surgery (ERAS) is one of the new concepts in the post operative care in which multidisciplinary approach has implemented for the speedy recovery of the patients. It is an evidence-based protocol to improvise the care during the perioperative period (Ituk & Habib, 2018). ERAS was started initially in colorectal surgery resulting in the shortened duration of hospital stay, no recurrent admission after discharge, less post operative complications and improved patient satisfactions (Anderson et al., 2003). Preoperative, intraoperative, and postoperative interventions are all included in the ERAS concepts. It includes the typical causes, such as insufficient analgesia, a delayed return of bowel function, and delayed ambulation, that results in the delayed recovery and prolongs the hospital stay. (Grocott et al., 2012). The main advantage in ERAS is using different analgesic drug regimen with various mode of actions aiming to minimize the side effects of single analgesic drug and provide opioid sparing analgesia. Various combinations of opioid analgesia like neuraxial opioid analgesia, oral analgesia, and peripheral nerve blockade can be used in reducing the analgesics during surgery (Ismail & Hameed, 2023).

The most common abdominal surgery among females is Cesarean delivery (C-section). In USA and UK the ERAS protocol was followed for C-section, studies reports that early discharge of the patients with increased satisfaction was observed in ERAS group (Brooten et al., 1994). The majority of obstetric anesthesiologists surveyed in the UK during the period of 2013 expressed support for the idea of using ERAS for C-section, and the majority of the institutions were either considering implementing an ERAS protocol for the C-section (Aluri & Wrench, 2014). In India C-section is the highly recommended procedure for saving both the mother and infant during serious complications. The number of C-section is high in India. 47.4% of C-section was observed in private hospitals and 14.3% was observed in Public sectors (Pandey et al., 2023). A recent data from the national survey indicated that 1 among the 5 pregnant women are undergoing C-section deliveries (Betran et al., 2015). Since the percentage of C-section deliveries is high in India the implementation of ERAS is necessary, mainly to decrease the hospital stay and improvising the perioperative care. Very few studies were conducted in India to implement the new concept in Obstetrics ward.

In the present study, pre-operative considerations like Patient education, preoperative hydration, caloric intake, optimization of haemoglobin, lactation assistance, and readiness were studied. Intra-operative considerations like Preventing hypotension and the accompanying symptoms of nausea, vomiting, thromboprophylaxis, anti-bacterial prophylaxis, oxytocin regulation, and delayed cord clamping were studied. Post-operative considerations like early oral

intake, consistent oral and multimodal analgesia, early movement, early urine catheter removal, and early discharge were studied.

Thus, the present study focused on the implementation of ERAS protocol in the C-section deliveries and the outcomes such as patient recovery and postoperative satisfaction were evaluated.

### METHODOLOGY

This observational study was conducted at Sree Balaji Medical college and Hospital, Chennai during the period of September to November 2023.

### Inclusion criteria:

The patients who underwent for the elective C-section were included in this study

### Exclusion criteria

- Patient who underwent Emergency C-section were excluded in the study.
- women who had prolonged hospital stay due to neonatal intervention were excluded in this study

Prior to the procedure, appropriate counselling of the study's protocols was provided during prenatal appointments, and then informed consent was obtained. In the preoperative preparations, parameters such as Hypertension, Glucose, Haemoglobin levels were checked. In Obese patient care has taken place for not gaining much weight during the pregnancy period. In the Intra operative ward care was taken in the following sections. Prophylactics antibiotics were given to the patient, in the surgical site antiseptic solution were used to clean the area, IV fluids less than 3 litres were given to maintain the normothermia and euvoolemia. Warm IVF were given to the patients to prevent hypothermia. To minimize the hypotension induced by spinal anaesthesia, antiemetics and vasopressin were given.

After the surgery the patients were reviewed for early oral intake, bowel movements, blood glucose control for wound healing, early mobilisation and ambulation within first 8 hours, time for removal of urinary catheter and mother infant bonding.

