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Original Research Article

Enhanced Recovery after Surgery Protocol Compliance Impact on Recovery after Cesarean Section in Primi Patients as Compared to Conventional Care

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Abstract

Background and Aim: Enhanced recovery after surgery (ERAS) is an evidence-based, multi-disciplinary approach throughout preoperative, intraoperative and postoperative period. The ultimate goal of ERAS is to enhance recovery, to improve the maternal and neonatal outcome and reducing perioperative complications.

Material and Methods: This is a prospective, randomized study involving 92 patients 46 in each group. In Group A ERAS protocols were applied and in Group B conventional care was given. Data evaluation was done by VAS (visual analog scale) score at 6-hour, comparison of CRP level at 24 hour and length of hospital stay.

Results: Post-operative pain was significantly less in ERAS group (p value 0.00008). There was no change in post op CRP level at 24 hours in both groups (p value 0.11). There was decreased duration of hospital stay in ERAS group (p value 0.000000042). Post-operative complications like nausea- vomiting and severe pain was significantly (p value0.0076 and .015 respectively) less in ERAS group while there was no change in postoperative headache and wound infection rate (p value 0.62 and 0.557 respectively).

Conclusion: We discovered that ERAS protocols significantly reduces hospital stay and decreases post-operative pain. ERAS protocols can be used to make tertiary hospital more efficient and speedier. ERAS protocol significantly improves overall patient satisfaction and reduces perioperative complications.

Keywords: Cesarean section, Obstetric anaesthesia, postoperative analgesia, TAP block.

Introduction

Enhanced recovery after surgery (ERAS) is an evidence-based, multi-modal approach throughout preoperative, intraoperative and postoperative period.

The ultimate goal of ERAS protocol during caesarean section is to enhance recovery and improve the maternal and neonatal outcomes. Even when caesarean delivery is planned, women also face the unique dual challenges: recovering from major abdominal surgery and taking care of the baby.

Efforts to enhance post-operative recovery may help to improve bonding and breastfeeding, as well as reduce the incidence of post-partum depression[1]. In a study done by Xianhua Meng et al have suggested that application of ERAS have significantly reduced postoperative complications, duration of hospital stay and postoperative pain[2].

The role of anaesthesiologist in ERAS covers the areas including management of peri-operative hypotension, prevention and treatment of intra- and post-operative nausea and vomiting, prompt management of hypothermia and multi-modal pain management [3].

Although there are still some concerns, ERAS implementation should not be delayed. Regular assessment and improvement should be integral part of the protocol. Further high-quality studies are

required to demonstrate the efficacy and cost effectiveness of the ERAS protocol.Enhanced recovery after surgery (ERAS) was firstly introduced by Kehlet in 1997 to reduce the length of stay in open sigmoid resections.[1]

Since then, a variety of research has been published related to this topic. Today ERAS has been incorporated in a wide range of specialties and various protocols have been published and are keep getting updated all over the world. Although ERAS protocols have been effectively applied in many specialities and institutes, the application of ERAS in obstetrics is being delayed. In 2018, ERAS society released guidelines for caesarean delivery.[4]

Material and Methods

This prospective, randomized study was approved by Institutional Ethical Committee. The study was conducted on 92 primigravida patients. All participants gave written, informed consent. The trial was registered with Clinical Trial Registry of India (CTRI) before patient enrolment. Randomisation was done by cards. We conducted simple randomization to assign the women to either the ERAS (Group A) or conventional care (Group B).Participants included for the study were primi patients, between age 18 to 30 years, having gestational age >37 weeks, of American Society of Anaesthesiologists (ASA) Class II, undergoing elective lower segment caesarean section (LSCS) under spinal anaesthesia. We excluded mothers with pregnancy complicated by preeclampsia or eclampsia, gestational age < 37 weeks, antepartum haemorrhage, gestational diabetes mellitus, and other physical disability.

Mothers listed for delivery by elective cesarean section were randomly assigned to either an ERAS group or Conventional group in a ratio of 1:1. We blinded the outcome assessors. Participants were not blinded because they received counselling and education about the intervention and blinding them would be difficult in this type of study. We opted ERAS protocols in Group A and conventional care in Group B. The protocols we applied in ERAS and Conventional care group are listed below [5].

