ROLE OF PARTOGRAM IN EARLY RECOGNITION OF CEPHALO PELVIC DISPROPORTION & PREVENTION OF OBSTRUCTED LABOUR

B.Manjulatha*, T.Prathibha Sravanthi**

Date of Submission: 21.05.2015          Date of Acceptance: 11.06.2015

Abstract

OBJECTIVE: To study the benefits of using partogram in primigravidae. The study was conducted on 200 primigravidae in labour ward Government Maternity Hospital, Sri Venkateswara Medical college, Tirupati. Progress of labour in primigravidae was monitored with WHO modified partogram and compared with 200 primigravidae which were not monitored with partogram and who were referred from peripheries. Duration of labour, rate of operative delivery and neonatal outcome was studied in the cases monitored with partogram. The rate of operative delivery, incidence of obstructed labour and other complications were studied in the referred group. The rate of operative delivery. Maternal and neonatal morbidity and mortality was compared in both the groups. The rate of instrumental delivery was 9% in study group and 23% in the cases not monitored by partogram. The rate of LSCS was 4.5% in the study group and 20% in the unmonitored group. No neonatal deaths occurred in partogram applied cases and 3 deaths occurred in cases not monitored by partogram. Two cases went in to obstructed labour in unmonitored group where as it was nil in study group. The Philpott’s alert and action lines on cervicograph appeared to be an appropriate indicator for early recognition of abnormal labour and helps in the prevention of maternal and neonatal morbidity and mortality.

CONCLUSION: Usage of Partogram with necessary interventions in the study group has resulted in less no. of operative deliveries and good neonatal outcome without any neonatal deaths. In spite of MCH services, we are getting referrals in stages of obstruction from peripheral centres. So, training of birth attendants, nurses, midwives and basic doctors in the usage of Partogram helps in identifying labours which are abnormal and thereby helps in timely referral and intervention. The value of Partogram in our setup cannot be ignored.

KEYWORDS: Partogram, Obstructed labor, CPD.

Authors:
*Associate Professor, **Assistant Professor, Department of Obstetrics & Gynaecology, S.V. Medical College, Tirupati, Andhra Pradesh, India.

Corresponding Author:
Dr T.Prathibha Sravanthi, Assistant Professor Department of Obstetrics & Gynaecology, S.V. Medical College, Tirupati, Andhra Pradesh, India.
Email: tp_sravanthi@yahoo.com

Introduction

The authenticity of Ian Donald’s statement “of all the journeys we ever make the most dangerous one is the very first one we undertake through the last 10cm of the birth canal” can never be doubted.

Every day, 1500 women die from pregnancy or childbirth-related complications.
In 2005, there were an estimated 5,36,000 maternal deaths worldwide. Most of these deaths occurred in developing countries, and most were avoidable. Women die from a wide range of complications in pregnancy, or Childbirth or the postpartum period. The four major killers are: severe bleeding (mostly postpartum), infections (also mostly soon after delivery), hypertensive disorders in pregnancy (eclampsia) and obstructed labour.

Every year more than 133 million babies are born and 90% of them in low and middle-income countries and around 3 million babies are stillborn. Almost one quarter of these die during birth. Prolonged and obstructed labours are the known avoidable causes for maternal and perinatal morbidity and mortality. The reported incidence of obstructed labour varies widely from as low as 1% in some populations to up to 20% in others.

Obstetric fistula is a devastating yet often neglected injury that occurs as a result of prolonged or obstructed labour in survivors. Without surgical repair, the physical consequences of fistula are, severe urinary and/or fecal incontinence, frequent pelvic and/or urinary infection, pain, infertility, and often early mortality. Therefore, prevention of obstructed labour is an important intervention towards reducing maternal and perinatal mortality and morbidity, and in achieving the Millennium Development Goals 4 and 5.

Early detection of abnormal progress of labour and prevention of Prolonged labour would significantly reduce the risk of postpartum hemorrhage and sepsis and eliminate obstructed labour, uterine rupture and sequelae. The partograph (or partogram) is a simple tool that has been used for this purpose.

