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Original Article

Study of Early versus Delayed Oral Fluid and Food after Cesarean Section

Esraa Hosny Abd Elhady *, Faisal Mustafa, Osama Abdelazem Hasan

Department of Obstetrics and Gynecology, Faculty of Medicine, Al-Azhar University, Assiut, Egypt

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*Corresponding author
Email: hosnyesraa199@gmail.com

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ABSTRACT

Background: A cesarean section refers to the childbirth method involving the extraction of the baby through an incision made in the abdomen and uterus. This procedure is commonly conducted and ranks among the most frequently performed surgical interventions, with a global prevalence ranging from 37% to 67%.

Aim of the work: To evaluate the impact of early maternal nutrition and gastrointestinal function following cesarean delivery.

Patients and Methods: In a randomized controlled trial, there were 100 cases in the Study group [Group A] that were allowed early feeding without considering bowel sounds, as opposed to the Control group [Group B], which included 100 cases with delayed feeding regardless of bowel sounds.

Results: There were no notable variations between the two groups in terms of BMI, age, gestational age, parity, surgical duration, blood loss, and ability to walk. However, a significant contrast was observed between the groups concerning bowel sounds and bowel movement. Group A demonstrated greater satisfaction levels compared to Group B, with statistically significant variances discerned between the groups.

Conclusion: Giving early oral nutrition after a straightforward cesarean delivery is more effective than providing early feeding without listening for bowel sounds, commencing 6 hours after the operation. It leads to faster restoration of gastrointestinal function, ambulation, shorter hospital stay, increased satisfaction, reduced vomiting and nausea, and a lower incidence of significant gastrointestinal complications compared to delayed feeding.

Keywords: Cesarean Section; Maternal Welfare; Postoperative Care.

INTRODUCTION

Cesarean delivery, also known as cesarean section, is when a baby is born through incisions made in both the abdominal wall [laparotomy] and the uterine wall [hysterotomy]. Unlike in cases of uterine rupture or abdominal pregnancy, the fetus is not taken out from the abdominal cavity during this procedure [1].

After abdominal surgery like this, patients are usually not allowed to eat or drink [NPO] until their digestive system shows signs of functioning normally, such as the presence of bowel sounds, passing gas or stool, or feelings of hunger [2].

Early initiation of oral feeding is said to boost patient satisfaction, encourage early movement, and lead to a shorter hospital stay. The expense of oral feeding is considerably less in contrast to the everyday expenses of intravenous fluids, IV apparatus, catheters, and nursing assistance [3].

Enhanced Recovery After Surgery [ERAS], also known as fast-track, rapid recovery, or accelerated recovery, is a surgical care model designed for elective surgeries. It comprises various care components aimed at reducing the body's stress response and organ dysfunction after surgery. The ERAS protocol for planned cesarean sections includes improved preoperative education, minimized fasting before surgery, early reintroduction of oral intake, cessation of intravenous fluids, improved pain management satisfaction, and the opportunity for women to have their urinary catheter and IV cannula removed on the same day as surgery and be discharged the following day [4].

Therefore, our research seeks to evaluate the effects of early maternal feeding on maternal contentment and gastrointestinal function post-cesarean delivery.

PATIENTS AND METHODS

This is a randomized controlled study that recruited 200 women admitted to the labor and delivery ward at the Department of Obstetrics and Gynecology at Al-Azhar University Hospital [Assiut] between February 2023 and July 2023. When the decision was made to proceed with a cesarean section due to obstetric reasons, only elective cesarean sections were considered for inclusion in the research.

The 200 participants were randomly divided into two groups: **Study Group [Group A]** consisted of 100 patients who were given early post-operative oral fluids and semisolid food within 2 hours of the surgery, regardless of bowel sounds, flatus, or stool passage, and **Control Group [Group B]** comprised 100 patients who were provided with late postoperative oral fluids and semisolid food within 8 hours of the surgery, irrespective of bowel sounds, flatus, or stool passage. Written consent was obtained from each patient before their involvement in the study.

Patient criteria: Inclusion criteria included term singleton pregnancies, uncomplicated elective surgeries lasting under an hour, and standard blood loss during and after the cesarean section. Exclusion criteria included postpartum hemorrhage, surgical complications during or following the procedure, history of gastrointestinal surgeries, significant adhesions, medical comorbidities, hepatic diseases, gastrointestinal disorders, obstetric complications, placental abruption, gestational diabetes, anemia, use of tocolytic agents influencing blood loss, premature rupture of membranes and chorio-amnionitis, multiple pregnancies, and fetal distress.

