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Audit of use of the partograph at the University College Hospital, Ibadan

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Summary

Study assessed documentation on the partograph and its influence on decision-making at the University College Hospital (UCH), Ibadan. Partograph records of parturient during 2004 were retrospectively reviewed. Four hundred and forty-five women had partographic monitoring. High-risk patients were more likely to receive closer (quarter-hourly) monitoring than low-risk women ($X^2 = 45.7$, $p < 0.0001$). Documentation was high and not influenced by woman's risk or booking status. Descent of presenting part and liquor status were the least recorded parameters. When tracing crossed the alert line (31.2%) or reached the action line (10.1%), augmentation of labour was more often (but not statistically significant) resorted to than emergency Caesarean section. When tracing crossed the action line however, intervention was significantly more likely to be emergency Caesarean section than augmentation of labour (88.2% vs. 11.8%), $X^2 = 5.3$, $p < 0.05$. Intervention for inadequate uterine contractions would more likely be augmentation of labour than emergency Caesarean section (81.4% vs. 18.6%), $X^2 = 3.9$, $p < 0.05$. This decision was not significantly influenced by the risk status ($X^2 = 0.003$, $p > 0.05$). Outcome of labour was favourable for majority of low and high-risk women and their infants. The partograph is universally employed in monitoring of labour at UCH Ibadan. Its use significantly influences decision-making and associated with positive labour outcome among low/high-risk parturient. It is recommended as the sine qua non tool for intra-partum monitoring in all health facilities in Nigeria to reduce maternal complications.

Keywords: *Partograph, audit, intra-partum monitoring, intra-partum decision-making, outcome of labour, quality of care*

Résumé

Cette étude évaluait la documentation sur la partographe et ses influences sur la prise des décisions au Centre Universitaire Hospitalier d'Ibadan. Les registres de

partographe de l'année 2004 étaient revus. Quatre Cent quarante cinq femmes avaient eu leur partographie suivie. Les patients à haut risque avaient la plus grande tendance de recevoir plus des soins que ceux à moindre risque. ($X^2=45.7$; $P=0.00001$). La documentation était plus élevée et n'avait pas influencé les risques chez les femmes ou statut d'enregistrement. Lorsque la ligne d'alerte était débordée (31.2%) ou atteignait la ligne d'action (10.0%), l'augmentation du travail était plus fréquent (mais pas statistiquement significative) que la scission césarienne d'urgence. Cependant, l'intervention était significativement d'être une scission césarienne d'urgence que l'augmentation du travail (88.2% vs 11.8%), $X^2=5.3$, $P<0.05$). L'intervention pour les contractions utérine inadéquate pourrait plus augmenter l'augmentation du travail qu'une urgence de chirurgie caesarienne (81.5% vs 18.6%), $X^2=3.9$, $P<0.05$). Cette décision n'était pas significativement influencé par le statut de risque ($X^2=0.003$, $P>0.05$). Le résultat du travail était favorable pour la majorité des femmes à grand ou moindre risque et leurs enfants. La partographe est universellement employée pour surveiller le travail au CHU, Ibadan. Son emploi influence significativement sur la prise de décision et associé avec un résultat du travail positif parmi les femmes à terme à moindre ou haut risque. Il est recommandé comme un outil sine qua non pour la surveillance d'intraparturition dans les centres de santé au Nigeria pour réduire les complications maternelles.

Introduction

Of all reproductive health indices, maternal mortality ratio best expresses the widening discrepancy in the level of care and the outcome of reproduction between the advanced and developing countries [1,2]. Available estimates show that about 515 000 maternal deaths occur every year from complications of pregnancy and childbirth [3]. Maternal deaths have been reported to be only the tip of an iceberg; among those who survive childbirth, at least 8 million women

suffer serious health problems and a further 50 million women suffer adverse health consequences after childbirth [4]. The overwhelming majority of these deaths and complications occur in developing countries [5].

For more than two decades, maternal mortality has been recognized as a public health problem in Nigeria. Despite the continued focus on the issue by stakeholders and support from the international community, maternal mortality figures continue to rise [6].

The majority of the deaths and complications could be prevented by cost-effective and affordable health interventions [7]; the same measures that would prevent maternal deaths would also prevent morbidity and improve neonatal outcome [8].

In 1987, the first International Motherhood Conference, held in Nairobi, Kenya adopted the goal of a 50% reduction in the 1990 levels of maternal mortality by the year 2000. The conference recommended among other issues the partograph as an effective tool for monitoring labour. When used effectively, the partograph will prevent prolonged or obstructed labour, which accounts for about 8% of maternal deaths [9].

