RETROSPECTIVE ANALYSIS OF FETOMATERNAL OUTCOME OF OBSTRUCTED LABOUR IN A LOW RESOURCE SETTING IN PORT HARCOURT

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ABSTRACT

Background:
Obstructed labour is still highly prevalent in developing countries and almost non-existent in developed countries. It is a major cause of adverse pregnancy outcome especially in low resource setting.

Objective:
To determine the prevalence and fetomaternal outcome of obstructed labour, assess the role of destructive operations in the management of obstructed labour and to make recommendations with the view of improving outcome.

Methodology:
This was a retrospective study involving 118 patients with obstructed labour managed at the University of Port Harcourt Teaching Hospital (UPTH) from 1st June, 2012 to 31st May, 2017. A proforma was used to obtain necessary information from the case files of the patients and the generated data was analysed using SPSS. Chi-square test was used to compare categorical variables with P value < 0.05 regarded as significant.

Results:
The prevalence of obstructed labour was 1.6%. Most of the women were between 21-35 years and most had secondary level of education while nulliparity accounted for 73.8%. Most (80.5%) patients had no formal antenatal care (unbooked). Cephalopelvic disproportion was the main cause of obstructed labour seen in 104 (88.1%). Emergency caesarean section was performed for 102 (85.6%) patients with obstructed labour. Nine (42.9%) out of 21 patients had destructive operations performed. Sixty-nine (58.5%) patients had post-operative complications; puerperal and wound sepsis were the most common post-operative complications. Fetal demise occurred in one out of every three cases of obstructed labour irrespective of booking status. Booking status was not significantly associated with adverse fetomaternal outcome.

Conclusion:
There is an urgent need to sensitized and encourage pregnant mothers to have specialized care during pregnancy and labour as most cases of obstructed labour were recorded amongst the unbooked mothers. The act of destructive operations should be encouraged and taught to resident doctors.

Key words: *Obstructed labour, fetomaternal outcome, Port Harcourt*

INTRODUCTION

Obstructed labour remains a major public health problem in Nigeria[1]. It is one of the most common preventable causes of maternal and perinatal mortalities in developing countries.[2-4]Obstructed labour refers to failure of the progress of labour due to mechanical problems necessitating assistance to effect delivery.[1-5] It occurs due to a mismatch between foetal presenting part and the maternal pelvis seen in situations such as cephalopelvic disproportion, mal-presentations, mal-position, hydrocephalous, locked twins and pelvic tumours.[2-4] This mismatch between the foetus and the maternal pelvis usually progresses as a spectrum from an early stage referred to as cephalopelvic disproportion (characterize by mild to moderate caput and moulding) which if neglected will progress to obstructed labour (evident by severe caput and moulding) and then to prolonged obstructed labour in which obstructed

labour is accompanied by maternal distress, electrolyte imbalance, foetal distress and foetal demise. In most multiparous patients unlike primigravidae, prolonged obstructed labour may culminate into ruptured uterus.[6] The most famous account of obstructed labour is that of Princess Charlotte of England (1817) who died after delivery of a-nine pound still born baby after 50hrs of labour.[7,8]

Studies in low-income countries have reported the prevalence of maternal deaths from obstructed labour between 2% to 8% of deliveries.[9-11] Maternal deaths from obstructed labour is most likely underestimated as the majority of deaths from obstructed labour as a primary cause are rarely documented, but rather the secondary (terminal) causes of deaths such as sepsis, ruptured uterus or haemorrhage.[12] Most perinatal deaths associated from obstructed labour are related to birth asphyxia.

