Partogram Depicted Labour Dysfunction and Feto-maternal Outcome In Primigravidas

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ABSTRACT

Objective — *To determine the frequency of labour dysfunction and associated feto-maternal outcome in primigravidas.*

Study design — *Descriptive case series.*

Place & Duration of study — *Obstetrics & Gynaecology Unit II Civil Hospital Karachi, from January 2007 to August 2007.*

Methodology — *A total of 100 primigravidas were included, having term singleton foetus in active phase of labour. The process of labour was recorded on partogram with maternal and foetal parameters.*

Results — *Among the study participants, partogram curve of 74% primigravidas showed labour dysfunction and required augmentation. Median duration of first stage of labour was 9 hours, second stage of 30 minutes and third stage of 8 minutes. Out of total patients, 82% neonates were observed with good Apgar score and 18% had poor Apgar score. There were 2% cases of puerperal pyrexia but no case of PPH, ruptured uterus and obstructed labour.*

Conclusions — *Partogram is an inexpensive and efficient method of labour monitoring which depicts any dysfunction in labour timely so that early intervention could take place. With the use of partogram the mean duration of labour was reduced.*

Key words — *Partogram, Labour dysfunction, Feto-maternal outcome.*

INTRODUCTION:

Labour and delivery are the focus and climax of reproductive process. They are both physical and emotional challenge for the mother and hazardous journey for the fetus.[1] Definition of dysfunctional labour involves a failure of either cervical dilatation or descent of presenting par despite the presence of efficient or inefficient uterine contractions. The simplest way of classifying this disorder is into three groups; abnormalities of powers (uterine abnormalities or maternal expulsive effort), abnormalities of passenger (the foetus) and abnormalities of the passage (the pelvis).[1,2]

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The proper understanding of pathophysiology of dysfunctional labour and appropriate treatment will be important in any attempt to reduce the national caesarean section rate and maternal and perinatal mortality rate.[2] In developing countries maternal mortality rate is high and most of these follow dysfunctional labour due to cephalo pelvic disproportion, which may result in obstructed labour, ruptured uterus, obstetric fistula etc. It may lead to PPH and neonatal infections. Prolonged labour may cause asphyxia, brain damage, infections and death.[3]

One of the methods introduced to reduce the higher incidence of maternal and neonatal mortality in developing countries is partogram, a visual record for evaluation of labour and feto-maternal conditions. In a large multicentre trial in Southeast Asia, 35,484 women were studied by maintaining the partogram with an agreed labour management protocol. There was significant reduction observed in prolonged

labour and the proportion of labour required augmentation. Emergency caesarean section and intrapartum still birth rate also fell.[4] Therefore WHO embarked on trials of use of partogram to monitor labour in maternal wards in developing countries and has found it very successful.

The study under discussion aimed to determine the frequency of labour dysfunctions and feto-maternal outcome in primigravidas by using the partogram. Such information shall assist in the management of patient by decreasing the duration of labour, resulting in timely decision which inturn reduce the caesarean section rate and improve foeto-maternal outcome.

METHODOLOGY:

This study was a descriptive case series in which 100 primigravidas (low risk pregnancies), presenting in labour at term with alive singleton pregnancy and vertex presentation included. Patients' demographic data i.e. booked or unbooked, age, and socioeconomic status were noted in predesigned proforma. The process of labour was recorded in WHO recommended partogram. Graphical recording was started when patient entered in active phase of labour i.e. when cervix was 3cm or more dilated. Per vaginal examination was performed at the time of admission in the labour room to ascertain pelvic size and Bishop score was noted. All findings were recorded in partogram. Cervical dilation was assessed 4 hourly by doing per vaginal examination. Presence or absence of foetal membrane, colour of liquor and moulding of foetal skull bone were also recorded.

Intensity and duration of uterine contraction for 10 minutes noted half hourly, by placing hand over patient's abdomen. Foetal heart rate was recorded with the help of Pinard stethoscope, half hourly for one minute and monitored more frequently if found abnormal. Electronic foetal monitoring was used when foetal hearts were non-reassuring by intermittent auscultation or if liqour was meconium stained.

