

THE EFFECT OF EARLY VERSUS DELAYED ORAL HYDRATION ON POST CESAREAN MATERNAL OUTCOME AND SATISFACTION

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ABSTRACT

Background: A widespread strategy where patients acquire nothing orally until return of bowel function (passage of flatus or bowel motion), observed by sluggish advancement of feeds to a solid diet postoperatively is now challenged although incredible controversial, there is increasing evidence demonstrating the safety of early oral hydration after ordinary cesarean section. Aim: This study aimed to identify the effect of early oral hydration on post-cesarean outcome and maternal satisfaction. **Research design:** A quasi-experimental design was utilized in this study. **Setting:** The study was carried out in Postnatal Ward of Women Health at Mansoura General Hospital. **Subjects:** A total of 160 post CS women were enrolled for the study, 80 received early oral intake and 80 had delayed oral intake. **Tools of data collection:** An interview questionnaire, patient assessment sheet and visual Analogue Scale (VAS). **Results:** Results indicated that the baseline traits of women in the two groups had been similar. Study group had significant lesser mean time of first bowel sounds and first passage of flatus (3.7 ± 0.9 & 6.3 ± 1.0 vs. 6.9 ± 1.1 & 13.2 ± 1.4 hours respectively), earlier mean time of sitting, initiation of breastfeeding, early removal of the catheter (5.5 ± 0.5 vs. 6.8 ± 0.5) and shorter hospital stay with increase level of maternal satisfaction. **Conclusion:** The study showed that early oral hydration increase post cesarean satisfaction and shortened hospital stay than the delayed hydration. It is a safe, easy and enforceable intervention that can be usual in surgical units. **Recommendations:** The study recommends that early oral hydration for women who had uncomplicated cesarean section under regional anesthesia want greater researches to be carried out to assess patient's tolerability and satisfaction to early oral hydration.

Keywords: *Early Oral Hydration, Delayed Oral Hydration, Post-cesarean mother*

INTRODUCTION

Cesarean sections are viewed routine procedures and additionally the most common major hospital surgical procedure carried out in the developed and developing world with a low chance of mortality for mother and child (Izbizky *et al.*, 2008; Yeoh, Leong & Heng, 2010). All surgeries involve the risk of infection, complications from anesthesia, internal injuries, postoperative adhesions and bleeding (Hannah, 2004). However, as regards cesarean section it is a less commonly surgical operation associated with injury to the surrounding organs such as the bladder and bowel (Linda *et al.*, 2006). Following CS, the standard practice is to withhold oral feeding until resolution of post operative ilues (POI). This has been based upon concern about the possibility

that early feeding could exaggerate POI, a pervasive problematic condition that is ought to be minimized due to the possibility of serious consequences, which include significant postoperative morbidity, prolonged hospitalization and accelerated healthcare costs. The exact etiology of ileus is unknown, but it is believed to be most common after laparotomy and major abdominal surgical procedures that enter the peritoneal cavity, rather those involving the bowel (Schuster *et al.*, 2006). The question are why should we wait until the passage of flatus or stools in the postoperative period before we start feeding our patients? Up to now there have been two answers to justify this attitude. First, it is believed that one should wait for the transient impairment of bowel motility to be restored to normal. This has been

thoroughly mentioned above. Second, early feeding could increase the risk of an anastigmatic leak, which, nowadays, is not known to be the cause (Hur *et al.*, 2009). Feeding and POI some surgical dogmas, such as the routine use of nasogastric tubes for POI, oral feeding and its sequential liberation (clear liquids to solid diets) after the resolution of ‘ileus’ have not been supported by the recent evidence. Early enteral feeding has been shown to be safe and tolerated, even as early as 4–12 hours after operation (Hur *et al.*, 2009). The logic behind early enteral feeding is that food intake can stimulate a reflex that produces coordinated propulsive activity and elicit the secretion of gastrointestinal hormones, inflicting an overall positive impact on bowel motility. Rather than ready for bowel sounds to return after patients undergo surgery, we can try to get the gut working again sooner (Andrew, Edward & Yvette, 2003; Johnson & Walsh, 2009 ; Varisara & Yuen, 2006).