### RESULTS:

In this study, 55 patients were taken for Elective C-section and willing to enroll in this study,

Out of 55 patients, 4 patients were fit for discharge on POD-1 but had to prolong they stay in the hospital due to neonatal intervention, so they were excluded from the study.

Among the 51 patients, 88% were educated about the ERAS and 12%

were not educated about the ERAS (Fig 1). In the pre-operative period 100% of the patients were treated for hypertension, Diabetes Mellitus and 98% were treated for anaemia. 43.13% of the patients were obese and limited their maternal weight gain during their maternity period. 94.11% of the patients followed NPO before 6 hours of surgery (Fig 2).

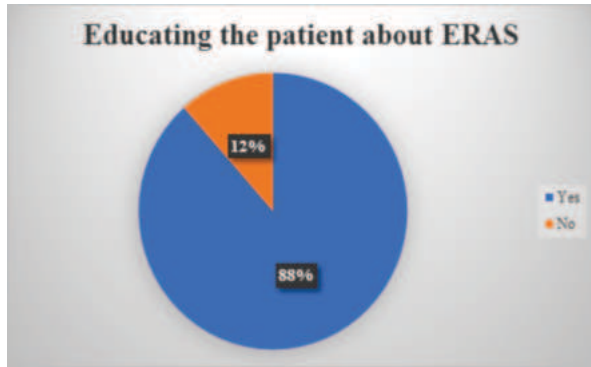


Fig 1: Educating the patient about ERAS.



Fig 2: % of people showed corrected pre-operative complications.

In the intra-operative ward, prophylactic antibiotics were given to all the patients and antiseptics were used in all the patients in the surgical site prior to C-section. 53% of the patients received less than 3 litres for maintaining the normothermia and euvolemia. 54.9% of the patients (fig 3).

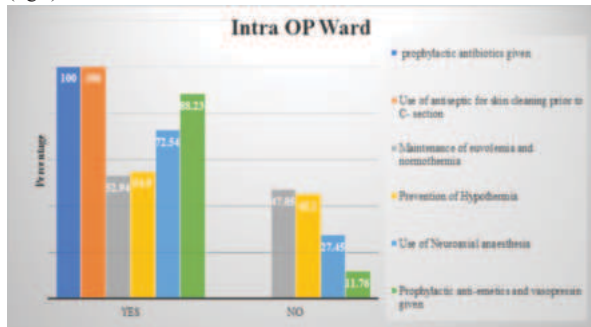


Fig3: Implementation of various ERAS protocols in the Intra operative ward

EARLY ORAL INTAKE



Fig 4: showing the % of patients taking oral food within 6 hours and after 6 hours.

In the post-operative ward the patients were assessed for the early oral intake. After 6 hours, 61% were able to take their oral food and 39%

were able to take their food within 12 hours (Fig 4). 94.11% of the study participants showed normal bowel movement and only 5.88% used chewing gum to start the bowel movement after surgery. 84.31% showed normal blood glucose level and good wound healing.

More than 75% of the patients showed early mobilisation and ambulation and urinary catheter was removed within 6-12 hours for 76% of the patients (Fig 5). ERAS protocol increased the bonding between the mother and the infant (96%).

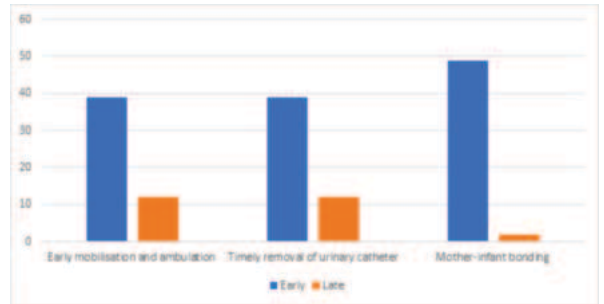


Fig 5: showed the number of patients showed early mobilisation, removal of urinary catheter and mother infant bonding.

