

A Prospective Observational Study Of Evaluation Of Progress Of Labour With Partograph In Primigravida And Multigravida

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Abstract: Background: Labour progress in partograph plotting helps to early recognition and prevention of the complication of labour. This helpful in better maternal and perinatal outcome. Aim of the study is to evaluate the maternal and perinatal outcome in primigravida and multigravida by comparing their partograph in labour. Material And Methods: This prospective observational study was carried out in Smt. SCL General Hospital a teaching tertiary care hospital from May-2018 to November-2019. Total 250 cases out of which 125 cases of primigravida and 125 cases of multigravida admitted in labour room were randomly selected and monitored by using modified WHO partograph. All the cases reporting to labour room and fulfilled the inclusion criteria were included in this study. Individual partograph was studied to know the various aspect of course of labour. Result: 208 out of 250 cases were before alert line, 34 cases were between alert and action line and 8 cases were beyond action line. Rate of cervical dilatation in most primigravida was between 1.1-2cm/hour and in multigravida was >2.1cm/hour. In Zone A, in primigravida 90.7% had VD and 9.3% had LSCS whereas in multigravida 96.4% had VD and 3.6% had LSCS. In Zone B, in primigravida 47.8% had vaginal delivery and 52.2% had LSCS whereas in multigravida 54.4% had VD and 45.5% LSCS. In Zone C, in primigravida and multigravida there were no VD and 100% had LSCS. Protracted active phase (50%) was presents the most common abnormality of first stage of labour in both group in present study and in second stage, arrest of decent (82%) was more common. In both groups, NICU admission were more in Zone C (3.2%) as compared to Zone A (2%) and Zone B (1.6%). Conclusion: This study has shown that using the partograph can be highly effective in reducing complications from both mother and neonate. It is also helpful in monitoring of labour and early diagnosis of abnormal labour. It prevents maternal mortality and morbidity. [Panchal V Natl J Integr Res Med, 2021; 12(6): 88-93]

Key Words: Partograph, Labour, Alert Line, Action Line, Vaginal Delivery (VD)

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Introduction: Labour is a phenomenon characterized by progressive increase in the frequency, intensity and duration of uterine contractions with progressive dilatation and effacement of cervix along with descent of fetus through the birth canal. This physiological process many a time leads to prolonged labour without recognition leads to morbidity and mortality of both mother and fetus.

Prolonged labour is associated with several adverse outcomes like maternal exhaustion, maternal sepsis, obstructed labour, rupture uterus, postpartum haemorrhage, perinatal asphyxia, neonatal sepsis, disability and can lead to stillbirth, neonatal death and even maternal death^{1,2,3}.

Giving healthy baby to healthy mother has always been aim of obstetricians. Early detection of abnormality, abnormal progress of labour, timely

intervention and prevention of prolonged labour would significantly reduce the risk of obstructed labour and other complication associated with it such as sepsis, post-partum haemorrhage, rupture uterus and death.

The WHO recommends the use of partograph in labour with a view of improving labour management and reducing maternal and fetal morbidity and mortality. Once labour has started it is possible to regulate its duration and progress with almost complete success. This requires a systemic approach with careful diagnosis of onset of labour, regular assessment and decisive action.

Partograph is a graphical record of the progress of labour and maternal and fetal condition during labour against a time scale. Plotting cervical dilatation and descent of presenting part against time allows objective graphic documentation of the progress of labour and simplifies the clinical

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interpretation of the changes that occur during labour. Any deviation from the normal curve alerts the attendant to possibility of a prolonged/ abnormal labour in advance. It helps in early detection of abnormality, categorization and early phase management of abnormal labour. It is used to see the progress of labour and identify abnormality and take necessary intervention. Partogram can be highly effective in monitoring and reducing complications from prolonged labour and reduce maternal and fetal mortality rate and operative interference⁴.

Material & Methods: This prospective observational study was carried out in Smt. SCL General Hospital a teaching tertiary care hospital from May-2018 to November-2019. Total 250 case out of which 125 cases of primigravida and 125 cases of multigravida admitted in labour room were randomly selected and monitored by using modified WHO partograph. All the cases reporting to labour room and fulfilled the inclusion criteria were included in this study. Individual partograph was studied to know the various aspect of course of labour.

Inclusion Criteria: Primigravida and multigravida with Cephalic presentation. Singleton pregnancy.

Exclusion Criteria: Pregnancy with obstetrical complications like major degree of Cephalopelvic disproportion, malpresentation, multiple pregnancy, antepartum haemorrhage, intrauterine death, previous caesarean section.

Pregnancy with medical complications like severe anaemia, uncontrolled diabetes and hypertension. The course of labour in all the cases were recorded on WHO modified partograph.