Significance of the study

It is necessary that optimum postoperative care must be provided to the woman who underwent CS to prevent complications which may arise. Most postoperative gastrointestinal complication can be prevented and decreased by nursing interventions. Therefore, it is important for new mothers to receive professional care and help in order to remedy these early post-operative health problems. Several studies in both high and low income countries have identified the importance of early post-operative hydration and feeding to prevent short term or long term morbidity. Therefore, the current study was conducted to assess the effect of early oral intake versus delayed oral intake on postoperative bowel function.

Aim of the study

The aim was to assess the effect of early versus delayed initiation of oral intake of fluids on post-cesarean maternal outcome and satisfaction.

Research question

What is the effect of early oral hydration on post SC maternal outcome and satisfaction?

RESEARCH METHODOLOGY

Research design:

A quasi experimental design was utilized in this study.

Study setting:

The study was conducted in the Postpartum Ward, at the Department of Obstetrics and Gynecology at Mansoura General Hospital.

Study subjects:

Between January to October 2017 a representative sample of 160 post CS women was enrolled for the study. Women were randomly assigned to one of two interventions. The ‘delayed feeding’ control group (80) started oral fluids and diet after 12 to 24 hours post operation. The ‘early feeding’ study group was offered oral fluids in 2, 4, and 6 hours post operation. Both groups were offered the same analgesic regimen, but had the option not to take the medication if they did not need it. Analgesic use was reported as the percentage of the total prescribed dose that was used.

Tools of data collection:

1. Structured interviewing questionnaire:

This include; Socio-demographic characteristics as age, residence, level of education, occupation and income, as well as obstetric data, medical or surgical history and history of CS operation.

2. Patient assessment check list:

Include the following

- Physical examination and vital signs.
- Time of return of intestinal sounds and time of passing flatus after CS.
- Amount of intravenous and oral fluids.
- Level of pain felt after oral hydration.
- The presence of ileus 24 hours after the operation
- Time of the first ambulation within 6 hours postoperative and time of starting breast feeding.
- Time of removal of the urinary catheter and length of hospital stay.

3. Visual Analogue Scale (VAS): used to assess the postoperative level of pain and the level of maternal satisfaction.

Content validity and reliability

Tools were reviewed by way of a panel of five experts in the field of Obstetrics and Gynecological

nursing to check its content validity. Modifications have been achieved a consequence based on their judgment.

Field work

After obtaining an official permission from the director of the Mansoura General Hospital and agreement of the chairman of obstetric emergency department, data were collected through a period of nearly ten months. The researcher maintained an anonymity and confidentiality of the subjects. She introduced herself to the women and briefly explained the nature and aim of the study to every woman before participation and women were enrolled voluntarily after the written informed consent process. Women were also assured that all information obtained during the study was confidential and used for the research purpose only and they have the chance to withdraw from the study when they want. Every mother was randomly assigned to the line of treatment. The researcher recruited the numbers 1, 3, 5...etc in early oral hydration and feeding group and the numbers 2, 4, 6...etc in delayed hydration and feeding group. The data collected from recruited mothers (reported in interviewing questionnaire and observation check list).

Pilot study

A pilot study was conducted on a sample of 10% of cases who were not included in the total sample size. It was done to test the study tools in terms of clarity and feasibility and the time required to be applied. Following the pilot study the questionnaire was reconstructed and necessary modifications were done to reach the final form.

Administrative and ethical consideration

All ethical issues had been taken into consideration at some point of all phases of the study; the researcher maintained an anonymity and confidentiality of the subjects. She introduced herself to the women and briefly explained the nature and aim of the study to every woman before participation and women have been enrolled voluntarily after the written informed consent process. Women were also assured that all information obtained during the study was confidential and used for the research purpose only and they have

the chance to withdraw from the study when they want.

Results and data analysis

The collected data were coded, organized, analyzed and tabulated using computer. Presentation of data into tables and graphs were carried out according to types of variables by using the statistical package for the social science (SPSS) Version 18. Descriptive statistics was used to calculate percentages, frequencies, mean and standard deviation for the two groups. Inferential statistics (Parametric and non Parametric) were used to draw conclusions from the study. Chi square test (X^2 and T - test) was used to estimate the statistical significant differences between the groups. A significant P -value was considered when P was less than 0.05 and it was considered highly significant when P -value was less than or equal 0.01.

RESULTS

Table 1 presents distribution of the studied women according to their socio-demographic characteristics. As regards age, it was observed that more than half of women in the study and control groups were <25 years (52.5% vs. 56.2% respectively). The percentage of women who had secondary level of education was higher in the study group (53.7% vs. 52.6% respectively) compared to the control group, but with no statistical significant difference. Meanwhile both groups were more likely to be housewives.

