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Early Versus Delayed Oral Feeding after Uncomplicated Cesarean Section

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Abstract
Background: Cesarean section (CS) is the most common surgery in the world and is defined as a laparotomy followed by a hysterotomy and fetal delivery. The current global standard is to use regional anesthesia, which allows patients to remain awake which minimizes drug transfer to the fetus.
Aim and objectives: to assess the safety of early Versus Delayed Oral Feeding after Uncomplicated Cesarean Section on the following post-operative outcomes: post-operative vomiting and abdominal distention, post-operative nausea and abdominal pain, return of intestinal movements, duration of intravenous fluid administration, duration of hospital stay.
Subjects and methods: This randomized controlled trial study was conducted at Benha university hospitals. This study was conducted on 200 consenting women undergoing cesarean section. All patients were divided into 2 equal groups: patients were randomized to receive either early or delayed feeding.
Results: there were high statistical significant differences between both groups regarding most of the secondary postoperative outcomes like time until return of bowel movements, time to ambulation, time to bowel opening, time of discontinuation of intravenous fluids ($p<0.001$). Majority of patients of both groups underwent spinal anesthesia (60%, 70% respectively).
Conclusion: The current study showed that there were improvements in return of bowel function and maternal satisfaction, coupled with a lack of gastrointestinal complications, support the advisability of early oral feeding over late oral feeding.

Keywords: Oral Feeding, Uncomplicated, Cesarean Section.

Introduction

The practice of obstetrics and gynecology has undergone many changes in the past century and on of these changes is an increase in the frequency ofcesarean section. In fact, cesarean section has become one of the commonest major surgical procedures in some countries. Cesarean section rates ranging from 36.96%-64.7% have been reported **(1)**.
Arescent meta-analysis of studies comparing early oral feeding with delayed oral feeding after CS found out that 'early oral feeding after CS enhances return to bowel function and does not increase the risk of postoperative complications **(2)**.
Traditionally, women who had a caesarean section has solid food withheld for the first 24 hours in the belief that this would prevent gastrointestinal complications. However, several clinical trials and a systematic review have shown that early feeding is as safe as the delayed progress. Save approach Moreover, some additional benefits have been reported such as a more rapid return of bowel sounds and regular oral diet and a shorter hospital stay **(4)**.
Although information about the safety of early feeding after caesarean section appears conclusive, the effect of the different postoperative feeding approaches on women's satisfaction has not been well evaluated with the only data available being from one quasi-randomized trial **(5)**.
Hydration and nutrition are two essential components of women's needs after cesarean delivery, Traditionally post-operative hydration following cesarean section implied using 2-3L of intravenous fluids in the first 12-24h, providing for fluid loss during the surgery and the maintenance requirements. Oral intake is usually allowed after 24h in the absence of nausea and presence of detectable bowel activity. Regular diet is initiated after flatus is passed **(6)**.
Today some researchers believe in low risk cesarean delivery, women can initiate oral fluid when they become conscious and tend to drink. Also they can receive regular diet earlier than traditional method **(7)**.
Early initiation of oral feeding was found to be safe and well tolerated in a study by Mehta et al. They found that early post-operative feeding resulted in a better outcome when compared with delayed feeding. It did not produced a higher rate of patient satisfaction **(8)**.
Aim of This Work was to assess the safety of early Versus Delayed Oral Feeding after Uncomplicated Cesarean Section on the following post-operative outcomes: post-operative vomiting and abdominal distention, post-operative nausea and abdominal pain, return of intestinal movements, duration of intravenous fluid administration, duration of hospital stay.