Individual partograph was studied to know the various aspects related to the course of labour and the studied to know the various aspects related to the course of labour and the role of partograph in influencing decision making in abnormal progress of labour was assessed.

The graph of the cases analysed and was placed in one of the three categories:

- Zone A- Cases who delivered when partograph was on or before the alert line.
- Zone B- Cases who delivered when partograph crossed alert line but not action line.

- Zone C- Cases who delivered when partograph crossed action line.

When the progress of labour crosses the alert line, examination of the patient was made and disproportion ruled out. Fetal heart rate, maternal pulse rate and uterine contraction were observed carefully in such patients. Whenever required augmentation done by artificial rupture of membrane or oxytocin. When the progress of labour crossed action line, reassessment of the cephalo-pelvic disproportion was done. Whenever required baby was delivered by lower segment caesarean section (LSCS).

The mode of delivery was ascertained and perinatal outcome analysed by studying condition of baby at birth, APGAR score and neonatal response.

Results: In present study 250 cases (125 primigravida, 125 multigravida) were included and results were analysed. Maximum number of cases 117 (46.8%) out of 250 cases were observed in the age group of 21-25 years. 19 cases were in age group of >31 years. Most of the primigravida 67 (53.6%) out of 125 cases belongs to age group of 21-25 years and most of the multigravida 54 (43.2%) out of 125 cases belongs to age group of 26-30 years. Total 214 cases (85.6%) were registered cases. Out of these 112 cases (89.6%) of primigravida and 102 cases (81.6%) of multigravida were registered during antenatal period. 89.6%, 9.2%, 1.2% cases were from lower, middle and upper class respectively.

Majority of cases 124 (49.6%) had 2cm cervical dilatation at the time of admission. Head was at -2cm station in 181(72.4%) cases while head at -1 station in 43 (17.2%) cases at the time of admission.

Table 1 shows, in primigravida, 97 (77.6%) cases were delivered when partograph was within alert line (Zone A) and 23 (18.4%) cases were delivered when partograph were between alert and action lines (Zone B) while 5 (4%) cases were delivered when partograph crossed action line (Zone C). In multigravida, 111 (88.8%) cases were delivered in Zone A and 11(8.8%) cases were delivered in Zone B while 3(2.4%) cases were delivered in Zone C. Very few cases were seen in Zone C mainly because of active intervention once the partograph crosses the alert line.

Table 1: Progress Of Labour

Zone	Primigravida (N=125)		Multigravida (N=125)		Total (N=250)	
	No.	%	No.	%	No.	%
Within Alert Line (Zone A)	97	77.6	111	88.8	208	83.2
Between Alert Line And Action Line (Zone B)	23	18.4	11	8.8	34	13.6
Outside Action Line (Zone C)	5	4	3	2.4	8	3.2

LSCS was done in 5 cases of primigravida group in latent phase. Among primigravida, 12(57.1%) cases were delivered by LSCS in whom the rate of cervical dilatation was <1 cm/hour (Group1). It suggests that if the rate of cervical dilatation is slower, than there are more chance of LSCS. In

group 2(1.1-2cm/hour) and 3(≥2.1cm/hour), majority cases were delivered by vaginally. In primigravida, 56(46.7%) cases had cervical dilatation at the rate of 1.1-2cm/hour. In multigravida, majority 84(67.2%) cases had cervical dilatation at the rate of >2.1cm/hour.

Table 2: Abnormality In First Stage Of Labour

Abnormality	Primigravida						Multigravida						Total	
	VD		LSCS*		Total		VD		LSCS		Total			
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Protracted Active Phase	11	73.3	4	33.3	15	55.5	4	57.1	3	30	7	41.2	22	50
Arrest In Active Phase	4	26.7	3	25	7	26	3	42.9	2	20	5	29.4	12	27.3
Fetal Distress	0	0	5	41.7	5	18.5	0	0	5	50	5	29.4	10	22.7
Total	15		12		27		7		10		17		44	

Fatal distress was present in 5 cases of primigravida group in latent phase Table 2 shows, protracted active phase was present as the most common abnormality of first stage of labour in total 22(50%) cases of both groups. Out of the 27 primigravida cases, 15 cases were delivered vaginally; out of which 11(73.3%) cases had protracted active phase and 4(26.7%) cases had arrest in active phase. Out of 12 cases who underwent LSCS, 4(33.3%) cases had protracted

active phase, 3(25%) cases had arrest in active phase and 5 (41.7%) cases had fatal distress. Out of 17multigravida cases, 7cases were delivered vaginally; out of which 4(57.1%) cases had protracted active phase and 3(42.9%) cases had arrest in active phase. Out of 10 cases who underwent LSCS, 3(30%) cases had protracted active phase, 2(20%) cases had arrest in active phase and 5(50%) cases had fatal distress.

