



“ROLE OF PARTOGRAM IN MANAGEMENT OF LABOUR IN PRIMIGRAVIDA PATIENT AT TERTIARY CARE CENTRE”

Obstetrics & Gynaecology

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ABSTRACT

Introduction: Although labor is a natural physiological process characterized by progressive increase in frequency, intensity and duration of uterine contractions, resulting in effacement and dilatation of cervix, with descent of the fetus through the birth canal, this physiologic process many a time may lead to prolonged labor. The partograph developed by World Health Organization is the best-known partograph in the low-resource setting. Partograph when used with defined management protocol is an inexpensive tool which can effectively monitor labor and be helpful in reducing incidences of both maternal and fetal morbidity and mortality by reducing the number of operative interventions, prolonged labor, obstructed labor and caesarean section. Then WHO in 1994 endorsed the partogram and later modified in 2000 and removed latent phase and defined active phase at 4 centimetres instead of previously used 3 centimetres. WHO advocated its use as a necessary tool in management of labor and recommended its universal use during labor. **Objective:** To analyse the patterns of labor amongst spontaneous parturient using a WHO modified partogram and to compare outcome of labor and neonatal outcomes in relation to partogram findings. **Methods:** This prospective study was carried over a period of 18 months on 100 parturients. Modified WHO Partogram was used to assess the progress of the labor. Parturients were divided on basis of partogram findings. Group-I (n=64), where parturients partogram remained to the left of alert line, Group-II (n=20), where parturients partogram remained between the alert and action lines and Group-III (n=16), where parturients partogram crossed the action line. In these three groups, the maternal and fetal outcomes were assessed. **Results:** Normal vaginal delivery was done in 95.3% of Group-I, 80% of Group-II and 43.75% of Group-III parturients. Instrumental delivery was done in 1.56% of Group-I, 10% of Group-II and 18.75% of Group-III parturients. LSCS was done in 3.1% of Group-I, 10% of Group-II and 37.5% of Group-III parturients. Instrumental / LSCS deliveries were higher in Group-II and Group-III parturients. A large proportion of newborns of Group-II and Group-III parturients had Apgar Score <7. **Conclusion:** The Modified WHO partogram is very helpful in the prediction of maternal and fetal outcome. It is highly recommended for use in resource deficient medical facilities, where early decision for delivery or referral can be taken on the basis of partogram findings..

KEYWORDS

Primigravida, Partogram, labor, Alert line, Action line, Modified WHO Partogram.

INTRODUCTION

The journey through our life we make, the most dangerous one remains the first that we take through the birth canal^{1,2} that is why it is exceedingly important to see that this journey is made safe both for the baby and the mother. Although labor is a natural physiological process characterized by progressive increase in frequency, intensity and duration of uterine contractions, resulting in effacement and dilatation of cervix, with descent of the fetus through the birth canal, this physiologic process many a time may lead to prolonged labor.

Prolonged labor is associated with several adverse outcomes. It can lead to maternal exhaustion, maternal sepsis, obstructed labor, rupture uterus, postpartum hemorrhage, perinatal asphyxia, neonatal sepsis, disability and can lead to stillbirth, neonatal death and even maternal death.^{2,5} Partogram is also a useful tool in making early decision to transfer the patient to higher centre when labor is not progressing normally, and therefore, it is used in peripheries.⁷ The partograph developed by World Health Organization is the best-known partograph in the low-resource setting. Partograph when used with defined management protocol is an inexpensive tool which can effectively monitor labor and be helpful in reducing incidences of both maternal and fetal morbidity and mortality by reducing the number of operative interventions, prolonged labor, obstructed labor and caesarean section.^{6,7} Once labor has started it is possible to regulate its duration and progress with almost complete success. This requires a systematic approach with careful diagnosis of onset of labor, regular assessment and decision making. Then WHO in 1994 endorsed the partogram and later modified in 2000 and removed latent phase and defined active phase at 4 centimetres instead of previously used 3 centimetres. WHO advocated its use as a necessary tool in management of labor and recommended its universal use during labor.^{2,8}

AIMS AND OBJECTIVES-

Early detection of abnormal progress of labor i.e. delay in cervical dilatation and delay in descent of fetal head. To assist in early decision on augmentation or termination of labor. Early recognition of maternal and fetal problem. Prevention of prolonged labor. To assess the maternal morbidity and perinatal morbidity and mortality. To assess the fetal condition and outcome.

