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Comparison of Early Hospital Outcome in Early Versus Delayed (2 Vs. 8 Hours) Oral Feeding in Females after Cesarean Section Under Regional Anesthesia

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

Introduction: The recommendation of oral feeding (OF) after 2 hours of the c-section (CS) under regional anesthesia (RA) should be encouraged as it results in quick postoperative recovery and lessens the time of hospitalization. Routine OF (just after hearing the bowel sounds through inspection) after CS under general anesthesia (GA) must be the final option.
Objective: This study's objective is to compare early hospital outcomes in early versus delayed (2 vs. 8 hours) oral feeding in females after cesarean section under regional anesthesia.

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Materials and Methods: This randomized controlled trial was completed in 6 months (August 12, 2017, until February 12, 2018). This study included 800 patients after getting informed consent from patients/attendants who met the inclusion criteria. Data was collected from the Department of Gynaecology & Obstetrics, Lady Aitchison Lahore. Females undergoing C-sections were randomly divided into 2 groups (groups A and B) using a random number table. In Group A and Group B, females were fed early (within 2 hours) or delayed (after 8 hours) as per operational definition, respectively. Short-term hospital outcome time to bowel movement, time to passage of flatus, abdominal distension, and hospital stay were measured.

Results: The mean hospital stay in the early feeding group was (31.82 ± 11.01) hours and in the delayed feeding group was (37.24 ± 9.34) hours. The mean time to bowel sound in the early group was (15.72 ± 4.67) minutes and in the delayed group (16.84 ± 4.58) minutes. The mean time to passage of flatus in the early and delayed group was (24.06 ± 5.60) minutes and (29.66 ± 5.36) minutes. The mean hospital stay, mean time to bowel sound, and mean time to Passage of flatus in the early group were statistically lower than the delayed group, p-value < 0.001. In the early feeding group, a total of 78 (19.5%) cases had abdominal distension, and in the delayed feeding group 129 (32.2%) cases had abdominal distension, with statistically lower abdominal distension in the early group p-value < 0.001.

Conclusion: Through the findings of this study it was found that the frequency of abdominal distension, time to passage of flatus, time interval to bowel sounds, and Hospital stay was less in the early feeding group as compared to delayed groups. So, by introducing early feeding, we may reduce hospital stays and gain more female satisfaction.

Keywords: Cesarean section; satisfaction; postoperative early feeding; delayed feeding.

1. INTRODUCTION

Cesarean section (CS) is one of the most commonly executed surgeries in which fetus delivery is assisted via incising the abdomen and uterus [1]. It is usually indicated in the scenario where typical vaginal birth poses a life-threatening risk for the fetus or mother [2]. In developed countries, CS is successfully conducted to deliver approximately 25% of babies [2]. The rate of CS has become so high in the last few decades with [3] reliable results, however, the chances of maternal as well as neonatal morbidity was considerably higher than vaginal birth [2-4] Oral feeding (OF) after CS is essential as it tends to reverse mucosal atrophy because of starvation and assist in an increment of anastomotic collagen, which is good for healing of wound [5, 6].

The results of the latest high-level research regarding early or delayed OF after CS are fairly debatable [7,8]. In recent times, a study encouraged OF right after 2 hrs of CS under RA for quick recovery after surgery and short duration of hospitalization. Routine OF (just after hearing the bowel sounds through inspection) after CS under general anesthesia (GA) must be the final option [9].

Izbizky G reported related outcomes in their study concerning abdominal distension, such as it was seen in 16 (17%) among delayed feeders, whereas in 16 (16%) among early feeders, p-value > 0.05 [10]. On the contrary, other studies reported quite controversial results such as 4.28% and 20% in early. They delayed feeding gatherings, respectively, with p-value < 0.05 [11]. Bowel movement time was seen to be increased among in delayed group at (11.7 ± 5) hours whereas it was reported as (7.8 ± 2.9) hours in early feeders, p-value < 0.0001. Moreover, studies are debatable regarding their result among early and delayed gatherings such as (12 ± 11) hours in early and (15 ± 11) hours in delayed groups, and p-value >0.050 [10].

