ORIGINAL ARTICLE

Programmed Labor For Optimizing Labor And Delivery

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Abstract

To evaluate the efficacy of Programmed Labor protocol in providing shorter, safer and a relatively pain free delivery. The study was conducted in Obstetrics & Gynecology deptt of Christian Medical College & Hospital, Ludhiana. 30 primigravidae were included into the study and treated as per protocol. Labor outcome was analyzed in terms of mean rate of cervical dilatation, mean duration of first, second and third stages of labor, average blood loss, mode of delivery, maternal and neonatal morbidity. 50 primigravidae as controls were also included in the study and analyzed for the same parameters. The mean rate of cervical dilatation in the study group was 2.3cm/hr, which was almost double of the control group. There was marked shortening of all the stages of labor. Average blood loss was comparatively less in the study group delivered vaginally. 2 (6.7%) babies born to these mothers had an Apgar Score < 7 but there was no perinatal mortality. Programmed labor protocol can safely lead to shorter labors and significant pain relief without any major increase in maternal or neonatal morbidity.

Key words

Programmed Labor Protocol, Pain Relief, Safe Delivery

Introduction

Labor is a physiological but painful event. The agony and stress a woman suffers is beyond description. The concept of providing relief from pain has been tardy in acceptance, however experience has shown that providing pain relief during labor reduces maternal stress and results in shorter labors and improved maternal outcome. Epidural analgesia has proved to be beneficial and has contributed significantly to pain relief and improved obstetric outcome. However in India, wherein the majority of women are cared for in small community hospitals and private maternity homes, facilities for providing epidural analgesia continues to remain a distant dream.

Obstetricians are trying to alleviate this misery and have an optimal outcome of labor, but there has always been great opposition by women activists as why a natural phenomenon should be medicalised. After long researches a protocol was developed to optimize the labor outcome i.e. pain relief, short labor, less blood loss and no adverse effect on the neonate1. This "optimizing labor protocol" or "programmed labor" refers to ensuring smooth progress of labor resulting in the delivery of a healthy baby, by vaginal route of a healthy mother, through judicious use labor inducers, appropriate obstetric analgesic regimen and partographic monitoring (1). Therefore, the present study was designed to evaluate the efficacy of 'Programmed Labor Protocol' in providing shorter, safer and relatively painfree deliveries.

Material & Methods

The present study was undertaken in the Department of Obstetrics and Gynecology of Christian Medical College & Hospital, Ludhiana(Punjab-India). 30 low risk primigravidae, at more than 37 completed weeks of gestation, of which 18 were in active labor i.e. cervix 3 –

From the Department of Obstetrics & Gynecology Christan Medical College& Hospital Ludhiana (Punjab)-141008 Correspondence to : Dr. Veronica Irene Yuel, C-25 Eighth Street Anna Nagar East Chennai – 600102 4cms dilated, well effaced, cephalic presentation without pelvic inadequacy and labor induced in the remaining 12, were included into the study. Labor was induced at 40 weeks gestation with cerviprime gel a night before so that cervical ripening could occur and patient goes into active labor in the morning. In all patients amniotomy was performed at 3-4 cms dilatation to ensure presence of clear liquor and satisfactory fetal heart rate pattern. A partogram was commenced alongside the "Standard Nomogram" and all labor events were charted on the partogram to guide the clinician in management of the patient. An intravenous line was started. If the frequency of uterine contractions were not adequate, labor was augmented either with hourly intracervical Tab.Dinoprostone (0.5 mg for a maximum of six doses) or with Inj. oxytocin in doses of 2mIU/ml/mt to a maximum of 8mIU/ml/mt till atleast 3 sustained contractions every 10 minutes were achieved. All patients were given a low sedative -6mg pentazocine with 2mgDiazepam diluted in 10ml of 5% dextrose was given intravenously as bolus. All these women then received Inj. tramadol 50mg IM + Inj. Drotaverine intravenously. Inj. Drotaverine was repeated every 2 hours, if required, for a maximum of three doses. Pain Score of the patient was noted as perceived by the women at the beginning of the protocol. After delivery, active management of third stage was carried out by injecting 125 mg carboprost intramuscularly.

Partogram was plotted along the "Standard Nomogram", for the progress of labor, which served as the control baseline reference for all further evaluations of treatment regimes. Duration of all the three stages of labor was noted. Average blood loss was noted after the delivery. Neonatal condition i.e. Apgar Score at 1 and 5 min were noted. Maternal and neonatal morbidity & mortality were noted. Pain Relief Score in these women was noted postpartum after they were fully awake. Scores were recorded as (i) Score 0 – no relief (ii) Score 1 – some relief but not as much as required (iii) Score 2 – substantial relief (iv) Score 3 – total relief. All the above parameters were compared with 50 low risk primigravidae taken as controls. Appropriate statistical analysis was done where applicable using t-test and Fisher Exact test.

Results

Partographic events in labor were analyzed. In the study group there was a marked reduction of the active phase of labor. The mean duration of cervical dilatation was nearly double (2.3 + 0.5 cm/hr) than the control group (1.2 + 0.5 cm/hr) resulting in shortening of the duration of both first as well as second stage in the study group (Table No. I). This observation was found to be statistically significant (p<0.001).

