

A randomized clinical trial to compare the post-operative outcomes of early vs. late oral feeding after Cesarean section

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Abstract: objectives: This study was undertaken to compare post-operative outcomes associated with early oral feeding versus late oral feeding after cesarean section. **Materials and Methods:** In this randomized clinical trial, 140 pregnant women underwent elective cesarean section with regional anesthesia were randomized in two groups. In the early oral feeding group 2 hours after surgery and in the delayed oral feeding group 8 hours after surgery a liquid diet began for patients. If patients had appropriate tolerance to liquid diet, regular diet began, gradually. The main outcomes for the investigation were included duration of hospital stay, time to return normal bowel function and post-operative gastrointestinal complications. **Results:** time to return of bowel movement (7.8 ± 2.9 h vs. 11.7 ± 5 h, $p < 0.0001$) and time to mobilization (10.7 ± 7.7 h vs. 13.5 ± 5.9 h, $p: 0.015$) were occurred significantly earlier in early feeding than late feeding group. We did not show any significant differences between groups in the post-operative gastrointestinal complications. **Conclusion:** early oral feeding given 2 hours after cesarean section has positive impact to reduce time to return normal bowel function with no significant effect on gastrointestinal complications.

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Key words: Cesarean section, early oral feeding, late oral feeding, bowel function

Introduction

Cesarean delivery is the most common surgical procedure for women that have increasing rate in the world. Improve the methods used in this process to reduce the incidence of complications and reduced length of hospital stay has always evaluated. Discharge patients from hospital are depended to some factors such as absence of wound complications and fever and presence of normal bowel function. Oral feeding has a major impact on improving of beginning of normal bowel function after operation. It has been suggested that after an uncomplicated surgery, liquid diet can be given on one day after operation; and after return of bowel function and flatus passing, the normal diet for patients can be initiated (rock,1997).

Until recent years, patients were not allowed to get oral intake of fluids after cesarean at least 8 hours. This thinking is due to some complications such as nausea, vomiting and abdominal distension (which may be occurs following oral feeding before bowel function), can lead to wound dehiscence, anastomotic complications or aspiration (mulayim,2008). But with the changing attitudes of surgeons, early oral feeding after abdominal surgery, especially cesarean section, has been considered.

Early feeding reduced the rate of body protein depletion, improves wound healing and has positive impact on psychological status of patients and reduced the length of hospital stay and incidence of nosocomial infections and the treatment costs (gocman,2002).

Because the majority of cesarean surgery is performed under regional anesthesia with low intestinal manipulation and most part of the patients are young, some researchers believe that women who had undergone cesarean section, 4-8 hours after surgery can receive their usual diet (Soriano,1996 ; burrows,1995 ; patolia,2001). Even, there are some studies in which oral intake in the first hours after the cesarean section has been prescribed for patients (mulayin,2008; teoh,2007). Although there are several studies in the field of initiation time of oral intake in women who have undergone cesarean section, the optimum time has not been agreed. In this study, we compared the outcomes of early and traditional oral feeding after cesarean sections

Materials and methods

After receiving approval from the Medical University ethic committee, this randomized clinical trial was conducted in the Imam Reza hospital, Kermanshah, Iran. Pregnant women underwent

elective cesarean section with regional anesthesia, after signing the informed consent, were studied. Exclusion criteria included general anesthesia, more than 1000 ml blood loss during operation, use of magnesium sulfate, gastrointestinal disorders and complications during surgery such as bowel and bladder injury. All patients underwent regional anesthesia and cesarean section was performed for all patients in the Pfannenstiel-Kerr method. After cesarean section, patients were randomized into two groups by 1:1 ratio method. In the early feeding group, 2 hours after surgery, patients received 250 ml of fruit juice and in the traditional feeding group, 8 hours after surgery, a liquid diet began for patients. If patients had appropriate tolerance to liquid diet, regular diet began, gradually.

If patients well tolerated normal diet, administration of intravenous fluids was disconnected.

Patients were visited by gynecologic residents every two hours during hospitalization and onset of bowel movement symptoms and abdominal distention was assessed and time to passage of flatus,

defecation and gastrointestinal symptoms such as nausea and vomiting were asked. If there was evidence of ileus, patients were treated with intravenous fluids, limitation of oral intake and nasogastric suction, if necessary.

Patients who were tolerated the normal diet with normal bowel movements and lacks of fever lasting 48 hours after surgery were discharged from hospital.

Statistical analysis was performed with SPSS 16 software. Continuous variables were analyzed with the independent *t* test and categorical variables were analyzed with chi square and Fisher exact tests.

Results

Between January 2010 and March 2011, 723 women underwent cesarean section. Of which, one hundred-forty women were randomized to study groups, following their operation, seventy women in each group. None of subjects were lost for outcome analysis in the study. There were no significant differences between groups regarding to baseline characteristics and cesarean indications (Table 1).

