EUROPEAN JOURNAL OF PHARMACEUTICAL AND MEDICAL RESEARCH

A STUDY ON THE IMPORTANCE OF PARTOGRAPHIC CONTROL OF LABOUR

Dr. Asma Begum*[1]

General Practitioner, Department of Obstetrics & Gynaecology, Hi Care General Hospital, Uttara, Dhaka, Bangladesh.

*Corresponding Author: Dr. Asma Begum

General Practitioner, Department of Obstetrics & Gynaecology, Hi Care General Hospital, Uttara, Dhaka, Bangladesh.

ABSTRACT

Background: Partographic control of labor involves the use of a partogram, which is a graphical record of the progress of labor. The partogram typically consists of a graph that tracks cervical dilation, fetal heart rate, and uterine contractions over time. **Objective:** In this study our main goal is to evaluate the importance of partographic control of labour. **Method:** This is a prospective study was carried out (MAT-1) in the Department of Obstetrics and Gynaecology, Dhaka Medical College Hospital (DMCH), Dhaka from 1" July 2009 to 31" December 2009. 50 Patients who are in 2nd stage of labour were included in my study. Fifty cases, including both primi- and multi-gravidae, who were admitted to Unit-I, Department of Obstetrics and Gynaecology, DMCH, during this period, was taken as the study population. Partographic recording was started for all women in labour. The frequency and strength of uterine contractions were studied half hourly in the active phase and the number of contractions in 10 minutes and strength of contractions were recorded. **Results:** During the study, 4-5 cm cervical dilatation was found by 70% pt, 20-40 sec uterine contraction was found in 38% pt and frequency of contraction was 3 among 50% pt. FHR was 120-140/min were found in 54% pt. Position of fetus found that 92% cephalic, 58% LOA, 52% head was engaged, half of the membrane was intact and 94% pelvis were adequate. Those who had LUCS among them 40% & 20% due to foetal distress and malrotation respectively where another 40% due to CPD. 40 & 60% neonate was male and female respectively. Mild dep (4-6) was found in 16% neonate within one min where it was only 4% within 5 min. 4-5 cm cervical dilatation was found in 66.7% multi and 71.9% primi pt, where more than 6 cm cervical dilatation was found in 9.4% and 11.1% primi and multi respectively. NVD was found in 62.5% & 83.3% primi and multi respectively. Assisted VD found more (12.5%) in primi than multi (5.6%) pt. Primi pt need more (25%) LUCS than multi (11.1%). Second stage of labour was found below 30 min in majority primi and multi pt (56.2% and 77.8%) where more than 60 min was found in 15.6% primi and 5.6% multi pt. **Conclusion:** With the use of partogram and its scientific application, the result showed that operative interventions were reduced, duration of labour and no maternal or perinatal mortality. In addition, it reduce the workload of recordkeeping in traditional way.

KEYWORDS: Partographic control, labor, parity.

INTRODUCTION

Partographic control of labor involves the use of a partogram, which is a graphical record of the progress of labor. The partogram typically consists of a graph that tracks cervical dilation, fetal heart rate, and uterine contractions over time. The cervical dilation is measured in centimeters, while the fetal heart rate is recorded in beats per minute, and the contractions are measured in terms of their frequency and duration. Partographic control of labor is a key component of obstetric care and is recommended by the World Health Organization (WHO) for all women in labor. The use of a partogram helps standardize the monitoring of labor, making it easier to identify when deviations from normal labor patterns occur.