MATERIAL AND METHODS

The present prospective observational study was conducted in the Department of Obstetrics & Gynecology, Index Medical College Hospital & Research Centre, Indore during the study period January 2018 to June 2019 on 100 primigravidas of 37-40 weeks gestation with singleton pregnancy, meeting all the inclusion criteria and none of the exclusion criteria.

INCLUSION CRITERIA:-

- Primigravida, aged 19-34 years, who had 37- 40 weeks gestation.
- Single live fetus in vertex presentation.
- Cases irrespective of either induced or spontaneous onset of labor.
- Patient in active phase of labor (4cm or more of cervical dilatation).

EXCLUSION CRITERIA:-

- Multigravida
- Teenage pregnancy
- Elderly primigravida
- Multiple pregnancies
- Malpresentation
- Post term pregnancy
- Preterm labor
- Severe oligohydramnios
- Polyhydramnios
- Contracted pelvis

Procedure:

On admission to labor room, a detailed history regarding age, LMP, EDD, duration of pregnancy, menstrual history, duration of married life, chief complain i.e., leaking, bleeding, show and labor pain was taken and a thorough examination was done with particular reference to the points as per proforma.

General examination of the patient was carried out including built, height, weight, pulse, skeletal abnormalities, pulse, blood pressure. She was examined for presence of fever, edema, pallor, and icterus. Thorough examination of cardiovascular and respiratory system done to rule out any kind of systemic disease.

Pervaginal examination was done and following was noted

- Position of cervix
- Consistency of cervix
- Cervical dilatation in cm
- Effacement of cervix in % of cervical length
- Presence of membranes
- Station of presenting part
- Position of occiput and anterior fontanelle

Detailed pelvic assessment i.e. whether sacral promontory is reached, Sacrum is well curved, Sacro sciatic notch admits 2 fingers, Ischial spine are prominent, Side walls are parallel or convergent, Subpubic angle is obtuse & outlet admits four knuckles was done to rule out obvious cephalopelvic disproportion.

Investigation details:-

Blood group and typing, Hb%, Blood urea, Blood sugar, VDRL, HIV, HBsAg, Urine - R/M, USG - Obstetrics.

The progress of labor, maternal and fetal condition was plotted on the Modified WHO partogram

A. Parameter used to assess progress of labor

1. Cervical dilatation
2. Descent of head
3. Uterine contraction

B. Parameters used to assess fetal condition-

1. Fetal heart rate
2. Time of rupture of membrane and colour of liquor
3. Moulding of fetal skull

C. Parameter used to assess maternal condition-

1. Pulse rate
2. Blood pressure
3. Temperature
4. Urine for volume, protein & ketone bodies

General protocol followed in our study was:

1. Plotting on partogram was started at beginning of active phase on the alert line.
2. Four hourly per vaginal examination was done.
3. Augmentation of labour was done by - amniotomy or oxytocin or prostaglandin.
4. Monitor maternal and fetal condition

All patients were classified into three labor groups:

- 1) Women delivering before reaching alert line - Group I
- 2) Women delivering between alert and action line - Group II
- 3) Women delivering after crossing the action line - Group III

STATISTICAL ANALYSIS

All the data analysis was performed using IBM SPSS ver. 20 software. Frequency distribution and cross tabulation was used to prepare the tables. Quantitative variables were expressed as the mean and standard deviation. Categorical data was expressed as percentage. PRISM and Microsoft office was used to prepare the graphs. Student t- test and ANOVA was used to compare the means. Chi Square test was used to compare the categorical data. P value of < 0.05 is considered as significant.