A partograph is a composite graphical record of progress of labour and salient condition of mother and foetus, first reported by Friedman in 1954. Philpott subsequently added alert line which is a modification of the mean rate of cervical dilatation of the slowest 10% of primigravidae. Action line introduced later 4hrs to the right of alert line. WHO in 1994 as part of Safe Motherhood produced and promoted partogram to improve labour management and to reduce maternal and foetal mortality and morbidity.

Material & Methods

This study was undertaken at Government Maternity Hospital, S.V. Medical College, Tirupati from October 2010 – September 2012. The study was conducted on 200 primigravidae admitted to labour ward at 4 cm cervical dilatation who fulfilled the following inclusion criteria.

Inclusion criteria
1) Primigravidae,
2) Vertex presentation
3) Women with spontaneous labour
4) Singleton pregnancy
5) No medical / obstetric complications.

Exclusion criteria
1) Antepartum haemorrhage
2) Malpresentations - breech, transverse lie, compound presentation etc.
3) Multiple pregnancy
4) Preterm labour
5) Pre-eclampsia and eclampsia
6) Major degree CPD

The progress of labour was plotted on WHO modified partogram, which includes both fetal and maternal parameters. Cervical dilatation was noted on admission and at 4th hrly intervals thereafter and recorded on the partogram. Progress of labour was assessed in relation to alert and action lines.

The patients who were on the left side of alert line were considered to be having normal cervimetric progress and were categorized as Group I. While those who crossed this line were considered to be exhibiting abnormal active phase and are identified as slow progressers. Those who are falling between alert and action lines categorized as Group II. Women falling right to action line categorized as Group III.

Cases with hypotonic uterine contraction and which failed to progress as per expectation were accelerated with oxytocin. A standard concentration of 10 units of oxytocin per litre was used. The rate of infusion started at 10 drops and increased every 15 minutes to a maximum of 60 drops per minute depending on uterine action. The drip was operated manually. All the cases were monitored with Partogram.

Dysfunctional labour was identified by following criteria, suggested by Studd et al (1982).

1. Primary dysfunctional labour
2. Secondary arrest of cervical dilatation
3. Secondary arrest of descent

Cases of fetal distress were terminated with instrumental delivery or with LSCS irrespective of the group. Those which were crossing the alert line were reviewed and found with secondary arrest of cervical dilatation with hypotonic uterine action were augmented with oxytocin. Cases crossing the action line and with secondary arrest of cervical dilatation or with caput or moulding suggestive of CPD are terminated with LSCS. Otherwise labor was continued with careful monitoring of maternal and fetal condition with partogram.

The duration of labor, rate of operative deliveries was studied and neonatal outcomes was compared in all the three groups. The rate of operative delivery and the neonatal outcome were also compared with 200 primigravidae, with vertex presentation matching with the above inclusion and exclusion criteria who were

**Results**

**Fig.1 Age Distribution of study subjects**

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>18-21</td>
<td>49%</td>
</tr>
<tr>
<td>22-25</td>
<td>33%</td>
</tr>
<tr>
<td>26-29</td>
<td>15%</td>
</tr>
<tr>
<td>≥30</td>
<td>3%</td>
</tr>
</tbody>
</table>
A significant association was observed between Mode of delivery and groups. Contingency co-efficient value of 8.7 was found to be highly significant \( p < 0.001 \) between group II and group III. Maximum number (100%) of normal vaginal deliveries occurred in Group I and minimum number in Group III. Maximum number of operative deliveries noted in Group III, and Nil in Group I.

Mean duration labour in Group III was found to be significantly higher than Group II and I as F test revealed a highly significant value \( (F = 272.46; P < 0.001) \). The mean duration of labour in Group-I was 4.39 ± 1.53 hours, in Group-II 9.1 ± 1.15 hours, whereas in Group-III it was 13.87 ± 2.13 hour.

Among 200 cases comparatively more % of women in Group II needed acceleration with oxytocin. Contingency coefficient analysis revealed a highly significant value \( (CC = 1.617; P < 0.0001) \) indicating that majority of women were improved in Group II with oxytocin as against none of the women improved in Group III. Thus indicating that hypotonic uterine action is common in Group II. Whereas secondary arrest of cervical dilatation and secondary arrest of descent due to CPD is more in Group III and hence they were not improved even with augmentation thereby crossed the action line. Thus the unrecognized CPDs and borderline CPDs were revealed out by monitoring with partogram.

