DOI: 10.7860/JCDR/2022/59075.17193

Original Article

Obstetrics and Gynaecology Section

Early versus Delayed Initiation of Oral Feeds among Mothers after Caesarean Delivery: A Comparative Study

RAJIV KUMAR SAXENA[1], CHAITANYA INDRANI[2], P ROSHINI[3], ARITRA MAJI[4]

ABSTRACT

Introduction: It is a common practice to keep a patient 'nil' per oral, till the return of bowel sounds, after any laparotomy. Enhanced Recovery After Surgery (ERAS) society, now recommends evidenced-based guidelines for postoperative early oral feeding after an uncomplicated Caesarean Delivery (CD), as opposed to the delayed (conventional) initiation of oral feeds.

Aim: To compare the effects of early feeding versus delayed oral feeding in women undergoing CD.

Materials and Methods: This prospective comparative study was conducted in Department of Obstetrics and Gynaecology at MVJ Medical College and Research Hospital, Bengaluru, Karnataka, India, from November 2020 to October 2021. Total of 148 women with uncomplicated singleton pregnancy undergoing CD, under spinal anaesthesia, were allocated into two groups. Early Feeding group (n=70) (EF) where feeding was started within 2-8 hours of surgery and Delayed Feeding group (n=78) (DF) where feeding was started between 18-24 hours of CD. The outcome measures were maternal satisfaction, and the effect on gastrointestinal function (return of bowel sounds, passage of flatus and stool), mobilisation of patient and complications in postoperative period. Student's t-test and Chi-square test were used as appropriate, and p-value <0.05 was determined to be statistically significant.

Results: The mean age of women in DF was 24.79±4.37 years and in EF group was 25.09±3.86 years. Overall, the maternal satisfaction was high in both the groups; DF (80%) and in EF (98.6%). There was an early return of bowel sounds in EF group 4.71±1.83 hours versus 13.72±3.08 hours in DF group. Participants in EF group recorded. early passage of flatus (9.89±3.00 hours versus 13.72±3.08 hours), and early ambulation (9.57±1.62 versus 14.95±3.9 hours) when compared to DF group participants.

Conclusion: The ERAS strategy is a safe and effective approach for postoperative care for women undergoing caesarean delivery and results in overall high patient satisfaction.

Keywords: Ambulation, Bowel sounds, Feeding, Flatus, Maternal satisfaction

INTRODUCTION

Caesarean Delivery (CD) represents the most significant operative intervention in obstetrics. The frequency with which it is carried out continues to rise [1]. As the risk of complications from the surgery have progressively diminished, this operation is being justified for ever widening clinical and social indications. In India, CD rates have been steadily rising with a wide variation in the rates reported from private and public hospitals [2]. Caesarean delivery are generally short duration operation involving minimal, if any, bowel manipulation in young healthy women. Postoperative management related to introduction of fluids and solid food, after CD, vary among individual doctors and different institutions. Historically, patients were kept 'nil per oral' (fasting), until return of bowel sounds or passage of flatus, this interval could vary anywhere between 8-24 hours [3]. Thereafter, clear fluids followed by soft diet were permitted. Regular diet was introduced only after patient passed flatus and or stools [4].

Postoperative ileus is a self-limiting event that follows all abdominal surgeries including CD. Although the exact mechanism of arrest and disorganisation of gastrointestinal motility is unknown, it appears to be associated with the opening of peritoneal cavity, bowel manipulation, duration of surgical procedure, and bowel adhesions. Those with intraoperative adhesions and postpartum haemorrhage were excluded as extensive intra-abdominal dissection prolongs the duration of surgery, causing increase in fat and tissue catabolism and retention of free fluid in response to altered level of antidiuretic hormone and aldosterone, causing electrolyte disturbance and predisposing to paralytic ileus [5]. From a clinical standpoint, most clinicians consider that an ileus has resolved when bowel sounds are heard and flatus is passed, hence, feeding is not allowed until this has happened.