RESULTS

Table 1: Distribution Of Patients According To Age Group

Age in years	No of cases	Percentage (%)
20-24	56	56
25-29	32	32
30-34	12	12
Relation to their partographic group		
Group I	64	64
Group II	20	20
Group III	16	16
Total	100	100

Table 2: Distribution of cases according to need of acceleration of labour

Acceleration of Labour	Group I		Group II		Group III		Total
	No.	%	No.	%	No.	%	
Yes	48	75.0	14	70.0	16	100.0	78
No	16	25.0	6	30.0	0	0.00	22
Total	64	100	20	100	16	100	100

Table 3: Comparison of rate of cervical dilatation amongst the groups

Group	N	Mean Rate $\pm$ SD (cm/hr)	Min	Max	P value
I	64	1.4 $\pm$ 0.023	1	2	0.042
II	20	0.7 $\pm$ 0.03	0.63	0.85	
III	16	0.53 $\pm$ 0.01	0.5	0.6	
Comparison of mean duration of active phase amongst the groups					
Group	N	Active phase (mean duration) $\pm$ SD In hrs	Min	Max	P value
I	64	4.3 $\pm$ 0.32	3	6	0.001
II	20	7.77 $\pm$ 1.23	7	9.5	
III	16	11.37 $\pm$ 2.56	10	12	

Table 4: Distribution of cases according to mode of delivery (n=100)

Groups	Mode of delivery						Total I	Chi Square/P value
	NVD		Instrumental		LSCS			
	No of cases	%	No of cases	%	No of cases	%		
I	61	95.3	1	1.56	2	3.1	64	98.325/0.001
II	16	80	2	10	2	10	20	
III	7	43.75	3	18.75	6	37.5	16	
Distribution of various abnormal partographic pattern in relation to mode of delivery (n=36 Group II and Group III)								
Indications	No.	%	No.	%	No.	%	No.	%
Failure of descent	0	0	0	0	1	2.77	1	2.77
Arrest of descent	0	0	2	5.55	1	2.77	3	8.33
Protracted descent	6	16.66	3	8.33	2	5.55	11	30.55
Arrest of dilatation	0	0	0	0	1	2.77	1	2.77
Protracted dilatation	17	47.22	0	0	3	8.33	20	55.55

Table 5: Indication for Instrumental delivery and LSCS according to partographic pattern (n=16)

Indication	Group I	Group II	Group III	Total
Fetal distress	3 (100)	1 (25)	2 (22.2)	6 (37.5)
Failure of descent	0 (0)	0 (0)	1 (11.1)	1 (6.25)
Arrest of descent	0 (0)	1 (25)	2 (22.2)	3 (18.5)
Protracted descent	0 (0)	1 (25)	2 (22.2)	3 (18.5)
Arrest of dilatation	0 (0)	0 (0)	1 (11.1)	1 (6.25)
Protracted dilatation	0 (0)	1 (25)	1 (11.1)	2 (12.5)
APGAR score in 1 minute				
SCORE	No.	No.	No.	Total
0-3	0 (0)	1 (5)	1 (6.25)	2
4 to 6	1 (1.6)	4 (20)	5 (31.25)	10
≥ 7	63 (98.4)	15 (75)	10 (62.5)	88
Total	64	20	16	100

Table 6: Distribution of cases according to maternal morbidity in various groups

Indication	Group I	Group II	Group III
Fever	0	2	2
Wound	0	2	2
Fistula	0	0	0
UTI	1	1	2
Perineal Tear	0	0	0
Duration of hospital stay			
3 to 5	63	16	10
6-9	1	2	3
≥ 10	0	2	3

Out of 100 pregnant subjects, 56 were of age between 20-24 years, 32 were between 25-29 years and 12 were 30-34 years. Mean age 24.08 yrs $\pm$ 4.12 years. (Table-1)

Group I – Left to alert line

Group II – Right to alert line

Group III – Right to action line

Out of 100 primigravida 64 had normal cervimetric progress and

delivered left to alert line, 36 had abnormal cervimetric progress. Out of which 20 crossed right to alert line and 16 crossed the Action line. (Right to action line). (Table-1)

Out of 100 labour 78% were accelerated. In group I, 75% cases needed acceleration; in group II, 70% and in group III, 100% patients needed acceleration. 22% delivered spontaneously without acceleration. (Table 2).

