ORIGINAL ARTICLE

Effect of Planned Early Recommended Ambulation Technique on Selected Post caesarean Biophysiological Health Parameters

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Abstract:

Background: Caesarean section has been a part of human culture since ancient times. It has been used effectively throughout the 20th century and among the major abdominal surgeries, it is the most common, oldest worldwide surgery performed in obstetrics. Despite the life saving advantages, there are several adverse consequences of caesarean delivery for a woman and to her household. The rate and risk of these complications increases due to the increasing incidence mainly in countries like India. The role of nurse midwife is to act in the best interest of patient and newborn and make the patient independent in carrying out the activities of daily living as soon as possible. This can lead to a faster recovery and shorter hospital stay. Also it can indirectly help in reducing the complications associated with prolonged bed rest and can improve the maternal newborn bonding. *Aim and Objectives:* The present study was done to evaluate the effect of planned early ambulation on selected biophysiological health parameters of post caesarean patients. *Material and Methods:* The study included total 500 study subjects, 250 in experimental and 250 in control group. Quasi experimental approach with multiple time series design was adopted for the study. The experimental group was given an early planned recommended ambulation technique starting from the day of surgery. This consisted of deep breathing exercise, cough exercise, leg exercise and early mobilization. Over and above, the routine general health care was given by the doctors and nurses. The control group received only by routine general care by doctors and nurses and mobilization on third post operative day as per strategy adopted by the hospital. The deep breathing exercises, coughing exercises and leg exercises were not given routinely and hence were not given to the control group. Post caesarean biophysiological parameters chart was used to assess the selected parameters for first five post operative days. *Result:* The significant findings of the study were that there was a significant difference in the proportions of normal observations of selected biophysiological health parameters like incisional pain, condition of breast, condition of abdomen and peristaltic movements of experimental group as compared to that of control group. All these parameters improved significant during first five post caesarean days at 0.05 level of significance. Thus the alternative hypothesis was accepted and null hypothesis was rejected. From the present study it could be concluded that the early planned ambulation is an effective strategy for post operative management of caesarean patient. It can help in avoiding morbidity and can enhance the early recovery of the patient.

Keywords: Early Planned Ambulation, Lower Segment Caesarean Section, Post Caesarean Biophysiological Health Parameters.

Introduction:

As the wellbeing of maternal and child health occupies paramount place in health care delivery system, today cesarean section has become the most common intervention in developed as well as developing countries. It is not performed as a last resort, but as a safe alternative to a difficult vaginal delivery. And the due consideration is given not only to immediate safety of mother and newborn, but also to remote the obstetric future [1].

Globally there are wide geographical variations in the caesarean section rates, but almost all show a rise, it has quadrupled in less than two decades. Most of the Caesarean Sections (CS) are currently performed to benefit the fetus, not the mother [2].

In India various studies reveal doubling or tripling of rates in short span [3]. Though the estimates of CS rate in India has been 7.1 per cent in the year 1998 and there is 16.7 percent increase in the rate annually in India (Stanton, 2006), which is one of the highest among the countries [4]. The woman who has undergone cesarean section has more problems, minor or major, than a woman with vaginal delivery. Some problem are like longer duration of hospital stay, postoperative pain, delayed ambulation, increased period required to return to normal meals, breast engorgement, , problems in relation to bladder and bowel, lactation failure, and less maternal newborn bonding. The patients recovering after abdominal surgery may limit their activities due to pain or fatigue interfering with their ability to regain their previous level of functioning. [5]. According to Dr. D. C. Dutta, caesarean section is even associated with intra operative and post operative complications [6].

