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Induction of labour: Experience and outcome at a tertiary facility in southern Nigeria

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Abstract

Background: The artificial initiation of uterine contractions to achieve vaginal delivery offers an opportunity to safe guard the lives of mothers and their foetuses. Induction of labour is done for postdate pregnancy and medical conditions that complicate pregnancy. These medical conditions must not be contraindication to vaginal delivery.

Methodology: This was a two-year retrospective study of case records of 74 women who had induction of labour for various reasons at the University of Port Harcourt Teaching Hospital. Data was collated from folders retrieved from hospital records. Statistical analysis of results was done using Statistical Package for Social Sciences (SPSS) version 25.

Results: A total of 74 women had induced labour within the 2 years study duration. Most common indications for induced labour were Post Date Pregnancy (25.68%), Pregnancy induced hypertension (PIH) (18.92%) and Intra Uterine Fetal Death (IUFD) (13.51). Misoprostol (94.59%) was the preferred cervical ripening agent, 61 (82.43%) had Misoprostol as most common labour inducer, 53 (71.62%) had vaginal delivery, 19 (25.68%) had Caesarean section. Maternal outcome showed that 72 (97.30%) had no postpartum complications, while only 1 woman had antepartum haemorrhage and primary postpartum haemorrhage each respectively.

Conclusion: Induction of labour has a high success rate. Maternal complications were minimal following induction of labour.

Keywords: Induction, labour, delivery, Port-Harcourt

Introduction

Obstetric care had been all about improving maternal and fetal safety during antenatal and labour events ^[1]. Thus induction of labour presents another opportunity to safe guard the lives of mothers and their foetuses. Induction of labour is the artificial stimulation of labour after 28 weeks of pregnancy, in order to achieve vaginal delivery ^[2]. The critical reason for labour induction is achieved when the benefits of delivery is far better and less risky as compared to the continuation of the gestation ^[3].

Furthermore, some medical risk factors for induction of labour include prolonged pregnancy, gestational diabetes, pregnancy induced hypertensive disorders, restriction of intrauterine growth, intrauterine fetal death, rhesus incompatibly complications, premature rupture of membrane (PROM) ^[4-6]. It is however imperative to carefully choose patients for induced labour and ensure the success of the intervention, as failure ultimately results to caesarean section, which consequently increases the incidence of Caesarean sections ^[4, 7]. Aside obstetric and medical indications, induction of labour had also been performed for social reasons in some regions ^[8].

The prevalence of induced labour differs across the world. About 23% of total deliveries in the United States of America and the United Kingdom were done by induced labour ^[9], while the same intervention accounted for 11% of total deliveries in Southern America ^[10]. In Australia, it account for 25% of all deliveries, while accounting for 9%, 30% and 37% in Czech Republic, Northern Ireland and Malta respectively ^[11]. However, in Africa the prevalence of induced labour had been reportedly low in some regions with 4.4% prevalence ^[12]. Several literatures had reported a low prevalence of 3% ^[13], 3.6% ^[2], 6% ^[12], 11.5% ^[8] and 12% ^[14], across different part of Nigeria.

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In a developing nation like Nigeria where maternal mortality and morbidity is still relatively high, induction of labour may offer another opportunity to saving mothers and foetuses, although the technological advancements are still poor. Therefore we aimed to determine the success rate and fetomaternal outcome of induced labour at the University of Port Harcourt Teaching Hospital.

Materials and Methods

Study Area: The study was carried out at the University of Port Harcourt Teaching Hospital (UPTH) which is located at Port Harcourt, River state.

Study Design: We conducted a retrospective study of all patients that had induced labour at University of Port Harcourt Teaching Hospital. It was a 2-years study from January 2020 to December 2022.

Study Population

Inclusion criteria were: All booked and unbooked women that had induced labour for different reasons at UPTH during the time of the study.

Exclusion criteria included: Women that did not undergo induced labour UPTH during the time of the study.

Data Collection

The data of patients that fit the selection criteria were retrieved using their case notes from the medical records department. Demographic information, indication for induced labour, induction of labour details, fetomaternal outcomes and maternal complications were documented in a pro forma sheet.