In recent years, these traditional practices of oral feeding after abdominal surgery, have been challenged by many studies, some offered a regular diet within the first 8 hours, whereas in delayed feeding group diet was introduced at 24 hours [6], and in the study by Tan PC et al., the participants were randomised to a sandwich meal served immediately on return to the ward or on demand [7]. In 2019, the Enhanced Recovery After Surgery (ERAS) society, published evidenced-based recommendations for postoperative care after CD, to enhance patient satisfaction and early recovery. One of the key element of the recommendations is early feeding with regular diet within two hours after CD. The evidence suggests that earlier resumption of solid food, accelerated return of bowel activity and reduced length of hospital stay with no evidence of higher complication rates. This also resulted in early ambulation, lower costs and higher overall maternal satisfaction [8-10]. Early oral feeding is associated with reduced protein store depletion, improved wound healing and faster recovery [11]. The economic impact of early discharge from the hospital after uncomplicated caesarean section cannot be overlooked [12].

There is an inherent resistance to change any conventional practice that has stood the test of time. The contrasting ERAS recommendation of early feeding versus the conventional delayed feeding after CD is one such area that needs implementation and audit. Hence, this novel study was designed to audit the current practice of Delayed Feeding (DF), and implement the evidence based practice of Early Feeding (EF) after CD. The primary objective was the overall maternal satisfaction with the procedure and the secondary objective was to assess the effect on gastrointestinal function (i.e. time to return of bowel sounds, passage of flatus and stool), time taken for ambulation of the patient and associated complications, if

any. The hypothesis of the study being that there is no difference in the above mentioned parameters with EF or DF after CD.

MATERIALS AND METHODS

This prospective comparative study was conducted in Department of Obstetrics and Gynaecology at MVJ Medical College and Research Hospital, Bengaluru, Karnataka, India, from November 2020 to October 2021. Institutional Review Board and Ethical Committee approval was taken prior to the study (MVJMC&RH/IEC-04/2019).

Sample size calculation: Sample size estimated was 69 for each group, considering the time for first flatus as 30.7±15.3 and 37.5±16.5 for the two groups with 5% level of significance and 80% statistical power [13]. In the present study, a total of 148 patients were recruited. On admission the patients were explained about the study protocol and informed consent was taken after which they were randomly allocated to two groups, i.e., EF group or DF group, using random number table.

Inclusion criteria: The study population included women with term, singleton pregnancy undergoing uncomplicated elective or emergency CD under spinal anaesthesia.

Exclusion criteria: Women treated with magnesium sulphate, tocolytic drugs, previous history of bowel surgery or bowel injury or general anaesthesia were excluded from the study.

This study comprised of 148 women participants, assigned to two groups:

- Group DF (n=78): Participants received conventional postoperative care i.e. nil per oral for 18-24 hours postoperatively, then allowed clear oral fluids after bowel sounds were heard, followed by soft diet.
- Group EF (n=70): Participants received ERASS recommended early oral feeds, that is, water within 2-8 hours of CD, followed by soft or regular diet. Clear oral fluids included sips of water, tender coconut water, fruit juice, tea, coffee. Soft diet included porridge, soup, idli, fruits, milk products followed by regular diet consisting of vegetables and chapatti or rice or ragi ball; as per patient's preference.

Study Procedure

Relevant information was collected to study the outcomes in both the groups. This included independent variables of demographic data like maternal age, parity, gestational age, previous abdominal surgery, whether emergency or elective CD. Postoperative parameters included assessment of 'maternal satisfaction' with postoperative care, which was recorded after 48 hours of CD, using the Visual Analogue Scale (VAS) [6]. The same scale was used to evaluate patient satisfaction on a scale from 0-10, minimum satisfaction was given a score of 0 and maximum satisfaction was given a score of 10. The scores of 0-3 denoted 'not satisfied at all', scores of 4-7 denoted 'low satisfaction' and scores 8-10 represented 'highly satisfied'. Time elapsed between end of CD and first maternal ambulation (walking with support), time of return of gastrointestinal motility (passing of flatus and motions), postoperative gastrointestinal complications (nausea or vomiting) and any other complications (abdominal distension, loose stools etc) were documented.