Table 3: Abnormality In Second Stage Of Labour

Abnormality	Primigravida						Multigravida						Total	
	VD		LSCS		Total		VD		LSCS		Total			
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Protracted descent	0	0	2	22.2	2	22.2	0	0	0	0	0	0	2	18.2
Arrest of descent	0	0	7	77.8	7	77.8	0	0	2	100	2	100	9	81.1
Total	0		9		9		0		2		2		11	

Table 3 shows out of 11 cases, who underwent LSCS. 2(18.2%) cases had protracted descent and 9(81.8%) cases had arrest of descent. Table 4 shows total 39 cases required some kind of induction and augmentation out of which total 6 cases (4.8%) of multigravida required induction by prostaglandin. Augmentation with ARM and

11cases (4.4%) required induction and 28 (11.2%) cases required augmentation. In present study, 24(19.2%) cases of primigravida required more active intervention as compared to 15(12%) cases of multigravida. 5 cases (4%) of primigravida and Oxytocin was done in 12(9.6%) cases of primigravida, out of which 7(5.6%) cases were

delivered vaginally and 5(4%) cases were delivered by LSCS. Augmentation with ARM and Oxytocin was done in 7(5.6%) cases of multigravida, out of which 4(3.2%) cases were delivered vaginally and 3(2.4%) cases were delivered by LSCS.

Out of 125 primigravida cases, 99(79.2%) cases were delivered vaginally and 26(20.8%) cases were delivered by LSCS while out of 125 multigravida cases, 113(90.4%) cases were delivered by vaginally and 12(9.6%) cases were delivered by LSCS.

Total 93.7% (195) cases of zone A had normal vaginal delivery out of which 88 cases were primigravida and 107 cases were multigravida where 6.2% (13) cases of Zone A required LSCS out of which 9 cases were primigravida and 4 cases were multigravida. 50% (17) cases of Zone B had normal vaginal delivery out of which 11

cases were primigravida and 6 cases were multigravida where 50% (17) cases of Zone B required LSCS out of which 12 cases were primigravida and 5 cases were multigravida. No cases in Zone C had normal delivery where 100% (8) cases of Zone C required LSCS out of which 5 cases were primigravida and 3 cases were multigravida. Majority 15(39%) of cases delivered because of fetal distress, 9(23.7%) LSCS occurred due to arrest of descent, 7(18.4%) LSCS due to protracted active phase, 5(13.1%) LSCS due to arrest in active phase and 2(5.3%) LSCS due to protracted descent.

PPH occurred in 0.8% (1) cases in primigravida while in 1.6% (2) in multigravida, which was predominantly of atonic variety. Maximum number of cases had no complication and this can be attributed to the effective use of the partograph during the labour. There was no maternal mortality.

Table 4: Distribution Of Patient According To Intervention

Intervention		Primigravida						Multigravida					
		VD		LSCS		Total		VD		LSCS		Total	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Induction (11)	Prostaglandin	2	1.6	3	2.4	5	4	6	4.8	0	0	6	4.8
Augmentation (28)	ARM	1	0.8	0	0	1	0.8	0	0	0	0	0	0
	Oxytocin	1	0.8	5	4	6	4.8	1	0.8	1	0.8	2	1.6
	ARM + Oxytocin	7	5.6	5	4	12	9.6	4	3.2	3	2.4	7	5.6
Total (N=39)		11	8.8	13	10.4	24	19.2	11	8.8	4	3.2	15	12

Table 5: NICU Admission According To Zone

Zone	Primigravida (N=125)		Multigravida (N=125)		Total (N=250)	
	No.	%	No.	%	No.	%
Zone A	3	2.4	2	1.6	5	2
Zone B	2	1.6	2	1.6	4	1.6
Zone C	5	4	3	2.4	8	3.2
Total	10	8	7	5.6	17	6.8

Table 5 shows irrespective of parity, NICU admission were more in Zone C 8(3.2%) cases as compared to Zone A 5(2%) cases and Zone B 4(1.6%) cases, because of associated labour abnormality. Out of 250 cases 17 (6.8%) babies required NICU admission.

In partographic management of labour, majority of babies had good APGAR score because of timely action taken. Out of 250 cases 246(98.4%) babies had APGAR >7 at 1 min. Total 98 cases (39.2%) birth weight of the baby was between 2.6-3kg. While 81(32.4%) cases birth weight of the baby was between 2.1-2.5kg.

In 47(18.8%) cases birth weight of the baby was between 3.1-3.5kg. Only 7(2.8%) cases had weight of >3.6kg at birth.

