Early versus Delayed Oral Liquids and Soft Food after Elective Cesarean Section: A Randomized Control Clinical Trial

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Abstract

Background: When medically needed, caesarean section (CS) is one of the most frequent major surgical operations, saving the lives of both mother and child.

Aim of the work: This randomised controlled clinical experiment was done on a total of 150 pregnant women getting elective CS under spinal anaesthesia at the Ain Shams University Maternity Facility, a tertiary hospital, between June 2021 and March 2022.

Results: The current analysis revealed no statistically significant differences in age, gestational age, or parity between the analysed groups. The time to ambulation, intestinal sound, passing flatus, and passing faeces were statistically substantially shorter in the early eating group, according to this study. Consequently, the early feeding group had a considerably greater rate of ambulation and bowel movements. Only variations in abdominal distension were statistically significant. In neither group was ileus paralysis recorded. This study revealed that patients in the early feeding group were much happier.

Conclusion: Early feeding following an uncomplicated caesarean delivery was associated with a lower frequency of ileus symptoms, a shorter mean time to the first bowel movement, and greater mother satisfaction. This, together with the absence of gastrointestinal issues, indicates that early oral feeding is preferable to late oral feeding. In light of these encouraging findings, it is suggested that we abandon the customary approach to eating.

Keywords: Oral Liquids, Soft Food, Cesarean Section.

Introduction

Each year, the number of caesarean sections done worldwide is increasing dramatically. Consequently, it became necessary to lay a larger emphasis on their postoperative treatment [(1)].

In addition to anaesthesia, wound healing, and nursing, the restoration of intestinal motility and the passage of flatus are recognised as significant variables determining the duration of postoperative hospitalisation [(2)].

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The conventional practice of giving the patient nothing orally after surgery until bowel function (in the form of a bowel movement or flatus) returns, followed by progressive eating, is being questioned and has become controversial [3].

The importance of early postoperative feeding is contingent on the capacity of food intake to induce a reflex that supports synchronised propulsive motion and stimulates the release of gastrointestinal hormones. These effects have an overall positive effect on intestinal motility, hence shortening the duration of postoperative ileus (4). Early feeding may also be associated with less protein depletion, improved wound healing, and a faster recovery [5].

It was believed that oral intake following surgery without the return of bowel motions might cause nausea, vomiting, and abdominal distention, which could result in wound deterioration. This perspective has changed, however, as the length of surgical procedures has decreased, regional anaesthesia has become more available, and intestinal manipulation has decreased. All of these factors promoted early oral consumption prior to the commencement of bowel movements [2].

There have been several comparative studies on postoperative hydration and nutrition strategies(2). There have been a number of studies on the effects of early hydration after caesarean surgery, but less on the effects of fast hydration.

Within the first two hours following surgery, haemorrhage is considered one of the most severe complications. Before commencing oral hydration soon after Caesarean operation, it should thus be extensively assessed [2].

Therefore, early oral hydration, namely the quick administration of oral fluids after caesarean sections, warrants more study. Additionally, its impact on surgical recovery and hospital duration of stay must be examined in depth.

Moreover, early oral hydration after Caesarean section may be advantageous in a number of ways, it may facilitate early return of intestinal movements and reduce the risk of hospital infections, leading to early hospital discharge (2), it may decrease the cost of hospital stay as it decreases the duration of intravenous fluid administration with less use of cannulae with evidence of its association with breastfeeding success and less suffering of the mummy, and it may facilitate early return of intestinal movements(3).

Aim of the Work

The goal of this trial is to examine the safety of early vs delayed oral feeding following a caesarean section (CS) conducted under spinal anaesthesia and without complications.

Patients and Methods

Study design

A Randomized Controlled trial.

Study location

This study was conducted at the university's maternity facility.

Participants Women who had caesarean delivery at the Ain Shams University Maternity Hospital and satisfied the aforementioned criteria.