Postoperative intravenous fluid was given to all groups until the women tolerated oral intake well. Intravenous (i.v.) hydration was discontinued when patient successfully completed a meal without nausea or vomiting. All participants received prophylactic antibiotics. Early breast feeding was encouraged in both the groups. Duration of surgery was defined as the time from onset of skin incision to skin closure. Cessation of i.v. fluids and removal of i.v. cannula were recorded in hours after completion of surgery.

STATISTICAL ANALYSIS

Continuous variables were presented as Mean±Standard Deviation (SD) and these variables between the two groups were compared by using Student's t-test. Categorical variables were presented as absolute numbers and percentage and these variables were compared using Chi-square test. A p-value <0.05 was determined to be statistically significant.

RESULTS

Both the groups were comparable with respect to demographic parameters as presented in [Table/Fig-1].

There was no difference in duration of surgery, amount of blood loss or intraoperative adhesions between the two groups [Table/Fig-2].

Parameters	Group DF (n=78) (Mean±SD)	Group EF (n=70) (Mean±SD)	t-value	p-value
Age (Mean±SD) (years)	24.79±4.37	25.09±3.86	0.42638	0.33
Gestational age (Mean±SD) (weeks)	37.96±3.38	38.06±2.03	0.3001	0.38
Primigravida (n)	33	37	χ^2=1.6471	0.19
Previous caesarean delivery (n)	45	33	χ^2=1.6471	0.19

[Table/Fig-1]: Demographic and clinical characteristics.

Intraoperative variables	Group DF	Group EF	χ^2 value	p-value
Adhesions	3	1	0.82	0.36
PPH# (>1 litre)	2	1	0.2395	0.62
Duration of surgery (Mean±SD) (minutes)	54.35±15.87	53.36±11.98	t-value=0.41846	0.33

[Table/Fig-2]: Intraoperative variables.
#PPH: Postpartum haemorrhage

Group EF received early oral sips of water within 2-8 hours (4.71±1.83 hours) of CD, whereas the mean time to start oral fluids in the DF group was 13.72±3.08 hours. Women in group EF ambulated early, when compared to DF group. Group EF women passed flatus early, when compared to DF group. Similar findings were noted in relation to passage of stools. These differences were statistically significant [Table/Fig-3].

Parameters	Group DF (Mean±SD)	Group EF (Mean±SD)	t-value	p-value
Volume of i.v. Fluids (litres)	2.52±0.41	1.76±0.30	2.63575	<0.001
Bowel sounds heard (hours)	13.72±3.08	4.71±1.83	21.2595	<0.001
Flatus (hours)	13.72±3.08	9.89±3.00	7.63525	<0.001
Stool passed (hours)	55.15±18.95	47.31±15.81	2.69147	0.03
Vomiting (n)	8	3	χ^2=1.9116	0.16
Ambulation (hours)	14.95±3.93	9.57±1.62	10.65074	<0.001
Removal of urinary catheter (hours)	18.09±2.68	11.51±1.43	18.29396	<0.001
VAS maternal satisfaction score (≥8)	63 (80.7%)	69 (98.6%)	χ^2=12.1257	<0.001

[Table/Fig-3]: Postoperative outcome.

No difference was observed between both the groups with respect to immediate postoperative nausea and vomiting. Group EF patients received lesser intravenous fluids postoperatively, which also facilitated early removal of urinary catheter in group [Table/Fig-3].

Both groups did not display any other complication before discharge. Statistically significant difference was also noted in woman's satisfaction, in favour of the early feeding protocol.