In another study, the average time of hospitalization was (48.7 ± 6.3) hours among delayed OF gathering, whereas it was reported as (48.3 ± 3.6) hours in early OF gathering, p-value > 0.05 [11]. Comparable results were demonstrated by Izbizky G; duration of hospitalization was (2.4 ± 0.5) and (2.5 ± 0.5), in early and delayed feeders, respectively, (p-value > 0.05) [10]. Furthermore, on average the flatus passing timing was comparable in both groups, (13.6 ± 6.8) hours and (15.4 ± 5.8) hours; in early and delayed feeding, respectively, (p-value > 0.05) [11]. In another study, the average flatus passing timing was almost similar in both groups such as; (22 ± 14) hours and (23 ±12) hours in the early and delayed feeding group, respectively, p-value > 0.05 [10]. The results in terms of duration of hospitalization and flatus

passing timing were comparable in the two studies detailed above.

This study aims to compare early hospital outcomes in early versus delayed (2 vs. 8 hours) oral feeding in females after cesarean section under regional anesthesia. International data is controversial regarding abdominal distension and time to passage of flatus in early and delayed feeding methods [10,11]. This study is necessary to be conducted to find the optimum time of feeding for better short-term hospital outcomes such as time to bowel movement, time to passage of flatus, abdominal distension, and hospital stay. If we prove early feeding (with 2 hours) as a good approach, we can alter our practice of mother feeding after c-section.

2. MATERIALS AND METHODS

2.1 Study Design

A randomized controlled trial was used

2.2 Duration of Study

The study was completed in 6 months (August 12, 2017, to February 12, 2018)

2.3 Sample Technique

Non-probability consecutive sampling

2.4 Setting

The study was conducted at the Department of Gynaecology & Obstetrics, Lady Aitchison Lahore

2.5 Sample Size

800 females in each group (a total of 400 cases) were taken. The sample size is calculated using a mean hospital stay of (2.5±0.5) days in the delayed group and (2.4±0.5) days in early group [11] using 95% confidence level, 5% level of significance, and 80% power of study.

2.6 Sample Selection

Inclusion criteria:

- All females aged 18-35 years planned for an elective C-section with regional anesthesia of any parity
- Term singleton pregnancies (was assessed on ultrasound having gestation 37-40 weeks)

Exclusion Criteria:

Patients were excluded from having

- Females with previous abdominal surgery (was assessed clinically)
- If females during C-section have blood loss ≥ 500ml (was calculated in the form of volume of blood loss by measuring the difference between pre-weight and socked packs and suction bottle where 1 gm = 1 ml blood loss by both these methods was added to get the total blood loss.)
- Infectious conditions such as Chorioamnionitis (if foul-smelling vaginal discharge and fever > 100 F^0).

Pakistan Demographics:

Chart 1. Patient demographic criteria

Age (years)	Gestational Age(weeks)	Hospital Stay (hours)
18-23 (270)	37-38 weeks (291)	Short stay 31-33 hours (239)
24-29 (291)	38-39 weeks (270)	Medium stay 34-36 hours (291)
30-35 (239)	39-40 weeks (239)	long-stay 37-39 hours (270)

Data Collection Procedure: In this study, we included 800 patients after getting well-versed consent from patients/attendants who met the inclusion criteria. Prior permission from the hospital ethical committee was taken. Data was collected from the Department of Gynaecology & Midwifery, Lady Aitchison Lahore. Mandatory demographical such as name, age address, and gestational history were taken. All surgeries were done under regional anesthesia and the C-section was accomplished by senior consultants having at least 5 years of experience after post-graduation. Females undergoing C-sections were randomly divided into 2 groups (Group A and Group B) using computer-generated random number tables. In Group A and Group B females were fed early (within 2 hours) or delayed (after 8 hours) Early vs. Delayed feeding was well thought out when oral liquid feed was given within 2 hours of C/section and delayed feeding was considered when oral liquid feed was given after 8 hours of C/section. Early hospital outcome contained time to return of bowel sounds, hospital stay, time to Passage of flatus and abdominal distension.

