# PREVENTION OF OBSTETRIC FISTULA: A CASE FOR THE UNIVERSAL APPLICATION OF THE PARTOGRAPH FOR LABOUR MANAGEMENT

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## ABSTRACT
The pathophysiology of obstetric fistula and its social sequelae are explained. The role of the Partograph as the most cost effective approach for the prevention of obstructed labour and fistula are carefully examined. A detailed description of how the Partograph is used for labour care is presented and the barriers to the universal use of the Partograph are identified. It is concluded that the Partograph has the capacity to completely prevent obstructed labour and fistula if used for all women and that lack of the knowledge of how to use it correctly to conduct labour, is identified as the greatest barrier.

Running Title: Partograph Use To Prevent Obstetric Fistula

## INTRODUCTION

An obstetric fistula is an abnormal communication between the vagina and the genito-urinary system and / or rectum and is characterized by continuous urinary and / or fecal incontinence. The continuous urinary dribbling excoriates the adjacent genital areas, produces painful rashes and emits offensive odour. It is often the result of prolonged obstructed labour commonly in the uneducated adolescent girl involved in very early marriage who labored at home with an illiterate traditional birth attendant and the baby a stillbirth (1). The consequences are devastating: the girl is usually kept hidden; subsequently, she finds it difficult to maintain decent standard of personal hygiene because she is continuously dribbling urine and water for washing is generally scare; divorce becomes inevitable and destitution follows, the girl being forced to beg for her livelihood (2,3). It is important to emphasize two points. Firstly, although it is often believed that obstetric fistula results from prolonged obstructed labour, it is not in all cases that fistula results from prolongation of obstruction because some earlier records showed that obstetric fistula occurred after only 3 hours of obstructed labour (4). This emphasizes the need to avoid obstructed labour in totality and not just only the prolonged obstructed labour. Secondly, obstructed labour whether or not it is prolonged, is also associated with fetal hypoxia, birth trauma and infections, resulting in intrapartum or early newborn death and perinatal morbidity (5). Therefore, prevention of obstructed labour is an important intervention towards reducing maternal and perinatal mortality and morbidity and in achieving the millennium development goals (MGDs) 4 and 5.

Obstructed labour occurs when the presenting fetal part cannot pass through the maternal bony pelvis. The presenting part then becomes wedged against the maternal pelvic bones compressing the soft tissues in between. The uterine contractions (which usually at this time is very strong and frequent) force the presenting part deeper into the pelvis compressing the maternal soft tissues much more forcibly. If this process is not relieved by surgical intervention, the blood supply to the entrapped soft tissue becomes compromised, ultimately resulting in tissue death and fistula formation. The World Health Organization's Global Burden of Disease study estimated that 21.9% of the disability – adjusted life years lost by women aged 15 through 44years

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were attributable to reproductive ill-health and that 14.5 years per woman were lost to adverse maternity related causes such as obstetric fistula which account for 22% of all morbid maternal conditions (6). Not only does the problem of fistula affect the productivity of a country, community and household, it also changes the life of the affected women forever. Women with fistula are no longer able to successfully fulfill their societal role of wife and mother and are often deserted by husbands and family and stigmatized by society.

The core issue is that, obstetric fistula is preventable through a number of now well known strategies like educating community leaders, religious leaders, parents, grandparents, peer counselors and various media to promote norms and behaviours to delay early marriage, and early initiation of sexual activity. Others, are family planning which should be available and accessible, basic child birth education for the pregnant women, on the importance of delivering at a health facility. In spite of all these, the most dependable strategy for prevention of fistula is the prevention of obstructed labour which is easily achievable.

## PREVENTION OF OBSTRUCTED LABOUR

i. **Antenatal prediction of obstructed labour**

Obstetric practice in the past, included identifying women at risk of obstructed labour, aiming for straight delivery without labour as a way to prevent obstructed labour. Such risk factors in the past, included short stature and small shoe size which are indirect markers of small pelvis and potential cephalo-pelvic disproportion (CPD) and hence risk for obstructed labour. The predictive value of these criteria are too low to justify direct obstetric intervention and even clinical and ultra sound estimation of fetal weight are all unreliable in predicting obstructed labour (7). Also external and internal pelvimetry either by clinical measurements or by imaging techniques to identify women at risk of obstructed labour, are described in standard obstetric textbooks (8,9). Pelvimetry in general has been confirmed to be a poor predictor of obstructed labour and hence unreliable (10).

ii. **Intrapartum prediction of obstructed labour through detection of slow labour progress**

