



STUDY AND EVALUATION OF PARTOGRAPH IN PRIMI AND MULTIGRAVIDAE IN LABOR

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ABSTRACT

Introduction: The partograph is a graphical tool used to monitor the progress of labor, fetal condition, and maternal well-being. **Objectives:** To assess the progress of labor, to evaluate the role of partogram in preventing prolonged labor, to evaluate the maternal and fetal outcome in both primi and multigravidae. **Materials And Methods:** This observational prospective study involved patients admitted to the labor room in Government Medical College, Vizianagaram. 100 patients of each group participated in the study and were randomly selected, one group consisted of primigravida while the other group was multigravida after meeting the inclusion and exclusion criteria. The study period is twelve months. All women spontaneous or induced labour, in first stage of labour with cervical dilatation not more than 7 cms. Singleton pregnancy of more than 36 weeks and less than 42 weeks, in cephalic presentation without any medical or obstetric complications were included disorders. Partogram was constructed according to WHO guidelines and labor managed accordingly. **Results:** Mean age group in primi was 22.7yrs with standard deviation of 3.7yrs and in multi mean age group was 26.8 yrs with standard deviation of 5.2yrs. Out of 100 primigravida, 70% had FTND, 9% had outlet forceps, 6% had vacuum application and 15% underwent LSCS. Out of 100 multigravida 80% had FTND, 6% had outlet forceps, 4% had vacuum application and 10% underwent LSCS. In group A in primi 68% had FTND, 2% had forceps and 2% had vacuum application and no LSCS whereas in multi 72% had FTND and 2% had forceps application. No vacuum/LSCS. In group B, in primi 2% had FTND, 7% had forceps, 4% had vacuum application and 6% underwent LSCS whereas in multi 8% had FTND, 4% had forceps, 2% had vacuum application and 4% LSCS. In group C, in primi and multi, there were no FTND and forceps application. In primi 9% had LSCS and in multi 6% underwent LSCS. Only 2% had Vacuum in multi in group C. 90% in primi and 82% in multi had no maternal complications and 66% in primi and 83% in multi had no neonatal complications. **Conclusion:** The partograph can be used to assess the progress of labor and to identify when intervention is necessary. This study has shown that using the partograph can be highly effective in reducing possible complications of prolonged labor and others for both the mother and the baby. It has shown to be effective in preventing prolonged labor, in reducing operative intervention and in improving the neonatal outcome.

KEYWORDS : Partograph, Labour progress.**INTRODUCTION**

The partograph is a graphical tool used to monitor the progress of labor, fetal condition, and maternal well-being. It was developed and tested by the World Health Organization (WHO)¹, to identify potential maternal and fetal complications early, ensuring timely interventions. It was introduced by Friedman^{1,2} in 1954. Objectives of Partograph is early detection of abnormal labor progress, prevention of prolonged labor, recognition of cephalopelvic disproportion, to decide augmentation, or termination of labor, to improve monitoring of maternal and fetal conditions³

Components of the Partograph: 1. Fetal condition: fetal heart rate, membranes, and liquor. 2. Progress of Labor: tracking cervical dilatation, descent of the fetal head, fetal position and uterine contractions. 3. Maternal Condition: Assessing maternal vital signs, medical and obstetrical issues, and medication administration.^{2,3} Key Features and Functions: Alert Line: Indicates potential labor complications, prompting increased vigilance. Action Line marks the critical point for specific management decisions, such as intervention or delivery, cervical dilatation is an indicator of labor progress plotted against time, descent of the fetal head assessed through abdominal and vaginal examinations.

Management of Labor Using the Partograph: Labor is divided into three stages. First Stage from the onset of labor to full cervical dilatation (10 cm). Latent Phase: In this phase, the cervix dilates from 0 to 4 cm, it typically lasts less than 8 hours. Active Phase: It starts when the cervix is 4 cm dilated and progresses at a rate of at least 1 cm per hour. Second Stage from full cervical dilatation to complete expulsion of the fetus. Third Stage from the expulsion of the fetus to placental expulsion.

