

Original Article

Ten-year review of burden and outcomes of retained placenta following vaginal delivery at the Delta State University Teaching Hospital, Nigeria.

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Abstract

Background: Retained placenta is a significant cause of maternal and neonatal morbidity and death in developing nations, particularly among unbooked and high-risk mothers. **Objective:** To assess the prevalence, clinical features, treatment approaches, and complications associated with retained placenta at Delta State University Teaching Hospital (DELSUTH). **Methodology:** This was a retrospective descriptive study from January 2011 to December 2020. Data were extracted from patients' clinical records using a structured pro forma. Variables included were socio-demographic characteristics, place of delivery, clinical features, treatment modalities, and outcomes. Data were analyzed using the Statistical Package for the Social Sciences (SPSS) version 28. **Results:** The prevalence of retained placenta was 1.2%. The mean age of the study population was 29.62 ± 6.49 years, with most patients being multiparous (52.4%), unbooked (71.4%), and possessing secondary education (52.4%). More than half (52.4%) were delivered at home and at traditional birth attendants' places. Common clinical presentations included snapped cord (47.6%) and active bleeding (38.1%). The most frequently used treatment method was manual removal of the placenta (61.9%). The common maternal complications were postpartum haemorrhage (81.0%) and postpartum anaemia affecting over half of the women (57.1%). Blood transfusion became necessary in 85.7% of cases. Among neonatal complications, NICU admissions accounted for 47.6%, while prematurity and stillbirths occurred in 23.8% and 19.0% of cases, respectively. **Conclusion:** Retained placenta is associated with adverse pregnancy outcomes, and the women commonly affected are those with unsupervised pregnancy and delivery or supervision of unskilled birth attendants. Discouraging deliveries outside standard health institutions and encouraging emergency obstetric care are crucial in reducing the burden of this preventable obstetric complication.

Keywords: Manual removal, Maternal complications, Neonatal outcome, Nigeria, Retained placenta, Tertiary hospital

Introduction

One of the most challenging complications following vaginal delivery, often resulting in significant blood loss, is a retained placenta. ¹⁻⁴ It is the second most common cause of postpartum haemorrhage (PPH), an

obstetric emergency that contributes to about 25% of maternal death globally. ⁴ Notably, approximately 10-15% of postpartum haemorrhage-related maternal fatalities, and even more among rural women due to

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poorly managed third stage of labour, are due to retained placenta.³ It also causes adverse neonatal outcomes because delayed delivery of the placenta often compromises newborn resuscitation and care.

Retained placenta is traditionally defined as the inability to expel the placenta within 30 minutes after the delivery of the foetus, and it remains a significant reproductive health issue in developing nations.^{5, 6} Prolonging this stage beyond 30 minutes increases the risk of postpartum haemorrhage and diminishes the chances of spontaneous placental separation.^{7, 8} With the active management of the third stage of labour, a set time limit may no longer be necessary for diagnosing retained placenta, because a placenta that fails to deliver despite interventions such as prophylactic oxytocin, uterine massage, and controlled cord traction should be considered retained for management purposes, even if the traditional 30-minute threshold has not been reached.⁸

The incidence of retained placenta following vaginal delivery varies globally, ranging from 0.1% to 3.3%, depending on the population studied.^{1, 3, 9} There is significant variation in the rates of retained placenta among different countries. The higher incidence reported in developed countries is largely attributable to the practice of earlier manual removal of the placenta.⁹ Because clinicians in high-income countries often have a lower threshold for intervention, driven by strict PPH-prevention protocols, ready availability of skilled personnel, and access to safe anaesthesia, manual removal is undertaken earlier in the third stage of labour. Consequently, placentas that might have delivered spontaneously are classified as "retained," thereby creating an apparent increase in incidence. Additionally, interventions common in most high-income countries, such as abortions and labour induction, could be contributing to the increase in the retained placenta rate. Even within the same country, there are regional differences in the occurrence of the condition occasioned by limited access to quality antenatal care, a high rate of deliveries outside health facilities, unskilled birth attendance, and late presentation to tertiary centres, contributing to the persistently poor outcomes. Retained placenta has been linked to multiple maternal complications, and while data on neonatal outcomes remain limited, adverse neonatal effects may also occur. A variety of risk factors have been proposed, and they include prolonged oxytocin administration, high parity, preterm birth, prior history of retained placenta, smoking, gestational diabetes, advanced

