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Early Postoperative Solid Food Consumption after Cesarean Section with Regional Anesthesia.

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Abstract

Background: Cesarean section is the most common and Essential Obstetric Surgery across the globe. It has a definite role in the reduction of maternal and perinatal mortality in developing countries, such as Bangladesh where around 7660 women die every year from causes related to pregnancy and childbirth. Early feeding with solid food may encourage earlier and smoother interaction between mother and infant. Aim of the study**:** The aim of the study was to see the safety and acceptability of early solid food consumption after cesarean section with regional anesthesia. **Materials & Methods:** A prospective randomized controlled study design was selected. The study was conducted in Bangabandhu Sheikh Mujib Medical University, Dhaka, Bangladesh from January to March, 2003. The sample size was 90 subjects. 42 were in the early feeding group and 48 in the control group. Statistical tools used to analyze the data included Unpaired Student's t' test, Chi-square test, Levene's test, Fisher's exact test and MS-Excel 16. **Results:** The mean time of first solid meal in the experimental group was 4.86±1.34 with a minimum of 4 hours and a maximum of 8 hours. On the contrary, the control group have taken their first solid meal at 24.85±5.87 with a minimum of 12 hours and a maximum of 44 hours. So, the mean time of first solid meal in the control group was about 6 times delayed. No patient in the early feeding group had any nausea or vomiting after the first solid meal or thereafter. **Conclusion:** Delayed resumption and slow advancement of food in a post-cesarean mother are widely practiced and considered safe. If we can feed the mother earlier, it facilitates her making a smooth interaction with her newly born baby and early breastfeeding.

Key words: Postoperative, Solid Food, Cesarean Section, Regional Anesthesia.

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INTRODUCTION

Cesarean section is the most common and Essential Obstetric Surgery across the globe. It has a definite role in the reduction of maternal and perinatal mortality in developing countries, such as Bangladesh where around 7660 women die every year from causes related to pregnancy and childbirth.[1] Majority of the pregnant women live in the rural areas and are handled by untrained local 'dai' during labor and delivery.[2] Hospitalization and the decision of abdominal delivery, if required, are a matter of fear and deviation from normality for these women, even when there is impending danger for themselves and their babies. The attendants of these women are also reluctant to bring the endangered laboring women for the fear of abdominal delivery. However, the improved safety of cesarean section brought about by the refinement and advancement of the surgical and anesthetic techniques, asepsis, antibiotic therapy, and blood transfusion has made it more acceptable to the pregnant women and their attendants. Modern obstetric care identifies high risk pregnancies and encourages the use of cesarean section for mothers who will be at more risk undergoing vaginal delivery. It also includes antepartum fetal monitoring to identify the fetus at risk which would not be able to withstand the hypoxic stress exerted by uterine contractions during labor. These fetuses, termed compromised fetus and identified by Fetal Kick Count, Non-Stress Test (NST), Contraction Stress Test (CST), Biophysical Profile, and Modified Biophysical Profile, can be better managed by abdominal delivery.[3] Traditionally, patients undergoing this surgery have been maintained by a gradual dietary expansion regimen involving introduction of liquid food by mouth 12-24 hours and solid food about 36-48 hours after cesarean section. So, there is a delay in having the feeling of well-being. The proper rate of advancement of diet remains a matter of style with few good studies to offer guidance.[4] Early feeding with solid food may encourage earlier and smoother interaction between mother and infant, thus helping in the establishment of breastfeeding. It may have a positive impact on early ambulation in these mothers and also in decreased hospital stay of the patient after delivery. Very few studies are available on early postoperative feeding, but some surgeons have suggested that early feeding leads to improved patient comfort and decreased need for postoperative analgesia. Prior to its widespread practice, further study and substantial evidence is essential. The aim of the study was to see the safety and acceptability of early solid food consumption after cesarean section with regional anesthesia.

Objectives

- **General Objectives:**
  a) To study the safety and efficacy of early postoperative solid food consumption in post-cesarean patients.
- **Specific Objectives:**
  a) It is expected that the findings of the study will help in enhancing the development of an established early feeding protocol for the post-cesarean patients.
  b) It may help in early hospital discharge of cesarean patients and thus reducing Obstetric Care Expenditure.