The partograph is a graphic recording of the progress of labour and salient features in the mother and the fetus are plotted against time in hours [8]. Its use facilitates the early detection of prolonged labour, indicates when augmentation of labour is appropriate and helps in recognizing cephalo-pelvic disproportion long before labour becomes obstructed [10]. The partograph thus serves as an 'early warning tool' and assists in early decision on transfer, augmentation and termination of labour.

The partograph as a tool for intra-partum management is a mandatory component of care in all health facilities providing maternity services in the new Women and Children Friendly Services (WCFHS) Initiative of the Federal Ministry of Health and UNICEF [11].

Monitoring of parturient women in developing country hospitals is largely by intermittent observations. The partograph offers an excellent opportunity to document such detail in a graphic form. Available evidence suggests that intermittent observation has almost comparable outcome with electronic fetal monitoring [12].

The use of the partograph in resource constrained settings is therefore to be encouraged

and should be regarded as providing quality maternal health care. Its use should contribute to the reduction of both maternal and perinatal morbidity and mortality.

It is consequently worthwhile to periodically evaluate the utilization of this tool in the care of parturient women. The partograph is a component of quality of care that should be readily available to parturient women at all levels of the health care system and at minimal cost to the health sector. This study was designed to assess the use of the partograph at the University College Hospital, Ibadan in south-western Nigeria. Recognizing the value of the partograph as a cheap, affordable and effective tool, the study explored the adequacy of documentation on the partograph and its influence on decision making in the management of the parturient woman.

Methodology

The study was a retrospective study conducted at the University College Hospital, Ibadan. The study period was between January 1, 2004 and December 31, 2004. Study participants were parturient women managed during the study period. The birth register for the period was retrieved and the hospital numbers of all women who had spontaneous vaginal deliveries and emergency Caesarean section were recorded. Their medical records were retrieved.

Inclusion and exclusion criteria as proposed by the WHO [13] were employed in this study.

Inclusion criteria for the study were:

- Women with spontaneous onset of labour
- Unbooked women admitted in labour and monitored with the partograph prior to delivery
- Women admitted and monitored during the first stage of labour

Exclusion criteria were:

- Women who had elective Caesarean section
- Unbooked women who had emergency Caesarean section without prior monitoring in labour in this hospital
- Women admitted into the Labour ward during the second stage of labour
- Women with intra-uterine fetal death prior to admission into Labour ward
- Women with multiple pregnancy

Women who had induction of labour were excluded from the analysis of actions taken to correct abnormalities during labour.

The study utilized a pre-designed data sheet to obtain relevant information for each woman including the biodata, parity, booking status, gestational age, risk factors, onset of labour, fetal heart monitoring, documentation of descent of fetal head, whether tracing reached/crossed alert/action line and the actions taken, uterine contractions, drugs administered to mother, mother's vital signs, mode of delivery, and birth weight. Other relevant data included the Apgar score at 5 minutes, admission into special care baby unit (SCBU) and the mother's and baby's status at discharge.

Data were coded, entered onto a micro-computer and analyzed using EPI-INFO version 6 (CDC, Atlanta). Statistical analysis was performed using chi-square test and t-test as appropriate. The level of significance was set at $p < 0.5$. The Joint University of Ibadan/University College Hospital, Ibadan Institutional Review Board gave ethical approval for the conduct of this study

Results

Total delivery in the year 2004 was 1 319. Eight hundred and nine women had vaginal delivery out of which 344 women were excluded for the reasons shown in Table 1. Four hundred and forty five women had partographic monitoring during labour. The parity distribution is shown in Fig. 1. The risk factors are indicated in Fig. 2. Oxytocin use for either induction or augmentation of labour constituted the commonest risk factor. Two hundred and sixteen (48.5%) women were low risk and 229 (51.5%) were high risk. Gestational age ranged between 30 and 42 weeks with a mean gestational age of 38.8 weeks \pm 1.9. Table 2 describes the pattern of parameters recorded on the partograph. Documentation was generally high and not influenced by the woman's risk or booking status, but the descent of the presenting part and the liquor status were the least recorded parameters.