According to Thaddeus and Maine[13], who presented the "Three Delays Model", the chain of factors affecting the outcome of obstructed labour in low-income settings include both cultural and socio-economic factors. These factors which include adherence to traditional childbirth practices, individual beliefs, poverty, lack of maternal empowerment, poor transportation, poor health care seeking behaviour, high cost of health care, poor facilities, altitude of care providers and lack of adequate manpower[13-15] contribute directly or indirectly to the prevalence and outcome of obstructed labour. Prolonged obstructed labour is not a common finding among patients (booked) who had partographic monitoring and specialized form of care during labour where emergency caesarean delivery is performed in the event of labour dystocia but mostly among patients (unbooked) who had no specialist care during labour.[16]

The long-term sequelae of obstructed labour which include secondary amenorrhoea, infertility, obstetric fistula, depression and death can be an enormous source of human misery. The prevention of obstetric fistulae and provision of skilled treatment if it occurs are important priority in region where obstructed labour is still highly prevalent.[16-19] The sure way of preventing these serious long term complications of obstructed labour is the prompt identification of cephalopelvic disproportion and instituting appropriate treatment before obstructed labour occurs.[14,16-19]

METHODOLOGY

This retrospective study was conducted in the department of Obstetrics and Gynaecology at the University of Port Harcourt Teaching Hospital, Rivers State during a period from 1st June, 2012 to 31st May, 2017. There were 146 cases of obstructed labour diagnosed within the study period and 118 (80.8%) case files retrieved had complete information for analysis. Permission was obtained from the Heads of the Department of Obstetrics and gynaecology and medical records for the use of patient records for the conduct of this study. The folder numbers of the patients who had obstructed labour and delivered at the UPTH were obtained from the record files in the booked and un-booked labour wards and were used to trace the case files from the medical records department and relevant information were extracted from the case files. Information obtained include age, parity, booking status, duration of labour, mode of delivery, birth weight, APGAR scores, fetal outcome, post-operative complications and maternal outcome. Patients who had antenatal care and delivery in the University of Port Harcourt Teaching Hospital were regarded as 'Booked' patients and this also include patients who were in labour and were referred to UPTH from Government Hospitals while those who did not register for antenatal care in

UPTH but were referred to UPTH while in labour were regarded as 'Un-booked' patients. Data collected were entered and analysed using SPSS version 20 software package (IBM, Armonk, NY, USA). Summary statistics were computed along with simple frequencies and cross tabulation. Chi square test was used to categorical variables and test *p* value <0.05 was regarded as significant

RESULTS

During the five-year study period, there were a total of 8,943 deliveries out of which 146 had obstructed labour giving a prevalence of 1.6%. However, 118 case files had complete information for analysis. The mean age of the participants was 27.7 with standard deviation of ±4.9 and ranged from 16 – 46 years. Those within the age range of 21-35 had the highest age distribution at 40.7%. Table 1. The mean parity was 2.7 and ranged from 0 - 6. Most of the patients with obstructed labour were nulliparous accounting for 73.8%. Secondary education accounted for 64.4% while 18.7% had primary or no formal education. Ninety-five (80.5%) of the patients were unbooked while 23 (19.5%) of the patients were booked. Forty-six (38.1%) patients had been in labour for more than 24 hours before delivery and these were mainly the unbooked patients while 58 (49.0%) had been in labour for 12 -24 hours and 14 (11.9%) for less than 12 hours before delivery. Cephalopelvic disproportion was the main cause of obstructed labour seen in 104 (88.1%) cases while fetopelvic disproportion and impacted transverse lie accounted for 14 (11.9%) cases. Emergency caesarean section was performed for 102 (85.6%) patients with obstructed labour, 7 (6.8%) had exploratory laparotomy for ruptured uterus while 9 (7.6%) had destructive operation with successful vaginal delivery. Twelve (57.1%) out of 21 patients who fulfilled the criteria for destructive operation were delivered through caesarean section while 9 (42.9%) had destructive operation performed. All destructive operations were performed by consultants and craniotomy was the only type of destructive operation performed. Seventy (59.3%) babies were delivered alive; five (4.2%) babies had early neonatal death mainly from severe birth asphyxia while 37 (31.4%) cases were intrauterine foetal death (IUFD). Fetal demise occurred in one of three cases of obstructed labour irrespective of booking status. Sixty-nine patients (58.5%) had post-operative complications while 49 (41.5%) did not have any significant complication following delivery and most of these were patients whose labour were not more than 24 hours before delivery. The most common complications were wound sepsis and puerperal sepsis while the least recorded complications were obstetric palsy (foot drop) and septic shock as shown in table 3. There were 3 cases of maternal mortality from obstructed labour giving a case fatality rate of 1 in 49. Mortalities were mainly due to sepsis, hypovolaemia and electrolyte imbalance. Table 4 shows the comparison of post-operative complications according to booking status and as shown by the p values, none of the complications were statistically significant.