DISCUSSION

Globally rising trends of caesarean delivery rates have ignited concerns regarding improving postoperative care, which is vital for multiple surgical disciplines. Enhanced Recovery After Surgery (ERAS)

society (2019) has recommended evidence-based guidelines for improving quality of postoperative care and safety after CD [14].

Most clinicians believe that maternal satisfaction is based on the psychological response of the patient to life events [15]. It is influenced by several factors for example effective management of postoperative intravenous fluids, nausea and vomiting, duration of fasting status [16].

In present study, high level of maternal satisfaction was observed in both the groups, 98.6% in EF group and 80.7% in DF group, respectively. Similar observations were made by Teoh WH et al., who conducted a RCT in Singapore population, in 196 women and reported higher maternal satisfaction (90 versus 60) in EF group as compared to the control group [3]. In a study conducted in Pakistan by Arif N et al., 80% of EF group had higher level of maternal satisfaction due to less thirst and hunger as compared to 49% in DF group [17]. In another study, 362 pregnant women were randomly assigned to EF (n=183) and DF (n=179) groups, and the maternal satisfaction was significantly greater in EF group [16].

Findings of maternal satisfaction have not been consistently high in the EF group. Izbizky GH et al., and Esra Ozbasli E et al., documented maternal satisfaction in the two groups as equivalent [6,18]. In present study, time for return of bowel sounds, passage of flatus and stool were earlier in the EF group when compared to DF group. Similar findings have been consistently reported by different researchers. In the study by Arif N et al., time for return of bowel sounds in hours was 7.8±0.93 in EF group and 11.75±0.91 in DF group. Mean time for passage of flatus was 12.38±0.66 hours in the EF group versus 15.12±0.54 in DF group [17]. Hsu YY et al., reported early return of gastrointestinal function in EF group [19]. Jalilian N and Ghadami MR, also reported early return of bowel movement in the EF group compared to DF group. The time to mobilisation was reported as 10.7±7.7 hours and 13.5±5.9 hours in EF and DF groups. They concluded that early oral feeding reduces the time required for return of normal bowel function, without significant increase in incidence of gastrointestinal complications [20].

Early resumption of fluids and food motivated the participants to ambulate early and also led to discontinuation of i.v. earlier than in the DF group. In the present study, the mean requirement for i.v. fluids in EF group was 1.76±0.3 litres and 2.52±0.414 in DF group. Masood SN et al., reported requirement of 1-1.5 L i.v. fluids in the EF group and 3-3.5 L in the DF group. They also compared the time to discontinue i.v. fluids in hours (25.27±8.75 in EF group and 30.24±14.21 in the DF group) [21].

In the present study, participants ambulated early in the EF group as compared to the DF group. This was probably influenced by early discontinuation of intravenous fluids and early removal of urinary catheter in the EF group. Arif N et al., reported only 77% of their participants ambulated within 15 hours in EF group and 65% of participants in their DF group [17]. Masood SN et al., reported that 53.8% women in EF group were mobilised within 15 hours of surgery as compared to 27.9% women in the DF group [21].

Early return of bowel sounds and early ambulation aided bowel movement and passage of stool earlier in the EF group. Time taken for bowel movement and passage of stool in EF group was 47.31 hours as compared to 55.15 hrs in DF group. In the randomised control trial by Orji EO et al., 200 women were randomly assigned to EF and DF groups mean time for bowel movement was 58.30±5.91 hours in EF group, when compared to 72.76±4.25 hours in DF group (p-value <0.001) [22]. Teoh WH et al., reported in EF group bowel evacuation time as 44.4 hours and 65.6 hours in the DF group (p-value <0.05) [3]. Studies by Senanayake H and Nasar AM et al., demonstrated shortened mean time to ambulate and void urine and stool in EF group [23,24].

In the present study, removal of indwelling foley's catheter was 11.51±1.43 hours in EF group and 18.09±2.68 hours in the DF group, and this difference was statistically significant. ERAS society emphasised on removal of catheter in those who do not need strict monitoring of urine output [14].