PATIENTS AND METHODS

This randomized controlled trial study was conducted at Benha university hospitals. This study was conducted on 200 consenting women undergoing cesarean section. All patients were divided into 2 equal groups: patients were randomized to receive either early or delayed feeding.
Ethical consideration: An informed consent was obtained from patients before enrollment in the study; an approval from Research Ethics Committee in Benha Faculty of Medicine was obtained.
Inclusion criteria: Patients planned for elective or emergency cesarean sections, under spinal anaesthesia, Term singleton pregnancies, Primigravida and Level of hemoglobin is not less than 10 g/dl. BMI < 30 kg/m2.
Exclusion criteria: History of bowel surgery**,** Maternal diseases (preeclampsia, diabetes mellitus)**,** Intraoperative or immediate postoperative complications, Chronic gastrointestinal problems, like chronic constipation, peptic ulcer, oesophagitis, hiatus hernia or irritable bowel syndrome.Severe abdominal adhesions, Randomization and allocation and Randomization:It was performed by computer-generated random sequence (Microsoft-Seattle, WA, USA)
Allocation concealment: By using sealed opaque sequentially numbered envelopes, each envelope included the type of intervention:If the letter inside the envelope was "E" which means early hydration", the woman was given a bottle of water to start drinking it. After about 6 hours she was offered a cup of clear warm fluid like peppermint or

anise, she was allowed to drink whatever she wants after that according to her needs (but not milk or soda containing drinks).While if the letter inside the envelope was "L" which means "late hydration": the woman was allowed to drink after 24 hours. Both the caregivers and the participants were blinded to the group allocation.

Methodology:

Both study groups were subjected to: History taking (Operative history, Medical history, Obstetric history Also, the weight and the length of the woman were checked to make sure that her BMI wasn't exceeding 30 if she was suspected to be overweight) Details of cesarean section (CS) (Indication of CS, Presence of adhesions, Estimated blood loss (ml) and Duration of surgery (minutes)), Data collection about the primary outcomes, The occurrence of vomiting and abdominal distention and Data collection about the secondary outcomes, Return of intestinal movements, Hospital discharge was done and A questionnaire about psychological satisfaction.

Clinical examination: General examination and B-Systemic examination.

Investigations: All patients were subjected to preoperative routine investigations (Complete Blood Count, Blood Group (ABO, RH), Pt, Ptt and INR and Random blood sugar.

Statistical Methods

Data were analyzed using Stata® version 14.2 (StataCorp LLC, College Station, TX, USA). Normality of numerical data distribution was examined using the Shapiro-Wilk test. Normally distributed numerical variables were presentedas the meanand standard deviation (SD) and intergroup differences were compared using the independent-samples t-test.Categorical data were presentedas number and percentage and differences were compared using Fisher's exact test (for nominal data) or the chi-squared test for trend (for ordinal data). Time to event analysis was done using the Kaplan-Meier method. The log-rank test was used to compare Kaplan-Meier curves.

P-values <0.05 were considered statistically significant

RESULTS

Table (1) shows that this study investigated 200 patients, divided into two groups; early feeding group (n=100) and delayed feeding group (n=100). Their mean ages (years) were 22.82 ± 2.17 and 22.48 ± 2.16 respectively. The mean gestational age (weeks) was 38.46 ± 0.76 foe early feeding group and 38.32±0.51 for delayed feeding group. The BMI for both groups was 28.8 ± 2.6, 29.34 ± 3.2 respectively. There were insignificant differences between both groups regarding demographic characteristics (p >0.05). This indicating that both groups were matched regarding age, gestational age, and BMI.

Table (2) shows that majority of patients of both groups underwent spinal anesthesia (60%, 70% respectively). The mean operation time (/min.) for early feeding group was 51 ± 8.4 and 53 ± 8 for delayed feeding group. The delayed feeding group showed high statistically significant blood loss than early feeding group (p <0.001).

Table (3) shows that there were high statistical significant differences between both groups regarding most of the secondary postoperative outcomes like time until return of bowel movements, time to ambulation, time to bowel opening, time of discontinuation of intravenous fluids (p<0.001). The early feeding group showed many results that were relatively better than the delayed feeding group. The time until the return of bowel sounds in the early feeding group (6 ± 0.35 hours) was shorter than the delayed group (8.85 ± 0.71 hours). Also, the time until ambulation in the early feeding group (5.95 ± 0.34 hours) was shorter than the delayed feeding group (9.1 ± 0.69 hours). Also, time to bowel opening and time of discontinuation of intravenous fluids were significantly higher in delayed feeding group 13.4 ± 2.4, 16.1 ± 1.4 compared with 8.3±0.58, 6.9±0.85 in early feeding group respectively.

Table (4) shows that early feeding group showed less frequent nausea, vomiting than the delayed feeding group with no statistically significant differences between both groups regarding the incidence of nausea and vomiting (p>0.05).