Criteria for inclusion

- Previous 1,2,3 cs women
- Caesarean section by choice with no complications.
- Uncomplicated pregnancy Spinal anaesthesia

Exclusion criteria

- Medical disorders in the form of HTN, DM.
- History of bowel surgery, intraoperative or immediate postoperative complications

- Contraindications to spinal anesthesia
- Women refused to participate in the study
- Patient receving medical treatment which interfere with intestinal motility e.g buscopan

Sample Size calculation

Using PASS 11 for sample size calculation with 80% power and 0.05 error, and based on earlier research by 'Guoetal,' the estimated mean time until flatulence for the Eof group is 20.18 hours and for the Lof group it is 24 hours. To establish a difference between the two groups, 75 women are required for each group.

Using a computer-generated list of random numbers, patients were randomised to either the "early feeding" or "delayed feeding" group. On opaque envelopes with consecutive numbers, the group's name was printed. In the maternity ward, a box containing sealed envelopes was put, and the envelopes were withdrawn serially until the conclusion of the research.

Ethics and legal considerations

This investigation was carried out at Ain Shams University's Faculty of Medicine after receiving permission from the department that specialises in obstetrics and gynaecology. Before any person was enrolled in the study, informed agreement was obtained from that individual by first outlining the objectives and procedures of the research.

Under the influence of regional anaesthesia, a simple caesarean section was done on each of the 150 women who participated in this study. Following the process, participants were randomly assigned to one of two groups. Women who satisfied both the inclusion and exclusion criteria were asked to participate in the study when the protocol was approved. Patients who were eligible for the trial were randomly allocated to either the early feeding group or the delayed feeding group using a computer-generated sequence. The identifier for this research on clinicaltrials.gov is NCT05233280.

3- Intervention:

First group (early feeding group): (n=75) allowed oral fluids and soft foods (2-4hrs) postoperatively regardless of intestinal sound, flatus, or stool. The second group (the delayed feeding group) was permitted oral fluids and soft foods. 6 hours after surgery.

1: Personal data

After the patient had been moved to the recovery area, her age, parity, gestational age, and the reason for the caesarean section were all noted. After that, the woman was briefed on the purpose of the research, as well as its advantages and potential drawbacks.

2: History taking

The entrance form and the lady were evaluated to ensure that all inclusion requirements were met and exclusion factors were eliminated:

To exclude the following from the medical history: hypertension and diabetes. Her obstetric history was reviewed to confirm that her pregnancy was without complications.

4: Oral fluids regimens

In the "early hydration" group, the woman received a few sips of water to urge her to drink. Then, a cup of clear, warm anise-flavored liquid was given to her, and she was free to drink according to her needs (but not milk or soda containing drinks). In the "delayed hydration" group, the woman was allowed to take liquids six hours after the start of treatment. When both groups tolerated oral fluids well, soft foods were subsequently added.

5: Intravenous fluids regimen:

All of the women received 500 millilitres of glucose solution with 5% concentration intravenously every six hours, 500 millilitres of Ringer lactate solution every twelve hours, and 500 millilitres of normal saline solution every twenty-four hours. These intravenous fluids were no longer administered since they were terminated after the lady had bow-

el movements early on and her feeding was well-established before 24 hours had passed. This occurred after the mother gave birth.

Outcomes;

Primary outcome:

Time of passage of flatus

Secondary outcomes:

Patient satisfaction using a 5-point Likert scale (satisfied, unsatisfied, neutral, completely satisfied, completely dissatisfied), time of stool passing, development of paralytic ileus symptoms such as non-audible intestinal sound, abdominal distention, nausea, and vomiting, and patient satisfaction using a 5-point Likert scale (satisfied, unsatisfied, neutral, completely satisfied, completely dissatisfied).