Limitation(s)

The present study focused only on one element of ERAS, namely early feeding. There are other important attributes that also contribute to the overall maternal satisfaction like postoperative pain relief and care of the neonate, which have not been studied. All the study participants included in the study had low risk uncomplicated CD, hence, the results cannot be extrapolated to complicated CD.

CONCLUSION(S)

The ERAS protocol can be implemented safely in any tertiary care hospital. It is an effective approach to improve the quality of postoperative care after caesarean delivery. The benefits of this strategy also include higher level of patient satisfaction. Once full feeding is established early in the postoperative period, in future, there exists the possibility of setting a trend for earlier discharge from hospital, especially in a resource constrained setting.

Acknowledgement

The author thanks the effort, assistance and co-operation of the Consultants, Residents of Department of Obstetrics and Gynaecology, as well as nurses and healthcare providers of M.V.Jayaram Medical College and Research Hospital.

REFERENCES

[1] Baskett TF, Calder AA, Arulkumaran S, Caesarean section. In Muurokerr's operative obstetrics: 11th Ed Elsevier Saunders. 2007;P151-66.
[2] Sharma AK, Patawa R, Saraswat D. Trend of delivery by caesarean section in leading states/UTs in India: Evidence from NFHS-5. GJRA Global Journal for Research Analysis. 2021;10(06):01-04.
[3] Teoh WH, Shah MK, Mah CL. A randomised controlled trial on beneficiaries' effect of oral feeding post-caesarean delivery under regional anaesthesia Singapore Med J. 2007;48:152-57.
[4] Horowitz IR, Rock JA. Post anaesthesia and post operative care in: Thompson JD, Rock JA, Te Linde's operative gynaecology 8th edition Philadelphia: J. B, Lippincott. 1997:142-163
[5] Pearson DLC, Ko E, Abaid L, Schuler K. Preoperative evaluation and post operative management. In Berek and Novak's Gynecology: 15th Ed Wolters Kluwer. 2016;682-48.
[6] Izbizky GH, Mini L, Sebastiani MA, Otano L. The effect of early versus delayed post caesarean feeding on women's satisfaction: A randomised controlled trail. BJOG . 2008;115:332-38 .
[7] Tan PC, Alzergany MM, Adlan AS, Azmi MAN, Omar SZ. Immediate compared with on demand maternal full feeding after planned caesarean delivery: A randomised trial. BJOG. 2016;14:123-31.
[8] Steenhagen E. Enhanced recovery after surgery: It's time to change practice! Nutr Clin tract. 2016;31:18-29.
[9] Elias KM. Understanding enhanced recovery after surgery guidelines: An introductory approach. J Laparoendosc Adv Sure Tech A. 2017;27:871-75
[10] Varadhan KK, Neal KR, Delong CH, Fearon KC, Ljungqvist O, Lobo DN, et al. The enhanced recovery after surgery (ERAS) pathway for patients undergoing major elective open colorectal surgery: A meta-analysis of randomised controlled trials. Clin Nuts. 2010;29:434-40
[11] Casto JC, Kramer J, Drake J. Post operative feeding A clinical review. Obstet. Gynecol. Survey. 2000;555:571-73.
[12] Adupa D, Wandabwa J, Kiondo P. A randomised controlled trial of early initiation of oral feeding after caesarean delivery in Mulago Hospital. East Afr Med J. 2003:80:345-50
[13] Ogbadua AO, Agida TE, Akaba GO, Akitoye OA, Ekele BA. Early versus delayed oral feeding after uncomplicated caesarean section under spinal anesthesia: A randomized controlled Trial. Niger J Surg. 2018;24(1):06-11.
[14] Macones GA, Caughey AB, Wood SL, Wrench IJ, Huang J, Norman M, et al. Guidelines for post operatieve care in cesarean delivery: Enhanced recovery after Suregry (ERAS) society recommendations (Part 3). Am J Obstet Gynecol. 2019;221(3):247.e1-247.e9.
[15] Pascoe GC. Patient satisfaction in primary health care. A literature review and analysis. Eval program plans. 1983;6:185-10 .
[16] Othman M. Early versus late oral feeding on the normal bowel function after caesarean section: A randomised controlled study. Adv Med Res. 2019;2(1):21-25.