Above table shows that the average rate of cervical dilatation in group I was 1.4 cm/hr $\pm$ 0.023. Group II had average rate of cervical dilatation of 0.7cm/hr $\pm$ 0.03 and group III 0.53cm/hr $\pm$ 0.01, which gave rise to protracted / arrest of labour. (Table 3) The Active 1st stage labour was longer in III group (11.37 hours) as compared to group II (7.77 hours) and Group I (4.3 hours). (Table-3)

Above table shows that in group I, out of 64 patients, 61 (95.3%) were delivered by normal vaginal delivery, 1 (1.56%) case underwent instrumental delivery and 2 (3.1%) cases needed LSCS. In group II, out of 20 cases, 16 (80%) delivered vaginally, 2 (10%) underwent instrumental delivery and 2 (10%) underwent LSCS. In group III, among 16 cases, 7 (43.75%) delivered vaginally, 3 (18.75%) had instrumental delivery and 6 (37.5%) delivered by LSCS. Out of 100 cases Maximum (61%) cases delivered vaginally in group I, whereas maximum (8%) cases underwent LSCS in group II and III p-value is 0.001 (significant). Coefficient value $\chi^2=98.325$ (Table-4) Of the 36 parturients of Group II and Group III, 16.7% underwent normal vaginal delivery due to protracted descent and 47.22% underwent due to protracted dilatation. 5.55% underwent instrumental delivery due to arrest of descent and 8.33% due to protracted descent. 2.77% parturient each underwent LSCS due to failure of descent, arrest of descent and arrest of dilatation respectively, 5.55% due to protracted descent and 8.33% due to protracted dilatation. (Table-4)

Out of the 100 parturients, 16 parturients underwent instrumental / LSCS deliveries. In Group I, all the parturients underwent instrumental / LSCS delivery due to fetal distress. In Group II, the cause of instrumental/ LSCS delivery were fetal distress, arrest of descent, protracted descent and protracted dilatation accounting for 25% each. In Group III, fetal distress (22.2%), arrest of descent (22.2%), protracted descent (22.2%) and 11.1% each of failure to descent, arrest of dilatation and protracted dilatation accounted for instrumental / LSCS deliveries. (Table-5) Apgar score of > 7 was seen in 98.4% newborns of Group I, 85% of Group II and 62.5% of Group III. 15% of Group II and 37.5% of Group III newborns had an apgar score <7. (Table-5) The association between apgar score and groups was found to be statistically significant (p=0.002).

1 parturient of Group I had urinary tract infection (UTI). In Group II, 2 parturients each had fever and wound infection and 1 parturient had UTI. In Group III, 2 parturients each had fever, wound infection and UTI. There was no maternal mortality. (Table-6) The mean duration of hospital stay in Group I was 3.42 $\pm$ 0.71 days, in Group II it was 4.65 $\pm$ 2.76 days and in Group III it was 5.75 $\pm$ 3.32 days. The duration of hospital stay in Group II and III was higher than that of Group I, which was due to various complications. (Table-6)

DISCUSSION

Labour is a simple natural process; which can take a turn producing it lethal and most dangerous for any patient. Partograph serves as a simple and inexpensive tool to monitor labour and provide early recognition of any deviation from normal progress of labour. This study was done to analyze the utility of alert and action line on partogram in management of labour in primi gravida for improving perinatal outcome and reducing maternal morbidity.

In the present study, 100 primigravidae in labour were analysed by means of the WHO- modified partogram, and its effect on maternal and neonatal outcome, were measured as the curves fell more to the right side in the partogram. This prospective study was conducted in department of obstetrics & gynaecology Index medical college hospital and research centre Indore during a period of 1 year and 6 months i.e. January 2018 to June 2019

Age distribution

In present study out of 100 pregnant subjects, 56% were in age group 20-24 years, 32% were between 25-29 years and 12% were 30-34 years. Mean age was 24.08 $\pm$ 4.12 yrs.