Maternal blood pressure, pulse and temperature were recorded hourly. Urine examination for volume, protein and acetone was carried out and recorded. Any medications and fluid intake given, also noted. The time of start of recording partogram was taken as 0 time. Alert and action line were made to assess progress of labour with four hours difference. Progress of labour labeled normal if the plotting of cervical dilatation remained on the alert line or to the left of it, augmentation was decided according to the Bishop score, strength and duration of uterine contraction. Augmentation was done either with surgical method, that is amniotomy or with medical method, by using oxytocin.

Oxytocin infusion (10 units) was made in 1000 ml of Ringer's lactate and started at a dose of 0.5 -10 mu/min and increased by ten drops at interval of 30 minutes. Dose was titrated against the uterine contractions aimed for maximum of 3-4 contraction every ten minutes lasting for 40-50 seconds. Adequate contractions were achieved up to the maximum dose of 16 mu/min. Maximum dose was not exceeded beyond the 32 mu/min. Partogram was maintained. Analgesia was given whenever needed. Outlet forceps or vaccum were applied for prolonged second stage of labour (2 hours). Caesarean section was performed whenever indicated.

Duration of labour in hours and mode of delivery (spontaneous vaginal, instrumental vaginal delivery or cesarean section) were noted. Neonatal resuscitative measures were taken in addition to tactile stimulation or oronasal suction when indicated. Mode of delivery and Apgar score at 1 and 5 minutes were recorded.

Statistical analysis was performed using SPSS version 10. Age of the patient was presented by mean and standard deviation. Frequencies and percentages were computed to present qualitative variables like antenatal booking status, socio-economic status, labour dysfunction, mode of delivery, indications of caesarean section, foetal outcome, birth weight and Apgar score at birth. Median (Inter-quartile range) of duration of 1st, 2nd and 3rd stage of labour was computed.

RESULTS:

A total of 100 primigravidas, having singleton foetus with cephalic presentation in active labour were included. Out of them 54 (54%) were booked while 46 (46%) were non booked. Mean age was 25.39 (range from 18 to 35) year. Most of the women belonged to age group of 21-25 year. Partogram curve depicted 74 (74%) women with labour dysfunction who required augmentation. Out of this amniotomy was performed in 34 (34%) women and 40 (40%) women needed oxytocin for augmentation, due to inefficient uterine contractions.

Primary dysfunctional labour and secondary arrest were types of labour dysfunction (table I). Mean duration of 1st stage of labour was 9 hours, median duration of 2nd stage of labour was 30 minutes and median duration of 3rd stage of labour was 8 minutes. Eighty (80%) women delivered vaginally, (6) 6% women had assisted forceps delivery, 4 (4%) women

Table I: Types of Dysfunction (n =100)

Nature of Dysfunction	Reason	Intervention
Primary dysfunctional labour	Insufficient uterine contractions	ARM + Oxytocin (34%)
Secondary arrest	Inefficient uterine contractions CPD Macrosomic baby Malposition	Oxytocin (30%) Caesarean Section (10%)

had assisted vacuum delivery and (10) 10% women had emergency caesarean section.

Cephalopelvic disproportion (CPD) was the commonest indication of caesarean section, that was found in 5 (50%) of women (as 6% neonates had birth weight greater than 3.5 kg). Out of 10 (10%) women who underwent caesarean section, foetal distress was present in 4 (40%) women and deep transverse arrest in 1 (10%). Neonatal death was recorded in 2 (2%) study participants.

Majority of the neonates 93 (93%) were of normal birth weight (2.5-3.5kg), 6 (6%) neonates were of >3.5 kg, and only 1(1%) neonate was of low birth weight (<2.5kg). Eighteen (18%) neonates were observed with poor Apgar score (< 6) while, 82 (82%) neonates were observed with good Apgar score (> 6) at one minute. After five minutes, 96 (96%) neonates were found with good Apgar score (>6) and only 4 (4%) neonates were observed with poor Apgar score (< 6), out of whom 2 (2%) neonatal deaths were recorded while 2 (2%) neonates were successfully resuscitated. No case of obstructed labour, PPH and ruptured uterus reported in this study. Two (2%) cases of puerperal pyrexia were found.