Table: 1 ERAS protocols

ERAS
Preoperative
Counselling and ERAS education. (About every procedure).
Fasting to solids but oral glucose rich clear fluid 2 hour before LSCS. (We used 200 ml of dextrose 5 %).
Prophylactic antibiotics.
Prophylaxis against Post-Operative Nausea and Vomiting (PONV) (8 mg of IV dexamethasone, 4 mg IV ondansetron).
Prophylaxis against pulmonary aspiration (40 mg of IV pantoprazole and 10 mg of IV metoclopramide).
Intraoperative
Single-shot spinal with 10–12.5 mg of hyperbaric bupivacaine and 15 µg of preservative-free fentanyl.
Restrictive fluid administration during LSCS to ensure normovolemia (We gave 1000 ml of Ringer Lactate IV).
Treatment of hypotension with 6-mg intravenous boluses of mephentermine.
Prevention of hypothermia with warm IV fluids and warm clothing cover.
Postoperative
For post-operative analgesia bilateral Transversus abdominis plane (TAP) block given with 0.25 % 20 ml bupivacaine on each side.
Rectal suppository containing diclofenac (100 mg).
Oral carbohydrate drink within 1 h (clear lemon juice with sugar and salt).
Cessation of IV fluids within 1 h.
Early breastfeeding, within 30 min.
Analgesia with oral single fixed-dose combination of 400 mg of ibuprofen and 500 mg of acetaminophen every 8 h. Breakthrough pain was treated with 50 mg of IV tramadol.
Early mobilization at 8 h.
Early urethral catheter removal at 6 h.
Oral antibiotics (850 mg of amoxicillin-clavulanate12hrly and 500 mg of metronidazole every 8 h).

Table 2: Conventional Care

Conventional
Preoperative
Fasting to solids and liquids for minimum of 6 hours.
Prophylactic antibiotics.
Prophylaxis against Post-Operative Nausea and Vomiting (PONV) (4 mg ondansetron).
Intraoperative

Single-shot spinal with 10–12.5 mg of hyperbaric bupivacaine.
Liberal fluid administration including preloading every mother.
Use of mephentermine based on anesthetist's clinical impression.
Postoperative
Oral feed within 6 hr.
Cessation of IV fluids within 24 hr.
Mobilization after 24 hr.
Urethral catheter for 24 hr.
Early breastfeeding within 1 hr.
Analgesia 50 mg IV tramadol 6 hourly.
Oral antibiotics (850 mg of amoxicillin-clavulanate q12h and 500 mg of metronidazole every 8 h).

The length of hospital stay, measured as the number of hours from the start of operation to discharge, was the main outcome of our research. 6 hours after surgery, the Visual Analogue Scale (VAS score) was used to quantify postoperative pain as a secondary outcome because the VAS score includes visual signals that everyone, regardless of their education can understand (appendix 1).

On the VAS score, severe pain was defined as a score of >7. Using the post-operative C-reactive protein (CRP) level at 24 hours, the patients' alterations in inflammation were also measured. Additional trial endpoints included the assessment of the complications such as headache, wound infection and nausea and vomiting in the initial 24 hours.

Statistical analysis: The recorded data was compiled and entered in a spreadsheet computer program (Microsoft Excel 2007) and then exported to data editor page of SPSS version 15 (SPSS Inc., Chicago, Illinois, USA). Quantitative variables were described as means and standard deviations or median and interquartile range based on their distribution. Qualitative variables were presented as count and percentages.

For all tests, confidence level and level of significance were set at 95% and 5% respectively.

Results

Table 3: Demographics data

Variables	Group A	Group B	P value
Age (in years)	**24.73+-2.72**	**25.39+-2.88**	**0.33**
BMI (in kg/m^2)	**23.5+-2.8**	**24.62+-3.25**	**0.09**
Gestational age (in weeks)	**39.73+-1.08**	**39.56+-1.1**	**0.488**

Table 4: Indication for Caesarean Section

Indications	Group A	Group B	P value
Malpresentation	11	9	**0.9192**
NPOL	16	18	
Previous myomectomy	2	1	
Twins	13	15	
Infected birth canal	4	3	

As seen in table 3, there was no significant difference in these demographic features between two groups. That suggests that the randomisation was good without any predetermined changes. And there was no significant difference between two groups in term of indications of caesarean section (table 4).

Table 5: Findings of the Different Variables

	Group A	Group B	P value
Duration of hospital stay	63.934+-6.45	69.86+-2.81	0.0000000422
VAS score at post op 6 hours	2.5+-1.16	3.71+-1.86	0.0003
Preoperatively(day before surgery)	1.12+-0.210	1.186+-0.23	0.1925
Postoperatively(24 hours after surgery)	10.69+-1.76	11.26+-1.59	0.1174

The above table shows that the ERAS group had a considerably decreased mean length of hospital stay compared to the conventional group. The study found that the Group A had a mean length of hospital stay of 63.9+6.45 hours compared to the Group B's 69.8+2.81 hours. As seen in table, post-operative Visual analogue scale score at 6 hours was significantly less in Group A compared to Group B. There was no significant difference in terms of level of inflammatory response in body as

seen by CRP levels in blood comparing 10.69+1.76 in Group A to 11.26+1.59 in Group B with p value of 0.11.

The Group A had significantly decreased incidences of nausea vomiting and severe pain as compared to Group B (p value 0.007 and 0.01 respectively), whereas there was no significant difference in rates of headache and wound infections in both groups(p value 0.62 and 0.557 respectively)

Discussion

In this study evaluating the impact of ERAS on elective LSCS, we found that ERAS is reasonable and it has considerably shortened hospital stay. Reduction in hospital stay decreases overall burden on the patients and thereby reduce overcrowding on the postnatal ward in large hospitals. Patient's complaints of acute pain and nausea-vomiting were also reduced. Shortened hospital stay can reduce psychological trauma to the patient however further data are needed.