Similarly, in the study of Sanyal U et al⁹ out of the 500 women, maximum (56%) belonged to the 21-25 yrs of age group. Muralidhar L et al⁶ studied 200 primigravidae, majority of them 90 (45.0%) were in the age group of 20-25 years, followed by 87 (43.5%) in aged 15-20 yrs. In the study of Ghanghoriya V et al¹⁰ out of 200 patients, majority of them 90 (45%) were in 21-25 years of age group, followed by 85 women (42.5%) in age group 26-30 years, 22 (11%) were in age < 20 years. The institution caters to the rural population who believe in marriage at an early marriageable age.

Distribution in relation to their partographic group

In current study out of 100 primigravida 64 had normal cervimetric progress and delivered left to alert line (group 1) while 36 had abnormal cervimetric progress, out of them 20 crossed right to alert line (group II) and 16 crossed the Action line (group III).

Similar results were observed in the study of Muralidhar L et al⁶ where out of the 200 primigravidae studied in labour with partographic analysis, 133 (66.5%) belonged to group I (left of alert line), 40 (20.0%) belonged to group II (right of alert line) and 27 (13.5%) belonged to group III (Right of action line). Not comparable to present study by Sanyal U et al⁹ study 404 (80.8%) women delivered before alert line (group I) and 76 (15.2%) women between alert and action line (group II) only 20 (4%) women beyond action line (group III), whereas in Bhuyar S et al¹¹ study out of the 300 primigravidae in labour, 118 (39.33%) belonged to group I, 147 (47.9%) belonged to group II and 35 (11.67%) belonged to group III. The observations in all the above studies showed that the operative interference is increased as the labour curve moves to the right of the alert line and it is significantly increased as the labour curve crosses the action line.

Need of Acceleration

In current study out of 100 labour, 78% were accelerated. Acceleration was needed in 75% cases in group I, 70% cases in group II and 100% cases in group III, there is no statistically significant difference in acceleration required in group III compared to group I and II because of small study group.

Similarly, in the Muralidhar L et al⁶ study, ARM and intravenous oxytocin accelerations were done in 21 (15.8%), 35 (87.5%) and 26 (96.3%) women in groups I, group II and group III, respectively. There is statistically significant difference in the acceleration required in group III compared to groups I and II (p<0.001).

Bhuyar S et al¹¹ observed that the acceleration of labour was carried out more in group II and III compared with group I.

In Pujar KG et al¹² study, labour was accelerated with oxytocin in majority of cases in group II (dysfunctional labor) in 72% cases than in group I (left to alert line).

Rate of Cervical Dilatation

The average rate of cervical dilatation in group I was 1.4 cm/hr $\pm$ 0.023. Group II had average rate of cervical dilatation of 0.7cm/hr $\pm$ 0.03 and group III had dilatation at the rate of 0.53cm/hr $\pm$ 0.01, which gave rise to protracted / arrest of labour.

Similarly, in Bhuyar S et al¹¹ study the average rate of cervical dilatation in active phase in various groups was, in group I was 1.41 cm/hr, group II 0.88 cm/hr and 0.59 cm/hr in group III, (P value: 0.042).

Muralidhar L et al⁶ reported the average rate of cervical dilatations was 1.4 cm/hr in group I, 0.8 cm/hr in group II and 0.6 cm/hr in groups III.

The slow rate of cervical dilatation was the main factor when the curve shifted to right side, and these rates are comparable in different studies.

Duration of Active stage of labour

In present study mean duration of active phase of labor was longer in III group (11.37 $\pm$ 2.56 hours) as compared to group II (7.77 $\pm$ 1.23 hours) and Group I (4.3 $\pm$ 0.32 hours).

Similarly, the mean durations of active phase of labour in groups I, II and III were 4.1, 6.9 and 9.6 hrs, respectively in the study of Muralidhar L et al⁶.

In Sanyal U et al⁹ study the average duration of observed active phase

of labour was 4.93 hours in primigravidae showing normal progress of labour and average duration of observed active phase in abnormal cases was 8.7 hours.