Alert Line: A line drawn on the cervicograph to indicate the slowest 10% of normal labor progress. Action Line: A line drawn 4 hours to the right of the alert line, indicating the need for intervention.

Cervicograph: A graphical representation of cervical dilatation against time.

Management between Alert and Action Lines: When labor progress is

slow, but still within the normal range, the following steps can be taken: Observe the progress for a short period before transfer to assess whether labor is progressing normally. Continue routine observations include fetal heart rate, maternal vital signs, and cervical dilatation. Artificial Rupture of Membranes may be performed if membranes are intact.^{3,4}

Management at or beyond Action Line: When labor progress is significantly slow or abnormal such as prolonged latent phase or secondary arrest of labor, interventions such as intravenous infusion, bladder catheterization, and analgesia are appropriate. Plan options for delivery include caesarean section if fetal distress or obstructed labor is suspected. Oxytocin augmentation of labour if there is no contraindication.^{3,4}

Oxytocin is to augment labor. First titrate against uterine contractions and increasing the dose until contractions are 3-4 in 10 minutes, each lasting 40-50 seconds. Monitor for hyperactivity and fetal distress and status of membrane. If membranes rupture monitors fetal and maternal well-being, administering antibiotics if membrane rupture exceeds 12 hours. Fetal distress is noted provide hydration and oxygen to the woman and prepare for delivery.

MATERIALS AND METHODS

An observational & prospective study that was performed on 100 cases- each of primi & multigravida in labor, who admitted in the Dept of - Obstetrics & Gynaecology, Government District Hospital, Vizianagaram, for about a period of 12 months during 2023 to 24 that fulfilled all relevant criteria. Inclusion criteria: Women with singleton term pregnancy with cephalic presentation with spontaneous or induced labor with Cx dilatation <7 cms at admission. Exclusion criteria: women with preterm labour, suspicious cephalopelvic disproportion or non-cephalic presentation with Cx dilatation >7 cms and Multiple-pregnancy, antepartum hemorrhage Any Medical ailments in pregnancy like heart-disease or hypertensive-disorders in pregnancy. Methods: after fulfilling the criteria, detailed obstetric, medical and menstrual and personal history and general and obstetric examination and vaginal examination and pelvic assessment. Partogram used in present study is "The WHO partogram" that is nearly similar to Phillpott & Castle's original description, retaining the

action-line in space drawn four hours away - right and parallel to that of alert-line. 4 hours variation between alert & action lines was recommended by WHO.³ As per WHO-policy "A lag time of four hours between a slowing of labor and the need for intervention is unlikely to compromise the fetus or the mother and avoids unnecessary interventions"⁴ When dilatation curve turns upward i.e. when active-phase begins, next square is marked, then a line is drawn at slope of 1 cm per hour. The slope signifies lower limit of mean cervical dilatation. This line is named "Alert-line", "Action-line" is drawn at 4 hrs parallel to & right of alert-line.

Protocol for management of labor along with partograph was tested as a part of this study as follows – If partogram continues to be normal-no intervention needed, if partogram is suggesting slow progress, acceleration may be performed preferably by amniotomy or others. If graph crosses alert-line, patient needs immediate reassessment.^{4,5,6} While reassessing, if there is higher suspicion for cephalopelvic-disproportion reassessment is better stopped and decision for caesarean section is given. In absence of any cephalopelvic-disproportion and fetal distress or if adequacy of contractions is absent, augmentation with oxytocin drip can be started to achieve ideal-frequency, duration & intensity of contractions. Progress in dilatation of cervix is noted following oxytocin stimulation. If there is visible progress, post-arrest slope is compared with that of pre-arrest slope. Same way, if delay in fetal-descent is still noted, once again cephalopelvic-disproportion needs to be ruled out. Pattern of descent curve is now strictly supervised. If it is progressing in tardy manner which means prolonged-descent, active intervention is not carried out, unless there is absence of fetal- descent for about 30 minutes, arrest in descent gets diagnosed. If fetal-distress occurs anytime midway, immediately trail of labor is terminated and end up in operative intervention. Labor graph of individual patients is analyzed and placed in any of the three categories.^{5,6}