It was also observed that there was significant reduction in the duration of third stage, which was due to early separation of the placenta in the study group (p<0.001). Average blood loss was much reduced, 75 (25)ml in the study group compared to 175 (25) ml in the control group (Table No.I). 86.7% women in the study group had normal vaginal delivery, comparable to those of the control group. Only two patients (6.67%) in the study group had caesarean section, the indication being relative cephalopelvic disproportion in one and fetal distress in another. This is similar to the incidence of caesarean section in the control group.

We observed in this study that 70% women had total pain relief in labor. When asked about there experience of labor they did not have much recollection of it. 16.7% of women had substantial relief while 13.3% had some relief but not as much as required . Pain relief scores in the study group were very significant (p<0.001). (Table-II&III)

Tachycardia was the commonest maternal morbidity noted in 80% of women in the study group. This was followed by nausea & vomiting in 10% and rise in blood pressure & fall in blood pressure in 5% each.

Two babies born to the women in the study group had Apgar Score of less than seven at one and five minutes. One of these babies had a heart rate of less than 100

Table No. 1	[Comparison	of the Partographic	Events
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	Primigravidae			
Parameters	Study Group	Control Group		
	(n=30)	(n=30)		
MD-Cervical Dilatation (SD) 2.3 (0.5)cm/hr	1.2 (0.5)cm/hr		
MD -of first stage (SD)	4 (1)hrs	6 (2) hrs		
MD- of second stage (SD)	$25 + 10 \min$	$45 + 15 \min$		
MD- of third stage	3 - 5 min	5 min		
Average blood loss (SD)	75 (25) ml	175 (25) ml		
Apgar Score < 7 at 1 and 5 n	nin 2	1		
Perinatal Mortality	Nil	Nil		

Table No. 11 Fall Kellel Scoles III the Study Glou	Table	No.	Π	Pain	Relief	Scores	in	the	Study	Grou
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No.	%
4	13.3
5	16.7
21	70
	No. 4 5 21



Table No. III Comparison of Mode of Delivery

	Primig	gravidae
Mode of delivery	Study Group	Control Group
	(n=30)	(n=30)
	No.(%)	No.(%)
Normal Vaginal	26(86.7)	45(90)
Forceps	1(3.33)	2(4)
Cesarean Section	2 (6)	3(6)

with respiratory depression; this baby was delivered by caesarean section for fetal distress. The second baby had a heart rate of less than 100 with respiratory depression at one and five minutes, however, after 15 minutes of active resuscitation the baby's Apgar Score improved. No apparent cause was found in these two babies, except that the mother had received the drugs mentioned in the protocol. Majority of (93.33%) babies did not have any complication. This was comparable to the control group where one baby had Apgar Score less than seven; no apparent cause of this could be found; i.e. 98% babies did not have any respiratory depression. On statistical analysis this was not found to be significant (p<0.5), however, larger studies are required to assess the effect of the drugs on neonates. There was no neonatal mortality (Table No.I).

Discussion

Labor and childbirth are natural events. Childbirth should be an event of joy and satisfaction but many times it turns into a harrowing experience for the mother due to pain. Stress of pain disturbs the maternal autonomic functions and liberates catecholamines which predisposes to dysfunctional labor and compromise fetal oxygenation. Freedom of pain improves the environment for both mother and fetus and therapy improves obstetric outcome (2). 'Programmed Labor Protocol'(1), provided relatively painfree, shorter and safer deliveries. The current study was undertaken with the aim of evaluating the efficacy of programmed labor protocol in providing shorter, safer and a relatively pain free delivery.

In the study group mean rate of cervical dilatation was almost doubled; the duration of all the three stages of labor was markedly reduced; the average blood loss was less. Neonatal morbidity was similar to the control group. There was no fetal or maternal mortality. Chauhan *et al*, (2), Daftary *et al*, (1) and Jyoti M *et al* (3) also had similar observations. The doubling of the rate of cervical dilatation and therefore, decrease first in the stage of labor can be attributed to the action of drotaverine. Studies have shown it to be a superior cervical dilatation agent than other antispasmodics like epidosin or buscopan (4, 5). Average blood loss of women in the study group was also much less compared to those in the control group. This was attributed to the effect of Carboprost administered at the anterior shoulder – active management of third stage. Daftary *et al*,(1) and Jyoti M *et al* (3) noted the same.

There was no major difference in the percentage of normal delivery in study as well as control groups. This was in accordance with the observations of Daftary *et* al,(1) and Jyoti M *et al*,(3). Majority of the patients had a good amount of pain relief, as reported in studies (1,6). Tramadol has been found to be an effective analgesia in labor without having a deleterious effect on the mother and the fetus5. The incorporation of partogram into the protocol of programmed labor was found to be meaningful to most of the clinicians as it helped to eliminate the ill effects of prolonged labors, prompted earlier recognition of dystocia and implementation of measures at the same time (6). We also reached to a similar consensus in our study. Thus, it should help many a clinicians to adopt this protocol in a private maternity clinic safely.

Conclusion

"Optimizing Labor Protocol" or "Programmed Labor Protocol" leads to shorter labors; analgesia is quite effective and side effects of drugs are minimal and safe for the fetus as well; labor is cherished with pleasure and childbirth becomes a joyous event for the mother. Clinicians in a private maternity set up can safely use it.

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