The postoperative complications can be immediate or remote complications which includes gynecological and general surgical complications [7]. The morbidity and mortality rate in caesarean section patients are mainly occurring due to postoperative complications related to immobility [4]. By preventive and promotive postoperative care the women can be helped to avoid the postoperative problems and complications. One of the important aspects of comprehensive postoperative care can be planned early ambulation. It means that patients can be out of bed as early as possible based on the type of surgery along with prescribed exercises. For caesarean section this period can be as less as 6-8 hrs after caesarean section. Inspite of reasons to believe that there would be some beneficial effects of early mobilization, technique there are very few studies and it is not practiced in many institutions. A study was therefore undertaken to find out the effect of planned early mobilization technique after CS.

Material and Methods:

Based on the aim and objectives of the study, quantitative-quasi experimental approach was used in this study. Before and after intervention with multiple time series design was adopted.

The investigator carried out the study in Dr Ulhas Patil Medical College and Hospital of Jalgaon. A partially controlled setting was used to conduct the study. The study was conducted during the year 2010 to 2012. The study subjects for the study consisted of 500 post caesarean patients. A non-probability purposive sampling technique was used to obtain the desired sample. The samples those who fulfilled inclusion criteria like those who underwent emergency or planned lower segment caesarean section under spinal anesthesia, with minimum discomfort in post operative period, which were available within first 4 to 5 hours after surgery and were willing to participate in the study, were included in the study. Post caesarean patients who had undergone classical CS or Lower Segment Cesarean Section (LSCS) under general anesthesia, who had developed major complications in post caesarean period, who were not willing to participate in the study, suffering with major pregnancy complications like severe anemia, diabetes, heart diseases, post partum hemorrhage, severe pregnancy induced hypertension and eclampsia, and whose newborns were stillborn or admitted in NICU were excluded from the study. The early ambulation leads to less fatigue, better healing of muscles, fewer "sick man complexes", no bowel and bladder complaints, eat better, sleep better and feel better. The goal of this concept is to optimize the postoperative management of the patient in order to reduce morbidity, to enhance recovery of the patient after a surgical procedure, to reduce hospital stay and to reduce the costs [8]. The tool for data collection was post caesarean biophysiological health parameters chart consisting of total eleven selected postcaeserean biophysiological health parameters. It included body temperature, pulse, respiration, blood pressure, incisional pain,

condition of breast and condition of abdomen, bladder function, bowel function/peristalsis, lochia and condition of lower extremities. The technique followed for data collection was structured observation technique. It was carried out to record all selected post caesarean biophysiological parameters at first contact with study subject when they were shifted toward from OT and at the end of each post cesarean day till fifth post operative day. After obtaining the ethical clearance from the ethics committee and after securing the permission from concerned authority of hospitals the study subjects were selected from population of maternity patients who had undergone LSCS. The sample selection was done according to the inclusion criteria of sample selection. The patients who met the study criteria were requested to participate in the study. The purpose of the study, potential benefits and risks, right to confidentiality and right to withdrawal were explained to each patient in their mother tongue and additional doubts asked by them were cleared with appropriate explanation.

Those patients who were willing to be a part of study were requested to sign an informed consent about their willingness to participate in the study. After that, each eligible woman was randomly assigned to either experimental or control group. Each study subject was given an identification number to maintain confidentiality. Each group consisted of 250 subjects. Based on the predetermined plan of action, the investigator carried out intervention of planned early ambulation and observations for each study subject. The ambulation technique [9] consisting of deep breathing exercises, coughing exercises, leg exercises and moving was followed for first five days. The planned ambulation was initiated soon after 5 to 6 hours of surgery. Before starting the planned exercises preliminary assessment was done to assess general condition of patient and for any special medical orders when the subjects were found to be hemodynamically stable. The technique was taught by explanation cum demonstration to the experimental group study subjects and supervised during its execution. After ensuring the correctness of performance, the experimental group subjects were motivated and instructed to follow the planned ambulation technique for three times in a day at the interval of 3 to 4 hours for first five days. The privacy was maintained for study subjects of experimental group while ambulating. The control group was refrained from this intervention of early ambulation. The control group received only the routine post caesarean medical and nursing care in which the ambulation including moving out of bed and leg exercises was initiated on third post caesarean day. The record in relation to variables was maintained as per predetermined schedule for first five post cesarean days.