Statistical methods:

The collected data were encoded, tabulated, and submitted to statistical analysis utilising IBM SPSS statistics software version 28.0, IBM Corp., Chicago, United States of America, 2021. If the Shapiro-Wilk test for normality has been passed, the data have been provided as meanSD (standard deviation) along with the lowest and maximum values of the range, and the test has been successful, a t-test is performed to compare the quantitative data. The Chi-square test and Fishers Exact test are effective when analysing qualitative data given as numbers and percentages for variables with extremely tiny expected values. In order to compare the rates, the log rank test was utilised. A p-value of 0.05 or less was necessary for the result to be declared statistically significant; otherwise, the threshold for significance was not fulfilled.

Results

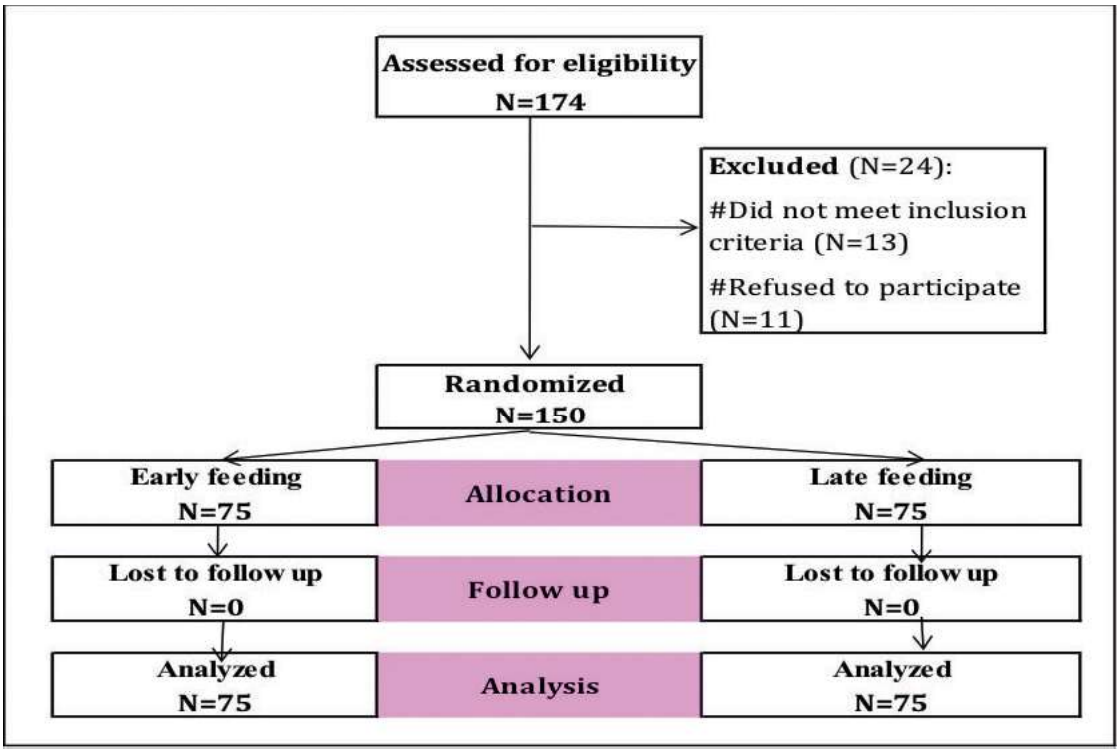

Figure 1: Flow chart of the studied cases

Table 1: Baseline traits in the groups under study

Vatiables		Early feeding (N=75)	Late feeding (N=75)	p-value
Age (years)	Mean±SD	29.7±5.9	29.9±5.3	^0.805
	Range	21.0–40.0	18.0–41.0	
GA (weeks)	Mean±SD	37.6±1.2	37.4±1.0	^0.274
	Range	34.0–40.0	34.0–40.0	
Parity	One	43 (57.3%)	24 (32.0%)	#0.104
	Two	24 (32.0%)	32 (42.7%)	
	Three	8 (10.7%)	19 (25.3%)	
Operation duration (minutes)	Mean±SD	57.8±14.2	61.3±14.8	^0.137
	Range	40.0–90.0	40.0–90.0	

GA: Gestational age. ^Independent t-test. #Chi square test

According to Table, there are no statistically significant differences in the ages, gestational ages, or parities of the research groups (1).