Table 1: Baseline characteristics

Age	FREQUENCY (118)	%
< 20	7	5.9
21 – 25	38	32.2
26 – 30	48	40.7
31-35	18	15.3
>36	7	5.9
PARITY		
0	85	72.0
1	12	10.2
2-4	19	16.1
>5	2	1.7
LEVEL OF EDUCATION		
None	4	3.4
Primary	18	15.3
Secondary	76	64.4
Tertiary	20	16.9
BOOKING STATUS		
Booked	13	11.0
Unbooked	105	89.0

TABLE 2: MODE OF DELIVERY AND FETAL OUTCOME

MODE OF DELIVERY	FREQUENCY	%
Emergency caesarean section	101	85.6
Exploratory laparotomy	8	6.8
Destructive operation	9	7.6
FETAL OUTCOME		
Alive	76	64.4
IUFD	37	31.4
Early neonatal death	5	4.2

TABLE 3: COMPLICATIONS OF OBSTRUCTED LABOUR

COMPLICATIONS	No. of cases	%
Wound sepsis	24	20.3
Puerperal sepsis	23	19.5
Post-partum anaemia	9	7.6
Ruptured uterus	7	5.9
Primary Post-partum haemorrhage	6	5.1
Burst abdomen	3	2.5
Fistulae	3	2.5
Genital tract laceration	3	2.5
Burst abdomen	3	2.5
Maternal death	3	2.5
Secondary PPH	2	1.6
Septic shock	1	0.8
Obstetrics palsy(foot-drop)	1	0.8
None	49	39.8

TABLE 4: COMPLICATIONS BY BOOKING STATUS

COMPLICATIONS	BOOKED (%)	UNBOOKED (%)	X^2	P-VALUE
Genital tract laceration	0	3	NA	0.70*
Wound sepsis	3	21	NA	0.51*
Puerperal sepsis	4	19	NA	0.22*
Ruptured uterus	0	7	NA	0.43*
Septic shock	0	1	NA	0.88*
Post-partum Anaemia	2	7	NA	0.25*

Primary PPH	1	5	NA	0.51*
Foot drop	0	1	NA	0.88*
Fistula	0	3	NA	0.70*
Secondary PPH	0	2	NA	0.79*
Burst abdomen	0	3	NA	0.70*
Maternal death	0	3	NA	0.70*
Fetal demise	5	37	0.05	0.52