Data Analysis

The data collected were entered into a spreadsheet (MS Excel). The data were analyzed using Statistical Package for Social Sciences (SPSS) version 25. The demographic data and medical information was summarized using descriptive statistics (mean, median, frequency percentage and standard deviation) as appropriate.

Results

A total of 74 women had induced labour within the 2 years study duration. As seen in table 1, the most frequent age group was 26-30 years (43.24%), parity was nullipara [0] (48.65%), tertiary education (71.62%), and booked at UPTH (81.08%). Most common indications for induced labour were Post Date Pregnancy (25.68%), Pregnancy induced hypertension (PIH) (18.92%) and Intra Uterine Fetal Death (IUFD) (13.51%), as stated in table 2. As shown in table 3, most women (70.27%) were in gestational age of 37-42 weeks, Misoprostol (94.59%) was the preferred cervical ripening agent, 61 (82.43%) had Misoprostol as most common labour inducer, 53 (71.62%) had vaginal delivery, 19 (25.68%) had Caesarean section (CS), while cephalopelvic disproportion in labour (CPD), failed induction of labour and fetal distress had 20% each for the most frequent indications for CS. Maternal outcome showed that 72 (97.30%) had no postpartum complications, while only 1 woman had antepartum haemorrhage and primary postpartum haemorrhage each respectively, as obtained in table 4. Similarly the fetal outcome in table 4 showed that 61 (82.43%) deliveries were alive, while 13 (17.57%) deaths were recorded, with 9 intra uterine fetal death before induction of labour and 4 still births as well.

Table 1: Demography of patients (n=74)

Demographic factor	Frequency (n)	Percentage (%)
Age (yrs.)		
20-25	4	5.41
26-30	32	43.24
31-35	23	31.08
36-40	15	20.27
Parity		
0	36	48.65
1	14	18.92
2	8	10.81
3	10	13.51
4	2	2.70
5	4	5.40
Educational level		
Primary	3	4.05
Secondary	18	24.32
Tertiary	53	71.62
Booking status		
Booked	60	81.08
Booked elsewhere	8	10.81
Un booked	6	8.11

Table 2: Indication for Induction of Labour (n=74)

Parameters	Frequency	Percentage (%)
Post Date Pregnancy	19	25.68
Pregnancy induced hypertension (PIH)	14	18.92
Intra Uterine Fetal Death (IUFD)	10	13.51
Premature Rupture of membrane (PROM)	7	9.46
Prolonged Pre-labour Rupture of Membrane	6	8.11
Post Date Pregnancy + PIH	6	8.11
Drainage of Liquor	3	4.05

Antepartum Haemorrhage	1	1.35
Bad Obstetric History With Post Date Pregnancy	1	1.35
Gestational Diabetes	1	1.35
Grand Multipara at 39 Weeks	1	1.35
Grand Multipara with Pre-eclampsia	1	1.35
Medical Termination of Pregnancy	1	1.35
Multinodular goitre	1	1.35
Hepatitis B surface antigen [HBsAg]-positive + PIH	1	1.35
Chronic hypertension	1	1.35

Table 3: Induction of labour (n=74)

Parameters	Frequency (n)	Percentage (%)
Gestational Age at induction (wks.)		
<28	-	-
28-36	22	29.73
37-42	52	70.27
Cervical Ripening		
Balloon catheter	4	5.41
Misoprostol	70	94.59
Method of induction		
Misoprostol	61	82.43
Oxytocin	9	12.16
Artificial Rupture of Membranes (ARM)	3	4.05
ARM and Oxytocin	1	1.35
Mode of delivery		
Vaginal delivery	53	71.62
Caesarean section (CS)	19	25.68
Instrumental Delivery	2	2.70
Indication for CS (n=15)		
Cephalopelvic Desproportion in Labour (CPD)	3	20
Failed Induction of Labour	3	20
Fetal Distress	3	20
CPD and Fetal Distress	1	6.67
Failed Induction and Post Date Pregnancy	1	6.67
Non-reassuring Fetal Status	1	6.67
OPI in Labour	1	6.67
Poor Progress in Labour	1	6.67
Unfavourable Cervix	1	6.67

*OPI=.....