Discussion: Improper management of labour may lead to maternal and fetal morbidity and mortality. Partograph is effective and cheaper way to monitor the progress of labour. It provides information about maternal and fetal wellbeing. The present study was done to establish the fact partograph is associated with better labour outcomes, so that the use of partograph becomes a routine practice in all health centres in our country. In present study,

maximum number of cases, 46.8% were observed in the age group of 21-25 years. It correlates with study K. Sowmya Krishna et al⁵ and Vineeta Ghanghoriya et al⁷ in which 57% and 45% cases were in this group.

89.6%, 9.2% and 1.2% cases were from lower, middle and upper class respectively. It correlates with study of Manojkumar J. Bhatt et al⁶ in which 58.5%, 37% and 4.5% cases were in lower, middle and upper class respectively. 83.2% cases were delivered in Zone A, 13.6% cases were delivered in Zone B and 3.2% cases were delivered in Zone C which was compared to study⁵ shows 77% cases were delivered in Zone A, 21% cases were delivered in Zone B and 3% cases delivered in Zone C. 67.2% cases delivered in Zone A, 22.8% cases were delivered in Zone B and 10% cases were delivered in Zone C⁸.

In primigravida 46.7% cases had cervical dilatation at the rate of 1.1-2 cm per hour which is comparable with the study of Manjulatha VR et al⁹ in which 50% of cases had cervical dilatation at the rate of 1.1-2 cm/hour. In this group (group 2) majority of cases were delivered by VD (50.5%) than LSCS (28.6%) which is comparable with the study of Manjulatha VR et al⁹ in which 56% cases were delivered by VD than 14% cases were delivered by LSCS. In multigravida majority 67.2% cases had cervical dilatation at the rate of >2.1 cm per hour. Protracted active phase was present as the most common abnormality of first stage of labour in total 50% cases of both primigravida and multigravida, where Kavya Mahesh Penumadu et al⁸ show it was present in 56% of cases. Total 4.4% case required induction.

Vineeta Ghanghoriya et al⁷ in which 13% cases required induction of labour. Augmentation of labour required in 12.2% cases which is less as compared to the study of Vineeta Ghanghoriya et al⁷ in which 64.5% cases required augmentation of labour. 84.8% cases have VD and 15.2% cases delivered by LSCS. It correlate with study of Vineeta Ghanghoriya et al⁷ shows 87.5% cases have VD and 12.5% cases delivered by LSCS. Another study by Sanyal U et al¹⁰ show 79.2% cases have VD and 15.6% cases delivered by LSCS. Total 93.7% cases of Zone A had normal vaginal delivery in the present study which is comparable with 99.1%⁷, 87.5%⁸.

In our study 6.2% cases of Zone A required LSCS, which is comparable with result of 11.9%⁸ and

0.9%⁷. In present study, 50% cases of zone B had normal vaginal delivery, which is comparable with the result of 84.3%⁷ and 50.9%⁸. 50% cases of zone B required LSCS, which is comparable with 38.6%⁸ and 15.7%⁷. In present study no cases in zone C had normal delivery, as comparable with the study of Vineeta Ghanghoriya et al⁷ which has no vaginal delivery and Kavya Mahesh Penumadu et al⁸ had 20% normal delivery.

100% cases of zone C required LSCS which is comparable with the result of Vineeta Ghanghoriya et al⁷ 100% and Kavya Mahesh Penumadu et al⁸ 68%. In present study, majority 39.5% cases were delivered by LSCS because of fetal distress, which is comparable with the study of Lakshmidevi Murlidhar et al¹¹ in which 63.6% were delivered by LSCS because of fetal distress.

Out of 38 cases who underwent LSCS 23.7% LSCS occurred due to arrest of descent, 18.4% LSCS due to protracted active phase and 13.1% LSCS due to arrest in active phase is comparable with study⁶ 23.5%, 11.8%, 17.6% respectively.

Complication like ruptured uterus and obstructed labour did not occur in partographic management of labour. Maximum number of cases had no complication and this can be attributed to the effective use of the partograph during the labour. Only 1.2% had PPH compared with K. Sowmya Krishna et al⁵ 2%. There was no maternal mortality in present study.

Out of 250 cases, 6.8% babies required NICU admission which is comparable with the study of 7%¹¹, 9.5%⁶ and 3.5%⁵. In present study 93.2% cases had no perinatal complications, which correlates with 96.5%⁵ cases had no perinatal complications. In present study, 98.4% babies had APGAR >7 at 1 min which is compared with 88.7%¹².

Conclusion: The correct usage of partograph in patients in labour helps in monitoring the labour outcome, to identify when intervention is necessary and to provide appropriate management improving maternal and perinatal health there by reducing complications leading to overall morbidity and mortality. It also helps in reducing unnecessary operative intervention.

Hence it is very helpful and handfull tool for health care providers working in labour room.

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