Patient Assessment Checklist: Comprehensive medical history was obtained, physical examination and vital signs were assessed, and transabdominal ultrasound was performed.

Postoperative Care: All patients were closely monitored every 4 hours in the initial postoperative period and then every 2 hours until discharge.

Statistical Analysis: The information was examined using the Statistical Package for the Social Sciences [SPSS] version 24. Tests for normality [Kolmogorov-Smirnov and Shapiro-Wilk tests] were performed. Continuous variables were reported as median and interquartile range [IQR]. A p-value less than 0.05 was considered to indicate statistical significance.

RESULTS

There was no statistically significant difference between the studied groups regarding age, residence, education, parity, number of cesarean sections, gestational age, and BMI [Table 1]. Similarly, there was no statistically significant difference between the studied groups in terms of operative time and blood loss [Table 2].

Additionally, the analyzed groups did not show any significant variations in postoperative nausea, vomiting, distension, and ambulation time. However, there was a statistically significant decrease [p-

value < 0.001] in the time taken for the first occurrence of flatulence in Group A [median = 6 hours, IQR = 5 – 8 hours] compared to Group B [median = 8 hours, IQR = 6 – 10 hours]. Similarly, there was a marked and statistically significant reduction [p-value < 0.001] in the time taken for the first bowel movement in Group A [median = 8 hours, IQR = 7.12 – 10 hours] compared to Group B [median = 13 hours, IQR = 12 – 15 hours].

Moreover, there was a statistically significant [p-value < 0.001] decrease in hospital stay in Group A [median = 12 hours, IQR = 10 – 15 hours] compared to Group B [median = 20 hours, IQR = 18 – 21 hours] [Table 3]. In terms of postoperative satisfaction, there was a statistically significant increase [p-value = 0.001] in the percentage of satisfied patients in Group A [93 patients, 93%] compared to Group B [76 patients, 76%] [Table 4].

Table [1]: Comparison of demographic data between studied groups

		Group A [n = 100]		Group B [n = 100]		Stat. test	P- value
Age [years]	Median	26		26		MW = 4901.5	0.809
	IQR	22 – 31		23 – 30			
Residence	Rural	60	60%	61	61%	X^2 = 0.021	0.885
	Urban	40	40%	39	39%		
Education	No	51	51%	41	41%	X^2 = 2.01	0.156
	Yes	49	49%	59	59%		
Parity	Median	2		2		MW = 4699	0.453
	IQR	1 - 3		1 – 3			
No. of CS	Median	1		2		MW = 4321.5	0.087
	IQR	1 - 2		1 – 2			
Gestational Age [weeks]	Median	38		38		MW = 4768	0.547
	IQR	38 - 39		39 – 39			
BMI [kg/m²]	Median	25		25		MW = 4893.5	0.794
	IQR	20 - 28		20.1 – 28			

Table [2]: Comparison of operative data between studied groups

		Group A [N = 100]	Group B [N = 100]	Stat. test	P-value
Operative time [min]	Median	40	40	MW = 5000	1.0
	IQR	31.25 - 50	31.25 – 50		
Blood loss [cc]	Median	500	500	MW = 4799.5	0.619
	IQR	450 - 650	450 – 600		

Table [3]: Comparison of post-operative data between studied groups

		Group A [N = 100]		Group B [N = 100]		Stat. test	P-value
Nausea	No	90	90%	85	85%	X^2 = 1.14	0.285
	Yes	10	10%	15	15%		
Vomiting	No	91	91%	85	85%	X^2 = 1.7	0.192
	Yes	9	9%	15	15%		
Distension	No	93	93%	88	88%	X^2 = 1.45	0.228
	Yes	7	7%	12	12%		
1st flatus [hours]	Median	6		8		MW = 2803	**< 0.001**
	IQR	5 - 8		6 – 10			
1st defecation [hours]	Median	8		13		MW = 501	**< 0.001**
	IQR	7.12 - 10		12 – 15			
Ambulation [hours]	Median	2		2.5		MW = 4542	0.233
	IQR	2 - 3		2 - 3			
Hospital stay [hours]	Median	12		20		MW = 395.5	**< 0.001**
	IQR	10 - 15		18 – 21			

Table [4]: Comparison of post-operative satisfaction between studied groups

		Group A [N = 100]		Group B [N = 100]		Stat. test	P-value
Satisfaction	No	7	7%	24	24%	**X^2 = 11.03**	**0.001**
	Yes	93	93%	76	76%		

DISCUSSION

After a cesarean section, it is common to limit oral intake for the initial 24 hours to prevent postoperative ileus. However, this approach continues in healthcare settings despite substantial evidence backing the advantages and safety of early oral feeding after a cesarean section [5].