Table 4: Feto-Maternal outcome after induction of labour (n=74)

Parameters	Frequency (n)	Percentage (%)
Maternal Outcome		
No complications	72	97.30
Antepartum haemorrhage	1	1.35
Primary Postpartum Haemorrhage	1	1.35
Fetal Outcome		
Alive	61	82.43
Intra Uterine Fetal Death before IOL	9	12.16
Still birth	4	5.41

*IOL= induction of labour

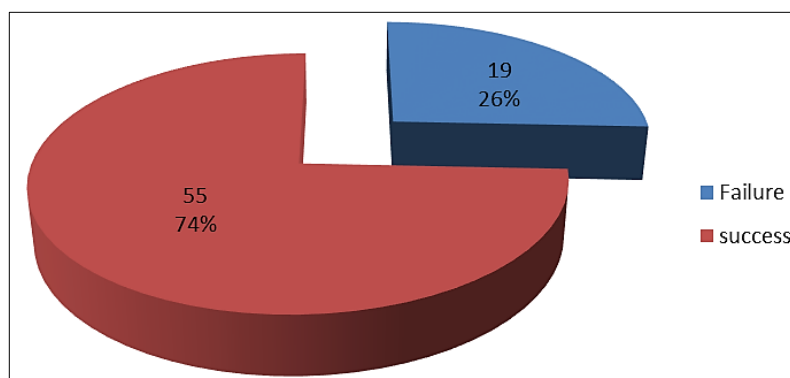


Fig 1: Outcome of induced labour (n=74)

Discussion

The demography of the women in this study showed that the frequent age was 26-30 years which constituted 43% of the entire study population, while women within 31-35 years were 31%. These age distributions were an indication that majority of the women married between their late second and third decade of life. This result is in agreement with the findings of Burodo *et al.* [2]; Lawani *et al.* [8]; Ugwuoroko *et al.* [15], who in their separate studies among women who underwent induced labour across Nigeria, had reported that majority of the women were in the 25-29 years age group. However, this differed from the study of Bello and Akinyotu [14] who reported 30-39 years as the most frequent age for women that underwent induced labour at the University College Hospital, Oyo state.

Furthermore, parity demography revealed that nulliparous women were most dominant in our study with about 48% occurrence. Although pregnancy-related complications that could trigger for induced labour intervention could happen to any expectant mother, however the reason for the high occurrence of nulliparous women who had induced labour in our study could probably be attributed to the fact most of these women were prone to pregnancy-related complications since it was the first pregnancy experience for most of them. This positively correlated with previous findings by Burodo *et al.* [2]; Ugwuoroko *et al.* [15]; Abisowo *et al.* [16]; Oyebode *et al.* [17], who all documented that in their various studies that women with zero (0) parity were the most common among women who underwent induced labour. Similarly, Poornima *et al.* [18]. Also reported nulliparous women as the most common among women who had induced labour at a tertiary facility in India.

Booking status is quite an important parameter especially in gestation because it depicts the spectrum of care and attention an expectant mother receives while at a hospital. In this study, 81% of the women were booked at our tertiary facility, while 10% were booked at other peripheral centres before being referred to us for expert care. Therefore, it became easier to manage these women and prepare them adequately for induced labour due to availability of vital medical information and antenatal follow up. The assessment of the booking status of pregnant women who had induced labour had also been previously documented by Lawani *et al.* [8]; Ugwuoroko *et al.* [15], who reported that over 70% of these women were booked, which resonated with the findings in this study as well.

Out of 16 total obstetric indications for induced labour that were diagnosed in the study population, postdate pregnancy was the most common in 19 women with 25.68%. This was in agreement with previous studies by Chawla *et al.* [1]; Burodo *et al.* [2]; Lawani *et al.* [8]; Ugwuoroko *et al.* [15]; Abisowo *et al.* [16]; Oyebode *et al.* [17]; Shrestha *et al.* [19] and Yadav *et al.* [20], who all reported the incidence of postdate pregnancy as the most common indication in their separate studies. In contrast, other indications such as prelabour rupture of membranes [14, 21], gestational diabetes [18], hypertensive disorders in pregnancy [22], had been all reported as the most frequent indications for induced labour. Furthermore, other common indications as observed in this study were pregnancy induced hypertension (PIH) (18.92%) and Intra Uterine Fetal Death (IUFD) (13.51%), Premature Rupture of membrane (PROM) (9.46%), Prolonged Prelabour Rupture of Membrane (8.11%), Post Date

Pregnancy + PIH (8.11%), drainage of liquor (4.05%), while others constituted 12.15%.