The partogram is usually started when a woman's cervix has dilated to 4cm, and her membranes have ruptured, or if there is an indication for induction of labor. The healthcare provider records the initial cervical dilation, fetal heart rate, and frequency and duration of contractions, and then continues to monitor these parameters every 4 hours or more frequently if needed. The partogram has several important features that are used to identify abnormalities and determine the need for interventions. For example, the alert line is a line drawn on the graph that indicates when the rate of cervical dilation or descent of the fetus is slower than expected. The action line is a more conservative line drawn on the graph that indicates when interventions such as augmentation of labor or operative delivery may be necessary.[1-4]

If the cervical dilation or fetal descent falls below the alert line, the healthcare provider may take steps to stimulate labor progress, such as providing oxytocin to

strengthen contractions. If cervical dilation or fetal descent falls below the action line, more aggressive interventions such as assisted delivery or cesarean section may be necessary. In addition to monitoring labor progress, the partogram also helps healthcare providers identify and manage potential complications such as fetal distress, postpartum hemorrhage, and infection. For example, changes in the fetal heart rate can indicate distress, and prompt intervention can be taken to address the issue.[5-7] Overall, partographic control of labor is an important tool for ensuring safe and effective delivery. It provides a standardized approach to monitoring labor progress and identifying potential complications early on, which can help reduce the need for more invasive interventions and improve maternal and neonatal outcomes.

Objective
In this study our main goal is to evaluate the importance of partographic control of labour.

METHODOLOGY
This is a prospective study was carried out (MAT-1) in the Department of Obstetrics and Gynaecology, Dhaka Medical College Hospital (DMCH), Dhaka from 1" July 2009 to 31" December 2009.

50 Patients who are in 2nd stage of labour were included in my study. Fifty cases, including both primi- and multi-gravidae, who were admitted to Unit-I, Department of Obstetrics and Gynaecology, DMCH, during this period, was taken as the study population.

Pregnant women coming to the hospital in labour or starting labour in the hospital were included. After taking history with particular attention to aspects relevant to this study, clinical examinations were carried out.

Labour was diagnosed on the basis of regular, recurrent painful uterine contraction, progressive cervical dilatation, show and rupture of membrane or formation of bag of water.

Partographic recording was started for all women in labour. The frequency and strength of uterine contractions were studied half hourly in the active phase and the number of contractions in 10 minutes and strength of contractions were recorded. Fetal monitoring was done by auscultating fetal heart sound by stethoscope and seeing color of the liquor if membrane is ruptured. Fetal heart sound was heard immediately after contraction has passed and at 30 minutes interval and re-recorded on the graph. A detailed vaginal examination was done on admission, from 4 to 10 cm (full dilatation) in the ACTIVE phase and should progress more rapidly, normally at 1 cm every hour. Per vaginal examination was done at an interval of 4 hours and more frequently in the later part of the active stage of cervical dilatation. About uterine contractions moulding of the fetal head

was also assessed. Before each vaginal examination, the level of the fetal head was assessed in fifths by abdominal palpation and was recorded with an '0' on the appropriate line of the chart. Maternal pulse rate was recorded every half hour, blood pressure and temperature once every 4 hours or more frequently, if indicated. Volume of urine passed was noted and estimation of sugar, protein and acetone in urine were done in selected cases.

Analgesics, intravenous fluid, strength and rate of oxytocin drip, all that were used, also recorded in the partogram. A female relative was allowed to stay with the patient in the first stage of labour. Injection pethidine 50-75 mg intramuscularly was used as pain killer when indicated. The labor was managed according to the standard practice. The length of labour was carefully noted with mode of delivery and the condition of baby determined by Apgar score. A 5 minute Apgar score <6 was regarded as abnormal.

In relation to alert and action lines, all the cases were studied and their due importance in practice was verified. The initial dilatation rate (IDR) in cm/hr was calculated on the basis of increase in the cervical dilatation at the next vaginal examination. The relation of IDR to outcome of labour was studied.

Data for individual study subjects were recorded on a predesigned data collection sheet. Parameters for which statistical analysis done were - age of the patient, gestational age, cervical dilatation, engagement, mode of onset of labour, augmentation, duration of active phase, second stage and total duration of labour, mode of delivery and their indications, mean IDR and neonatal outcome. Collected data were compiled and appropriate statistical analysis, such as Z-test, Chi-square test and unpaired Student's't' test were done using computer-based software, Statistical Package for Social Science (SPSS). P value <0.05 was taken as minimum level of significance.

