

Original research article

Study of Importance of Partogram on Active Management of Labour in Primigravidae

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Abstract

Background: The key to early diagnosis is the detection of disorders in labour progression specifically by following the evolution of characteristic patterns of cervical dilatation and fetal descent using the partogram. Although labour is a natural physiological process characterized by progressive increase in the frequency, intensity and duration of uterine contractions, resulting in effacement and dilation of the cervix with descent of the fetus through the birth canal.

Methods: This is Prospective study of Carried out total 400 patients conducted in the Department of Obstetrics and Gynaecology. Darbhanga medical college and Hospital Laheriasarai, Darbhanga. All the patients were primigravidae with term gestation, cephalic presentation without any complications who presented with both spontaneous and induced labour. WHO partogram was used for all patients.

Conclusion: Use of partogram is a simple, safe, inexpensive and highly effective means of monitoring progress of labour. Hence it identifies the abnormality early and deliver them safely in time by active management of labour.

Keywords : Partogram, Labour, Primigravidae.

Introduction

Although labour is a natural physiological process characterized by progressive increase in the frequency, intensity and duration of uterine contractions, resulting in effacement and dilation of the cervix with descent of the fetus through the birth canal. This physiological process many a time many lead to pathological one and failure to recognize this would result in prolonged labour with the resultant increase in the intensity in the morbidity and mortality of both fetus and the mother. Most authorities believe that the best way to monitor labour is with the help of a partogram, which is a record of the progress of labour and the maternal and fetal condition during labour against a time scale. Plotting cervical dilatation and descent of the presenting part against time allows objective graphic documentation of the progress of the labour and simplifies the clinical interpretation of the dynamic changes that occur during labour. Any deviation from the normal curve alerts the attendant to the possibility of a labour disorder in advance. It helps not only in recognition but also in characterization and management of dysfunctional labour. 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 the onset of labour, regular assessment and decisive action. Prolonged labour was known to be associated with maternal infection, obstructed labour, PPH, uterine rupture, which increase the maternal and perinatal morbidity and may end with mortality. It has been a common axiom "Not to allow sun to set twice on a labouring women", in order to prevent such tragic events.

Of all the Journey's ever we make the most dangerous one is the very first one, we take through the birth canal, obstetrician as well as women in labour would prefer the delivery to be accomplished in shortest possible time, compatible with safety of mother and fetus. Hence, the hopeful expectancy replaced by an active management of labour. Partogram can be used as an effective aid for this purpose.

Objectives

To recognize at an early stage abnormal labour in primigravidae, To assess perinatal morbidity, To assess maternal morbidity.

Review of Literature

The concept of active management of labour was first implemented by O'Driscoll and colleagues at the National Maternity Hospital in Dublin in 1968 O'Driscoll and Colleagues (1969) published an article entitled "prevention of prolonged labour". He highlighted his concern that many women were experiencing difficult deliveries after prolonged labour and suffering greatly because of dehydration, confusion, repeated doses of narcotics and infection. Recognizing this psychologic and emotional stress, O'Driscoll developed the active management of labour principles to shorten labour and achieve efficient uterine contractions to affect spontaneous delivery in primigravida patients. Management system contains both organizational and medical components with physicians supervising normal spontaneous labour in nulliparous women and intervening only when labour progress slows. First, the candidates for the active management of labour are nulliparous patients with uncomplicated term gestations with a fetus in the cephalic presentation.

Second, patients are not admitted to the labour ward unless they meet the strict diagnosis of labour. Admission is contingent on the onset of painful, regular uterine contractions with complete cervical effacement, bloody show with or without rupture of membranes.

Early amniotomy is performed at admission to assess the volume and colour of fluid and to confirm vertex presentation. This intervention is performed to gauge whether or not there is fetal compromise. If there is meconium or scant amount of fluid present, then the patient receives more intense surveillance and is not eligible for higher dose oxytocin augmentation.

A policy of early amniotomy seemed to reduce labour duration from between 60 and 120 minutes. There was a statistically significant reduction of 54 minutes for total length of labour, with a I stage reduction of 39 min. In addition, the study concluded that there was no evidence that amniotomy increased the likelihood of infection or fetal heart rate abnormalities. Although not the primary aim in the active management of labour, Emanuel A. Friedman (1954) was amongst the first to emphasize the importance of plotting cervical dilatation (in cms) against time from the onset of labour. Philpott and Castle (1972) devised a composite graphic labour record on which all details of the progress of labour as well as the fetal and maternal condition could be recorded on a single piece of paper against a time scale. Philpott and Castle have made an important and significant contribution to the practice of obstetrics in a way – especially as it is practiced in underdeveloped areas or wherever personnel are limited in number, sophisticated or skills, Emanuel A. Friedman (1975) in order to allow for the evolution of the normal latent phase and for simultaneously observing the development of the descent pattern for purpose of detecting its aberrations, Friedman's Partogram was devised. John Studd (1973, 1975) he modified Philpott's graphic record and developed five separate patterns representing normal labour progress in patients admitted at 5 different levels of cervical dilatation. Daftary Shirish and Mhatre Pravin (1977) constructed a NORMOGRAM with the alert line two hours to the right of, and parallel to, the phase of maximum slope.