Time to return of bowel sounds: it was calculated as time in hours for the return bowel sounds (that was heard using a stethoscope placed at the abdomen of the patient for 1 minute).

Table 1. Comparison of Age (years), gestational age, hospital stay (hours), time to bowel sound (minutes), and time to Passage of flatus, (minutes) in both study groups

	Groups	Mean	S.D	Minimum	Maximum	t-test	p-value
Age (years)	Early	26.80	5.09	18.00	35.00	1.51	0.131
	Delayed	26.25	5.19	18.00	35.00		
Gestational age (weeks)	Early	38.72	1.06	37.00	40.00	0.99	0.322
	Delayed	38.65	1.01	37.00	40.00		
Hospital stay (hours)	Early	31.82	11.01	14.00	50.00	7.50	<0.001**
	Delayed	37.24	9.34	20.00	50.00		
Time to bowel sound (minutes)	Early	15.72	4.67	10.00	25.00	3.42	0.001**
	Delayed	16.84	4.58	10.00	28.00		
Time to passage of flatus (minutes)	Early	24.06	5.60	12.00	35.00	-14.42	<0.001**
	Delayed	29.66	5.36	12.00	36.00		

***. Highly significant*

Table 2. Comparison of Abdominal distension in both study groups

		Study groups		Total
		Early	Delayed	
Abdominal distension	Yes	78(19.5%)	129(32.2%)	207(25.9%)
	No	322(80.5%)	271(67.8%)	593(74.1%)
Total		400(100.0%)	400(100.0%)	800(100.0%)

Chi-square 16.951, p-value <0.001

Mean Hospital stay: It was calculated as a time for a patient's stay in the ward that is designed from the point when patients are shifted toward their discharge, and was premeditated in hours. Patients were discharged when they were able to take oral solid food and go to the washroom.

Time to Passage of Flatus: It was measured in terms of total time mandatory measured from C-section to time needed lapsing flatus in hours.

2.7 Abdominal Distension

It is defined when substances, such as air (gas) or fluid, mount up in the abdomen causing its outward expansion beyond the normal girth of the stomach and waist. The patinas were requested to tell if it happened. Patients were discharged if they abided by solid food without vomiting.

2.8 Data Analysis Procedure

All data was analyzed using SPSS (version 20). Quantitative data like age, gestational age, time to bowel movement, time to Passage of flatus, and hospital stay were presented as mean ± S.D. Abdominal distension being qualitative data was presented in the form of f (%). Independent sample t-test was used for the comparison of quantitative variables (time to bowel movement, hospital stay, and time to passage of flatus) in both study collections. The chi-square test was applied to compare the occurrence of abdominal distension in both study groups, and a p-value ≤ 0.05 was taken as significant.

3. RESULTS

The mean age of cases in the early and delayed groups was (26.80 ± 5.09) years and (26.25 ± 5.19) years respectively. The minimum and maximum age in both groups was 18 and 35 years. The mean gestational age in the early group was (38.72 ± 1.06) weeks and in the delayed group was (38.65 ± 1.01) weeks. The minimum and maximum gestational age was 37 and 40 weeks. The mean hospital stay in the early feeding group was (31.82 ± 11.01) hours and in the delayed feeding group was (37.24 ± 9.34) hours. The mean hospital stay in the early group was statistically lower as compared to the delayed group, p-value < 0.001. The mean time to bowel sound in the early group was statistically lower (15.72 ± 4.67) minutes as compared to the delayed group (16.84 ± 4.58) minutes, p-value < 0.05. The mean time to Passage of flatus was statistically lower in the

early group (24.06 ± 5.60) minutes as compared to the delayed group (29.66 ± 5.36) minutes, p-value < 0.001. In the early feeding group, a total of 78(19.5%) cases had abdominal distension and in the delayed feeding group 129(32.2%) cases had abdominal distension, with statistically lower abdominal distension in the early group, p-value < 0.001.