DISCUSSION

The first application of the enhanced recovery after surgery (ERAS) regimen was carried out in colorectal surgery. This programme of standardised perioperative care is deeply ingrained in several surgical specialties, such as gynaecologic, urologic, colorectal, and hepatobiliary surgery. Improved recovery following surgery has been demonstrated to have positive effects on the health system in terms of lower costs as well as clinical benefits such as shorter hospital stays, less problems, and fewer readmissions. Furthermore, the mother must recover sooner to care for her infant actively and independently after C-section. In the present descriptive study attempt has been made to observe the application of ERAS in the C-section patient for the easy recovery.

When a C-section is performed, the bladder is either drained right before the procedure or an indwelling catheter is used, which can be removed anywhere from right after the procedure to 24 hours later. While the Society for Obstetric Anaesthesia and Perinatology (SOAP) guidelines prescribe removal after 6–12 hours after operation, but the ERAS society has suggested rapid removal (Macones et al., 2019). In the present study, out of 51 patient, urinary catheter was removed within 12 hours for 39 (76.47%) patients. Previous studies also showed earlier catheter removal by applying ERAS protocol in C-section ward was 82% (Vipulachandra et al., 2023). Another study compared the ERAS group and non ERAS group and found in ERAS group the urinary catheter was removed within the meantime 6.56 hrs but in non ERAS group it was 62.68 hours (Gupta et al., 2022). Earlier catheter removal will avoid the incidence of urinary tract infection in the post operative ward. Early catheter removal make the patients to get out of bed when they felt the urge to urinate for the first time following surgery and hence early mobilisation will be achieved. In the present study early mobilisation was observed before 8 hours for 39 patients. In the standard protocol, the ambulation time was usually after 2 days (Gupta et al., 2022). Pravina et al, (2021) also reported the earlier mobilisation time of 6 hours in ERAS group when compared to that of conventional group.

In the Pre operative ward the patients were assessed for the maintenance of hypertension, obesity, gestational diabetes and anaemia as per the ERAS protocol (Bostanci et al., 2018). In the traditional practice, post operative oral intake will be started only after the recovery of bowel function. Early oral intake has raised concerns about the possibility of vomiting and severe paralytic ileus, which could lead to anastomotic leakage, aspiration pneumonia, and wound dehiscence (Charoenkwan & Matovinovic, 2014). In ERAS protocol early oral intake assists with early mobilisation and discharge of patients without worsening issues like nausea, vomiting, or infection. It also enhances maternal satisfaction and speeds up the recovery of bowel function (Gupta et al., 2022). Studies also showed early oral intake reduces the postoperative stress, reduces the risk of sepsis mainly due to the less colonisation of bacteria (Deitch et al., 1991). In the present study, among 51 patients more than 60% showed early oral intake after 6 hours and remaining patients showed oral intake within

12 hours. 94% showed normal bowel movement and only 6% showed bowel movement after using chewing gum. In ERAS procedure early oral intake is one of the major criteria and it will be achieved using any one of the criteria like using chewing gum, consuming coffee or sips of water (Canzan et al., 2022). Therefore in the current study to initiate the bowel function chewing was used. Chewing is the inexpensive method and also showed lesser risk of nausea and vomiting with the positive effects of mastication and deglutition (Chapman et al., 2018). Thus ERAS showed the satisfactory result on C-section patient by preserving body homeostasis, encouraging early release, and lowering postoperative complications, excellent analgesia, intraoperative warming, and early oral feeding all help to hasten recovery.

## CONCLUSION

The present study showed the improved recovery following surgery using ERAS protocol, which may lessen the financial burden on both the patients and medical facilities. This would enable a mother to begin caring for her child considerably sooner without jeopardising her happiness or safety. The hospital will also benefit from a decrease in bed occupancy, which will increase the number of patients receiving treatment and ensure that medical resources are used effectively.

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