Fig. 4 shows that mean Birth wt. is more in Group III compared to Group II and it is more in Group II compared to Group I. Apgar scores are better in Group I compared to Group II and better in Group II compared to Group III.
Cases Not Monitored With Partogram

Not much variation observed in age distribution between the study group and the group not monitored by partogram.

**Fig-5: Age distribution**

According to the data, the rate of intervention is significantly raised in unmonitored cases compared to that in monitored cases irrespective of the age group. Operative deliveries are also significantly increased.

**Fig 6: Comparision of Mode of Deliveries**

No. of cases delivered by LSCS for the indication of obstructed labor are 2 in unmonitored cases where as it is nil in study group. LSCS for the indication of CPD is 22 in unmonitored cases but it is only 5 in study group.

From the above comparisons it was found that rate of operative delivery, maternal & perinatal morbidity and perinatal mortality are more in cases not monitored with partogram and are significantly reduced in cases where labour was monitored with partogram.
Discussion

In this study of 200 primigravidae, all women were admitted to labour ward at 4cm dilatation with intact membranes. This was taken as zero hour. The mean time taken for the active phase of labour with normal progress according to this study was 4.39 ±1.53 hours. This was compared with following studies.

1. In the study done by Hendricks et al., the average duration was 4.8 hours.
2. The duration of normal cervical dilatation as described by Friedman (1954) lasted for 14.4 hrs.
3. Daftary and Mahatre (1977) studied 96 primigravidae to prepare a standard nomogram and found the duration for full dilatation to be 7 hours 50 mins.
4. Pierre Drouin (1979) in his study of 480 primigravidae showed latent phase to be 9.5 ±4.7 hours and the active phase to be 6.1 ±3.9 hrs.

Thus the duration of cervical dilatation with normal progress in the present study can be compared with the duration of labour in the above mentioned studies.

Rate of cervical dilatation: Melmed and Evans (1976) studied the predictive value of cervical dilatation rate and found the rate of dilatation measured early in labour (active phase) to be accurate. The mean rate of cervical dilatation for spontaneous delivery was 1.75 cm/hr, for assisted delivery was 0.9 cm/hr and for caesarean section was 0.42 cm/hr.

In the present study, the rate of cervical dilatation in the normal delivery group was 1.8 cm/hr. in the assisted delivery group was 0.96 cm/hr. and in the LSCS group it was 0.6 cm/hr.

In 1995, De Groof, Vangleender Huyson, Junker, (1995) did a study on the impact of introduction of partogram on maternal and perinatal mortality and morbidity and concluded that the introduction of partogram reduces the amount of the time in labour, thereby improving the follow up care the pregnant women receives.

In the present study also, partogram helped in early recognition of prolonged labour and obstructed labour, there by reduced the duration of labour by active intervention at the right time. This in turn helped to bring down the maternal and perinatal mortality rates.

Group wise distribution:

In the present study, among the 200 primigravidae, 81.5% belonged to group I, 13.5% belonged to group II and 5% to group III.

1. In the study by Pierre Drouin, group I consisted of 52%, group II consisted of 18% and group III 30% of the women.
2. In Philpotts study, group I consisted of 78%, group II-11% and group III 12% of women respectively. In the study by Daftary and Mahatre the distribution of patients in Group I, II and III were 66%, 22%, 9% respectively. Thus, the present study...
also compares with the above mentioned studies.

The incidence of normal delivery and operative delivery:

1. In the Pierre Drouin study, overall operative delivery rate was 22%, and the same in group I, II and III were 1%, 27% and 72% respectively.\(^6\)

2. In Philpotts series, the incidence of operative delivery was 1.2% in group I, 20.6% in group II and 72.8% in group III. Incidence of normal delivery in group I was 98%, in group II 79% and in group III 28% respectively.\(^8\)

In the present study, the incidence of normal delivery in group I was 96.93%, in group II 44.4% and group III 30%. The incidence of operative delivery was 0% in group I, 7.4% in group II and 70% in group III. Thus in this present study as well as in the study shown by Pierre Drouin and Philpott, it was found that there was a higher incidence of operative delivery and interference in group II and group III.

Thus it is quite evident that, with the slow rate of cervical dilatation, the incidence of operative interference is much higher thus increasing the maternal morbidity.