This research was carried out to evaluate how starting maternal feeding early affects maternal contentment and gastrointestinal function post-cesarean sections. It also examined the differences in outcomes between early and late feeding following cesarean delivery.

It is a randomized clinical trial involving 200 participants randomly allocated into two equal groups: the first group was assigned to receive fluids and semisolid foods 2 hours after surgery, while the second group was designated to receive fluids and semisolid foods 8 hours after surgery.

Several similar studies on early and delayed feeding after cesarean section have been published. The timing of initial feeding ranged from immediately post-procedure [6] to 8 hours postoperatively [7] in the early feeding group, and from 12 hours [8] to 24 hours [9] in the delayed feeding group. In this study, the 2-hour mark was chosen for the early feeding group to prevent complications such as aspiration occurring within this timeframe. **Jalilian *et al.*** [10] also selected the 2-hour post-operative time for the early feeding group.

There were no notable variations in the demographic, obstetric, and operative traits among the individuals in both groups; they were comparable concerning most fundamental variables.

As per **Anwer *et al.*** [11], there were no statistically significant variations in the demographic, obstetric, and operative characteristics among the trial participants in the two groups. The average age of the participants was 30.23 ± 4.7 in one group compared to 30.81 ± 4.7 in the other group, with a p-value of 0.458. Similarly, the mean parity was 2.01 ± 1.1 in one group compared to 2.39 ± 1.3 in the other group, with p-values of 0.061 for the early and delayed feeding groups, respectively.

In our research, we found that Group A [early feeding] experienced the initiation of bowel sounds and bowel movement at a median time of 6 hours, whereas in Group B [late feeding], this occurred at 8 hours. There was a statistically significant contrast noted between the two groups.

Our findings regarding the restoration of bowel function can be explained by the fact that food intake may stimulate a reflex that enhances propulsive movements and triggers the release of gastrointestinal hormones, resulting in a generally favorable impact on bowel motility as observed by **Steinert *et al.*** [12].

These results are consistent with the study conducted by **Mohammed *et al.*** [13], where the appearance of bowel sounds and passage of flatus occurred earlier in the study group [at 21.6 and 34.5 hours, respectively] compared to the control group [at 31.7 and 49.2 hours, respectively].

The early feeding group had a significantly briefer average time for the passage of solid stool compared to the late feeding group, 62.6 hours versus 69.9 hours [P = 0.035]. We did not find any statistically significant variance in ambulation between the two groups. The median time for ambulation in Group A [early feeding] was 2 hours, whereas in Group B [late feeding] it was 2.5 hours.

In line with the study by **Masood *et al.*** [14], after 15 hours following the operation, 316 women [53.8%] from the early feeding group could walk, while only 164 [27.9%] from the control group could do so. The early feeding group exhibited significantly elevated levels of thirst and appetite compared to the control group [P < 0.001 for both indicators], indicating statistical significance.

In our study, nausea did not show statistically significant differences, consistent with findings by **Jalilian *et al.*** [10] and **Anwer *et al.*** [11], who conducted a study involving 100 cases. The early oral feeding group was defined as starting between 2 hours to 12 hours postoperatively.

These results align with the study by **Ahmed *et al.*** [15], as they found less nausea in the early feeding group compared to the delayed feeding group, although the difference was considered negligible.

Regarding the impact of each feeding approach on vomiting, there were 9 patients [9%] with vomiting in Group A compared to 15 patients [15%] in Group B, showing no statistically

significant difference. **Atef *et al.*** [16] demonstrated no significant difference between the early and delayed feeding groups in terms of vomiting [P value > 0.05], with less vomiting reported in the delayed feeding group.

In contrast, a study by **Mawson *et al.*** [17] evaluating vomiting at 6-8 hours postoperatively found more cases of vomiting in the early feeding group compared to the delayed feeding group [5 cases versus 1 case], although the difference was statistically insignificant [P value 0.245].

