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A Clinical Study of Programmed Labour and Its Maternal and Foetal Outcome

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Abstract: Objectives: *To evaluate the various effects of programmed labour protocol on maternal and fetal outcome.*
Study Design*: It is a prospective Study.*
Study Area: *Department of Obstestrics & Gynaecology, Government General Hospital, Guntur, affiliated to Guntur Medical College.*
Material & Methods: *100 uncomplicated Primi Gravida in active phase of labour were selected and randomized into study and control group of 50 each study group received programmed labour protocol and the control group received conventional labour protocol. Rate of labour progressing, duration of labour, pain relief score, maternal and foetal outcome were studied.*
Results: *The mean rate of cervical dilation was 2.44 $\pm$ 0.29 cm/hr, which was almost double of the control group. There was marked shortening of all the stage of labour. Average blood loss was comparatively less in the study group. 56% of women had moderate, and 36% of women had good pain relief. Majority of women in the study group delivered vaginally. 2 babies born to these women in study group had an Apgar Score <7, but there was no perinatal mortality.*
Conclusion: *Programmed labour protocol is an effective way to achieve labour analgesia, shortens all stages of labour without adverse maternal and perinatal outcome.*
Keywords: *Programmed Labour, Partogram, Pain Relief Score, Labour Analgesia.*

I. Introduction

Labour is generally defined as the progressive dilatation of the uterine cervix in association with repetitive, strong uterine contractions that effects in and expulsion of the product of conception. Labour pain is among the severe pain experienced by women is beyond description.

The concept of providing relief from pain has been tardy in acceptance, however experience has shown that providing pain relief during labour reduces maternal stress and results in shorter labours 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, where in 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.

Obstestricians are trying to alleviate this misery and have an optional outcome of labour, 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 labour outcome by programmed labour or optimizing labour protocol refers to active management of labour, providing pain relief with combination of analgesia and antispasmodics charting labour events alongside an indigenously prepared Partogram with alert and active guidelines for timely obstestric intervention to optimize labour outcome. Therefore the present study was designed to evaluate the efficacy of programmed labour protocol in providing shorter, safer and relatively pain free deliveries.

II. Materials And Methods

The present study was undertaken in the Department of Obstertrics and Gynaecology of Guntur Medical College & Hospital, Guntur from Oct 2012 to Oct 2013
Subjects : 100 uncomplicated Primigravida in active phase of labour were enrolled in the study.

Inclusion Criteria:
1. Primigravida between 37 to 40 weeks of gestational age with single live intra uterine gestation with vertex presentation at the onset of active phase of labour
2. Availability of anaesthesiologist and neonatologist in the premises.

Exclusion Criteria:
1. Clinical evidence of cephalopelvic disproportion.

2. P1H, premature rupture of membranes.
3. Pregnancy complicated by any medical illness.
4. Hydromnios, IUGR
5. Antepartum haemorrhage
6. Previous uterine and cervical surgeries.

In all women included in the study a detailed history, general physical examination and obstestric examination including vaginal examination was done and all the required investigations carried out. When the patients entered into active phase, artificial rupture of membranes was done if liquor was clear programmed labour protocol was initiated.

As soon as the patients of the study group entered the programmed labour protocol, a partogram was initiated. Maternal vital parameters and fetal heart rate documented periodically. Per vaginal examination carried out after every hour to two hourly interval.

Following regime of administering medicine for pain relief and facilitating smooth cervical dilatation was adopted.

An I.V infusion line with dextrose 5% ringer lactate was started with 15-20 drops/min. To sustain optimal pains i.e., 3-4 sustained contractions / 10 min, 5 units of oxytocin to the drip was added. 2mg Diazepam + 6mg Pentazocine diluted in 10ml of saline, slow Iv as bolus to initiate pain relief. Tramadol was not used in our study. Injection Drotaveine 40mg is administered IV, will be repeated every 2 hours, if the rate of cervical dilatation is less than 1 cm / hr, for a maximum of three doses.

The progress of labour is observed by charting the maternal and foetal parameters every hour and the progress of labour is assessed on the basis of cervical dilation and descent of the fetal head, as documented periodically on the partogram.

When the patient is in advanced labour, and the fetal head down on the pelvic floor, the patient starts complaining of severe pain, or bearing down sensation. At this time the cervix is often almost 7-8 cm dilated. Pain relief score was noted and graded, score 3 as good pain relief, score 2 as moderate pain relief and score 1 as mild pain relief.

Initial dose, inj. Ketamine 0.2 to 0.3mg/kg body weight dilute the drug in 10ml of saline and administer slowly, over a few minutes. Pain relief score was noted. Top up doses of Inj. Ketamine were given at 20-30 min intervals half the initial dose wherever required. The last top up dose of inj. Ketamine was given after the birth of the baby. After delivery Inj. Prostadin 125 mcg was given in for active management of the third stage of labour. In the control group routine hospital protocol was followed which included an IV infusion line with Ringer lactate / dextrose 5% vaginal examination as and when required. Partogram was maintained in this group too oxytocin drip was started only if required but the dose was less 1 mU /min and not escalated to that level as in study group. No sedative or analgesic was given to any women in the control group.

III. Results

Both the groups were compare able in age, parity and Gestational maturity partographic quests in labour were analyzed.