The action line is two hours to the right of and parallel to the alert line. They found it more applicable to the regional population as compared to the partogram of Philpott and Castle. Duration of deceleration phase in primigravidas averages 50 minutes and in multigravidas averages 22 minutes. The 95th percentile limits were defined as 2.7 hours and 52 minutes respectively. A prolonged deceleration phase is characterized by a deceleration phase duration of longer than 3 hours in a primigravida and 1 hour in a multigravida. Frigoletto et al, showed that there was a decrease in Maternal fever with active management of labour more encouraging was that there was no significant difference in the occurrence of fetal distress, placental abruption, shoulder dystocia or perineal lacerations. Lopez-Zeno et al demonstrated no increase in maternal or neonatal morbidity. In the largest prospective study, Satin et al demonstrated a significant decrease in neonatal culture – proved sepsis with a high dose of oxytocin protocol.

Material and methods

This is prospective Study Carried out of 400 patients admitted at Darbhanga medical college and Hospital Laheriasarai, Darbhanga, Bihar. Study duration of two years. The total number of deliveries within this period were 1280. Term primigravidae patients were chosen for the study after confirming that they fulfilled the relevant criteria.

Inclusion Criteria

Primigravida patients, Term gestation (37 – 42 weeks) as determined by history and clinical examination, Confirmatory objective evidence of labour judged by cervical dilatation, station of the head and uterine activity, Cephalic presentation, vertex as the presenting part.

Exclusion criteria

Suspicion of cephalopelvic disproportion, High risk pregnancy or bad obstetric history, Medical disorders in pregnancy like heart disease and pregnancy induced hypertension.

All examinations to determine the cervical dilatation and fetal station were carried out during a contraction. Since the true estimate of cervical dilatation is difficult to achieve with a flaccid cervix, it is probably best to measure dilatation during a height of a contraction at all times. The same applies for fetal station. While this may prove same what more uncomfortable for the patient, the benefits in useful information may make it acceptable especially in those cases in which problems in labour progression occurs.

Individuals tend to err rather consistently that is, a given individual will often overestimate or under estimate cervical dilatation or fetal station by a constant amount in a predictable manner. This consistently makes it possible for an individual to create a perfectly acceptable labour pattern provided he or she alone makes all the examinations. Examinations were carried out four hourly throughout the duration of labour. However, modifications were made to account the rapidly progressing labour, especially during the maximum slope of dilatation, wherein, examinations were done much more frequently.

All the relevant findings were charted serially on a partogram and a continuous partogram was obtained.

In the absence of significant cephalopelvic disproportion, fetal distress or ideal contractions oxytocin drip was started to obtain the ideal frequency, duration and intensity of uterine contractions. Following oxytocin stimulation, further progress in cervical dilatation was looked for.

Results

Table 1: Age group distributions

Age in years	Number of cases	Percentage
15-20	192	48
21-25	165	41.3
26-30	41	10.3
31-35	2	0.5
Total	400	100

Chi-square – 257.740; P < .000 (HS)

Table 2: Descriptive statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Age	400	15	34	21.49	3.08

The age group in the present study was between 15 – 35 years. Statistically significant difference was observed between different frequencies of different age groups. In the age group 15 – 20 yrs, maximum number of patients and as age increased the number of cases decreased serially.

Table 3: Outcome in labour in the study group

Mode of delivery	No. of cases	Percentage
FTND	288	72.0
Outlet Forceps	73	18.3
Vacuum	9	2.3
LSCS	30	7.5
Total	400	100

Chi-Square = 492.540; P < .000 (HS)

In the study group of 400 patients, maximum number of patients i.e. 288(72%) had full term vaginal delivery and least number of patients 30 and 9 i.e. 7.5% and 2.3% underwent LSCS and vacuum respectively, highly statistically significant difference was found.

It is observed that between the cervical dilatation at admission and outcome of labour, statistically non significant association was observed indicating maximum number of FTND i.e. 100 percent were observed with cervical dilatation > 5 cm, and followed by 4 – 5 cm dilatation i.e. 76.3%. Comparatively more number of LSCS i.e. 9% was obtained in the group of patients with cervical dilatation 2 -3 cm and none of LSCS in group of patients with > 5 cm dilatation.