Virtually all the antenatal methods described, have poor predictive values for obstructed labour because the changes that occur in the dimensions of the fetal head and the maternal pelvis during labour cannot be successfully predicted by any antenatal methods. Labour is the best test for the diagnosis of CPD at which time the fetal head is also the best pelvimeter during the course of labour. During active phase labour, a decrease in the presenting dimension of the fetal head brought about by increasing flexion, asynclitism and moulding, and the increased in maternal pelvic dimension through relaxation of the pelvic joint ("give of the pelvis") help to overcome many cases of CPD suspected before the onset of labour. Similarly, very often CPD occurs in active phase labour in cases where there was no suspicion or risk for CPD in the antenatal period or even in early part of labour; the neglect of which will eventually result in obstructed labour (11). Hence, assessing the progress of active phase labour is the best way to predict obstructed labour. Out of the three known methods for assessing progress in the active phase labour (monitoring of the descent of the presenting part, assessment of uterine contractions and assessment of the rate of cervical os dilatation), monitoring the rate of cervical os dilatation is the most dependable and objective to be used (11). The normal rate of cervical os dilatation in the active phase labour is 1cm per hour and this is the normogram for assessing progress in active phase labour worldwide (12-14). During the course of labour, regular vagina examination is used to assess the rate of cervical os dilatation to identify those women progressing normally who will achieve vagina delivery. Those who

are progressing at the rate of less than 1cm per hour are in slow progress and without the appropriate intervention will progress to obstructed labour. Early diagnosis of slow labour progress in active phase labour and appropriate intervention are the most objective and dependable way to prevent obstructed labour. The Partograph is a simple tool, designed over 39years ago, that has been used for early diagnosis of slow labour progress, the treatment of which will prevent obstructed labour and its sequelae.

**The use of the Partograph to prevent obstructed labour and obstetric fistula**

i. **How the use of the Partograph can prevent obstructed labour**

It is important to address this issue because only few workers have explained the details of how the Partograph can prevent obstructed labour, obstetric fistula and even maternal deaths. Labour is the act of expulsion of the fetus and placenta from uterus at term through the vagina to the outside world via the process of first, second and third stages of labour (15). The first stage labour is the longest and most tedious but it is the determinant of outcome of labour because quite often, abnormal first stage is followed by abnormal second and third stages (16). Although first stage has a latent and active phases, the active phase labour is the actual determinant of labour outcome and it is the phase that deserves close supervision. Monitoring first stage active phase labour, is usually by assessment of cervical os dilatation rate; the normal rate of which is 1cm per hour and a rate of progress less than 1cm per hour is slow labour progress. Slow labour progress is the earliest anomaly of active phase labour which if not detected and treated, will progress later to obstructed labour and its sequelae.

The actual issue in the prevention of obstructed labour, is the inability of caregiver in labour to recognize slow labour progress which always heralds obstructed labour. In most instances, the features of obstruction would have set in, before the caregiver realizes at all that something is wrong. This is very common in the developing countries where often care in labour is provided by staff who maybe skilled birth attendant but lack the obstetric skill to easily diagnose slow labour progress without any aid. This explains why, even midwives and other skilled birth attendants, refer labour complication very late. The Partograph is the clinical tool which when used to record observations in labour according to the structured protocol will assist with diagnosis of slow labour process in active phase early enough for appropriate intervention to correct this anomaly so that normal labour progress can be restored and obstructed labour completely prevented. This is achieved through the idea of the alert and action lines on the Partograph. The alert line is the visual mark of 1cm per hour cervical os dilatation rate of progress and facilitates easy recognition of slow labour progress so that the recommended actions can be taken to prevent obstructed labour. The action line is a visual mark of slow labour progress in active phase for a considerable period ranging from 2, 3 or 4 hours. This is often represented by the action line which on the WHO modified Partograph is 4 hours from the alert line. The action line is the visual mark of when defined intervention must be instituted by the staff with the cognate knowledge of what intervention must be initiated as appropriate treatment for the slow progress.

ii. **How to use the Partograph to prevent obstructed labour and obstetric fistula**