ERAS incorporates minimal changes in oral intake, appealing analgesia, prevention of PONV, and swift mobilization which affect recovery and deals well with post-operative challenges. The use of ERAS at cesarean delivery can be associated with a reduction in postoperative narcotic use. We understand that the cause of reduction in postoperative narcotic use may be multi-factorial. Decreasing the need of opioids improves maternal and neonatal bonding, improves maternal recovery and reduces opioids related side effects. As shown by previous studies done by Meng X. et al suggested that protocols implementing ERAS in LSCS could shorten length of hospital stay and hospital cost and reduce the incidence of complications, postoperative pain score, and opioid use, but did not increase the rates of readmission[2]. In a previous study done by Macarena Barbero et al suggested that in group where ERAS protocols have been applied , C-reactive protein plasma level decreased 1.46 mg/dL and the probability to meet the discharge criteria increased 7% (P <0 .001 both)[6].

Previous study done by Nikolas C. Teigen et al evidenced that enhanced recovery after surgery at cesarean delivery may have the potential to improve outcomes such as overall postoperative length of stay, improved patient satisfaction, and an increase in breastfeeding rates[7]. In addition, there has been study done by Fae E. et al evaluating implementation of an ERAS pathway for women having cesarean deliveries was associated with decreased postoperative length of stay and with cost savings [8].

Our study has considerable merits since it is a randomized controlled trial, and the process of randomizing was successful, as seen by the balance of baseline characteristics in two arms. Second, the trial is carried out in a hospital where patients represent a typical large population. In addition to described results here, advantages of ERAS implementation in LSCS may have other potential benefits such as overall patient satisfaction and increasing the rate of bed turnover. However, the data about breast feeding rate is not clear. Hopefully, more studies will be conducted to evaluate these beneficial effects of ERAS, further checking the effects related to neonate outcome, postpartum depression, and service efficiency.

Conclusion

We discovered that ERAS decreases Length of hospital stay and post-operative pain while decreasing complications like severe pain and nausea vomiting. Our findings suggest that ERAS is practical and efficient in LSCS. Future trials should include implementing patient satisfaction inquiries in district-level health facilities.

Reference

1. Zhi-Qiang Liu, Wei-Jia Du, Shang-Long Yao. Enhanced recovery after cesarean delivery: a challenge for anesthesiologists. Chinese Medical Journal 2020; 133(5).
2. Meng X, Chen K, Yang C, Li H and Wang X (2021) the Clinical Efficacy and Safety of Enhanced Recovery After Surgery for Cesarean Section: A Systematic Review and Meta-Analysis of Randomized Controlled Trials and Observational Studies. Front. Med. 8:694385.
3. Ituk U, Habib AS. Enhanced recovery after cesarean delivery. F1000Res. 2018 Apr 27; 7:F1000 Faculty Rev-513.
4. Wilson RD, Caughey AB, Wood SL, Macones GA, Wrench IJ, Huang J, Norman M, Pettersson K, Fawcett WJ, Shalabi MM, Metcalfe A, Gramlich L, Nelson G. Guidelines for Antenatal and Preoperative care in Cesarean Delivery: Enhanced Recovery After Surgery Society Recommendations (Part 1). Am J Obstet Gynecol. 2018 Dec;219(6):523.e1-523.e15.
5. Baluku M, Bajunirwe F, Ngonzi J, Kiwanuka J, Ttendo S. A Randomized Controlled Trial of Enhanced Recovery after Surgery Versus Standard of Care Recovery for Emergency Cesarean Deliveries at Mbarara Hospital, Uganda. AnesthAnalg. 2020 Mar;130(3):769-776.
6. Barbero M, Garcı´a J, Alonso I, Alonso L, San Antonio-San Roma´n B, Molnar V, et al. Impacto del grado de cumplimiento de un protocolo ERAS en la recuperacio´nfuncionaldespue´s de cirugı´acolorrectal. Cir Esp. 2021; 99:108–114.

7. Teigen NC, Sahasrabudhe N, Doulaveris G, et al. Enhanced recovery after surgery at cesarean delivery to reduce postoperative length of stay: a randomized controlled trial. Am J ObstetGynecol 2020; 222:372.e1-10.
8. Fay E, Hitti JE, Delgado CM, et al. An enhanced recovery after surgery pathway for cesarean delivery decreases hospital stay and cost. Am J ObstetGynecol 2019; 221:349.
9. Jensen MP, Chen C, Brugger AM. Interpretation of visual analog scale ratings and change scores: a reanalysis of two clinical trials of postoperative pain. J Pain. 2003 Sep;4(7):407-14.