Table 4: Perinatal outcome

Neonatal complications	No. of cases	Percentage
Nil	342	85.5
Birth asphyxia	25	6.3
Septicemia	11	2.8
Neonatal jaundice	9	2.3
SGA	9	2.3
Others	4	1.0
Total	400	100.0

Chi-square = 1368.320; P < .000 (HS)

Maximum number of babies i.e. 85.5% delivered had no complications. Birth asphyxia was found in 6.3% of babies, septicemia was seen in 2.8%. Neonatal jaundice was observed in 2.3%

of babies and other complications were cephalohematoma was seen in 1% of cases. Statistically significant association was found.

Table 5: Maternal complications in relation to partogram pattern

Maternal complications	Partogram			
	A	B	C	Total
Nil	185(47.7%)	171(44.1%)	32(8.2%)	388(100%)
UTI	1(16.7%)	5(83.3%)		6(100%)
Retained placenta	1(50%)	1(50%)		2 (100%)
Fever		3(100%)		3(100%)
3 rd degree Perineal tear		1(100%)		1(100%)
Total	187(46.8%)	181(45.3%)	32(8.0%)	400(100%)

CC = 0.147; P < .360 (NS)

From the above table, non significant association was observed between maternal complications and partogram pattern. However, comparatively more percentage of complications were observed in Group B patients and nil in Group C patients.

statistically non significant association was found between neonatal complications and partogram pattern. However, comparatively more percentage of neonatal complications were observed in Group B patients and least in Group C patients.

Discussion

Study all the patients at admission were of cervical dilatation between 2 to 5 cms. In Paul Holmes study there were 63% of FTND's with 2-3 cm dilatation, 26.6% had outlet forceps / vaccum and 10.6 % underwent LSCS. In the present study at 2-3 cms cervical dilatation, 70.9% were FTND's, 18% had outlet / vacuum and 9% underwent LSCS. In Paul Holmes study at 4-5 cms cervical dilatation, there was 70% FTND 25% outlet forceps / vacuum application and 4.2% underwent LSCS. In the present study at 4-5 cms cervical dilatation there was 76.3% FTNDs, 19.7% outlet forceps / vacuum and 1.3% underwent LSCS. There was one patient with cervical dilatation > 5 cm. it was delivered vaginally. In the Phipott and Castle series study, 78.85% had FTND, 15.55% had outletforceps or vaccum delivery and 2.6% had LSCS.⁶ In Daftary and Mhatre series, 68% had FTND, while 14% required outletforceps / vacuum and 7.5% underwent LSCS. In the WHO study 78.3% had FTND, while 4.2% required outlet forceps, 10.5% had vacuum application and 6.9% underwent LSCS. In Laurence Impey et al study 75.4% had FTND while 19.2% required outletforceps / vacuum and 5.4% underwent LSCS.

In the present study, 72% had FTND 18% required outlet force

Table 6: Duration of labour in I and II stage (Comparative study)

Duration of labour (Hr)	John FR Baret ³²	P.J. Steer et al ³⁵	Present study
I stage	7.4	5.4 ± 2.53	7.57
II stage	32.4	46 ± 37	23.51

it is observed that in the present study the duration of first stage of labour was 7.57 hr as compared to 7.4 hours by John Fr. Barette, and 5.4± 2.53 hrs by Steer et al. In the present study the duration of second stage of labour was 23.51 hr as compared to 32.4 min by John Fr. Baret and 46 ± 37 min by P.J. Steer et al. According to Philpott and Castle series which was done in 1972, 78% of the patients were in group A, 11% of patients were in group B and 11% were in group C. In the Daftary and Mhatre series, which was done in 1977, 66% of the patients were

in group A, 25.5% of the patients were in group B and 8.5% of patients were in group C. In the present study 46.8% of patients were in group A 45.3% percent of patients were in group B and 4% of patients were in group C. it can be observed that in the Philpott and castle series patients in Group A 89.76% had a FTND 9.8% required forceps / vacuum and 0.4% required LSCS. In the group B, 79.41% had FTND, 20.95 % required forceps or vacuum delivery and no LSCS was necessary.

Thus a patient in group A had a good prognosis for spontaneous vaginal delivery. All the patients in group B required intensive monitoring with Active management of labour, even group B patients had a high percentage of FTND and there were no LSCS. at 1 min 91.8% of babies had APGAR of 7-8 compared to 9-10 by Goyal et al. At 5 min, 92% of babies had APGAR of 9-10, compared to 94% by Beher et al and APAGR of 0-3 was observed in 0.5% compared to 1% by Beher et al. it is observed that in the present study 88.6% had no complications compared to 86.5% by RB Behere. Birth Asphyxia was found in 6.3% of babies compared to 6% by Behere while neonatal jaundice was 2.3% compared to 5.5% by Behere.

Conclusion

Although labour is a natural phenomenon leading to child birth and normally majority of labours do occur spontaneously, a few tend to become dystocic and go in for prolonged labour. Hence it is essential to identify the abnormality early and deliver them safely in time by active management of labour.

From this study and previous studies, it is evident that the routine use of the partogram is helpful to detect abnormalities in the progress of labour and it permits early corrective therapy.

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