Our study did not detect any occurrences of paralytic ileus or readmission in either group. As highlighted by **Dar *et al.*** [18], there was no notable distinction between the early and delayed feeding groups regarding distension and ileus [P-value >0.05], with fewer incidences in the early feeding group. In cases where ileus did arise, it was classified as mild, with no instances of severe ileus observed.

Additionally, there was a significant reduction in hospital stay in Group A [median = 12 hours] compared to Group B [median = 20 hours]. This finding is consistent with the study by **Mostafa** [19], which demonstrated that early ambulation significantly decreased the length of hospital stay. This supports our first feeding approach, as it resulted in the shortest mean ambulation time with a significant difference among all groups and between the early feeding groups. Our results align with those of **Atef *et al.*** [16], as their research showed statistically significant shorter times to meet discharge criteria in the early feeding groups.

Upon comparing the two groups in terms of satisfaction, we observed that women in the early feeding group had significantly higher satisfaction levels compared to those in the delayed feeding group [P-value 0.001].

Our findings are consistent with **Mostafa** [19], where their research also demonstrated that the early feeding group exhibited statistically significantly higher satisfaction rates [P-value < 0.05]. According to **Adeli *et al.*** [20], maternal satisfaction was greater in the early-fed group than in the standard care group. This finding aligns with results from other studies. The increased satisfaction reported by the early-fed group could be attributed to the positive outcomes associated with this practice, such as early ambulation, shorter hospital stays, mental well-being from early recovery, and potential cost savings.

Conclusion

Early oral feeding after uncomplicated cesarean section significantly improves patient outcomes, including accelerated recovery of gastrointestinal function, early ambulation within 6 hours post-operation, reduced hospital stay duration, increased satisfaction, decreased vomiting and nausea, and lower incidence of significant gastrointestinal complications compared to delayed feeding.

Conflicts of interest: None.

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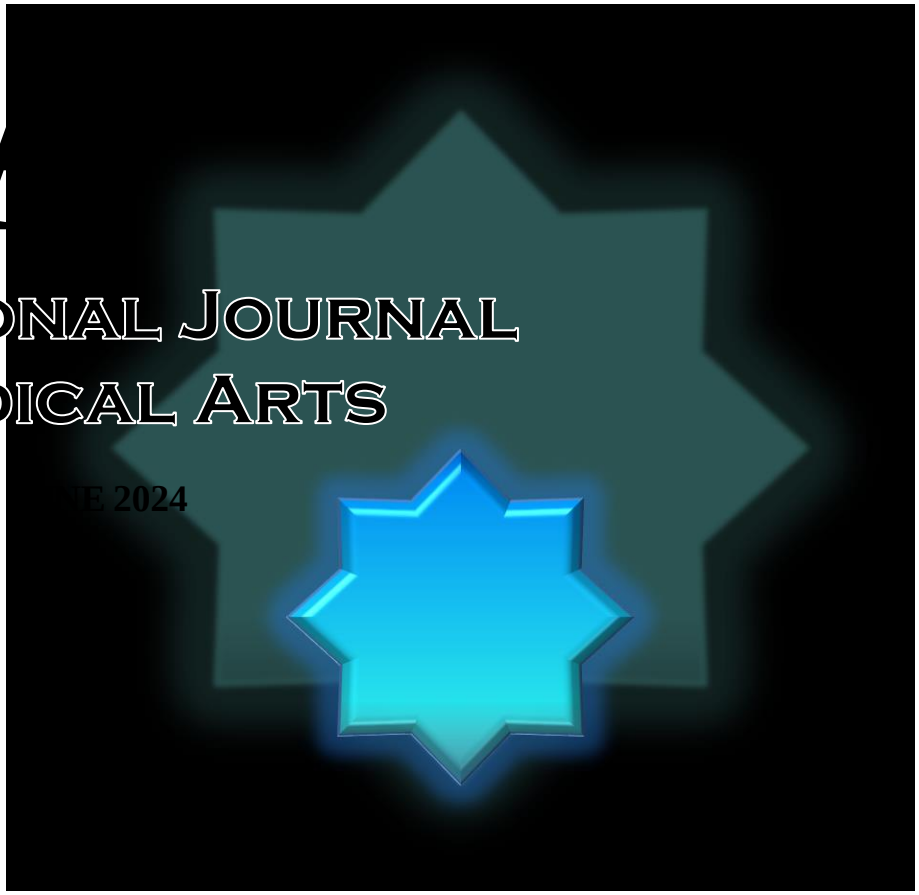

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