Table 1: Distribution of the Studied Women According to their Socio-Demographic Characteristics (n=160)

Socio demographic data	Study group (n=80)		Control group (n=80)		Chi square test	
	No.	%	No.	%	X^2	P
Age						
▪ <25 years	42	52.5%	45	56.2%		
▪ >25 -35 years	38	47.5%	35	43.8%	0.227	0.634
Occupation						
▪ Housewife	55	68.8%	56	70.0%		
▪ Working	25	31.2%	24	30.0%	0.029	0.864
Educational level						
▪ Secondary	43	53.7%	42	52.6%	1.646	0.439
▪ High	24	30 %	20	24.9%		

$P < 0.05$ (significant); X^2 : Chi square test

Table 2 reveals that women in the study group were more likely to drink oral fluids during the postoperative period compared to those in the control group (1993.8±206.1 vs. 566.3±154.0 liter respectively). Meanwhile, they had lesser IV intake than the control group (1028.1±112.5 vs. 2806.3±45.1 liter respectively). Differences observed are highly statistically significant ($p<0.001$).

Table 2: Distribution of the Studied Women According to the amount of Fluid Intake

Amount of fluid intake (liter)	Study group (n=80)	Control group(n=80)	T test	
	Mean ±SD	Mean ±SD	t	P
IV intake	1028.1 ±112.5	2806.3 ±45.1	58.970	<0.001
Oral intake	1993.8 ±206.1	566.3 ±154.0	49.620	<0.001

T-Independent samples t-test ; *P <0.001 (significant)

Table 3 shows that there were significant differences in the postoperative bowel mobility between the study and the control groups ($p<0.001$ *). Patients in the study group were more likely to have lesser mean time of first bowel sounds and first passage of flatus after surgery (3.7 ±0.9 and 6.3 ±1.0vs. 6.9 ±1.1 and 13.2 ±1.4 hours respectively).

Table 3: Distribution of the Studied Women According to the Bowel Mobility During the Postoperative Period (n=160)

The bowel mobility	Study group (n=80)	Control group (n=80)	T test	
	Mean ±SD	Mean ±SD	T	P
▪ First bowel sound (hours)	3.7±0.9	6.9±1.1	20.067	<0.001*
▪ First passage of flatus (hours)	6.3±1.0	13.2±1.4	13.793	<0.001*

T-Independent samples t-test; *P<0.001 (significant)

Table 4 indicates an early mean time of sitting, ambulation and initiation of breastfeeding among women in the study group compared to those in the control group (3.7±0.6 & 5.3±0.5 & 2.7±0.7 vs. 8.0±0.5 & 6.6 ±0.5 & 6.7±1.3, respectively). Differences observed are statistically significant ($p<0.001$ *).

Table 4: Distribution of the Studied Women According to the First Sitting Time, First Time of Ambulation, and Initiation of Breast Feeding (n=160)

Variables	Study group (n=80)	Control group (n=80)	T test	
	Mean ±SD	Mean ±SD	T	P
▪ First sitting time (hours)	3.7 ±0.6	8.0 ±0.5	14.600	<0.001*
▪ First time of ambulation (hrs.)	5.3 ±0.5	6.6 ±0.5	15.331	<0.001*
▪ Initiation of breast feeding (hours)	2.7 ±0.7	6.7 ±1.3	6.591	<0.001*

T-Independent samples t-test; *P<0.001(significant)

Table 5 reveals that women in the study group were more able to have the catheter being removed for them earlier than the control group (5.5±0.5 vs. 6.8±0.5, respectively). The table also shows that the mean duration of hospitalization in the study group was significantly shorter than those in the control group (35.9±9.8 vs. 53.9±14.3 hrs). By using the visual analog scale table 5 indicates a statistical significance difference among the two groups regarding the pain felt after oral hydration and feeding ($p<0.001$ *). Moderate and severe pain was highly encountered among women in the control group compared to those in the study group (56.2% & 33.8% vs. 40.0% & 6.2% respectively).