Preference was given to each study subjects willingness, convenience and comfort. The enrollment was continued till the researcher obtained the required sample size in each group. The record in relation to selected variables was maintained as per predetermined schedule for first five post cesarean days.

Structured observation technique was used for assessing the selected biophysiological health parameters, by using post caesarean biophysiological health parameters chart. The baseline assessment was done within first 4 to 5 hours of caesarean section at initial contact with study subjects, and then at the end of each post caesarean day for first 5 post operative days. Self report technique by use of visual analogue scale was used to assess the intensity of incisional pain. A structured observation technique for assessing the condition of breast, condition of abdomen, and presence of bowel function was used. The condition of breast was assessed for softness, local tenderness and redness. The abdomen was assessed for softness, bloating or distention. The bowel function was assessed for the presence or absence of peristalsis. Depending on the quantitative or qualitative type of data and based on the findings, the scores were assigned to the normal findings and deviations from normal, as per scoring key which was prepared as per

expected normal findings for each observed parameter. As per the objectives and hypothesis the statistical analysis was done. Demographic and obstetrical data of the study subjects was analyzed with frequency and percentage. The analysis of scores of selected post caesarean biophysiological health parameters was done by frequency and percentage. The comparison of scores of selected post caesarean biophysiological health parameters between the experimental and control group was done by using test of significance of difference between two sample proportions (Large Sample) - Z test was used.

Results:

The study group consisted of 500 women undergoing CS as per inclusion criteria. They were allocated to study and control groups randomly by lottery method till desired sample size was reached in each group. The selected post caesarean biophysiological health parameters evaluated were intensity of

incisional pain, condition of breast for softness, local tenderness and redness, condition of abdomen for softness, bloating, and distention and presence or absence of bowel function/ peristalsis.

i.   Distribution of study subjects based on selected demographic and obstetrical characteristics-

The sociodemographic and obstetrical variables of age, gravidity, parity, type of CS, indications for CS and primary or repeat CS are given in (Table 1). There was no significant difference in the distribution of these variables in study and control groups.

The demographic and obstetrical data of the study subjects showed that the majority of the subjects were from the age group of 21 to 25 years and multi gravida. The majority had undergone primary emergency caesarean section. And for majority of them maternal factor was the indication for caesarean.

Table 1: Distribution of Study Subjects Based on Selected Demographic and Obstetrical Characteristics (N=500)

Sr. No.	Selected Demographic & Obstetrical Characteristics	Specification	Study group		Control group		χ^2 value	P
			No	%	No	%		
1	Age in years	< 20	032	12.8	034	13.6	0.608	0.962
		21 to 25	123	49.2	121	48.4		
		26 to 30	071	28.4	075	30.0		
		31 to 35	021	08.4	017	06.8		
		>36	003	01.2	003	01.2		
2	Gravida	Primi	111	44.4	122	48.8	0.972	0.324
		Multi	139	55.6	128	51.2		
3	Parity	Primi	122	48.8	138	55.2	0	1
		Multi	128	51.2	112	44.8		
4	Type of caesarean section	Planned	056	22.4	049	19.6	0.591	0.442
		Emergency	194	77.6	201	80.4		
5	Indication for caesarean section	Maternal indication	157	62.8	152	60.8	4.502	0.105
		Fetal indication	063	25.2	052	20.8		
		Combined indication	030	12.0	046	18.4		
6	Number of caesarean section	Primary	154	61.6	159	63.6	0.214	0.644
		Repeat	096	38.4	091	36.4		

ii. Analysis and comparison of complaint of intensity of incisional pain

The following table shows the summarized calculations. The analysis and comparison of intensity of incisional pain experienced by the study and control group showed that the proportion of normal observations, i.e. no to mild incisional pain, was significantly more in the study group as compared to control group for all five post caesarean days, except for baseline assessment. The obtained Z value was greater than the critical Zá value (1.645) for one tailed test, at 0.05 level of significance. It showed that the higher percent of subjects of experimental group experienced no pain to mild pain, whereas the more number of subjects from control group experienced moderate to severe pain. So the Null hypothesis was rejected. And the alternative hypothesis of significantly higher proportions of normal observations in the study group was accepted (Table 2).