Table 2: The study groups' time spent walking (in hours).

Measures	Early feeding (N=75)	Late feeding (N=75)	^p-value	Relative effect Mean±SE 95% CI
Mean±SD	5.7±1.4	6.7±1.4	<0.001*	-1.1±0.2
Range	2.7–11.0	3.0–9.2		-1.5–-0.6

*^Independent t-test. *Significant. SE: Standard error. CI: Confidence interval. Relative effect: Effect of early relative to late feeding*

As seen in Table 2, the early feeding group had a significantly shorter time to ambulation, as measured statistically.

Table 3: compares the study groups' times to intestinal sounds in hours

Measures	Early feeding (N=75)	Late feeding (N=75)	^p-value	Relative effect Mean±SE 95% CI
Mean±SD	2.7±0.7	3.4±0.7	<0.001*	-0.7±0.1
Range	2.0–4.0	2.0–5.0		-0.9–-0.5

*^Independent t-test. *Significant. SE: Standard error. CI: Confidence interval. Relative effect: Effect of early relative to late feeding*

As shown in Table 3, the time to intestinal sound was statistically shorter in the early feeding group.

Table 4: Time to flatus (hours) among the studied groups

Measures	Early feeding (N=75)	Late feeding (N=75)	^p-value	Relative effect Mean±SE 95% CI
Mean±SD	4.2±1.1	6.2±1.2	<0.001*	-2.0±0.2
Range	1.7–9.0	2.7–8.0		-2.4–-1.7

*^Independent t-test. *Significant. SE: Standard error. CI: Confidence interval. Relative effect: Effect of early relative to late feeding*

As seen in Table 4, the time to flatus was statistically considerably shorter in the early feeding group.

Table 5: Time to stool (hours) among the studied groups

Measures	Early feeding (N=75)	Late feeding (N=75)	^p-value	Relative effect Mean±SE 95% CI
Mean±SD	8.1±1.8	10.0±1.8	**<0.001***	-1.8±0.3
Range	4.0–13.0	6.7–15.6		-2.4–-1.3

*^Independent t-test. *Significant. SE: Standard error. CI: Confidence interval. Relative effect: Effect of early relative to late feeding*

As seen in Table 5, the time to first bowel movement was statistically substantially shorter in the early eating group.

Table 6: Postoperative complications among the studied groups

Complication	Early feeding (N=75)	Late feeding (N=75)	p-value	Relative effect Relative risk 95% CI
Nausea	4 (5.3%)	9 (12.0%)	#0.147	0.44 (0.14–1.38)
Vomiting	1 (1.3%)	4 (5.3%)	§0.367	0.25 (0.03–2.18)
Distension	10 (13.3%)	22 (29.3%)	**#0.017***	0.45 (0.23–0.89)
Paralytic ileus	0 (0.0%)	0 (0.0%)	NA	NA

*#Chi square test. NA: Not applicable. *Significant. CI: Confidence interval. Relative effect: Effect of early relative to late feeding*

In the early feeding group, vomiting, nausea, and stomach distension were more common, with statistically significant differences in abdominal distension. In neither group was paralytic ileus documented.

Table 7: Postoperative patients' satisfaction among the studied groups

Satisfaction	Early feeding (N=75)	Late feeding (N=75)	p-value	Relative effect Relative risk 95% CI
Satisfied	61 (81.3%)	45 (60.0%)		
Neutral	8 (10.7%)	18 (24.0%)	**#0.016***	1.36 (1.09–1.68)
Not satisfied	6 (8.0%)	12 (16.0%)		

*#Chi square test.. *Significant. CI: Confidence interval. Relative effect: Effect of early relative to late feeding regarding being satisfied*

Patients in the early feeding group reported significantly better levels of satisfaction, as seen in Table (7).