In Godara et al¹³ study the mean duration of active phase was 3.97±0.69 hr, 5.98±1.67hr in normal and abnormal partograph respectively. Bhuyar S et al¹¹ reported the mean durations of active phase of labour in group I was 4.55 hrs, group II was 6.90 hrs and 10.16 hrs in group III, with a range of 2 hrs to 11.45 hrs. The difference in mean duration of active phase in group I i.e. 4.55 hrs and group III i.e. 11.45 hrs is statistically significant (p value <0.001). Increase in duration of active phase of labour is the main indicator of delayed progress of labour.

Group wise distribution of cases according to mode of delivery.

Current study showed that in group I, out of 64 patients, 61(95.3%) were delivered by normal vaginal delivery, 1(1.56%) case underwent instrumental delivery and 2(3.1%) cases needed LSCS. In group II, out of 20 cases, 16 (80%) delivered vaginally, 2(10%) underwent instrumental delivery and 2 (10%) LSCS. In group III, among 16 cases, 7(43.75%) delivered vaginally, 3 (18.75%) had instrumental delivery and 6(37.5%) by LSCS. Out of 100 cases Maximum (61%) cases delivered vaginally in group I, whereas maximum (8%) cases underwent LSCS in group II and III shows p-value 0.001 (significant). Coefficient value $\chi^2=98.325$.

Similarly, Sanyal U et al⁹ showed that majority women (94 %) in Group I underwent normal vaginal delivery while 2% required instrumental delivery and 4% had LSCS. On the other hand, cesarean delivery rate was more in group II i.e. 57.9% and highest in group III i.e. 90%. Normal vaginal delivery in group II and group III were 18.4% and 10% respectively.

Muralidhar L et al⁶ in their study noted that in group I, 130 (97.7%) women delivered vaginally and 3 (2.3 %) women delivered by LSCS. In group II, 29 (72.5 %) delivered vaginally, 7 (17.5 %) had instrumental delivery and 4 (10.0%) delivered by LSCS. In group III, 5 (18.5 %) women delivered vaginally, 7 (25.9 %) had instrumental delivery and 15 (55.6%) delivered by LSCS. There is statistically significant difference in the mode of delivery in group III compared to groups I and II (p<0.001).

Partographic pattern in relation to mode of delivery

Present study shows that commonest pattern of abnormal labor was protracted dilatation (55.55%), other were protracted descent (30.55%), arrest of descent (8.33%), failure of descent (2.77%), arrest of dilatation (2.77%). Most cases of protracted dilatation 17(47.22%) delivered vaginally, while in case of failure of descent and arrest of dilatation patient had to undergo LSCS. Out of 3 (8.33%) cases of arrest of descent 2 (5.55%) cases underwent instrumental delivery and 1 (2.77%) by LSCS. Among 11(30.55%) cases of protracted descent 6(16.66%) delivered vaginally, 3(8.33%) by instrumental delivery and 2 (5.55%) LSCS.

Similarly, in Sanyal U et al⁹ study the commonest pattern of abnormal labour was protracted dilatation (36.5%). Others were arrest of dilatation (28.1 %), protracted descent (19.8%), arrest of descent (11.5%) and failure of descent (4.2 %). Most cases of protracted dilatation 12 (12.5%) delivered vaginally, while in case of failure of descent, arrest of descent and arrest of dilatation patients had to undergo LSCS. 10 (10.4%) cases of protracted descent were delivered by instrumental delivery.

Indication of Instrumental delivery and LSCS

In present study Fetal distress was the commonest indication in group I, while fetal distress and non progression of labour accounted for maximum no. of instrumental delivery and LSCS in group II and III. Similarly in Bhuyar S et al¹¹ study fetal distress was the commonest indication in group I, while fetal distress and nonprogress of labour accounted for the most number of caesarean sections in the study group. In Godara et al¹³ study the indication for instrumental and caesarean delivery in normal partograph (left of alert line) was fetal distress (4.3%). The indications for instrumental and caesarean delivery in abnormal partograph (right of alert line) were fetal distress (13.75%), protracted dilatation 14(17.5%), arrest of descent 40 (50%) and arrest of dilatation 15 (18.75%). The mode of delivery in arrest of descent is forceps, vacuum & caesarean delivery which are 20%, 17.5% & 62.5% respectively and mode of delivery in arrest of dilatation is vacuum & caesarean delivery which were 6.6% & 93.3%

respectively. All women with protracted dilatation (17.5%) delivered normal vaginally. Muralidhar L et al⁶ in their study noted that in groups I and II, the main indicator for instrumental delivery/LSCS was fetal distress (100%). In group III, indicator for instrumental delivery/LSCS was fetal distress in 7 (40.9 %), secondary arrest of descent in 6 (50 %) and secondary arrest of dilatation in 2 (9.1 %) of the cases.