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MATERIALS & METHODS

A prospective randomized controlled study design was selected. The study was conducted in Bangabandhu Sheikh Mujib Medical University from January to March, 2003. The sample size was 90 subjects, of which 42 were in the early feeding group and 48 were in the control group. Every subject entered the study after giving an informed consent. Subjects in the early postoperative feeding group were offered solid food 4 hours after the end of surgery and reassured regarding the safety of such feeding. The foods offered were 2 slices of Bread/4 Biscuits with one cup (minimum) of Milk/ Horlicks /Tea. Patients' head and neck were supported at the time of feeding with a pillow. The control group had nothing by mouth for a minimum of 12 hours followed by a clear liquid prior to advancing to solid foods. Time of feeding was calculated from the end of surgery. The study was started for each subject at the time of surgery and ended at discharge. Standard analgesic doses for injectable narcotics and nonsteroidal anti-inflammatory agents were given to the patients on a demand-basis after surgery. Injection Pethedine 75-100 mg was used in the immediate postoperative period and Diclofenac 50 mg suppository was used subsequently as an analgesic agent. Abdominal circumference (in centimetre) was measured at the level of the umbilicus using a paper tape 12, 24, 36 & 48 hours after surgery. The difference between maximum and minimum abdominal circumference was recorded in each group. Subjects were interviewed daily regarding any abdominal bloating, the time of first rectal gas emission and return of bowel movement. Patients' records of physical evaluation of bowel function and potential complications were also reviewed. Ileus was defined as minimal or absent bowel sounds with abdominal bloating and pain. Statistical tools used to analyze the data included Unpaired Student's t' test, Chi-square test, Levene's test, Fisher's exact test and MS-Excel 16.

➢ **Inclusion criteria**

- All cesarean sections were performed with a low transverse uterine incision.
- Both the experimental and the control groups were operated under regional anesthesia.
- Subjects were recruited from the labor and delivery suite by their resident physician.

➢ **Exclusion criteria**

- Patients operated with general anesthesia,
- Patients with active bowel disease or a requirement of bowel surgery at cesarean,
- Patients who had undergone labor for more than 16 hours,
- Patients with nausea or vomiting when food was offered,
- Patients who required intensive postoperative care for any reason.

RESULTS

Both the experimental and control groups were statistically matched in mean age, parity, gestational age, length of surgery, and preoperative duration of labor (Table-1 to Table-VI). Majority of cases were of elective cesarean section in both groups (36/42 in the experimental and 39/48 in the control group). Repeat cesarean sections were similar in both groups (Table-IV). Two cases in each group had

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previously undergone two cesarean sections. The mean time of first solid meal in the experimental group was 4.86±1.34 hours with a minimum of 4 hours and maximum 8 hours. On the contrary, the control group ingested their first solid meal at 24.85±5.87 with a minimum of 12 hours and maximum 44 hours. So, the mean time of first solid meal in the control group was about 6 times delayed. No patient in the early feeding group had any nausea or vomiting after the first solid meal or thereafter. Nausea or vomiting after first solid meal was also absent in the control group.

Table-VII to Table-XIV show comparison of postoperative fluid requirement, doses of analgesics required, appearance of bowel sounds, passage of flatus, return of bowel movement, difference in abdominal girth and duration of hospital stay after operation in between the two groups. Two patients in the control group had abdominal bloating, one on the first and another on the second postoperative day but the complaint was relieved after spontaneous bowel movement without any medication.