Table 1. Demographic and operation characteristics of patients in the study groups

	Early feeding (n=70)	Late feeding (n=70)	p value
Age (yr)	27.8±4.1	29.1±5.8	0.156
Gestational age (wk)	38.9±1.1	38.6±1	0.601
Gravidity (n)			
1	28	25	0.728
2	31	25	0.388
3 and more	11	20	0.103
Operation time (min)	41.4±9	46.5±9.3	0.658
Estimated blood loss (ml)	804±105	772±84	0.764
Cesarean indication			
Malpresentation	7	13	0.227
CPD	14	12	0.828
Meconium aspiration	10	8	0.801
Prior cesarean section	31	26	0.492
Other	8	11	0.623

Data presented as mean (±SD) or number

* CPD: Cranio-pelvic disproportion

The comparison of post-operative variable records among women in early feeding group vs. late

feeding group is summarized (table 2).

Table 2. Post-operative outcomes of patients in the study groups

	Early feeding (n=70)	Late feeding (n=70)	p value
Duration of hospitalization (h)	48.3±3.6	48.7±6.3	0.658
Bowel movement (h)	7.8±2.9	11.7±5	<0.0001
Passage of flatus (h)	13.6±6.8	15.4±5.8	0.1
First defecation (h)	24.4±11.6	26±10.7	0.845
Mobilization (h)	10.7±7.7	13.5±5.9	0.015
Nausea (n)	12	18	0.303
Vomiting (n)	4	9	0.243
Abdominal distention (n)	3	14	0.008

Fever (n)	5	4	0.999
Wound infection (n)	0	0	-
Urinary tract infection (n)	2	1	0.999
Re-hospitalization (n)	0	0	-

Data presented as mean (\pm SD) or number

As shown in this table, time to return of bowel movement (7.8 ± 2.9 h vs. 11.7 ± 5 h, $p<0.0001$) and time to mobilization (10.7 ± 7.7 h vs. 13.5 ± 5.9 h, $p: 0.015$) were occurred significantly earlier in early feeding than late feeding group. The mean duration of passage of flatus was shorter in early feeding than late feeding group (13.6 ± 6.8 h vs. 15.4 ± 5.8 h); however, the difference was not significant ($p: 0.1$).

There were no significant differences between groups respect to post-operative gastrointestinal complications, except for abdominal distention. The incidence of abdominal distention was significantly lower in early feeding than late feeding group ($p: 0.008$). The incidence of fever, infections and re-hospitalization were similar between groups.

Discussion

The traditional approach where limit oral feeding by women after cesarean section till return bowel activity is challenged now. With changing surgeon's attitudes, early oral feeding after cesarean section has been considered. So, many studies evaluated the safety of early oral feeding after cesarean section. However, there are controversies about the method of anesthesia, kind of initial diet and optimum time to initiate oral feeding (mulayim,2008; gocmen,2002; Soriano,1996; burrows,1995, patolia,2001; teoh,2007). The time to initiate oral feeding varied from immediately after operation to eight hour after operation in early feeding manner (teoh, 2007; rabbo,1955; Weinstein,1993) and 12 to 24 hour in late feeding manner (Weinstein,1993; pinmuang-ngam,2000; kovaisarach,2005). In this randomized clinical trial we evaluated the outcomes of early (2h after operation) and late (8h after operation) oral feeding in women who had undergone cesarean section with regional anesthesia.

Our results showed that early oral feeding 2h after cesarean section, without any increase of gastrointestinal complications and risk of aspiration, reduces the time to return bowel movement. In our study, time to return bowel movement significantly was shorter in early feeding group than late feeding group. Passage of flatus occurred earlier in early feeding group, although this difference was not significant. Additionally, incidence of abdominal distention was lower in early feeding group. We didn't show any differences between groups regard to nausea and vomiting and other gastrointestinal complications. Benzineb et al, in their study showed that early oral feeding reduced gastrointestinal

complications about five-fold rather than late oral feeding (benzineb,1995). Also, in parallel of our study, Mangesi et al, in their review study reported that in women underwent cesarean section that taking early oral feeding, the incidence of abdominal distention were lower than women with late feeding and no differences were seen in the incidence of nausea between groups (mangesi,2004).

Previous study by Finan et al, showed that bowel function usually return 6 to 12 hours after surgery (finan,1995). On the other hand, Bufo et al, in their physiological study showed that myoelectric and motor activity of stomach was not affected by abdominal surgery (bufo,1994).

According to our study, similar results were published in the study by Mulayim et al. In their study women who had undergone cesarean section with regional anesthesia in the two feeding groups (2h vs. 8h after operation) were studied. The results of this study showed that women who started early oral feeding return of bowel movements occurred more rapidly than those with late feeding. Also, duration of hospitalization significantly was shorter in early feeding group (mulayim,2008). Although reducing hospital stay is one of the potential advantages of early oral feeding, this feature was not seen in our study. Because of our hospital policy, patients were kept in the hospital till 48h post-operation to ensure from the mothers health and absence of fever and other operation related complications.

conclusion

early oral feeding given 2 hours after cesarean section has positive impact to reduce time to return normal bowel function with no significant effect on gastrointestinal complications compared with late oral feeding at 8 h after cesarean section.

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