iii. Analysis and comparison of findings related to condition of breast –

The analysis and comparison of findings in relation to condition of breast for softness, local tenderness and redness showed that except for the baseline observations, the proportion of normal findings was significantly more in the study group as compared to the

Table 2: Analysis and Comparison of Incisional Pain among Experimental and Control Group (N=500)

Time of Assessment	Study Group (%)	Control Group (%)	Calculated SE	Calculated Z Value	Level of Significance
Baseline	98.0	99.4	0.0101	01.3844	NS
POD 1	95.6	89.2	0.0205	02.7200	*
POD 2	88.8	46.0	0.0373	11.4739	*
POD 3	83.6	20.8	0.0347	18.0734	*
POD 4	78.8	18.8	0.0357	16.7780	*
POD 5	84.8	23.2	0.0350	17.5764	*

Level of significance- 0.05

Table 3: Analysis & Comparison of Condition of Breast among Experimental & Control Group (N=500)

Time of Assessment	Study Group (%)	Control Group (%)	Calculated SE	Calculated Z Value	Level of Significance
Baseline	82.80	80.40	0.0346	0.6928	NS
POD 1	96.80	87.20	0.0238	4.0197	*
POD 2	96.00	84.00	0.0263	4.5643	*
POD 3	94.80	66.40	0.0330	8.6036	*
POD 4	94.00	68.00	0.0331	7.8535	*
POD 5	95.60	78.80	0.0289	5.8087	*

Level of significance- 0.05

control group, for all five post caesarean days. The percent of subjects with normal findings i.e. soft breast, no local tenderness and no redness were more in experimental group as compared to that of control group. The obtained Z value for each observations carried out at the end of post caesarean day was greater than the table Zá value indicating the significant difference in both the study groups.

iv. Analysis and comparison of findings related to condition of abdomen-

The analysis and comparison of condition of abdomen among the study and control group showed that except for the baseline observations, the proportion of normal observations was significantly more in the

study group as compared to the control group, for all five post caesarean days. The higher percent of subjects from experimental group showed normal condition of abdomen i.e. no bloating, no tenderness, no distention as compared to subjects of control group. The obtained Z value for each observations carried out at the end of post caesarean day was greater than the table Zá value indicating the significant difference in both the groups. So the alternative hypothesis was accepted and the null hypothesis was rejected.

v. Analysis and comparison of findings related to presence of bowel peristalsis-

The table 5 in relation to the analysis and comparison of findings in relation to presence or absence of bowel

Table 4: Analysis & Comparison of Condition of Abdomen among Experimental & Control Group (N=500)

Time of Assessment	Study Group (%)	Control Group (%)	Calculated SE	Calculated Z Value	Level of Significance
Baseline	98.40	99.20	0.0097	00.8219	NS
POD 1	95.20	88.80	0.0240	02.6560	*
POD 2	96.40	50.80	0.0337	13.5143	*
POD 3	94.00	38.80	0.0342	16.1002	*
POD 4	93.60	46.40	0.0351	13.4340	*
POD 5	97.20	65.60	0.0318	09.9357	*

Level of significance- 0.05

Table 5: Analysis & Comparison of Bowel Peristalsis among Experimental & Control Group (N=500)

Time of Assessment	Study Group (%)	Control Group (%)	Calculated SE	Calculated Z Value	Level of Significance
Baseline	98.40	99.20	0.0097	00.8219	NS
POD 1	72.80	39.60	0.0418	07.9390	*
POD 2	88.40	48.00	0.0375	10.7644	*
POD 3	96.00	52.00	0.0339	12.9636	*
POD 4	99.20	75.60	0.0277	08.5070	*
POD 5	100.00	93.20	0.0159	04.2708	*

Level of significance- 0.05

peristalsis among the study and control group showed that except for the baseline observations, the proportion of normal observations was significantly higher in the study group as compared to the control group, for all five post caesarean days. The higher percent of subjects of experimental group showed resumption of early peristalsis as compared to control group subjects. As the obtained Z value for each observations carried out at the end of post caesarean day was greater than the table Zá value, the alternative hypothesis was accepted and null hypothesis was rejected.