4. DISCUSSION

Conventionally, the utilization of two to three liters of IV fluid in the 1st (12 to 24 hours) was the usual practice of feeding after CS. Oral food was only permitted after 24 hours if there was no postoperative nausea in the presence of bowel movement on examination. After the Passage of flatus, regular food is started to prevent gastric problems like abdominal distention, nausea, or vomiting. Currently, many clinicians recommend that in the case of uncomplicated CS, oral fluids can be initiated after the patient has recovered from anesthesia and solid food can be started as soon as the patient experiences thirst unlike the conventional routine [12].

Belching was reported in a study after resuming early oral fluid and early feeding after surgery. It relieved abdominal distension as well as flatulence because of upward gas movement via the esophagus and stomach and ultimately gas elimination from the mouth. The frequency of flatulence tends to decrease in patients who start early solid food that further fastens the peristaltic activity and averts the gaseous retention in the colon [13]. Early intake of oral fluid showed less frequency of flatulence on the 2nd and 3rd postop days according to a study conducted by Shamaeian Razavi [14]. On the other hand, many trials also revealed that early OF possessed no significant effect on abdominal distension and flatulence [15]. A study conducted by Teoh et al. reported that early intake of solid food could enhance the chances of nausea and vomiting after surgery [16].

In the current study, the mean hospital stay in the early feeding group was (31.82±11.01) hours, and in the delayed feeding group was (37.24±9.34) hours. The mean hospital stay in the early group was statistically lower as compared to the delayed group, p-value < 0.001. Another examination revealed no difference in the results as we found, i.e. average duration of stay in the hospital in the delayed OF group was (48.7±6.3) hours, and in the early group it was 48.3±3.6 h, p-value > 0.05 [11]. Comparable results were demonstrated by Izbizky G; duration of hospitalization was (2.4 ± 0.5) days and (2.5 ± 0.5) days, in early and delayed feeders, respectively, (p-value > 0.05) [10]. We found fewer mean hospital stays in early feeding methods.

In the current study, the mean time to bowel sound in the early group was statistically lower (15.72 ± 4.67) minutes as compared to the delayed group (16.84 ± 4.58) minutes, p-value < 0.05. In another study bowel movement time was seen to be increased among in delayed group 11.7±5 whereas it was reported as (7.8±2.9) hours in early feeders, p-value <0.0001 [11]. Moreover studies (as we found) are debatable regarding their result among early and delayed gatherings such as (12±11) early and (15±11) in delayed groups, and p-value >0.050 [10].

In the current study, the average time of flatus passage was statistically lower in the early group (24.06 ± 5.60 minutes) as compared to the delayed group (29.66 ± 5.36 minutes), with p-value < 0.001. Moreover passing of flatus was also the same in groups, 13.6±6.8 hrs in early OF and 15.4±5.8 hrs in delayed OF, p-value > 0.05 [11]. The average flatus passing timing was almost similar in both groups such as; 22 ± 14 and 23 ±12 in the early and delayed feeding group, respectively, p-value > 0.05 [10]. The results in terms of duration of hospitalization as well as flatus passing timing were comparable in the two studies.

In the current study in the early feeding group, a total of 78(19.5%) cases had abdominal distension and in the delayed feeding group 129(32.2%) cases had abdominal distension, with statistically lower abdominal distension in the early group, p-value < 0.001. Related outcomes were reported by Izbizky G in their study concerning abdominal distension such as it was seen in 16 (17%) among delayed feeders whereas in 16(16%) among early feeders, p-value > 0.05 [10]. The findings are not in agreement with our statistics, On the other hand, similar results (as we found) about abdominal distension was reported by Jalilian N, i.e. 20% in delayed and 4.28% in the early group, p-value < 0.05 [11].