Table 1: Breakdown of women who had SVD but excluded from study

Multiple gestation	42
Breech presentation	26
IUD/Abnormal cases	176
Admission in second stage of labour	120
Total	364

Fig 1: Parity distribution of patients

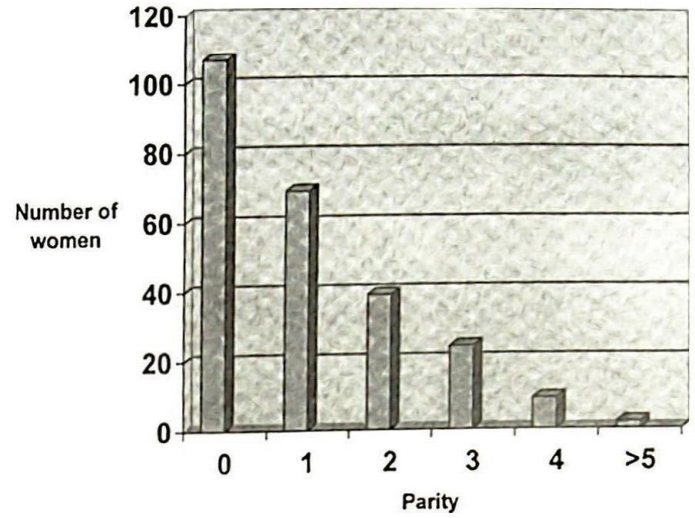


Fig. 1:

Fig. 2. Risk factors during labour

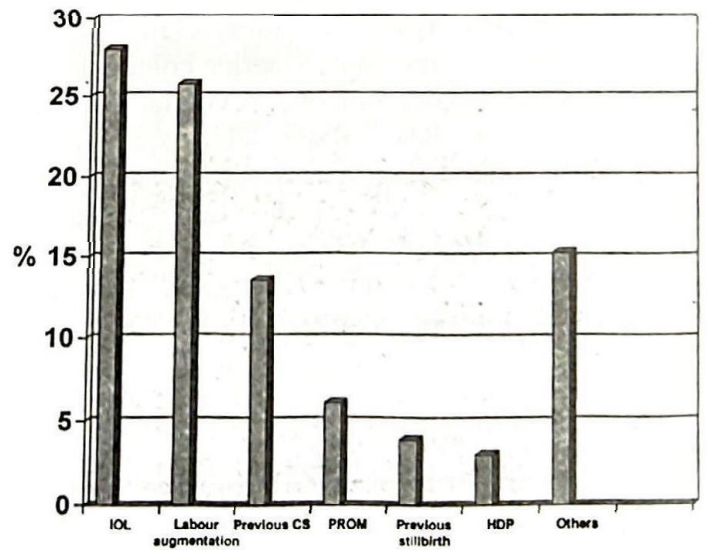


Fig. 2:

IOL - Induction of labour
Previous CS - Previous caesarean section
PROM - Premature rupture of membranes
HDP - Hypertensive disorders of pregnancy
Others - Anaemia, intra-uterine growthrestriction, oligohydrannios, preterm labour. HBSS, grandmultiparity.

Table 2: Documentation on the partograph

Parameter	N	%
Regular fetal heart rate monitoring	392	88
Liquor status	200	44
Descent of fetal head	353	79
Uterine contractions	432	97
Maternal vital signs	412	94

The fetal heart rate was not consistently recorded (i.e. either every 15 or 30 minutes during the first stage of labour) in about 12% of parturients. Fetal heart rate was monitored half-hourly in 170 (81.0%) of low risk women. High risk patients were more likely to receive closer (quarter-hourly) monitoring than low risk women (51.7% vs. 19.0%) - $X^2 = 45.7$; $p < 0.0001$. When the tracing on the cervicogram crossed the alert line (31.2%) or reached the action line (10.1%), augmentation of labour was more often (but not statistically significant) resorted to than emergency Caesarean section. When the tracing crossed the action line however, the intervention was significantly more likely to be emergency Caesarean section than augmentation of labour (88.2% vs. 11.8%), $X^2 = 5.3$, $p < 0.05$.

Intervention for inefficient uterine contractions (i.e. less than 3 uterine contractions in 10 minutes or the duration of each contraction is less than 40 seconds and associated with poor descent of fetal head and cervical dilatation) was more likely to be augmentation of labour than emergency Caesarean section (81.4% vs. 18.6%), $X^2 = 3.9$, $p < 0.05$. This decision was not significantly influenced by the risk status ($X^2 = 0.003$, $p > 0.05$).