Discussion:

Though childbirth is a universally celebrated natural event; yet for many thousands of women in India it is becoming a matter of concern due to the overmedicalisation of their bodies. One of the current examples of this is the caesarean section delivery. Studies have also shown that over the past few decades childbirth is increasingly influenced by medical technology [4].

Although CS is a comparatively risk free procedure (editorial, 1988) it is not without problems for anesthetists, obstetricians, midwives and physiotherapists and most important of all- for the woman herself [11]. For reducing the possible incidence of postoperative complications for the women, mobilization of patients in the postoperative period is necessary.

Instead of only mobilization, early ambulation after 6-8hrs could be helpful in reducing the possible postoperative maternal complications and morbidity rate following cesarean section [10].

In the present study we have estimated that the early planned ambulation have significantly lowered the intensity of incisional pain in the study subjects as compared to the control group. Also the present study has revealed that the condition of abdomen among the study group subjects was significantly towards normal level.

Both these findings can be supported by the study done by Phanase Sunil [11] on early ambulation and

severity of selected post operative outcome parameters. The present study was undertaken to assess the effect of scheduled ambulation of selected postoperative outcomes between the control and the study groups in two hospitals of Bangalore; scores of postoperative outcomes of the two groups were also associated with demographic variables. The sample of 60 major abdominal surgery patients admitted in two hospitals was subjected to a rating scale of 14 demographic items and 35 items on parameters of postoperative outcomes like pain, fatigue, urine retention, constipation, collection of flatus etc. The results showed that scheduled ambulation was effective in reducing the severity of selected post-operative outcomes. The post test mean of parameter score in experimental group was 44.9% and control group was 59.6%, indicating less severity of parameters at 0.05 level.

The present study has found that the planned early ambulation was effective in maintaining the breast condition to normal level. The similar findings were obtained by a study done to assess the effectiveness of early and late ambulation on abdominal wall hematoma, breast engorgement and urinary tract infection in post caesarean patients in Bangalore. This study showed that the patients who received early ambulation had showed significantly less breast engorgement, and lower incidence of urinary tract infection, as compared to patients who were ambulated at later stage [12].

The present study showed that the bowel peristalsis was significantly normal in the study group. This can be supported by study done by Waldhausen J. H. and Schirmer B. D [13]. The study was done to determine whether ambulation hastens recovery from ileus following laparotomy, 34 patients were studied, 10 of whom followed an ambulatory regimen beginning on postoperative day 1 (group A). The other 24 patients (group C) did not become ambulatory until postoperative day 4. All patients underwent placement of seromuscular bipolar recording electrodes on

the Roux limb, stomach, jejunum, and colon at laparotomy. Group A was recorded before and after ambulation so comparisons could be made to determine if ambulation had an acute effect on myoelectric activity. Group A pre ambulation and group C recordings were compared to judge whether there was an over-all effect of ambulation on myoelectric recovery. The data suggested that ambulation as a means to help resolve postoperative ileus and its accompanying cramps.

Conclusion:

From this study it could be concluded that the planned early ambulation is after lower segment cesarean section plays an important and beneficial role in improving the post caesarean biophysiological health parameters of postnatal mothers. Thus it is effective strategy which can help in early post cesarean recovery of the postnatal mothers and this can indirectly helps in reducing the hospital stay and cost of hospitalization. It can also be practiced safely in hospital setting for the benefit of patients and health care team members.

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