This study is divided into 3 groups according to present partogram Group A- Safe zone- mothers who deliver before alert line. Group B- Observation zone-mothers that deliver between alert and action lines. Group C- Intervention zone- mothers that deliver after crossing action line. After process of delivery, labor-notes includes time of delivery, mode of delivery spontaneous / induced labor, acceleration with oxytocin, type of forceps if applied and indication. If caesarean-section is done its indication. Also note made on – episiotomy, duration of stages of labor, total labor-duration and third stage labor. Placenta & membranes complete/incomplete / abnormalities, weight of placenta, blood loss, baby condition, sex, weight of baby, 1 minute & 5 minute - APGAR scores. external congenital malformations if any. Post partum mother status: at 2 hours of delivery like temperature, blood-pressure, pulse-rate, status of uterus and amount of bleeding. Maternal and Neonatal-complications if any.

RESULT

Statistical data used are mean and SD. All the statistical calculations were made using Microsoft Excel 2013. In this study average age group among primi is 22.6 years with a deviation of 3.1 years. In multi gravida it is 26.6 years with a deviation of 3.5 yrs. Majority of cases are booked out of which 62% cases had spontaneous labor onset. Most of the cases who came with cervical dilatation 2-4 cms at admission had good outcome and there was no much variation between primi and multigravida. In 100 primigravidas 70% had normal vaginal delivery, 9% underwent outlet forceps, 6% underwent vacuum application, 15% had LSCS. Of 100 multigravida 80% had normal vaginal delivery, 6% underwent outlet forceps, 4% vacuum application rest of 10% had LSCS. Among group A primis 68% gone through normal vaginal delivery, 2% underwent forceps another 2% were with vacuum application. Among multi 72% normal vaginal delivery only 2% gone through forceps application. No vacuum or LSCS reported. Among group B, primis 2% underwent normal vaginal delivery, 7% forceps and 4% vacuum application, around 6% had LSCS. coming to multigravidas 8% underwent normal vaginal delivery. 4% gone through forceps and 2% got vacuum application. 4% landed in LSCS. Among group C no normal vaginal delivery and forceps application in both groups. 9% primi cases underwent LSCS, 6% multigravidas underwent LSCS. 2% reported to have vacuum application which are group C multigravidas. Average baby weight in women with primigravida was noted as 2.71 kgs. In multigravidas it was about 2.97 kgs.

Table1: Distribution as per the Mode of Delivery

Mode of delivery	Primi	Multi	Total
Normal vaginal	70	80	75
Forceps	9	6	7.5

Vacuum	6	4	5
LSCS	15	10	12.5
Total	100	100	200

Majority of neonates born with Apgar score 7-8 at minute 1. Apgar score 9-10 at minute 5 of birth. No significant change found between primi and multis. 90% primi & 96% multi had nil maternal complications. 70% primi & 82% multi had zero neonatal complications.⁷ My study showed usage of partograph is highly beneficial in decreasing complications related to prolonged labor. Also, it improved outcomes by reducing operative intervention & better neonatal outcomes.