**Description of the Partograph**

This section shall rely on the current knowledge of labour in which active phase first stage labour is defined as a cervical os dilatation of 4cm and above associated at term with regular, painful, and palpable contractions, of at least one in every 10 minutes interval. The Partograph for this discussion shall be the

modified WHO Partograph with the printed alert line from 4cm cervical os dilatation to 10cm dilatation on a slope of 1cm per hour. The action line is printed 4 hours parallel and to the right of the alert line. The Partograph is meant for recording observations in active phase labour aiming to alert midwives and obstetricians to deviation in labour course as well as in maternal and fetal well being. The observations are commonly fetal vital signs ( fetal heart rate (FH), volume and colour of liquor and moulding), maternal vital signs (blood pressure, pulse rate, respiration rate, urinary volume and content) contraction details (contraction, frequency per every 10minutes, duration and consistency), progress of labour, (descent of the leading part and cervical os dilatation), and therapeutics undertaken on the course of labour (infusion, analgesics, oxytocics, antihypertensives, tocolytics and anticonvulsant drugs). All these are recorded in a graphic format against time spent in active phase labour so that; it is easy to view in a single spread, the variations in feto-maternal vital signs with uterine contractions and labour progress. The alert and action lines are printed on the cervicograph aspect of the Partograph. There is also provision for the date and time of admission into the labour ward on the partograph.

Although the Partograph has several other auxiliary uses, we shall concentrate on the use to monitor active phase labour course for safe motherhood. The use of Partograph requires an initial training so that the care giver can understand the format. It is however to be emphasized that there are no recordings or information required for the Partograph that a skilled birth attendant will ordinarily not elicit if the Partograph was not being used to supervise labour. The Partograph is a format where these information are just filled in, hence it facilitates recordings of labour observations. In this way the Partograph is not any extra burden involving tedious recordings in labour. It provides for a uniform recording of the same essential information in all parturients which makes analysis and the comparison of results easy.

Importantly, the use of the Partograph must be associated with a preset protocol of procedure and actions/interventions agreed upon for any findings whether normal or abnormal. What constitute normal FH range, liquor colour, moulding, BP and respiration rate must be preset so that deviations are easy to know. The common causes of labour progress crossing the alert line and what actions are to be taken and which cadre of staff to take these actions must be preset. When progress crosses the action line, the common causes, what type of actions and by which staff cadre and for how long if need be, when the actions by a staff cadre to correct any anomaly is not effective, what observation will reveal this and the next staff to be involved in such more complicated cases, must all be preset and known to all. In the context of present day knowledge of labour, the Partograph is a structured protocol of actions and procedures for teamwork management of labour whether it is normal or abnormal to ensure good feto-maternal outcome (17). The purpose of the Partograph is to record observation in labour so as to alert caregivers to deviations in labour course like slow labour progress for more careful treatment by the appropriate staff cadre. However, when the progress now crosses the action line, the more senior staff cadre with the appropriate skill must now take over subsequent management until delivery to ensure safe outcome. The skilled attendant in labour must be trained in these detailed aspects of the Partograph.

**Protocol for use of the partograph**

A common protocol for the use of the Partograph nowadays is as follows. Once women are confirmed in active phase labour, an artificial rupture of membranes (ARM) is performed, the findings are all

recorded on the Partograph and time of the confirmation in active phase is recorded as the zero time for the woman. The findings at the vagina examination (VE), are projected to the printed alert line on the y-axis and plotted. The next examination which will be after one hour, consist of vital signs for the mother and fetus and contraction details, and are recorded on the Partograph in a graphic form which should have been taught at an earlier training. This is repeated every hour until second stage when it will now be every 10minutes until delivery. The VE is repeated every 4hourly or if deemed appropriate, earlier and plotted on the Partograph such that it is projected along the printed alert line on the y-axis and plotted. The recording of the assessment of the descent of the presenting part is similarly projected along the printed alert line. The graph of cervical os dilatation progress is joined with dotted lines to show a relationship to both alert and action line. When the graph of progress is to the left of the alert line, it implies that the progress is normal at the rate of 1cm or more per hour and if this is sustained, the parturient will end up with normal delivery and will be managed by the same cadre of caregiver, who has been conducting the labour from the onset.

**Progress crossing alert line**

When the graph of cervical os dilatation progress crosses the alert line, this is, a prompt alert to the diagnosis of slow labour progress which is the earliest obstetric anomalies that may herald obstructed labour if neglected. When it occurs at a peripheral unit where the staff has no skill for the management of slow labour, every arrangement should be finalized, to transfer the woman to a centre where there are staffs with obstetric skill to manage slow labour progress. If the woman is at a secondary or tertiary unit where there are staff with obstetric skill, the midwife if she was the staff managing, should transfer the woman to the care of the obstetric team who will assess and exclude common causes of slow progress crossing alert line like intact fetal membranes or dehydration and treat as appropriate. From then on, the management of this case shall be by the staff (obstetric team) with the appropriate skill of how to manage it either in the same labour ward or transferred from another unit. This is the concept of inter-professional transfer from the midwife to the obstetric team, for parturients whose cervical os dilatation progress is less than 1cm per hour indicated by plotted dilatation crossing the alert line.