Table (5) shows that there was highly significant difference between both groups regarding psychological satisfaction with the p-value 0.001. Most of the women in the early feeding group were satisfied with the method of feeding as they were not experiencing the thirst sensation after the operation allowing them to be less stressful, and they decided to choose the early feeding again in the following deliveries. In the early feeding group, 94 (94%) women reported they were satisfied, while 6 (6%) women were dissatisfied. In the delayed feeding group, 78 (78%) women reported they were satisfied, while 22 (22%) women were dissatisfied. We considered this result a very important one as the psychological satisfaction allows the woman to be less stressful and to enjoy her stay in the hospital more, with a better ability to breastfeed her baby. Women satisfaction was significantly earlier in early feeding group compared with late feeding group.

Table (6) shows that there was highly significant difference between both groups regarding time to achieve satisfaction where women in the early feeding group had shorter intervals to achieve satisfaction than women in the delayed feeding group (P <0.001).

Table (1) Demographic characteristics of the studied groups (n=2٠0).

Variable	Early feeding group (n=100)	Delayed feeding group (n=100)	Test	P value
	Mean ± SD (range)	Mean ± SD (range)		
Age (years)	22.82 ± 2.17 (20 – 28)	22.48 ± 2.16 (20 – 28)	t=1.1	0.27
Gestational age (weeks)	38.46 ± 0.76 (38-41)	38.32±0.51 (38-40)	t=1.53	0.13
BMI	28.8 ± 2.6 (25 – 35)	29.34 ± 3.2 (24 – 35)	t=1.32	0.19

Table (2) Operative data of the studied group (n=200).

Variable	Early feeding group (n=100)	Delayed feeding group (n=100)	Test	P value
	No. (%)	No. (%)		
Type of anesthesia				
General	40 (40%)	30 (30%)	χ^2 =2.2	0.14
Spinal	60 (60%)	70 (70%)		
	Mean ± SD (range)	Mean ± SD (range)		

Operation Time (/min.)	51 ± 8.4 (35-70)	53 ± 8 (40-70)	t=1.7	0.09
Blood Loss (/ml)	424.5 ± 62.4 (350 – 555)	453 ± 50.4 (350 – 550)	t=3.5	<0.001

Table (3) Time to main end-points among the studied groups (n=200).

Variable		Early feeding group (n=100)	Delayed feeding group (n=100)	Test	P value
		Mean ± SD (range)	Mean ± SD (range)		
Time (h)	Recovery of Bowel sounds	6 ± 0.35 (5.5 - 6.5)	8.85 ± 0.71 (7.5 – 9.5)	t=36	<0.001
	Time to ambulation	5.95 ± 0.34 (5.5 - 6.5)	9.1 ± 0.69 (8 – 10)	t=40.7	<0.001
	Time to bowel opening	8.3±0.58 (7.5 – 9)	13.4 ± 2.4 (9 - 16)	t=20.6	<0.001
	Discontinuation of IV fluids	6.9±0.85 (6 - 8)	16.1 ± 1.4 (14 – 18)	t=57	<0.001

Table (4) Incidence of adverse outcomes in both study groups (n=200).

Variable	Early feeding group (n=100)		Delayed feeding group (n=100)		Test	P value
	No.	%	No.	%		
Nausea	12	12	14	14	χ^2 = 0.17	0.67
Vomiting	6	6	10	10	χ^2 =1.1	0.29

Table (5) Women satisfaction in both study groups (n=200).

Variable	Early feeding group (n=100)		Delayed feeding group (n=100)		Test	P value
	No.	%	No.	%		
Satisfied	94	94	78	78	χ^2 = 10.63	0.001
Not satisfied	6	6	22	22		

Table (6) Time to event analysis using the Kaplan-Meier method till Women satisfaction in both study groups (n=200).

	Mean and median for survival time				
			95% Confidence Interval		
Group	Estimate	Std. Error	Lower Bound	Upper Bound	Upper Bound
Early feeding group	6.000	.000	6.000	6.000	.
Delayed feeding group	10.406	.149	10.115	10.698	10.523
Overall	8.335	.175	7.993	8.678	.