NA – Not Applicable *Fisher's exact p value

DISCUSSION

Obstructed labour as shown in this study is still highly prevalent in our environment and associated with significant foetal and maternal morbidities. The prevalence of obstructed labour of 1.6% found in this study is lower than the 4% reported by Melah et al in Gombe[3], 3.2% reported by Aboyeji in Illorin[20], 2.1% reported by Menon in Pakistan and 12.2% by Fantu but higher than the 0.8% reported by Omole-Ohonsi in Kano[21], 0.78% reported by Jeremiah in a previous study in Port-Harcourt[22] and 1.27% reported by Daffallah in Sudan[9]. The differences in the socio-demographic characteristic of the patients, advancement in obstetric care and prompt response to cephalopelvic disproportion may account for the observed differences in the prevalence of obstructed labour. Most studies of obstructed labour are documented from developing countries where a significant number of pregnant mothers do not have access to specialist care during labour for various reasons[23,24]. Obstructed labour is not a common finding in developed countries hence the paucity of reports from developed countries. Obstructed labour being a complication of labour was mostly seen in women aged 21-25 years at the prime of their obstetric career and this finding was also collaborated by findings in other similar studies[3,9,21-22]. Obstructed labour was found to be commonest (72.0%) among the nulliparous women. This is an expected finding as also observed in similar studies[9,20-22,] as women who had had a successful vaginal delivery were less likely to have obstructed labour. Nulliparous patients are more at risk because their pelvises have not yet been tested for adequacy by the events of labour. It was a common practice to routinely perform pelvic assessment on all primigravidae before term to ascertain adequacy of the pelvis and to offer elective caesarean section to those with abnormal findings. This practice is no longer favoured as it does not take into account the events of labour which aim to increase the pelvic dimensions such as relaxation of pelvic ligaments and the altitude of the foetus which facilitate vaginal delivery. However, routine pelvic assessment is limited to patients with short stature, history of

pelvic abnormalities, and those likely to have a Vaginal Birth after Caesarean section (VBAC)[25] . Most cases of obstructed labour in multiparous patients who had had previous successful vaginal delivery are likely due to foetal macrosomia, pelvic tumours and foeto-pelvic disproportion rather than a contracted pelvis[16,25]. The role of education was not positively demonstrated in this study as despite the fact that most of the patients had some level of education but had their labour mismanaged at the homes of traditional birth attendants accounting for the high number of unbooked patients with obstructed labour observed in this study. There have been several debates on the role of traditional birth attendants in obstetric practice whether they should be trained to detect complications of labour in order to ensure early referral considering the fact that a significant number of our pregnant mothers patronize TBAs. However, some stakeholders are against such training arguing that it is more cost-effective to offer free training for nurses and midwives and to deploy them to rural communities to offer standard obstetric care than to train TBAs[14,26]. The few cases of booked patients seen in this study were referred from Government hospitals, those who had cephalopelvic disproportion that progressed to obstructed labour due to delays in carrying out surgery or booked patients who presented late in labour. Expectedly, most patients with obstructed labour were delivered through emergency caesarean section and few patients had destructive operations. Considering the significant number of IUFD observed in this study, one would have expected more destructive operations to have been performed. A detailed review of the case files showed that only 42.8% (9) of patients who required destructive operations had the surgery performed whereas 12 (58.2%) who would have benefitted from destructive operation had emergency caesarean section either due to lack of skill to perform destructive operation or aversion to perform the procedure. Understandably, destructive operation causes disfiguring of the dead foetus and this may have some adverse effect both on the care-giver and the parents. It is recommended that care givers should reconstitute the foetal parts as much as possible before presenting the dead foetus to the parents. Though destructive operations are hardly practised in developed countries, it is still a relatively common practice in developing countries were prolonged obstructed labour and IUFD are still highly prevalent[27-30]. The advantages of destructive operations over emergency caesarean section in patients with obstructed labour and IUFD cannot be overemphasised. Such advantages include prevention of a scarred uterus which makes the next pregnancy a high-risk pregnancy, prevention of dissemination of infection and better post-operative recovery[27]. Destructive operation is still part of the curriculum for the training of medical students and residents in developing countries whereas destructive operation is hardly necessary in obstetric practice in developed countries and the need for destructive operation can be used as a tool to assess the level of obstetric practice in a given region[28-30]. The patients that had exploratory laparotomy were all unbooked patients who had ruptured uterus sequel to obstructed labour and most of these patients had hysterectomy performed. It is not surprising that puerperal sepsis and wound sepsis were the most common post-operative complications considering the fact that most were unbooked patients who had their labour managed in unhygienic environments with multiple vaginal examinations, prolonged rupture of fetal