**Progress crossing the action line**

When the graph of progress cross the action line which on the modified WHO Partograph is 4hours from the alert line, this implies very significant slow progress with severe threat of obstructed labour if not appropriately managed. The more senior member of the obstetric team (such as a senior registrar in a tertiary level unit) with vast knowledge of how to manage such cases, must now be involved to take over. The action will include a comprehensive review of the case and an astute vagina examination (VE) to identify the cause of slow progress at the action line, like uterine inertia, CPD or cervical dystocia. While the appropriate intervention for slow progress due to uterine inertia is oxytocin augmentation, that due to CPD or cervical dystocia will be operative delivery; hence the care giver who is to decide on which intervention, must be knowledgeable or else a mistaken diagnosis may be disastrous. This is the concept of intraprofessional transfer from one obstetric team member to a more senior member for safe outcome (18). It is also important to note that once the care in labour has involved a more skilled person in the labour care team, it is imperative that more senior staff must maintain the care until delivery, because once there is any problem in the first stage labour, there may also be, second and third stage of

labour problems for which the more skilled person will similarly be required.

This demonstrates that, the use of the Partograph for safe conduct of active phase is a structured preset protocol in which there must have been a prior training at which providers are made familiar with the agreed action/procedures and intervention for all findings observed in active phase labour whether normal or abnormal. This is how the Partograph should be used to prevent obstructed labour. It is not to be used as in several previous studies (19-22)), where the Partograph was used without preset protocol on what actions/interventions and what cadre of staff will take any particular action based on the findings. Although this protocol has emphasized the W.H.O Partograph with 4 hours action line, from the alert line, it could be used for Partograph with action line at 2 or 3 hours and outcome may be the same. As long as the labour management follows a preset protocol and the appropriate staff cadre handles the problems as they arise, the outcome will be good for the mother and baby inspite of the differences in action line placement at 2, 3 or 4hours from the alert line. It is the appropriateness of the action at the action line (which will be a reflection of the skill of the staff conducting the intervention) that determines the good outcome in the use of the Partograph for preventing obstructed labour.

There are several studies which confirm the usefulness of the Partograph in all healthcare settings (22-25). There are also some studies which question the rationale for the use of the Partograph and in particular that the partograph interferes with the autonomy of the midwife in conducting labour without any restriction (26-28). For this later group, it is important to stress that success of care in labour now is a teamwork among care giver in which the limit of care for labour anomalies is well defined and the Partograph is the best tool to facilitate this teamwork approach particularly with the alert and action lines system. This is what makes the Partograph a useful tool for all cadres of labour care givers.

## CONCLUSION

In practical realities, the WHO Partograph and protocol, is a structured procedure for the management of first stage active phase labour to prevent obstructed labour, based on the anticipation of normal progress at the rate of 1cm per hour (visually represented as the alert line); in which the midwives are involved from the onset of the active phase and maintain labour care for labour course which has not crossed the alert line but refer women whose labour progress cross the alert line to the obstetric staff. For the obstetric staff who takes over further management for women whose progress cross the action line (which on the modified WHO Partograph is 4 hours from the alert line) a review including VE should be performed to establish the cause of this delay and the identified cause is treated according to standard treatment. By this approach (the use of the Partograph) slow labour progress is effectively treated and obstructed labour completely prevented. The correct and appropriate use of the Partograph entails a package in which the midwife begins the labour care and completes such labour until delivery as long as the progress is such that the alert line is not crossed. The obstetric staff is only a back up for women whose progress becomes abnormal as revealed by the plotted progress crossing not only the alert line but also the action line. The action taken, at the action line is a package of the appropriate treatment for the established cause of the slow progress. Hence whenever the Partograph is used for labour management, there must be means (including logistic facilities) for effecting this in-built referral for cases who develop slow progress for optimal treatment by the appropriate staff either in the same or another hospital. In this way, obstructed labour and obstetric fistula will be completely prevented through the universal use of the Partograph by skilled birth attendant in all health settings worldwide.