Table-I: Age of the Women

Groups	N	Age (years)		P Value
		Range	Mean ±SD	
Experimental	42	18-40	27.67±5.37	0.313
Control	48	19-38	26.65±4.15	

Table-II: Gestational age of the women

Groups	n	Gestational age (weeks)		P Value
		Range	Mean ±SD	
Experimental	42	31-41	38.36±2.12	0.817
Control	48	33-42	38.25±2.34	

Table-III: Parity Distribution

Parity	Experimental (n=42)		Control (n= 48)		P Value
	N	%	n	%	
Nulliparous	17	40.5	23	47.9	0.479
Parous	25	59.5	25	52.1	

Table-IV: History of abdominal surgery (previous cesarean section)

History of abdominal surgery	Experimental (n=42)		Control (n= 48)		P Value
	N	%	**n**	%	
Present	19	45.2	17	35.4	0.343
Absent	23	54.8	31	64.6	

Table-V: Preoperative duration of labor

Groups	N	Preoperative Labor (hours)		P Value
		Range	Mean ±SD	

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Experimental	42	0-12	1.00±2.86	0.309
Control	48	0-14	1.75±3.93	

Table-VI: Operation time (Length of surgery)

Groups	N	Operation time (minutes)		P Value
		Range	Mean ±SD	
Experimental	42	25-60	39.88±6.75	0.753
Control	48	30-75	39.78±8.23	

Table-VII: Intravenous (IV) fluid required after operation

Groups	N	IV Fluid (ml)		P Value
		Range	Mean ±SD	
Experimental	42	1500-3000	2635.71±409.53	0
Control	48	2200-3800	3018.75±358.87	

Table-VIII: Dose of pethidine used after operation

Groups	N	Pethidine Dose		P Value
		Range	Mean ±SD	
Experimental	42	1-2	1.74±0.45	0.1
Control	48	1-2	1.88±0.33	

Table-IX: Dose of Diclofenac 50mg suppository used postoperatively

Groups	N	Diclofenac dose		P Value
		Range	Mean ±SD	
Experimental	42	2-8	4.40±1.04	0.001
Control	48	3-10	5.31±1.43	

Table-X: Appearance of postoperative bowel sound

Groups	N	Bowel sound (hours)		P Value
		Range	Mean ±SD	
Experimental	42	2-20	9.00±3.37	0
Control	48	8-21	12.67±2.41	

Table-XI: Flatus passed postoperatively

Groups	n	Flatus passed (hours)		P Value
		Range	Mean ±SD	
Experimental	42	8-32	18.98±5.05	0.011
Control	48	12-38	21.68±4.88	

Table-XII: Postoperative return of bowel movement

Groups	n	Bowel movement (days)		P Value
		Range	Mean ±SD	
Experimental	42	1-4	2.17±0.66	0.0001

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Control	48	1-6	2.75±0.89	

Table-XIII: Difference of abdominal girth (maximum-minimum)

Groups	n	Difference (cm)		P Value
		Range	Mean ±SD	
Experimental	42	1-7	3.81±1.33	0.025
Control	48	2.5-8	4.43±1.24	

Table-XIV: Postoperative hospital stay

Groups	n	hospital stay(days)		P Value
		Range	Mean ±SD	
Experimental	42	3-7	5.12±0.89	0.114
Control	48	3-9	5.50±1.30	

DISCUSSION

Early resumption of solid food after surgery is generally poorly accepted by obstetrician-gynecologists for concerns of patients' safety. It is a common belief that early feeding with solid food results in nausea, vomiting, or abdominal distension due to postoperative ileus. At present, we are attempting to base medical practice on evidence based scientific medicine. This study has indicated no compromise of safety with early resumption of solid food even four hours after cesarean section, with the mean time being 4.86±1.34 hours. A comparable result was also found by Burrows WR, et al, by giving solid food within eight hours of surgery.[5] Another study was done by Weinstein, Louis et al who administered an elemental diet named the PROEF diet (prepared specially for post-operative patients), which was a commercial preparation given immediately after cesarean.[6] In contrast, we used easily available foods for the early feeding regimen which is more applicable for generalized use. Generally, pregnancy is associated with delayed gastric emptying, which is enhanced in labor.[7] These gastrointestinal effects are thought to be consequences of elevated progesterone and reduced motilin levels.[8] Despite such beliefs, normal laboring patient can usually tolerate oral feeding, even in the second stage. The contents within the stomach provide a stimulus to its activity and empty stomach lacks this important stimulus.[9] Though requiring entry to the abdomino-pelvic cavity, cesarean section requires minimal or no bowel manipulation and does not affect bowel function significantly. Even after bowel surgery, bowel sounds change in character but continue uninterrupted.[10] In this study, the time of appearance of bowel sound in the experimental group was 9.00±3.37 and in the control group was 12.67±2.41 hours, which is similar to the findings of a study conducted in Nigeria.[11] Flatus passed earlier in the experimental group (18.98±5.05 hours) than the control group (21.68±4.88 hours). Appearance of bowel sounds and passage of flatus in the study of Kathpalia were also earlier in study group (21.6 and 34.5 hours, respectively) than in control group (31.7 and 49.2 hours respectively).[12] Clinically, direct postoperative jejunal fluid and enteral feeding formula administered after Gl surgery has been successful.[13] The necessity of various nutritional substrates for wound healing is well