Table I – Comparison of Partographic Events

Parameters	**Study Group**	**Controls Group**
Rate of cervical dilation – MD ± SD	2.44 ± 0.29 cm/hrs	1.18 ± 0.43 cm /hr (P <0.0001)
Duration of fist (Active Phase) Stage of Labour MD ± SD	2.45 ± 0.40 hrs	4.97 ± 1.05 hrs (P<0.0001)
Duration of Second Stage of Labour MD ± SD	25.52 ± 8.60 min	57.00 ± 6.44 min (P <0.0001)
Duration of Third Stage of Labour MD ± SD	3.90 + 1.85 min	6.44 + 1.69 min (P<0.0001)
Average blood Loss MD ± SD	81.70 + 27.49 ml	140.2 + 34.70 (P<0.0001)
Apgar Score <7 at land 5min)	2	1
Prenatal Mortality	Nil	Nil

In study group there was a marked reduction of the active phase of labour. The mean duration of cervical dilatation was nearly double (2.44 +0.29 cm/hr) than the control group (1.18 +0.43 cm/hr) resulting in shortening of the duration of both first as well as second stage in the study group. This observation was found to be statistically significant. (P<0.0001).

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 3.90 ± 1.85 minutes. Average blood loss was much reduced

81.70 ± 27.49 ml in the study group compared to 140.2 ± 34.70 ml in the control group which is statistically significant (P value <0.0001)

Table II – Pain Relief Score in the Study Group

Relief Score	No	Percentage
1	4	8%
2	28	56%
3	18	36%

For good pain relief the score was given as score 3, moderate pain relief score 2, mild pain relief score 1. In the study there was 36% of women has total pain relief 56% of women has moderate pain relief. Only 4% of women had mild pain relief.

Table III – Mode of Delivery

Mode of Delivery	Study	Control
SVD	42 (84%)	45 (90%)
Forceps	6 (12%)	3 (6%)
LSCS	2 (4%)	2(4%)

Only two patients in the study group had caesarean section, the indication being relative cephalopelvic disproportion in one and foetal distress in another. This is similar to the incidence of caesarean section in the control group.

Table IV – Side Effects in Mother

Side Effects	Study No = 50	Control No = 50
Nausea	8 (16%)	1 (2%)
Vomiting	4 (8%)	2(4%)
Giddiness	1 (2%)	0 (0%)
Diarrhoea	3 (6%)	0 (0%)

None of the patients had life threatening complications in both the groups, most of them had nausea and vomiting (8% and 4%) one patient in control group had mild PPH, which was controlled with oxytocics. Giddiness (2%) and dianhoea (6%) are also answered in study group.

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 was delivery by caesarean section for foetal distress both the babies had Apgar score 10, after active resuscitation. No apparent cause was found in these two babies except that the mother had received the drugs mentioned in the protocol. In control group one baby had low Apgar score, no apparent cause was found neonatal mortality, was seen both the group.

IV. Discussion

The protocol of programmed labour was first introduced by Daftary et al [1] in the period of 2000-2007. Programmed labour protocol rest on the incorporation of three principles, active management of labour, synergistic application of analgesics and antispasmodics during active phase to facilitate its progress and monitoring the progress of labour on a pictogram alongside a standard nomogram to detect dysfunctional labour and to adopt timely intervention.

The stress of pain labour disturbs the maternal autonomic functions and liberates catecholamines which predisposes to dysfunctional labour and compromise fetal oxygenation. Freedom of pain improves the environment for both mother and fetus and therapy improved obstetric outcome [2]. Programmed labour protocol provided relatively pain free, shorter and safer deliveries shorter and safer deliveries. The current study was undertaken with the aim of evaluating the efficacy of programmed labour protocol in providing shorter, safer and a relatively pain free delivery.

In the study group the mean rate of cervical dilation was almost doubled, the duration to all the three stages of labour were markedly reduced. The average blood loss was reduced. Neonatal morbidity was similar to the control group. There was no fetal or maternal mortality. Pattary et al, Chauhan etal [2] Jyothi M et al [3], Veronical et al [4] had similar observations. The doubling of the rate of cervical dilation and therefore, decrease first in the stage of labour can be attributed to the action of drotaverine. Studies have shown it to be a superior cervical dilation agent than other anti spasmodic like epidosin or buscopan [4,5]. Average blood loss of women in the study group was also much less compared to those in control group. This was attributed to the effect of carboprost administered in the active management of third stage. Daftary et al [1] and Jyothi M et al [3] noted the same. The incorporation of partogram was helped to earlier recognition of dystocia and implementation of measures at the same time[6].

There was no major difference in the percentage of normal delivery in the study as well as control groups. This was in accordance with the observations of Daftary et al [1] and Jyothi M et al [3]. Majority of the

patients had good amount of pain relief, which is similar to the study of Daftary [1], Meena Jyothi [3], veronica et al [4], Long J. Yuey et al [7] Suvonnakote et al and Prasertsawat et al.

In our study minor side effects like nausea, vomiting, diarrhoea were seen in both study and control group. It is also similar to the study by Meena Jyothi et al. In our study the neonatal outcome was comparable between the study group and control group without any significant difference, which is similar to Mena Jyothi et al, Samera Dixit et al.

V. Conclusion

Programming a labour is an easy and effective way to achieve labour analgesia, shortens the duration of all the stages of labour without any adverse effects on maternal and neonatal outcome. Analgesia is quite effective and the side effects of drugs are minor and safe for the fetus as well. The ease of administration, the need for minimal patient monitoring with systemic analgesia made programmed labour protocol highly acceptable.

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