In this study, majority (70.27%) of the women before the commencement of induced labour were in 37-42 weeks of gestation, while only 29.73% were within 28-36 gestational weeks. This showed that most of the women in our study were induced at term (70.27%), rather than preterm pregnancy period (29.73%). This was in agreement with Bello and Akinyotu [14] and Burodo *et al.* [2], who reported that 69% and 72% of the women in their studies had labour induction at term respectively.

Misoprostol was the preferred ripening agent as it was used in 94.59%, while it was also the most frequent method of labour induction, with about 61 (82.43%) women having received it. Other methods used were Oxytocin (12.16%), Artificial Rupture of Membranes (ARM) (4.05%) and ARM + Oxytocin (1.35%).

The usage of Misoprostol as a most common labour inducer had been previously documented by Lawani *et al.* [8], Ugwuoroko *et al.* [15] and Malende *et al.* [22], with 78%, 90% and 96% usage in their study population. Although Burodo *et al.* [2] reported misoprostol as the major ripening agent in 91% of the women which agreed with our findings, however ARM + Oxytocin was the preferred labour inducer in 65% of the women which differed from our findings.

After labour induction, 55 women had successful induced labour which gave 74% success rate, while only 19 (26%) had failed labour induction. Furthermore, 53 (71.62%) women had vaginal delivery, 19 (25.68%) had Caesarean section (CS) and only 2 (2.70%) had instrumental delivery. Moreover, the most common indication for Caesarean section was cephalopelvic disproportion in labour (CPD), failed induction of labour and fetal distress, which had 20% each. Cephalopelvic disproportion in labour (CPD) and fetal distress had also been reported by Ugwuoroko *et al.* [15] as main indication for CS, which was in agreement with our results as well. The 74% successful rate of induced labour in this study is higher than the 16% by Abisowo *et al.* [16] in Lagos, 44% by Bello and Akinyotu [14] in Oyo and 58% by Abdulkadir *et al.* [21] in Ethiopia. However the successful rate is similar to the 71% by Ugwuoroko *et al.* [15] in Anambra and 77% by Burodo *et al.* [2] in Sokoto, but lower than the 85% by Ayuba *et al.* [23] in Bayelsa. The reason for the 74% successful induced labour in this study might be because majority of our study population were in their term pregnancy when induction occurred and also due to the appropriate use of different concentration of misoprostol as cervical ripening agent and the subsequent use of the same drug for labour induction.

The Maternal outcome showed that 72 (97.30%) had no complications, while only 2 women out of the study population had complications, with each having had antepartum haemorrhage and primary postpartum haemorrhage respectively. Also for the fetal outcome, 61 (82.43%) were alive, while 13 (17.57%) deaths were recorded, with 9 intra uterine fetal death before induction of labour and 4 still births as well. Thus, the maternal outcome in this study was quite good, as no maternal mortality was recorded. The maternal complications obtained in this study is similar to that reported by Burodo *et al.* [2], who recorded primary post-partum haemorrhage, antepartum haemorrhage, uterine rupture and 1 maternal death in his study, although no case of uterine rupture and maternal death was seen in our study. In contrast, the 12% intra

uterine fetal death before induction of labour obtained in this study was higher than the 9% reported by Oyeboode *et al.* [17]. Although only 4 deaths occurred during induced labour, however the incidence of fetal death in this study was 17.57% of the total deliveries, which was high and thus adequate care measures must be taken to forestall such occurrence in women who are to undergo induced labour.

Conclusion

The 74% successful rate of induced labour in this study was quite good; however more interventions are needed to achieve a higher success rate. Although only 2 maternal complications with zero maternal death were seen in this study, the fetal outcome was not good enough, as 13 perinatal deaths were recorded. Thus more attention should be focused on the safety of both maternal and fetal health, before, during and after induced labour.

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