APGAR at 1 Min

In our study on comparing APGAR score in 1 minute, it was found maximum no. of newborns (98.4%) among group I had apgar score >7 at 1 min. In group II 85% newborns had apgar score >7, while significant no. of patients in group III (75%) had apgar score <7. In this table significant association $p=0.002$ was found with $\chi^2=86.912$. Godara et al¹³ showed that the APGAR score at 1 min (more than 7) in normal and abnormal partograph was 94%, 73.80% respectively. The APGAR score at 1 min (less than 8) in normal and abnormal partograph was 5.60%, 26.30% respectively. The difference in APGAR score at 1 min less than 8 in normal and abnormal partograph was also statistically significant (p value<0.01). In Penumadu KM et al² study, there was no difference of mean birth weight between the three partogram groups. APGAR <7 and cry after resuscitation were proportionately more in Group B and C (right to alert line) than in group A (left to alert line). Most babies (92.4%) in all three groups had spontaneous cry and APGAR ≥7 at 1 minute. There were no neonatal deaths.

Maternal morbidity

Our study showed that only 1 patient each in group I and II and 2 patients in group III had UTI. 2 patients had wound infection in both group II and III. Febrile illness developed in 2 cases each in group II and III respectively. No maternal mortality occurred. Similarly, in Sanyal U et al⁹ study reported that fever occurred in 1% cases of normal labour and 6.2% cases of abnormal labour. Wound complications were also more in abnormal labour (12.5%) than normal labour (2%). In Godara et al¹³ study out of 80 women with abnormal partograph 5(6.3%) women had tear. Out of 320 women with normal partograph, fever occurred in 3(0.93%) women and wound infection occurred in only 2(0.63%) women. Out of 80 with abnormal partograph, fever occurred in 6(7.5%) women and wound infection occurred in 5(6.25%) women. Thus, it was more in cases, who had abnormal partograph and needed interventions. The similar results found in study done by Shinde et al¹⁴, the maternal morbidity was evaluated in relation to the type of labour. The morbidity was 3.52 % in cases having normal labour pattern whereas, it was 53.33 % in cases with abnormal labour pattern. Morbidity was mainly related to infection, blood loss and wound sepsis.

Duration of hospital stay

Present study showed that maximum patients of group III had to stay in hospital for longer period due to various complications of prolonged labour. Similarly, in Sanyal U et al⁹ study average hospital stay was only two days in normal labour but 4.81 days in abnormal labor. There were no cases of puerperal sepsis or maternal death and severe maternal complications were successfully averted. Shinde et al reports a maternal morbidity of 3.52 % in cases having normal labour pattern whereas, it was 53.33 % in cases with abnormal labour pattern. Khan et al¹⁵ found that partograph prevented rupture uterus in planned labour after caesarean delivery.

SUMMARY

All patients were classified into three labor groups:

- 1) Women who delivered before reaching alert line - Group I
- 2) Women who delivered between alert and action line - Group II
- 3) Women who delivered after crossing the action line - Group III

In present majority of the women were very young with mean age being 24.08 yrs.

Out of 100 primigravida 64 had normal cervimetric progress and delivered left to alert line, 36 patients had abnormal cervimetric progress. Out of which 20 crossed right to alert line and 16 of them crossed the Action line. (Right to action line).