Discussion

The most common surgical operation performed worldwide is a C-section, which involves a laparotomy, hysterotomy, and the birth of the foetus [6].

Two to three hours after abdominal surgery, the small intestines begin to work and fully recover within six to twelve hours. The stomach recovers to normal function within 12 to 24 hours following surgery, whereas the large intestines recover completely within 48 to 72 hours. The recovery of bowel function can be determined by a patient's gut sound, flatus production, and stool movements (as judged by a physician). These factors are affected by incision size, surgical site, operating time, blood loss, anaesthetic type, opioids, the patient's overall health, diet, and mental health state [7].

The major goal of the typical diet following abdominal surgery is to prevent ileus. It is now advised that women who have just had a caesarean section ingest food orally as soon as feasible rather than sticking to the suggested diet. Early oral intake has raised questions about how it may affect postoperative ileus and other complications after caesarean delivery [8].

Given that postoperative bowel movements complications following caesarean section are a major problem and are frequently associated with nausea, vomiting, and prolonged hospital stays, it was determined that comparing the return of bowel movements in regionally anaesthetized women undergoing caesarean section who were given early oral feeding versus those who were given late oral feeding would be of particular interest [6].

This study compared the safety of early oral feeding following a simple caesarean section (CS) under spinal anaesthesia to delayed oral feeding six hours after audible intestinal sounds.

Between June 2021 and March 2022, 150 pregnant women undergoing elective CS under spinal anaesthesia at the Ain Shams University Maternity Facility, a tertiary hospital, participated in this randomised controlled clinical intervention.

Before recruiting began, this effort was authorised by the Ain Shams University Faculty of Medicine's ethical committee. This investigation may be found at https://clinicaltrials.gov/ct2/ show/NCT05233280. With the identification NCT05233280, it was registered at clinical.trial.gov. This research examined the eligibility of 174 individuals and enrolled 150 patients (75 in each group). Thirteen individuals failed to meet the study's eligibility standards, while eleven patients withdrew to participate.

The study included two groups of 150 pregnant women who delivered via elective CS under regional anaesthesia. No statistically significant differences were identified between the groups in terms of age, gestational age, or parity (p values = 0.805, 0.274, 0.104, and 0.137, respectively).

During the prior decade, a number of studies evaluated early vs delayed oral feeding after a caesarean section and found no negative consequences. However, their results were variable [6].

According to the findings of this study, the early-eating group had quicker times to ambulation, intestinal sound, flatus production, and faeces production (p 0.001).

Consequently, the group that was fed earlier had a much higher rate of ambulation and bowel motions.

Mawson et al. [6] conducted a randomised controlled trial with 148 singleton pregnant women undergoing elective caesarean section (C-section) with regional anaesthesia in order to compare the return of bowel movements in those who were given Early Oral Feeding (EOF) versus those who were given Late Oral Feeding (LOF). They observed that EOF was linked to increased bowel movement.

Mawson et al. [6] found no difference in the time it took to pass stool and flatus following surgery (EOF 3,213868.8 min, LOF 3,084660 min, P = 0.504; LOF 1,589.4 802.8 min, LOF 1,621.8756.6 min, P = 0.809). Considering the possible homogeneity of our sample population.

Ogbadua et al. [9] compared the safety of early vs delayed oral feeding in 152 women who received an uncomplicated CS under spinal anaesthesia. Their findings are congruent with ours. The early-fed group had substantially shorter postoperative time intervals for bowel sound restoration (7.3 h vs. 11.5 h; P = 0.005) and flatus passage (30.7 h vs. 61.5 h; P = 0.005).

Salehian et al. [10] conducted a randomised clinical study with 120 primiparous women who underwent elective caesarean section to examine the effect of early oral hydration on the restoration of bowel function and woman's satisfaction after surgery. They discovered statistically significant differences between the postoperative interval before the lady first heard regular intestinal noises, the postoperative interval before she first passed flaccid stools, and the woman's happiness level.