In the present study 15-20 years age group 20% in primi 4% in multi. 31-35 age group 16% women are multigravida and 2% primi. Most of the patients belong to age group of (21-25) with 49% & (26-30) with 27%. Least age was 17 and highest was 38 with mean age of 25 years with mean deviation of 4.19. most of the cases are booked cases only. 62% pregnant women came with spontaneous labor only 38% cases of induced labor. there is no significant variation observed among primi and multigravidas as per mode of delivery. But variation is noted among FTND which accounts 75%, operative interference like forceps 7.5%, vacuum 5% and LSCS 12.5%. In most cases Cx dilatation on admission was found to be 2 to 3cms of which 70% had NVD. In multi gravidae Cx dilatation on admission is 2 to 3cms in 57% & 4 to 5cms in 43%. In primigravidae, Vx station on admission was -2 and -1 in 48% & 29% which accounts for majority of patients who had FTND. In multigravida group, Vx station on admission is -3 and -2 station, 24% and 31% delivered vaginally. In this study there is a significant statistical difference is noted among outcomes of labor in relation to partogram groups. In primis. 68% of primigravidae and 80% in multigravidae in group-A had normal vaginal delivery while 15% in primi in group-C had LSCS and 2% & 6% of multigravidae in group-C underwent vacuum application & LSCS. Mean weight was- 2.91 kgs. It is also observed no statistically significant difference is noted between primi & multigravida in relation to APGAR score @ minute 1.⁷ It is also observed 84% of neonates have APGAR score of 7 to 8 at minute one. And also noted that there is no significant variation between primi & multigravidas in relation to APGAR scores at 5 min. It is noticed that 82% newborn babies had APGAR 9-10 at minute 5 of birth and 1% had APGAR score of 7-8 at minute 5. Maximum patients i.e. 86% are without any complications. Just 8% got fever & 6% PPH. 74.5% pregnant women are without complications. While 9.5% have meconium staining for which stomach wash was done after delivery. Just 2% had birth asphyxia.

DISCUSSION

Table 2 Distribution According to Partogram Groups

Partogram group	Phillpott & castle	Daftary & Mhatre	Present study
A	78%	66%	72%
B	11%	25.5%	19%
C	11%	8.5%	9%

From the given table it is noted that my study correlated well with Phillpott & Castle's study with 72% cases in group A, 19% fell in group B & other 9% in C group. Improvement in outcomes of Group C are noted in my study which is due to early intervention as partograph crossed alert line.

Table 3 Outcomes of Labor in Correlation with Pattern of Partogram in Primigravidas

Gro up	Philpott & Castle			Daftary & Matre			Present-study		
	FTND	Vac/ Forceps	LSCS	FTND	Vac/ For	LSCS	FTND	Vac/ For	LSCS
A	89.76	9.8	0.4	85.61	6.06	2.27	94.4	5.5	-
B	79.41	20.95	-	43.14	33.3	3.93	10.5	57.8	31.5
C	-	-	100	5.88	-	76.48	-	-	100

From the table it is observed that my study correlated with previous ones to some extent. It is observed that using a partogram^{3,4,5,6} in labor & follow up of graph helps in predicting outcome of labor accurately. Thus, group A had good prognosis of vaginal delivery. Group B required careful monitoring and active labor management. Group B had a higher rate of operative vaginal delivery & there were more cases landing in LSCS. Patients under group C are categorized as 'at risk' and immediate intervention is needed.

Table 4 Apgar Scores at 1 min

APGAR score at 1min	Goyal Lathika et al	Present study	
		primi	multi

9-10	78%	-	-
7-8	22%	82%	86%
<7	-	18%	2%

In my study apgar at minute 1⁷ is not in correlation with study of Goyal Lathika et al.⁸ In my study 82% of neonates had Apgar score of 7-8⁷ at minute one. However, my study is in correlation with study of Beher et al.⁹ Apgar at minute 5. 82% of babies had Apgar score of 9 to 10⁷ at minute 5. My study is in correlation with study of Beher RB et al.⁹ Compared to the primis, babies of multis had lesser complications. Nil neonatal deaths in both groups. Complications to mother among the primi & multigravidas were less. This may be due to the efficient usage of partogram during labor.

CONCLUSION

With this study, it is clear that regular usage of partogram is very beneficial to pick out abnormalities in progress of labor, mainly by following the sequential patterns of dilatation of cervix & descent of fetal head. Besides this, the advantages of following a partogram are as follows: This is free of cost, efficient & less time consuming, highly sensitive & specific, better clinical assessment. Also it identifies which cases may need more intensive intrapartum monitoring & intervention as early as possible either operative or conservative. Continuous monitoring through partogram is a key to diagnose labor dystocia. Need for intervention is based on clinical assessment, partogram defines the appropriate critical time to intervene, no need any expensive equipment, permanent record for that particular labor. My study has showed that usage of partograph is highly efficient to reduce complications with prolonged labor for mother & baby. It is also shown to be useful in prevention of prolonged labor.

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