Overall Comparisons			
	Chi-Square	df	Sig.
Log Rank (Mantel-Cox)	176.472	1	.000
Breslow (Generalized Wilcoxon)	176.472	1	.000
Tarone-Ware	176.472	1	.000

Discussion

The main results of this study were as follows:

To eliminate the effect of any confounding factor that may affect the final outcome the current study enrolled two well-matched groups in baseline data, as there was no statistically significant difference between the studied groups as regard demographic and surgical data. Blood loss was statistically higher in delayed feeding group compared to early feeding group but this clinically non-significant.

The current study showed that there were high statistically significant differences between both groups regarding most of the secondary postoperative outcomes like time until return of bowel movements, time to ambulation, time to bowel opening, time of discontinuation of intravenous fluids ($p<0.001$). The early feeding group showed many results that were relatively better than the delayed feeding group. The time until the return of bowel sounds in the early feeding group (6 ± 0.35 hours) was shorter than the delayed group (8.85 ± 0.71 hours). Also, the time until ambulation in the early feeding group (5.95 ± 0.34 hours) was shorter than the delayed feeding group (9.1 ± 0.69 hours). Also, time to bowel opening and time of discontinuation of intravenous fluids were significantly higher in delayed feeding group 13.4 ± 2.4, 16.1 ± 1.4 compared with 8.3±0.58, 6.9±0.85 in early feeding group respectively.

In concordance with the current study Shalaby, performed a randomized controlled trial (RCT) to compare early and late oral feeding among 200 pregnant women undergoing elective CS, patients were allocated into 2 well matched groups as regard demographic and surgical data, cases in early feeding group were more likely to experience bowel sound earlier than patients given late feeding (P-value<0.01), also cases in early feeding group experience bowel opening earlier than patients given late feeding (P-value<0.001) **(9)**.

Consistent with this study Atef et al. in randomized control study enrolled 300 pregnant women with elective uncomplicated cesarean section, 150 women enrolled in the early feeding group and 150 in the late feeding group, the studied groups were well-matched in maternal and surgical data, the study showed that the early feeding groups showed better outcome regarding bowel functions than late feeding group. Early feeding group showed earlier intestinal sound, Open bowel and Ambulation (P-value<0.001; all) **(10)**.

Regarding adverse events in the studied groups, it was revealed that early feeding group showed less frequent nausea, vomiting than the delayed feeding group with no statistically significant differences between both groups regarding the incidence of nausea and vomiting (p>0.05).

Consistent with this study Atef et al. revealed that there were no significant differences noted concerning postoperative complications between the studied groups, vomiting found to be higher in the early feeding groups, but the cases were mild and easily treatable **(10)**.

Also, in agreement with the current study Mawson et al. showed that there was no difference in gastrointestinal complications between early and late feeding groups (P-value 0.978) **(11)**.

As regard satisfaction, it was revealed that there was highly significant difference between both groups regarding psychological satisfaction with the p-value 0.001. Most of the women in the early feeding group were satisfied with the method of feeding as they were not experiencing the thirst sensation after the operation allowing them to be less stressful, and they decided to choose the early feeding again in the following deliveries. In the early feeding group, 94 (94%) women reported they were satisfied, while 6 (6%) women were dissatisfied. In the delayed feeding group, 78 (78%) women reported they were satisfied, while 22 (22%) women were dissatisfied. We considered this result a very important one as the psychological satisfaction allows the woman to be less stressful and to enjoy her stay in the hospital more, with a better ability to breastfeed her baby.

Women satisfaction was significantly earlier in early feeding group compared with late feeding group.

Kaplan-Meier Plot showing higher probability of patients who received early feeding to achieve satisfaction, as early feeding group had significantly shorter intervals to achieve satisfaction than women in the delayed feeding group (P <0.001).

In concordance with the current study Shalaby, showed that the patients in early feeding group showed significantly higher satisfaction score compared to late feeding group, also, showed earlier discharge than late feeding group (P <0.001; both) **(9)**.

As well, in line with the current study Wu SI et al. revealed that the maternal satisfaction was high in both the groups; delayed feeding (80%) and in early feeding (98.57%) (P <0.001) **(12)**.