[17] Arif N, Ahmed RQ, Arif A, Zafar B, Shehzad F. Impact of early Vs delayed oral feeding on hospital stay after caesarean section under regional anaesthesia. Pak Armed Forces Med J. 2020;70(4):1138-42.
[18] Ozbasli E, Takmaz O, Dede FS, Gungor M. Comparison of early and on demand maternal feeding after caesarean delivery: A prospective randomised trial. Singapore Med J. 2021;62(10):542-45.
[19] Hsu YY, Hung HY, Chang SC, Chang YJ. Early oral intake and gastrointestinal function after caesarean delivery: A systematic review and meta-analysis. Obstetrics and Gynaecology. 2013;121(6):1327-34.
[20] Jalilian N, Ghadami MR. Randomized clinical trial comparing postoperative outcomes of early versus late oral feeding after caesarean section. J of Obstetrics and Gynaecology Res. 2014;40(6):1649-52.
[21] Masood SN, Masood Y, Naim U, Masood MF. A randomized comparative trial of early initiation of oral maternal feeding versus conventional oral feeding after caesarean delivery. Int J Gynaecol Obstet. 2014;126(2):115-19.
[22] Orji EO, Olabode TO, Kuti O, Ogunniyi SO. A randomized control trial of early initiation of oral feeding after caesarean section. J Matern Fetal Neonatal Med. 2009;22(1):65-71.
[23] Senanayake H. Elective caesarean section without urethral catheterization. J Obstet Gynaecol Res. 2005;31:32-37.
[24] Nasr AM, El Bigawy AF, Abdelamid AE, Al-Khulaidi S, Al-Inany HG, Sayed EH, et al. Evaluation of the use vs non-use of urinary catheterization during caesarean delivery: A prospective, multi-center, randomized controlled trial. J Perinatol. 2009:29:416-21.

PARTICULARS OF CONTRIBUTORS:
1. Professor, Department of Obstetrics and Gynaecology, MVJ Medical College and Research Hospital, Bengaluru, Karnataka, India.
2. Assistant Professor, Department of Obstetrics and Gynaecology, MVJ Medical College and Research Hospital, Bengaluru, Karnataka, India.
3. Assistant Professor, Department of Obstetrics and Gynaecology, MVJ Medical College and Research Hospital, Bengaluru, Karnataka, India.
4. Assistant Professor, Department of Obstetrics and Gynaecology, MVJ Medical College and Research Hospital, Bengaluru, Karnataka, India.

NAME, ADDRESS, E-MAIL ID OF THE CORRESPONDING AUTHOR:
Dr. Chaitanya Indrani,
Flat No-232, 13th Cross, Indira Nagar, 2nd Stage, Bengaluru, Karnataka, India.
E-mail: drpcindrani1537@gmail.com

PLAGIARISM CHECKING METHODS: [Jain H et al.]
- Plagiarism X-checker: Jul 16, 2022
- Manual Googling: Nov 01, 2022
- iThenticate Software: Nov 12, 2022 (10%)

ETYMOLOGY: Author Origin

AUTHOR DECLARATION:
- Financial or Other Competing Interests: None
- Was Ethics Committee Approval obtained for this study? Yes
- Was informed consent obtained from the subjects involved in the study? Yes
- For any images presented appropriate consent has been obtained from the subjects. No

Date of Submission: **Jul 16, 2022**
Date of Peer Review: **Aug 10, 2022**
Date of Acceptance: **Nov 14, 2022**
Date of Publishing: **Dec 01, 2022**