membranes without antibiotics which predispose the patients to chorioamnionitis. Chorioamnionitis is a serious infection that will lead to puerperal sepsis and wound sepsis following delivery. Obstetric fistula is well known complication of prolonged obstructed labour and despite prolonged catherization which is instituted to prevent obstetric fistulae three (2.5 %) patients still had obstetric fistula[5,17,31]. Prevention of prolonged obstructed labour through early identification of cephalopelvic disproportion and prompt intervention remains the sure means of eradicating the menace of obstetric fistula and other complications associated with obstructed labour[5,31]. This study showed that one in every 3 cases of obstructed labour was associated with fetal demise. This high fatal wastage was mostly seen in the unbooked patients and in those who had been in labour for more than 12 hours without definitive intervention signifying that prompt intervention is essential in reducing this high fetal wastage associated with prolonged obstructed labour. A comparison of post-operative complications according to booking status did not reveal any significant association (as evident by the *p* values in table 4) despite the fact that more post-operative complications were recorded in the unbooked patients. This finding may be due to the small number of booked patients in this study but may also imply that that booked and unbooked patients are likely to suffer the same fate if obstructed labour occurs. Obstructed labour is essentially a disease of the unbooked patient who had poor intrapartum care.

CONCLUSION:

Obstructed labour remains a prevalent health problem in Nigeria, associated with significant maternal and fetal complications. It is essentially a disease of the ubooked patient with poor intrapartum care. Early identification and prompt treatment of cephalopelvic disproportion remains the sure way of eradicating the problems of obstructed labour. As long as obstructed labour is still part of our practice, the act of destructive operations should be encouraged and taught to resident doctors.

REFERENCES

1. National Population Commission and ICF Macro (2009) Nigeria Demographic and Health Survey 2008. Abuja, Nigeria.
2. Nwobodo E, Ahmed Y. Obstructed labour: A public health problem in Sokoto, Nigeria. *Sahel Med J*. 2011;14(3):140.
3. Melah GS, El-Nafaty AU, Massa AA, Audu BM. Obstructed labour: a public health problem in Gombe, Gombe State, Nigeria. *J Obstet Gynaecol* 2003; 23: 369-373.
4. Ande A, Olagbuji B, Ezeanochie M (2012). An audit of maternal deaths from a referral university teaching hospital in Nigeria: the emergence of HIV/AIDS as a leading cause. *Niger Postgrad Med J* 19: 83-87.
5. Obed SA. Obstructed Labour In: Kwawukume EY,Ekele BA, Danso KA, Emuveyan EE (ed), Comprehensive Obstetrics in the tropics. Assemblies of God Literature Center Ltd, 2nd Edition 2015; 106-113
6. Rizvi SM, Gandotra N. Maternofetal outcome in obstructed labour in a tertiary care hospital. *Int J Reprod Contracept Obstet Gynecol*. 2017;4(5):1410–3.
7. Rather SY, Qureshi A, Parveen S. Obstructed labor – current scenario in a developing country. *Internet J Gynecol Obstet*