Recently a comparative study was performed to find out the outcome of early OF regarding its tolerability, acceptance, side effects, and complications. The study group showed a shorter time of flatus and bowel sounds (34.5 and 21.6h,

respectively) in comparison with the control group (49.2, and 31.7 hours, respectively). The study reported no other adverse effects or complications of early OF. Thus, delayed OF showed no significant superiority over early OF and early OF must be started as it has no adverse effects. The benefits such as quick recovery after surgery and greater patient contentment can be expected from early OF [17].

Guo et al. performed a study in 2015, on early OF and delayed OF results after CS regarding their efficacy and safety. The study's primary results have demonstrated that through 20 reports, a total of 4584 females undergoing CS were included. The rates of complications after surgery and the satisfaction of the patient were similar in both groups. The early OF group showed fast recovery of bowel sound and movement, flatus, and regular diet (P <0.001). Moreover, time for IV fluids, duration of hospitalization, and time to 1st breastfeeding were shorted in the early OF group (P< 0.001 for all). Thus, the study has concluded that delayed OF is not superior to early OF after CS as early OF promised many short-term advantages [18].

In 2015, another comparative study was designed which evaluated the results of early and delayed OF after CS. Delayed OF (24 hours) was initiated in Group A while early OF (6 hours) in Group B. The bowel movements were recovered in group B in 6.13 this time was 9.29 hours in group A. Similarly, in group B, the time to regular diet was 11.39 hours however in group A, it was 18.06 hours. The average duration for IV fluid was 22.33 hrs for group A while it was 7.86 hours for group B. The length of hospital stay as well as gastric complications after surgery were comparable in both groups. Hence, recovery time for bowel movements, regular diet, and IV fluid time were lesser in the early group (6 h) in comparison with the delayed group (24 h). Gastrointestinal problems after surgery were not different in both gatherings [19]. These findings are similar to our findings too.

Moreover, a local comparative study was performed in which early and delayed methods of feeding were compared after CS. Females were randomly allocated in 2 groups as per receiving early oral food (after 2 hrs) or delayed (after 18 hrs). The study measured the mother's ambulatory recovery, her satisfaction, gastric recovery, and duration of stay in the hospital. The result has shown that in the final examination total, 1174 females (n= 587 in each group) were recruited. There was no considerable difference in gastric issues among the 2 gatherings. Early OF groups experienced lesser hunger or thirst and their satisfaction was also high; P<0.05). About 53.8% of females showed ambulatory function in less than 15 hours after surgery in early feeding gathering whereas this percentage was only 27.9% in the delayed group. Other complications such as wound infection, requirement of readmission, or febrile morbidity, were also not so noteworthy. Thus, it can be concluded that early OF after CS had good results in terms of ambulatory recovery, mother satisfaction, and duration of stay in the hospital, without any short or long-term complication which make this regime fairly economical [20].

Similarly, another research was done in which unfavorable gastric effects after CS was compared among females who had their 1st food early and who had 1st food delayed (8 h vs 24 h). Randomization of 151 pregnant females into 2 groups who had no surgical, medical, or gyne-related issues, 75 in the early while and 76 in the delayed group in the year 2003. The result has shown that demographic variations were the same yet the blood loss during surgery was significantly different together with the utilization of a Foley catheter, IV fluid resuscitation, and timing of 1st sound of the bowel. These factors were observed to be decreased among the early group, however, no substantial differences were reported regarding gastric issues after the operation. So, concluded by this study, there were no unfavorable gastric effects after CS were seen in early groups; 8 h when contrasted with delayed groups; 24 h [21,22].

5. CONCLUSION

Through the findings of this study, it was found that the frequency of abdominal distension, time to Passage of flatus, time interval to bowel sounds, and hospital stay was less in the early feeding group as compared to delayed groups. So, in the future, by introducing early feeding we may reduce the hospital stay can gain more females' satisfaction.

CONSENT

As per international standards or university standards, patient(s) written consent has been collected and preserved by the author(s).

ETHICAL APPROVAL

As per international standards or university standards written ethical approval has been collected and preserved by the author(s).

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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