RESULTS
Table-1 shows age distribution of the study group where Age - Mean (±SD) 23.2 years (±5.06) with Range 16-34 years Table 1 show that 28% pt was below the age group of 20 years, 62% were between the age group of 20-30 years and 10% were above the age group of 30 years.

Table 1: Age distribution of the study group (n=50).

Age distribution of the study group	No	Percentage
< 20	14	28
20-30	31	62
>30	5	10
Total	50	100

Figure-1 shows reproductive status of the study group where 64% primi and 36% multigravida patients.
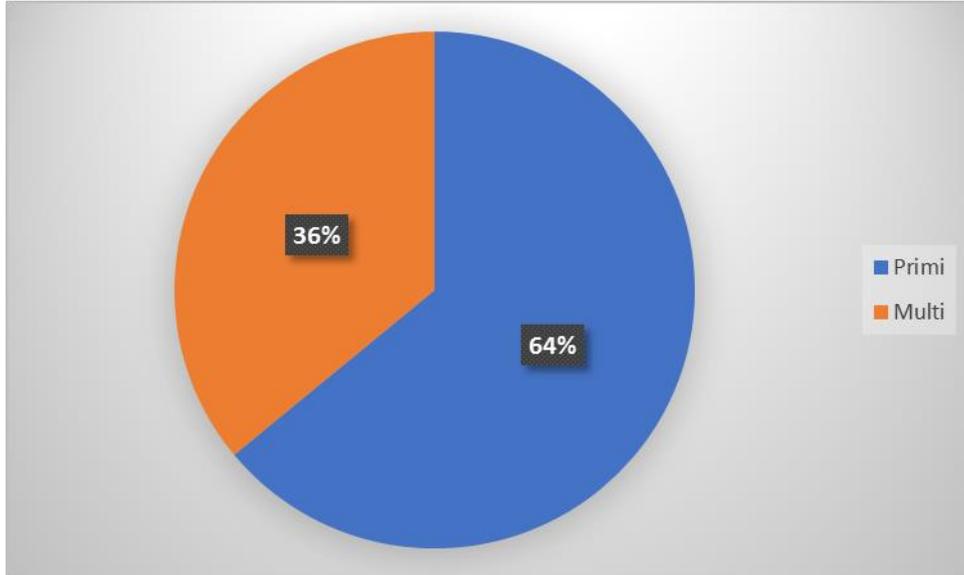

Figure 1: Reproductive status of the study group.

Table-2 shows Obstetric Condition of pt where 4-5 cm cervical dilatation was found by 70% pt, 20-40 sec uterine contraction was found in 38% pt and frequency of contraction was 3 among 50% pt. FHR was 120-140/min were found in 54% pt. Position of fetus found that 92% cephalic, 58% LOA, 52% head was engaged, half of the membrane was intact and 94% pelvis were adequate.

Table-2: Obstetric Condition of pt (n=50).

Obstetric Condition	No	Percentage
Cervical dilation		
4-5 cm	35	70
>5-6 cm	10	20
>6 cm	5	10
Total	50	100
Duration of Uterine constraction		
<20sec	14	28
20 – 40sec	19	38
>40sec	17	34
Total	50	100
Frequency of contrction		
2	11	22
3	25	50
4	14	28
Total	50	100
FHR		
<120/min	3	6
120-140/min	27	54
>140/min	20	40
Total	50	100
Presentation of foetus		

Cephalic	46	92
Breech	4	8
Total	50	100
Engagement		
Not Engaged	24	48
Engaged	26	52
Total	50	100
Presenting Part		
Occiput	46	92
Breech	4	8
Total	50	100
Membrane		
Intact	25	50
Rapture	25	50
Total	50	100
Pelvis		
Adequate	47	94
Inadequate	3	6
Total	50	100

Ht of Ut - Mean (±SD) 34.84 cm (+1.21) with Range 32-36 cm.

FHR-Mean (SD) 140.8/min (+8.4) with Range 110-154/min.

Table-3 shows Outcome of pregnancy (n=50) where 40 & 60% neonate was male and female respectively. Mild dep (4-6) was found in 16% neonate within one min where it was only 4% within 5 min.