DISCUSSION:

The crucial factor in active management of labour is the timing of interventions whether through amniotomy, augmentation or caesarean section. The use of partogram with its alert and action line provides the optimum timing of these interventions, thus it is a useful method for monitoring progress of labour and depicting dysfunctional labour in primary and tertiary care hospitals.

After implementation of partogram curve in current study 74% women were identified, having dysfunctional labour and required augmentation of labour with amniotomy or oxytocin due to inefficient uterine contraction. In this study 34% women were augmented with oxytocin after crossing action line on partogram and 40% of women progressed well with amniotomy when cervical dilatation was between alert and action line.

This study had similar results as that conducted by Studd et al.[5] These researchers augmented 36% of primigravidas and 13% multigravidas, whereas O Driscol augmented 55% of primigravidas with oxytocin.[6] This is well established that dysfunctional labour, which was diagnosed by partogram after surgical and medical augmentation showed better outcome in relation to approach to abnormalities of labour and foetal outcome. A study that was conducted by Dujardin B et al.[7] They performed amniotomy and oxytocin augmentation in half of the deliveries which crossed the alert line.

In current study median duration of first stage of labour was 9 hours. These results were significant. Only 20% of primigravidas had laboured longer than 12 hours. Study conducted by Sizer AR et al, found the rate of cervical dilation of 1.7 cm / hour. In a WHO[4] multicentre trial conducted in Indonesia, Malaysia and Thailand, proportion of labour lasted over 18 hours was almost halved after introduction of partogram.[8] Javaid et al reported that after introduction of partogram 91.6 % of women were delivered within 12 hours and 8.4% within 24 hours.[9]

Tahir et al reported fall in caesarean section rate from 52% to 22% after introduction of partogram.[10] Partogram was implemented in Dublin National Maternity Hospital in 2001 and it was found that caesarean section rate fell to 5.4%.[11] Another study conducted by Alfirevic et al found lower rate of caesarean section rate due to foetal distress.[12] In the present study 80% of women were delivered vaginally.

In this study 18% neonates were delivered with poor Apgar score i.e < 6 in 1 minute and required resuscitation (when labour crossed the alert line) while 82% of neonates were observed with good Apgar score. Tausef et al reported a need of resuscitation in 9.4% of babies in whom labour

curved crossed alert line as compared to 1.4% of babies with normal labour.[13] WHO trial revealed marked fall in intrapartum stillbirths from 0.5% to 0.3% with implementation of partogram in the labour management. Neonatal deaths and resuscitation requirement fell from 6% to 2%.[4]

Study conducted by Dangal et al showed that partogram was found highly effective in reducing maternal and foetal complication rate due to prolonged labour, postpartum haemorrhage, sepsis, anoxia, infection and intrauterine deaths.[14] Another study which was done in South Africa, reported that crossing of the alert line yielded a relative risk for resuscitation, 1.91 while 4 hours action line resulted in a relative risk of 1.41.[15]

Javaid et al reported decrease frequency of vaginal examination after implementation of partogram.[9] They performed vaginal examination after 4hours when labour was not stimulated and after 2hours when augmentation was started. Ultimately they found reduction in puerperal infection rate. In our study only 2 cases of puerperal pyrexia were reported. Study conducted by Chazzota C et al, reported 59% drop in postpartum sepsis cases due to the reduction in the mean number of vaginal examinations.[16]

In the tertiary care center like Civil Hospital Karachi, where junior doctors and lady health workers are getting training, partogram act as an effective, easy and inexpensive tool which makes timely remedial intervention to improve maternal and foetal outcome favourably. This is also supported by Fadhy et al, study of 20 midwives who took part and were regularly conducting birth in maternity homes of Medan. The results concluded that partogram should be promoted by midwives for labouring women in maternity homes.[17]

CONCLUSIONS:

Partogram is simple and inexpensive method of monitoring labour which does not need high technology and intelligence. With the use of partogram the mean duration of labour decreased and it also helped in prevention of prolonged labour, postpartum haemorrhage and infection.

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