Collectively our results were agreed with the recent systematic review and meta-analysis by Kim et al. who included 7 studies involving 1,911 patients, the metanalysis showed that early feeding was significantly associated with shorter time to recover bowel movement compared with delayed feeding. Early feeding was not associated with nausea and vomiting, but lower incidence of abdominal distension. Early feeding was significantly associated with shorter time to discontinuation of intravenous fluids and removal of urinary catheter **(13)**.

The current study was limited by small sample size, being a single center study and relatively short follow up period.

Conclusion

The current study showed that there were improvements in return of bowel function and maternal satisfaction, coupled with a lack of gastrointestinal complications, support the advisability of early oral feeding over late oral feeding

References

[1] Zhang J, Troendle J, Reddy UM, Laughon SK, Branch DW, Burkman R, Landy HJ, Hibbard JU, Haberman S, Ramirez MM, Bailit JL. Contemporary cesarean delivery practice in the United States. American journal of obstetrics and gynecology. 2010 Oct 1;203(4):326-e1.

[2] Mehta S, Gupta S, Goel N et ., al. Postoperative oral feeding after casarean section – early versus late initiation: a prospective randomized trial. J Gynecol Surg, 2010; 26 (4): 247-50.

[3] Adeli M, Razmjo N, Tara F, Ebrahimzadeh S. The effect of early post cesarean feeding on women's satisfaction. Journal of Family and Reproductive Health. 2010 Jun 15:79-82.

[4] Azhar RA, Bochner B, Catto J, Goh AC, Kelly J, Patel HD, Pruthi RS, Thalmann GN, Desai M. Enhanced recovery after urological surgery: a contemporary systematic review of outcomes, key elements, and research needs. European urology. 2016 Jul 1;70(1):176-87.

[5] Huang H, Wang H, He M et., al. Early oral feeding compared with delayed oral feeding after cesarean section: A meta- analysis. J Matem Fetal Neonatal Med. 2016; 29:423 9.

[6] Guo J, Long S, Li H, Luo J, Han D, He T. Early versus delayed oral feeding for patients after cesarean. International Journal of Gynecology & Obstetrics. 2015 Feb 1;128(2):100-5.

[7] Radhika B, Agrwala et., al. Early oral hydration and its impact on bowel activity after elective casarean section – our experience. European journal of obstetrics & Gynecology and reproductive biology, 2005; 120:53-56.

[8] Izbizky GH, Mining L, Sebastiani MA, et., al. The effect of early versus delayed postcaesarean feeding on women's satisfaction: A randomized controlled trial. BJOG, 2008; 115:332 8.

[9] Shalaby MA, Maged AM, Al-Asmar A, El Mahy M, Al-Mohamady M, Rund NM. Safety and efficacy of preoperative tranexamic acid in reducing intraoperative and postoperative blood loss in high-risk women undergoing cesarean delivery: a randomized controlled trial. BMC Pregnancy and Childbirth. 2022 Mar 14;22(1):201.

[10] Atef A, Elsayed R, El-Mazny A, Mohamed S. Assessment of Different Regiments of Early Oral Feeding in Comparison to Delayed Feeding After Elective Uncomplicated Cesarean Section: A Randomized Control Trial. Evidence Based Women's Health Journal. 2021 Nov 1;11(4):356-61.

[11] Mawson AL, Bumrungphuet S, Manonai J. A randomized controlled trial comparing early versus late oral feeding after cesarean section under regional anesthesia. International journal of women's health. 2019 Sep 13:519-25.

[12] Wu SI, Wu CC, Cheng LH, Noble SW, Liu CJ, Lee YH, Lin CJ, Hsu CC, Chen WL, Tsai PJ, Kuo PH. Psychobiotic supplementation of HK-PS23 improves anxiety in highly stressed clinical nurses: a double-blind randomized placebo-controlled study. Food & Function. 2022;13(17):8907-19.

[13] Kim H, Jeon Y, Yoon S, Lee G. Effects of Early Oral Feeding versus Delayed Oral Feeding on Bowel Function, Gastrointestinal Complications and Surgical Recovery after Cesarean Section under Regional Anesthesia: Systematic Review and Meta-Analysis. Journal of Korean Academy of Nursing. 2021 Dec 1;51(6).