Table 5: Outcome of pregnancy (n=50).

Outcome of pregnancy	No	Percentage
Sex		
Male	20	40
Female	30	60
Total	50	100
Apgar score with in one min		
Mild Dep (4-6)	8	16.0
No Dep (>6)	42	84.0
Total	50	100.0
Apgar score within five min		
Mild Dep (4-6)	2	4.0
No Dep (>6)	48	96.0
Total	50	100.0

Apgar score within one min - Mean (SD) 7.32 (978) with Range 4-8
Apgar score within five min - Mean (±SD) 9.48 (+1.1) with Range 6-10
Wt of new born in - Mean (±SD) 2.82 (+.27) Kg with Range 2.5-3.5Kg

Table-4 shows Cervical dilatation of the Pt in relation to parity (n=50) where 4-5 cm cervical dilatation was found in 66.7% multi and 71.9% primi pt, where more than 6 cm cervical dilatation was found in 9.4% and 11.1% primi and multi respectively.

Table 4: Cervical dilatation of the Pt in relation to parity (n=50).

Cernival Dilatation (cm)	Primiparson (n=32)	Multiparous(n=8)	P value
	No (%)	No (%)	
4-5	23 (71.9)	12 (66.7)	.92[ns]
>5-6	6(18.8)	4(22.2)	
>6	3(9.4)	2(11.1)	

p value reached from chi square test
ns=Not Significant

Table-5 shows Parity of the Pt and mode of delivery (n=50) where NVD was found in 62.5% & 83.3% primi and multi respectively. Assisted VD found more (12.5%)

in primi than multi (5.6%) pt. Primi pt need more (25%) LUCS than multi (11.1%).

Table 5: Parity of the Pt and mode of delivery (n=50).

Mode of delivery	Primiparous (n=32)	Multiparous(n=18)	P value
	No (%)	No (%)	
NVD	20 (62.5)	15(83.3)	
Assisted VD (Ventose)	3(9.4)	1(5.6)	. 45ns
Assisted VD (Forcep)	1(3.1)	0	
LUCS	8(25)	2(11.1)	

p value reached from chi square test
ns = Not Significant

Table-6 shows Duration of second stage in relation to parity where second stage of labour was found below 30 min in majority primi and multi pt (56.2% and 77.8%) where more than 60 min was found in 15.6% primi and 5.6% multi pt.

Table 6: Duration of second stage in relation to parity.

Second stage of labour (minutes)	Primiparous (n=18)	Multiparous(n=9)	P value
	No (%)	No (%)	
$\leq$30	18 (56.2)	14 (77.8)	
>30-60	9(28.1)	3(16.7)	.296ns
>60	5 (15.6)	1(5.6)	
Mean±SD	37.88±19.2	27.78±16	. 06ns
Range	0-70 (Minutes)	15-65 (Minutes)	

p value reached from chi square test/ 't' test
ns=Not Significant

DISCUSSION

Most of the primi patients belonged to age group 16-20 (50%) and multi- patients in age group 26-30 years (83.3%). Mean (±SD) age of multiparous women were significantly higher compared to primiparous (26.72±3.8 vs 21.2±4.6 years). This finding is more or less consistent with findings of Rahman,[38] who found 18-28 years as the most common age group (mean±SD23. 76±4.54 years). According to Bangladesh Demographics and Health Survey (BDHS), median age of first pregnancy is 18.3. years in Bangladesh.[8] The lower age group in primiparous women can be explained by socio demographic character of the patients. Here, most of patients came from low socioeconomic status with poor educational background. Majority of the primi and multi patients (64% and 36% respectively) attended the Hospital at their 38-40 weeks of gestation. Same observation was shown by other study.[9]

In this study, 71.9% and 66.7% primi and multigravid patients, respectively, attended the labour word in the active phase of labour (4-5 cm dilatation).