In group I out of 64 primigravida, 48(75%) patients needed acceleration of labour. Out of 48 patients ARM was done in 34 cases, in 11 cases ARM with oxytocin was used, and tab misoprostol was used 3 cases. Out of 20 cases in group II In group-II, 14 (70%) needed the acceleration. Of which ARM was employed in 4 cases, ARM plus

oxytocin was used in 6 cases and tab misoprostol was used in 4 cases. In group-III out of 6 patients labor was accelerated in 3 (50%) cases using ARM plus oxytocin. p value is 0.012 which is significant.

In group-I out of 48 patients 46 patients progressed 2 underwent LSCS (4.16%) for foetal distress. In group-II, out of 14 patients 12 progressed with acceleration and delivered vaginally, 2 were delivered by LSCS (14.2%) for NPOL and foetal distress. In group III, out of 16 cases 6 (37.5%) underwent LSCS which is significantly higher than group-I and group-II. Which is statistically significant (p value 0.001)

The Active 1st stage labour was significantly longer in group-III (11.37 hours) as compared to the group-II (7.77 hours) and group-I (4.3 hours).

In group-I, out of 64 patients, 61 (95.3%) had normal vaginal delivery, 1 (1.56%) underwent instrumental delivery and 2 (3.1%) cases needed LSCS. In group-II, out of 20 cases, 16 (80%) had delivered normally, 2 (10%) underwent instrumental delivery and 2 (10%) underwent LSCS. In group-III, out of 16 cases, 7 (43.75%) delivered normally, 3 (18.75%) had instrumental delivery and 6 (37.5%) delivered by LSCS. Out of 100 cases Maximum (61%) cases delivered normally in group-I, whereas maximum (8%) cases underwent LSCS in group II and III. p-value is 0.001 (significant). Coefficient value $\chi^2=98.325$.

Out of 20 case with protracted dilatation, majority (73.9%) of deliveries were normally, while in case of failure of descent, arrest of descent and arrest of dilatation patients had to undergo LSCS. Out of 6 case of protracted descent 3 had instrumental delivery.

Fetal distress was the commonest indication in all 3 groups, while non progression of labour accounted for maximum no. of instrumental delivery and LSCS in group-II and III.

Majority of the newborns (98.4%) in group-I had apgar score >7 at 1 min, similarly 85% in group-II and 25% in group-III (25%). In this comparison a significant association $p=0.002$ was found with $\chi^2=86.912$.

Significantly low number of newborns had low apgar score in group-I as compare to group-II and group-III.

In group-I and group-II one patient each had UTI where as in group-III 2 cases of UTI were diagnosed. In group-II and group-III 2 patients each had wound infection. Fever developed in 2 patients each in group II and group III. There was no maternal mortality during the study.

Present study reveals that majority patients of group-III had to stay in hospital for longer duration as compared to other groups, due to the complications of prolonged labour and co-morbidities.

CONCLUSION

The study helped us come to the following conclusions

1. Abnormal labour patterns can be identified earlier by partogram.
2. The difference in outcomes like mode of delivery, augmentation of labour and neonatal outcome was significant and can be predicted by partogram.
3. Maternal and perinatal outcomes can be predicted with use of partogram.

This study shows that active management in primigravidae using Partogram has got definitive role in modern obstetrics. It reduces unnecessary strain on mothers by reducing total duration of labour, without any increased foetal morbidity and mortality. If accepted as routine procedure, it will be suitable in all situations where the labour room remains busy and congested day and night.

The neonatal condition, as assessed by Apgar score after the baby is born, is also better when the labour is monitored using Partograph. This is because the Partograph accurately denotes the condition of fetus as the labour is progressing and hence also helps in taking necessary steps to assure a healthy newborn. Therefore, the use of partograph should be included as an essential pre-requisite while conducting deliveries in all labour wards.

It is useful in settings with poorer access to health care resources. Hence in our country where rural population is still predominant training the nurses, ANM and other staff in primary health centers

would help in detecting labour abnormalities earlier and their early referral to tertiary centre as we are yet to achieve effective peripheral level emergency obstetric care to prevent complications and reduce neonatal and maternal morbidity and mortality. So reutilization of partogram can play an important role in helping to achieve the MDG.

The only disadvantage is that it requires continuous monitoring but at the same time it gives satisfaction to labouring women as she is monitored by the same doctor there by lessening her anxiety.

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