The incidence of acceleration: All the 200 women were accelerated with artificial rupture of membranes. Among them 16% women were accelerated with oxytocin. In group II and III, 68.75% and 21.87% required acceleration with oxytocin. In group I 9.37% women needed acceleration with oxytocin.

In one study by William Ledger and William Witting, it was found that in group I, the incidence of acceleration was 27%, whereas in group II and group III, the rate of acceleration was 72%.\(^9\)

In this present study also, it was found that the acceleration of labour by oxytocin was very much increased in group II and group III.

Incidence of CPD: In the present study, it was found that, in group III, there was a high incidence of CPD among women who showed secondary arrest of descent of presenting part and secondary arrest of cervical dilatation. Among the 2 women who exhibited secondary arrest of cervical dilatation, both underwent LSCS due to CPD.

1. In the study by Friedman and Sachtleban, 50% of women with secondary arrest of cervical dilatation had CPD.\(^10\)

2. In the study by A.N. Shrotri (1991), it was found to have a higher incidence of CPD and fetal malposition among women with prolonged II stage.\(^11\)

3. Sarkar and Paul (1990) found that the incidence of CPD was 69.7% among women with secondary arrest of descent.

4. In the study by Gupta et al. (1991) had 32.0% incidence of CPD.\(^12\)

Mean apgar scores & Average birth weight:
The apgar score in group III were comparable to those of group I and group II.
Mean apgar score in the study group at 1 and 5 minutes was 7.2 and 9.8 respectively. There were no perinatal losses in any of the groups.

The babies were heavier in group II compared to group I and in group III when compared to group II, thus causing CPD and slow progress of labour.

1. In 1979, Jhon, Chen, Studd showed the outcome of normal and dysfunctional labour. According to their study, whose labour progress was to the right of action had low apgar scores at 1 minute and 5 minutes and delivered heavier babies and the babies had to be resuscitated.

2. In the study of A.N. Shrothri, there were more perinatal loss in women with secondary arrest of descent with CPD and in women with dysfunctional labour. The babies were severely asphyxiated at birth.11

Comparison between monitored and unmonitored cases:

The rate of operative deliveries and the neonatal outcome in the present study was compared with the cases not monitored with partogram. It was found that the rate of operative deliveries in cases monitored with partogram is 4.5% whereas it is high of about 20% in cases not monitored with partogram.

No case was allowed to go into obstructed labor in the study group whereas 2 cases were delivered in obstructed labor in unmonitored cases.

Babies in the study group are delivered with fair apgar of about 7.6 at 1mt and 9.9 at 5mt where as in unmonitored group with low apgar of about 6.9 at 1mt and 8.8 at 5mts. Neonatal deaths recorded nil in the study group where as 3 deaths were recorded in the unmonitored group.

Thus the study shows that the management of the patients with partograms increases the quality and regularity of observations of the mother and foetus and acts as an “Early warning system” for the detection of abnormal progress, enabling early decision for referral, or intervention, or termination of that labour, thus improving maternal and fetal outcome.

Conclusion

1. Usage of Partogram in the study group has resulted in less no. of operative deliveries. 4.5% of cases were delivered by LSCS compared to 20% of cases in the group not monitored by partogram.

2. Neonatal outcome was good without any neonatal deaths in the study group compared to 1.5% deaths in cases not monitored with partogram.

3. No case of Obstructed labour in monitored group where as 1% of cases went in to obstructed labour in unmonitored group.

4. Inspite of good MCH services , we are getting referrals in stages of obstruction from peripheral centres. So, training of birth attendants, nurses , midwives and basic
Role of Partogram in CPD. M. B.Manjulatha et al.

Doctors in the usage of Partogram helps in identifying labours which are abnormal thereby helps in timely intervention or referral.

5. The value of Partogram in our setup cannot be ignored.

Acknowledgements:

We are grateful to Dr.B.Sreedevi, Retired Professor, Department of Obstetrics and Gynaecology, Dr.D.Shankar Reddy, Assistant Professor, Department of Community Medicine, S.V.Medical College, Tirupati for their cooperation in the present study

REFERENCES

1. Ian Donald's Practical Obstetric Problem, 6/e - Page 506
10. Williams Obstetrics – 21st edition

Click here for more articles: www.commedjournal.in