Table 5: Distribution of the Studied Women According to the Mean Duration of Removal of the Catheter, Hospitalization and Level of Pain

Variables	Study group	Control group	T test		
	Mean ±SD	Mean ±SD	T	P	
Removal of the catheter (hrs)	5.5 ±0.5	6.8 ±0.5	15.502	<0.001*	
Duration of hospitalization(hours)	35.9 ±9.8	53.9 ±14.3	9.243	<0.001	
Pain	Study group (n=80)	Control group (n=80)	χ ²	P	
	Mild	43 53.8%			8 10.0%
	Moderate	32 40.0%			45 56.2%
	Severe	5 6.2%			27 33.8%

Figure 1 shows distribution of the studied women according to the presence of ileus 24 hours after the operation. The majority of women in the study group had no ileus compared to those in the control group (71.2% vs. 11.2%). Meanwhile, 3.8% of them were exposed to severe ileus compared to almost one fifth of the control group (21.2%). Differences observed were highly statistically significant ($p<0.001$).

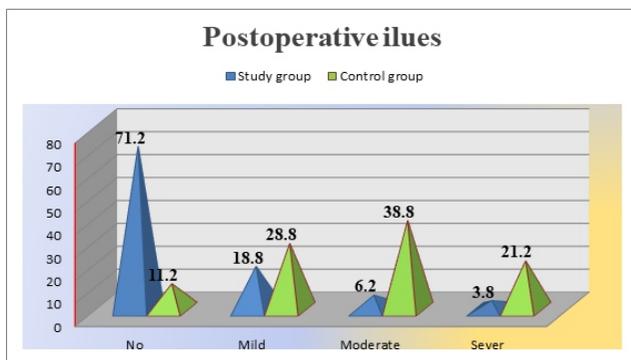


Figure 1: Distribution of the Studied Women According to the Presence of Ileus 24 Hours after the Operation (n=160)

Figure 2 shows the level of maternal satisfaction of the study group before their hospital discharge. The majority (87.5%) of women in the study group was completely satisfied and only 12.5% who were moderately satisfied.



Figure 2: Distribution of the Study Group According to the Level of Maternal Satisfaction after Early Oral Hydration and Feeding after CS (n=80)

DISCUSSION

Caesarean section is generally short operation involving minimal or no bowel manipulation (Ugwu *et al.*, 2011). However, in addition to elective pre-operative fasting, patients endure additional postoperative hunger. Oral intake was not approved for at least 8 hours, patients acquire nothing orally till return of bowel function (passage of flatus or bowel motion, feces, or sounds heard by abdominal auscultations) (Ghafouri *et al.*, 2008). The present protocol was in partial agreement with Kovavisarach & Atthakorn, (2005), who had shown that food can be started within the first 8 hrs without waiting for return to normal gastro-intestinal function.

The current study findings revealed that there are no statistically significant differences related to participant's general characteristics. More than half of women in the study and control groups were <25 years. Meanwhile they had been greater likely to be housewives. These findings were concurrent with numerous studies which determined that no significant difference between both groups in respect to socio demographic characteristics and previous obstetric history (Izbizky *et al.*, 2008; Linda *et al.*, 2006 ; Silver *et al.*, 2006). However, women in the study groupie early oral intake (EOI) were more likely to drink mean oral fluids and less mean IV intake compared to the control group and differences observed are statistically significant ($p<0.001$).The present study analysis of the bowel mobility after operation between the study group and the control group confirmed that, by offering clear liquid 2 hours and juice 4 hours after surgery, without expanded incidence of ileus, rather than following a rigid protocol. The EOI group had a more rapid return of bowel function, with a considerable shorter mean postoperative time interval to bowel movement.

This result is consistent with Teoh, Shah & Mah, (2007); Mulayim *et al.*, (2008) and Adeli *et al.*, (2013) who con-firmed that post cesarean early oral intake caused faster bowel sounds return. Patolia *et al.*,(2001) also reported that women in the early-fed group had shorter time intervals from surgery to bowel movement, 34.5h versus 51.0 h, $P<0.001$. Similarly Al-Ghareeb, Ahmad & Turki, (2013), reported that the experimental group initiated bowel sounds significantly earlier with a median value of 3 hrs compared to 6.5 hrs for the control group. Consequently the bowel movement returned significantly earlier with median duration of 29 h among the study group compared to 54 h among the control group. In the present study the data confirmed a beneficial effect of early oral hydration and feeding after CS in time period of lesser mean time intervals to passage of flatus.