## REFERENCES


1. Harrison, K.A. "Obstetric Fistula: One social calamity too many". Brit. J. Obstet.Gynaecol. 1983; 90: 385-386
2. Harrison, K.A. "Child-bearing, health and social priorities: A survey of 22,774 consecutive deliveries in Zaria, Northern Nigeria". Brit. J. Obstet.Gynaecol. 1985; 92: (suppl 5): 1-119
3. Ahmed, S., Holtz, S.A. social and economic consequences of obstetric fistula: Life changed forever. 2007; 99: 510-515
4. Mahfouz, N. "Urinary fistula in women". J. Obstet.Gynaecol brit. Empr. 1930; 37: 566-576
5. Matha; M. The Partograph for the prevention of obstructed labor. Clin_Obstet.Gynecol. 2009; 52: 256-269
6. Murray, C., Lopez, A. The global burden of disease: a comprehensive assessment of mortality and disability from diseases, injuries and risk factors in 1990 and projected to 2020. Cambridge M.A: Harvard University Press on behalf of World Bank and WHO 1996
7. Hofmeyr, G.J. Obstructed lanor: Using better technologies to reduce mortality. Int. J. Gynecol.Obstet. 2004; 85(suppl 12) 562-572
8. Donald, I. Practical obstetric problems. Lloyd-luke (medical books) Ltd (PG Asian Edition 1979
9. Myerscough P.R. Munro Kerr's Operative obstetrics. ATBS Publishers (Indias under arrangement with Balliere Tindall U.K. 1002
10. Pattinson, R.C., Farrell, E.M.E. Pelvimetry for fetal cephalic presentation at or near term. Cochrane Database Syst Rev 1997; 2: CD000161. D01: 10.1002/14651858 CD00161
11. O'Driscoll, K., and Meagher, D. Active management of labour. The Durblin experience. 2nd Ed. Baillere Tindall London. 1986. P. 43
12. O'Driscoll, K., Strange, J.M: Active management of labor. Brit. M.J. 1973; 3: 135-137
13. Duignam, N.M., Studd, J.W., Hughes, H.O. Characteristics of normal labour in different racial groups. Br. J. Obstet.Gynecol. 1975; 82: 593-601
14. World Health organization Partograph in management of labour. World Health Organization Maternal Health and Safemotherhood programme. Lancet. 1994; 343: 1399-1404
15. Orhue A.A.E. Normal labour: principles and practice of the conduct of labour. Trop. J. Obstet.Gynaecol. 1998; 5: 1-14
16. Orhue, A.A.E. Normal labour. In agboola Akin (Eds). Text Book of Obstetrics and Gynaecology for medical students 2nd Edit. Heineman educational books Nigeria Plc. 2006. ).2830302
17. Orhue, A.A.E. Principles of labour management and the role of the Partograph in contemporary obstetric practice: In Health Sector Reforms and Maternal Health. Eds: Omigbodu A.D; Olayemi O; Oladokun, A. Ladipo, O.A. Proceeding of the 39th Annual Conference of SOGON, Ibadan, Nigeria. 2005. P. 388-397
18. Orhue, A.A.E. Utility of the alert line and action lines on the Partograph as hallmark for inter and intra professional referrals in labour at tertiary level care labour ward In Health Sector Reforms and Maternal Health. Eds: Omigbodu A.D; Olayemi O; Oladokun, A. Ladipo, O.A. Proceeding of the 39th Annual Conference of SOGON, Ibadan, Nigeria. 2005. P. 384-387
19. Wolsh, D. Management of progress in the first stage of labour. Midwives chronicle 1994; 107: 84-88
20. Windrim, R, Seaward P.G., Honett, E. et al: A randomized controlled trial of a bedside Partograph in active management of primiparous labour. J. Obstet.Gynaecol.can 2007; 29: 27-34
21. Walss Rodriguez RJ, Gadino RF, Tapia. R.S. Trial of labour. A comparative study between Friedman's Partogram and conventional descriptive Partogram. Gincol.Obstet. M. ed. 1987; 55: 318-322
22. Pattinson RC. Howarth,C.R., Mdlnli. W. et al: Aggressive or expectant management of labour: a randomized clinical trial. BJ OG 2003; 110: 457-461
23. Varidya, P.R., Patkar, L.V. Monitoring of labour by Partogram. J. Indian med. Assoc. 1988; 83: 147-149
24. Burgess, H.A. Use of the labour graph in

Malawi. J. Nurse. Midwife. 1986; 31: 46-52
25. Urrio T.F. Maternal deaths of Sangea Regional Hospital Southern Tanzania. East Afr. Med. J. 1991; 68: 81-87
26. Lennox C.E., Kwest, B.E., Earley, T.M. Breech labor on the W.H.O. Partograph. Int. J. Gynecol. Obstet. 1998; 62: 117-127
27. Lavender, T., Wallymahmed, A.H., Walkinshaw, S.A. managing labour using the Partograph with different action lines: a prospective study of women's views. Birth 1999; 26: 89-96
28. Lavender, T., Malcolmson, L. Is the Partograph a help or hindrance? An exploratory study of midwives views. Pract. Midwife. 1999; 2: 23-27.