2017 ;13(2)
8. Cron, J. Lessons from the developing world: obstructed labor and the vesico-vaginal fistula. Ob/Gyn & Women's Health. Medscape General Medicine
9. Daffallah SE, Ambago J, E1- Agib F. Obstructed labour in a teaching hospital in sudan. *Saudi Med. J*. 2003; 24: 1102-1104
10. Karis A, Dasgupta M, Sanghamita M. Management of obstructed labour: a retrospective study. *J Obstet Gynaecol Ind* 2005; 55(1): 48-51
11. Wall LL. Dead mothers and injured wives; The social context of maternal mortllity and morbidity among the Mausa of Northern Nigeria. *Stud Fam Plan*, 1998; 29: 341-359
12. WHO: The World health report: 2005: make every mother and child count. 2005, Geneva: World Health Organization, 230
13. Thaddeus S, Maine D. Too far to walk: maternal mortality in context. *Soc Sci Med.* 1994;38(8): 1091–1110. doi: 10.1016/0277-9536(94)90226-7.
14. Abioye-Kuteyi EA, Elias SO, Familusi AF, Fakunle A, Akinfolayan K. The role of traditional birth attendants in Atakumosa, Nigeria. *J R Soc Promot Health*. 2001;121(2):119–24.
15. Pitchforth E, van Teijlingen E, Graham W, Dixon-Woods M, Chowdhury M. Getting women to hospital is not enough: a qualitative study of access to emergency obstetric care in Bangladesh. *Qual Safe Health Care*. 2006;15(3):214–219.doi:10.1136/qshc.2005.017285
16. Neilson JP, Lavender T, Quenby S, Wray S. Obstructed labour Reducing maternal death and disability during pregnancy. *Br Med Bull*. 2003;67(1):191–204.
17. Ara A. Outcome of Obstructed Labour. *J Postgrad Med Inst Peshawar-Pak.* 2011 [cited 2017;18(3).
18. Islam JA, Ara G, Choudhury FR. Risk Factors and Outcome of Obstructed Labour at a tertiary care Hospital. *J Shaheed Suhrawardy Med Coll*. 2013;4(2):43–6.
19. Mathai M: The partograph for the prevention of obstructed labor. *Clin Obstet Gynecol*. 2009, 52 (2): 256-269. 10.1097/GRF.0b013e3181a4f163.
20. Aboyeji AP, Ijaiya M-DA, Yahaya UR. Ruptured Uterus: A Study of 100 Consecutive Cases in Ilorin, Nigeria. *J Obstet Gynaecol Res*. 2001;27(6):341–8.
21. Omole- Ohonsi A, Attah R. Risk Factors for Ruptured Uterus in a Developing Country. *Gynecol Obstet*. 2011;1:102 doi:10.4172/2161-0932-1000102.
22. Jeremiah I, Nwagwu V. The pattern of obstructed labour among parturients in a tertiary hospital in southern Nigeria. *P H Med J*. 2012;6(1):89–95.
23. Kyomuhendo GB: Low use of rural maternity services in Uganda: impact of women's status, traditional beliefs and limited resources. *Reprod Health Matters*. 2003, 11 (21): 16-26. 10.1016/S0968-8080(03)02176-1.
24. Kabakyenga JK, Östergren PO, Turyakira E, Mukasa PK, Pettersson KO (2011) Individual and health facility factors and the risk for obstructed labour and its adverse outcomes in south-western Uganda. *BMC Pregnancy Childbirth* 11: 73.
25. American College of Obstetricians and

Gynecologists. ACOG Practice bulletin no. 115: Vaginal birth after previous cesarean delivery. *Obstet Gynecol*. 2010;116(2 Pt 1):450–63.

26. Ebuehi OM, Akintujoye I. Perception and utilization of traditional birth attendants by pregnant women attending primary health care clinics in a rural Local Government Area in Ogun State, Nigeria. Int J Womens Health. 2012;4:25–34.
27. Sikka P, Chopra S, Kalpdev A, Jain V, Dhaliwal L. Destructive operations--a vanishing art in modern obstetrics: 25 year experience at a tertiary care center in India. Arch Gynecol Obstet. 2011; 283(5):929–33.
28. Arora R, Rajaram P, Oumachigui A, Parveena null. Destructive operations in modern obstetrics in a developing country at tertiary level. Br J Obstet Gynaecol. 1993;100(10):967–8.
29. Ezugwu FO, Anya SE, Onah HE, Okaro JM. Are Destructive Operations Still Relevant to Obstetric Practice in Developing Countries? Trop J Obstet Gynaecol. 2002;19(2):90–2.
30. Singhal SR, Chaudhry P, Sangwan K, Singhal SK. Destructive operations in modern obstetrics. Arch Gynecol Obstet. 2005;273(2):107–9.
31. Ezegwui HU, Nwogu-Ikojo EE. Vesico-vaginal fistula in Eastern Nigeria. J Obstet Gynaecol. 2005;25(6):589–91.