This finding is in partial agreement with Mulayim *et al.*, 2008 and Jalilian, Fakhri & Keshavarzi, (2013) who in their study said that the return of bowel sounds and passage of flatus occurred significantly earlier in patients in the EOI group compared with women in then delayed oral intake (DOI) group. According to the present study findings the time intervals of first motion

or sitting time at the study group was earlier than the control group. Regarding initiation of ambulation, it was observed that the women in study group ambulated earlier than control group. This could probably explain as the adequate rehydration enhanced early energy intake and early discontinuation of IV fluids. All of these factors may affect positively on postoperative ambulation. This finding is supported by Adupa, Wandabwa & Kiondo, (2013) and Adlaja, Wandabwa & Kiondo, (2003) who found that women in early hydration group got out of bed (patient mobilization) significantly earlier ($p = 0.001$) than the control group. Similar this finding was reported by Al-Ghareeb, Ahmad & Turki, (2013) and Jalilian Fakhri & Keshavarzi, (2013) who clarified that 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. Time to mobilization (10.7 ± 7.7 h vs. 13.5 ± 5.9 h, $p = 0.015$) occurred significantly earlier in early oral hydration than late intake group. As for breast feeding, the present study revealed that all women in both groups breast fed their infants with a significant early mean time of initiation among women in the study group compared to those in the control group. This may be explained by the fact that patients in the EOI group felt less encumbered by the IV infusion and earlier resumption of diet aided in the returning back to normal condition. Similarly, Teoh, Shah & Mah, (2007) study in Singapore found that the early hydrated women had earlier commencement of breast feeding than the delayed group.

According to Johnson & Walsh, (2009) postoperative ileus can selectively affect the stomach, small intestine, or large intestine, each with different causes and clinical presentation and each managed differently. The present study revealed that the majority of sample in the study group had no ileus compared to those in the control group. Meanwhile, very few of them have been exposed to severe ileus compared to almost one fifth of the control group. Difference observed is highly significant ($p < 0.001$). This is in agreement with Adupa, Wandabwa & Kiondo, (2013) and Al-Ghareeb, Ahmad & Turki, (2013) who reported that early oral hydration decrease the incidence of paralytic ileus among experimental group.

The above mentioned result was also consistent with Varisara & Yuen, (2006), who provided the EOI group a

liquid diet within 8 hours after surgery, advanced to a soft diet on the next meal and then an ordinary diet. The DOI group was prohibited from mouth feeding for the first 24 hours after surgery, advanced to a liquid diet on the first postoperative day, and then a soft diet on the second postoperative day. They found that the rate of mild ileus symptoms in the EOI group was significantly less than the control group (19.6% versus 31.1%, $p = 0.03$). Concerning the time of the removal of the foley's catheter, the current study shows that it was early removed in patients of the study group in comparison to those in the control group. This finding was in the same line with Sumita, Sarika & Neerja, 2010 who established a comparative study between early versus late oral feeding after CS and found that the time of using the foley's catheter was significantly shorter among the EOI group compared to the control group. Similarly Al-Ghareeb, Ahmad & Turki, (2013) found that women in the study group had earlier removal of Folly's catheter with earlier median duration 12.5 vs. 25.6 hour than the control group. Traditionally, the mother may be discharged from the hospital after CS in the absence of complications on the fourth or fifth postpartum day Satij & Cohen, (2006). Our data shows a beneficial effect of early oral hydration and feeding after CS in terms of earlier discharge from the hospital. This finding is in partial agreement with De Castro *et al.*, 2008 and Purkayastha *et al.*, 2008. Hunger and thirst are frequently encountered after CS. The present result revealed that moderate and severe pain was significantly highly encountered among women in the control group compared to those in the study group and EOI increase the rate of women's satisfaction. In partial agreement with the present study finding Izbizky *et al.*, 2008, who reported that the early feeding group had a higher satisfaction level than the late feeding group when they undergo planned CS (absolute difference -6.4 , 95% CI -11.7 to 1.1), but no difference in the experience of pain. Conversely, in the emergency intrapartum CS group, in those who had early feeding there was no difference in satisfaction compared with the late feeding group but significantly less pain.

CONCLUSION

Early oral hydration for women who underwent uncomplicated CS under regional anesthesia had

benefits on return of bowel sounds and motility, early resuming to regular diet, decreasing the duration of intravenous fluid administration, early ambulation, shorter median time of initiation of breast feeding and it shortened the length of hospital stay.

RECOMMENDATIONS

Training programs are recommended for nurses in order to enhance their knowledge and skills involving EOI in order to be capable to educate and counsel women about such evidence based practice.

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