In this study, 4-5 cm cervical dilatation was found in 66.7% multi and 71.9% primi pt, where more than 6 em cervical dilatation was found in 9.4% and 11.1% primi and multi respectively at the time of admission. In a study reported that admission dilatations were 4.3 and 6.8 cm respectively.[10]

In the present study, 62.5 percent primigravida and 33.3 percent multigravida has fetal head engaged at an early stage of labour. This finding is consistent with the findings, who showed that 63.8 and 35 percent of primi and multigravida, respectively had fetal head engaged at an early stage of labour.[11]

It has been shown that engaged head had more vaginal delivery (54.3%) than non engaged head (45.7%). On the other hand, non engaged head had more Caesarean delivery (60.0%) than engaged head (40.0%). This finding comply with other study, who also showed that engaged head had more spontaneous delivery. Influence of engagement of head in labour on mode of delivery in present series was found to be positive one.[12]

In the present study, it has been shown that some primi and milti patients had spontaneous onset of labour. Induction needed in 62.1% primi and 52.9% multigravida patients.

The active phase of labour in the present series varied from 1 to 9 hours in both primi and multigravida, and the mean (±SD) duration are 4.61±1.89 and 4.1+2.23 hours, respectively. In other study the mean active phases in primigravida was 3.4 hours.[13]

Duration of second stage of labour in the present study were 37.88±19.2 minutes in primigravida and 27.78±16 minutes in multi gravida. In one report duration of second stage in primigravida was 45 minutes.[14] whereas other study reported that, the duration were 46 and 22 minutes in primi and multigravida, respectively.[15]

REFERENCE

1. WHO. The Prevention and management of postpartum hemorrhage. Report of a technical working group. Geneva. World health organization, 1990.
2. WHO. Revised 1990 estimates of maternal mortality. A New approach by WHO and UNICF. Geneva: World Health organization, 1996; 17-20.
3. Harrison JLA. Obstetrics Fistula: One social calamity to many. Br J obstet Gynaecol, 1983; 90: 385-6
4. Khan AR, Jahan FA Begum SF. Maternal mortality in rural Bangladesh: the jamalpur district. Stud Fam plan, 1986; 17: 7-12.
5. Alaudin M. Maternal mortality in rural Bangladesh: the Tangail district. Stud Fam plan, 1986; 17: 13-21.
6. Koening MA, Fauveau V, Chowdhury AL, Chakbraborty J, Khan MA. Maternal mortality in Matlab, Bangladesh, 1976-1985. Stud Fam Plan, 1988; 19: 69-80.
7. Akhter HH. Safe motherhood: situation analysis in Bangladesh. Paper presented in national conference in safe Motherhood, Dhaka, December 1994.
8. BSB. Statistics Pocket book of Bangladesh. Dhaka: Bangladesh Bureau of statistics, 1998: 355-7.
9. Who. safe motherhood: mother baby package. A road map for implementation in countries. Geneva: World Health organization, 1993; 242.
10. Whitefield CR. Dewhurst's textbook of obstetrics and gynaecology for postgraduates. 5th ed. Oxford: Blackwell Scientific publications, 1995: 242.
11. Murphy AG. Failure to progress in Second stage of labor. Curr opin obstet Gynecol, 2001; 13: 557-67.
12. Wolfgang J, Barbara s, Ursula P, Sandra H, Barbara S, peer H, et al. the prognostic impact of a prolonged second stage of labour on maternal and fetal outcome. Acta obstet Gynecol Second, 2002; 81: 214- 21.
13. Whitefield CR. Dewhurst's textbook of obstetrics and gynaecology for postgraduates. 5th ed. Oxford: Blackwell scientific publications, 1995; 287.
14. Archie CL, Biswas MK. The Course and Conduct of normal labour and delivery. In: DeChemey AH, Nathan L, editors. Current obstetric and Gynaecologic diagnosis and treatment. 9th ed. Lange Medical Book / Mc Graw –Hill, 2003; 213-21.
15. Friedman EA. Primigravid labour: a graphicostatistical analysis' obstet gynaecol, 1955, 6: 567-89.