Table 3: Fetal Outcome

	5 minute Apgar score		P - value
	< 7 (%)	≥ 7 (%)	
Booked	1.8	98.2	< 0.05
Unbooked	7.0	93.0	
Low risk	0.8	99.2	< 0.05
High risk	4.1	95.9	

The high risk woman and the unbooked woman were significantly more likely to be delivered by operative delivery than their low risk and booked counterparts.

However, the outcome of labour was favourable for the majority of low and high risk women and their infants (Table 3). Although booked patients and low risk patients tended to have higher 5-minute Apgar scores compared with the unbooked and the high risk patient, the mean 5-minute Apgar scores were high. There was no maternal or perinatal mortality among the study population.

Discussion

This audit exercise revealed that the partograph is employed in the management of all parturient women. Its use is thus well established in this hospital. Being a tertiary health facility with Physician-led practice, it is the Physician who documents most of the information recorded in the partograph. A previous study had established the advantages of the partograph in reducing the incidence of prolonged labour in the same hospital [14].

The preponderance of high-risk women reflects the tertiary status of the institution. It is a regional referral centre. Although a higher proportion of high risk women had quarter-hourly fetal heart rate monitoring compared with low risk women, intra-partum monitoring appears to fall short of standard criteria which stipulate quarter-hourly heart rate monitoring for all high risk women among other recommendations.

More than 10% of patients did not have the fetal heart rate documented in a consistent pattern indicating a failure to comply with standard criteria of half - hourly and quarter - hourly fetal heart monitoring for low risk and high risk patients respectively.

Intermittent auscultation is the standard practice in this environment. When appropriately implemented, evidence shows comparable neonatal outcome with continuous fetal monitoring [12]. However it is only when the fetal heart rate pattern has been identified by auscultation that it could lend itself to interpretation.

This observation is consequently an evidence of sub - optimal intra-partum monitoring. Chalumeau *et al* [15] implicated sub - optimal intra-partum monitoring and care in the high still birth rate prevalent in the West African sub-region. These authors attributed the inadequate intra-partum monitoring to non - use of the partograph.

The prominent contribution of oxytocin use to risk during labour also confirms the conclusion of

Chalmeau *et al* [15] that the principal risk factors for late stillbirth could be detected only in the late antenatal and intra-partum periods, thus emphasizing the important role of the partograph. Partograph use facilitates decision-making. A consistent pattern emerged in the study. Crossing the alert line was associated with augmentation of labour. For patients whose tracing on the cervicogram crossed the action line, there was a significant intervention to effect prompt delivery. These trends are indeed consistent with recommended standards of care for parturients and therefore appropriate [8,16]. According to these recommendations, the plot of cervical dilatation reaching the alert line is an indication of slow progress in labour: thus in a peripheral health facility, the woman should be referred to a central unit whilst in a referral level facility, the woman should be reassessed and the labour augmented with oxytocin if uterine contractions are inadequate. Any woman whose plot of cervical dilatation reaches or crosses the action line should be in a referral level facility, careful assessment is indicated and a decision made to augment labour with oxytocin (in the absence of signs of fetal distress or obstructed labour) or deliver by caesarean section (when there are signs of fetal distress or obstructed labour).

The findings in the study showed that use of the partograph was associated with favorable labour outcome. Though low-risk and booked patients had significantly higher mean 5 – minute Apgar scores compared with their high-risk and unbooked counterparts, the mean 5 – minute Apgar scores were quite high for all patients. There was no fresh still birth among the patients studied. The small sample of women studied in this audit is acknowledged. Larger studies will have more power to explore these associations better.

Given the positive associations identified with the use of the partograph, it is logical to conclude that it will improve the quality of obstetric care; therefore any endeavor to improve care must accord it priority attention. Indeed, in recognition of its value, the Women and Children Friendly Health Services initiative of the Federal Ministry of Health proposes to establish partograph use as one of the standard criteria for quality obstetric care that must be available in all health facilities in Nigeria [11].

Research on the value of the partograph at the primary and secondary levels of care is recommended. Introducing the partograph to other levels of care will require thoughtful coordination and effective monitoring.

Conclusion

The partograph is universally employed in monitoring of labour at the University College Hospital, Ibadan. Utilization of the partograph is thus feasible. Its use significantly influences decision-making and is also significantly associated with positive labour outcome among low and high risk parturient. However, there is room for improvement in fetal heart monitoring and documentation of maternal and fetal parameters. The partograph is recommended as the sine qua non tool for labour monitoring in all health facilities in Nigeria in order to reduce maternal and perinatal morbidity and mortality.

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