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established. Windsor et al suggested that perioperative nutritional status is more important than the patient's overall nutritional status for wound healing. [14] Moreover, in grossly malnourished patients, there are clear immunodeficiency and impaired wound healing.[15] After abdominal surgery, there is often a significant and prolonged negative nitrogen balance, reflecting a loss of lean body mass in delayed-feeding patients.[16] Thus, this effect can be minimized by early feeding with easily available solid food as used in this study. The hospital stay of the patients after surgery was not significantly different in the experimental group in comparison to the control group (5.12±0.89 days & 5.50±1.30days in the experimental and control groups respectively). A contributing factor for this observation was that the decision of discharging patients was not under the discretion of the study team, rather postoperative hospital stay was regulated by the previously established protocol of the concerned physician in most cases. Mothers staying in hospitals for neonatal care of their babies was another factor that influenced the duration of their stay in hospitals. Begum, Rokeya et al,[17] showed a significant difference of postoperative hospital stay in between the two groups. In their study, the mean time of first solid meal was 11.78±0.46 hours in the experimental group and 46.62 ±0.23 hours in the control group. The mean postoperative hospital stay was 3.13±0.05 days in the experimental and 6.24±0.10 days in the control group. They also showed a saving of Taka-1000/- per operation for the early feeding group. Moore FA, Feliciano DV, Andrassy RJ, et al, had done a meta-analysis of eight prospective randomized trials comparing the efficacy of enteral versus parenteral nutrition in postoperative surgical patients. They suggested that total enteral nutrition when compared with total parenteral nutrition solutions, prevents gastrointestinal mucosal atrophy, attenuates the injury stress response, maintains immune-competence and preserves normal gut flora.[18] In the present study, the two patients who complained of abdominal bloating, one on the first and another on the second postoperative day, were relieved with spontaneous bowel movement on the second post-operative day. As they did not require nasogastric decompression or any medication, these cannot be taken as ileus.

Limitations of the study:

This prospective randomized controlled study was done with a small sample size and the participants were observed in only one hospital. Factors such as financial constraints and prevalent tendency of concerned personnel to follow conventional delayed-feeding practices, provided an extra layer of challenge towards increasing the sample size. A large multicenter trial can potentially provide stronger evidence in favor of making this practice widespread.

CONCLUSION

Delayed resumption and slow advancement of food in post-cesarean mothers are widely practiced and considered safe. But this practice keeps them feeling as 'patients', rather than as 'mothers', for an unnecessarily long time. If we can feed the mother earlier, it facilitates her making a smoother interaction with her newly born baby and early breastfeeding. Early developed feeling of well-being and earlier discontinuation of intravenous fluid allow her to be ambulant earlier. This scheme may reduce the cost of parenteral hydration, nutrition and medication. It can maintain post-operative

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nutrition of the patient more effectively at a low cost. The decision to feed the patient can also be taken by a well-trained nurse or midwife, but before going to a widespread practice, a large, multi-center trial can be undertaken. If our senior obstetricians become more concerned with the early feeding protocol, subsequent reduction of postoperative discomfort of patients may encourage them to discharge mothers earlier from hospitals. Which may result in a reduction of obstetric care expenditure.

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