Chantarasorn et al. [11] conducted a randomised controlled study with 107 women undergoing an uncomplicated caesarean section under regional anaesthesia to examine the benefits and drawbacks of early postoperative feeding vs conventional nutrition for caesarean section patients. It was revealed that the early eaters had considerably less voiding intervals.

In a trial involving 200 moms, Bandyopadhyay [12] assessed the effectiveness of early oral feeding following caesarean birth. 12–14 hours; mean 13 hours; 30-36 hours; mean 33.2 hours (control group; p 0.01); flatus passed 36–40 hours; mean 37.9 hours; stool passed 36–40 (p 0.01); flatus passed 36–40 (p 0.01); stool passed 36–40 (p 0.01). (8.75 hours for bowel noises, 7.3 hours for flatus passage, and 6.27 hours for a bowel movement).

Vomiting, nausea, and abdominal distension were not substantially more prevalent in the early feeding group; only abdominal distension was statistically significant (p = 0.017). In neither group were any signs of ileus paralysis seen.

This study found that patients in the early feeding group were significantly happier than those in the control group (p = 0.016).

Mawson et al. [6] found that while there was no difference in gastrointestinal problems (EOF 42.03 percent, LOF 41.01 percent, P = 0.977), mother satisfaction with postoperative consumption was significantly higher in the EOF group (P = 0.049). Other reported symptoms, including nausea, vomiting, and bloating, did not diminish significantly after 6 to 8 hours, 24 hours, or after the patient was discharged (P-value 0.05).

Ogbadua et al. [9] observed that the early feeding group had significantly shorter hospital stays, which is consistent with our findings (P 0.001; 4.2 days vs. 4.9 days). Women who consumed meals earlier in the day were significantly happier.

In addition, Huang et al. [7] revealed that EOF was not linked with an increased risk of nausea (RR, 0.95; 95% CI, 0.69-1.33), abdominal distension (RR, 0.68; 95% CI, 0.43-1.07), diarrhoea (RR, 0.63; 95% CI, 0.28-1.41), moderate ileus symptoms (RR, 0.82; 95% CI, 0.53-1.10), or vomiting (RR). Salehian (0.960.18 vs 1.134 days; P0.05) (0.960.18 versus 1.134 days; P0.05). The group receiving early feeding had more patient movement than the intervention group (14.1 hours versus 18.8 hours; P0.05). Prefed mothers reported much greater maternal happiness (P0.05).

This is in accordance with the findings of Teoh et al. [13], who discovered that the mothers of EOF participants were much happier. It impacts postpartum depression, future

pregnancy decisions, and the reputation of medical professionals and institutions.

In addition, Chantarasorn et al. [11] found that postoperative nausea and vomiting were not seen, and the rate of mild ileus symptoms in the early feeding group was considerably lower than in the traditional feeding group (19.6% versus 31.5%, p = 0.03).

Teoh et al. [13] found that nausea increased in EOF patients who had orange juice 30 minutes after surgery. Despite a significantly higher incidence of nausea in the EOF group (10.2% vs. 2%, P0.05), mother satisfaction was much greater (P0.0001).

It is noteworthy to note that Izbizky et al. [14] observed no difference in satisfaction ratings between the two groups when they compared the early introduction of regular meals 8 h following surgery to the fluids used in the current experiment, which contradicts our findings. An earlier study hypothesised that the introduction of solid as opposed to liquid meals, which are significantly more pleasant for the great majority of women undergoing CS, might account for the observed difference in outcomes.

Conclusion

Following a caesarean birth without difficulties, early feeding was related with better bowel function recovery, a shorter mean time to first bowel movement, and greater mother satisfaction. In addition to the absence of gastrointestinal difficulties, this supports the idea of early oral feeding as opposed to delayed oral feeding.

On the basis of these optimistic findings, it is suggested that we alter our eating habits.

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