maternal age, previous uterine surgery, conception via in vitro fertilization (IVF), and congenital uterine anomalies.² Patients with retained placenta following vaginal delivery commonly present with snapped umbilical cord, active vaginal bleeding, atonic uterus, and haemorrhagic shock.^{1, 3} The exact pathophysiological basis of retained placenta remains incompletely understood and is likely multifactorial.¹⁰ Three primary mechanisms have been proposed: abnormal placental invasion (invasive placentation), insufficient placental perfusion, and inadequate uterine contractility.¹⁰ Clinically, it may present in various forms, which include trapped placenta, placenta adherent, and placenta accreta.¹⁰

As reported in previous studies, the major treatment modality involves manual removal of the placenta (MROP) under adequate anaesthesia,¹ as pharmacologic approaches, such as the injection of oxytocin or saline plus oxytocin into the umbilical vein, have not shown consistent efficacy.¹⁰ Nevertheless, significant complications may still occur, including severe haemorrhage, postpartum endometritis, and retained placental fragments, which can lead to secondary haemorrhage or infection. Prophylactic antibiotics are commonly administered with MROP, although evidence regarding their benefit remains inconclusive. In cases of significant bleeding, immediate implementation of a massive transfusion protocol, repeat controlled cord traction, uterine evacuation via suction, and intrauterine tamponade (e.g., using a balloon catheter) is critical. If detaching the placenta proves to be particularly challenging, one should consider the possibility of placenta accreta spectrum (PAS) and prepare for potential haemorrhage management and a hysterectomy.

In various low-resource areas, retained placenta is linked to a high mortality rate. A study from Quetta, Pakistan, reported a maternal mortality rate of 2% related to this condition,¹² while a research from Nigeria recorded a case fatality rate of 3.12%.¹³ The main cause of death is significant obstetric haemorrhage, which is more prevalent in situations where manual removal of the placenta (MROP) cannot be quickly conducted due to inadequate facilities or delays in accessing tertiary care. Other significant complications associated with retained placenta are postpartum anaemia, genital infections (endometritis), shock, genital lacerations, acute renal failure, and prolonged hospital admissions.^{1, 3, 14}

Due to several reasons, including cost of maternal services, illiteracy, poor health-seeking behaviour,

and lack of access to healthcare facilities in Nigeria and most sub-Saharan African countries, a lot of pregnant women still deliver at home, in churches, at traditional birth attendant facilities, or in private maternity centers. These places of delivery lack proper equipment and skilled personnel to adequately manage the third stage of labour and its complications.

Despite the enormous complications linked to retained placenta, DELSUTH lacks comprehensive data on it. This study was, therefore, conceptualized to explore the socio-demographic characteristics, clinical presentations, management approaches, and the maternal and neonatal complications in women with retained placenta over a ten-year period. Documenting our findings is necessary to understand the true scope of the problem, which would guide evidence-based health policies and the development of interventions to improve both maternal and neonatal outcomes. It will also establish vital baseline data for future clinical audits in DELSUTH.

Materials and Methods

Study Design, Setting, and Period

This was a retrospective descriptive study conducted using a ten-year data (January 2011 to December 2020) at the Department of Obstetrics and Gynaecology, Delta State University Teaching Hospital (DELSUTH), Oghara, in the Niger-Delta region of Nigeria. DELSUTH caters to the health needs of Deltans and also serves as a major referral centre for patients from the neighbouring Edo, Bayelsa, and Rivers states. This study was carried out between June and September 2025

Case definition

Failure of the placenta to deliver within 30 minutes after the birth of the baby was considered a retained placenta

Study Population

The study population comprised all women managed for retained placenta from 28 weeks of gestation during the study period at DELSUTH, Oghara.

Inclusion

Women with singleton vaginal deliveries, a documented diagnosis of retained placenta, and complete medical records.

Exclusion

Women with multiple gestations, those who underwent elective caesarean section, and those with incomplete or missing medical records

Sample Size

Eligible cases that met the inclusion criteria during the study period were included.

A total of 21 cases were analyzed.

Ethical Considerations

This study was approved by the Ethics Committee of the Delta State University Teaching Hospital (DELSUTH HREC Approval Number: HREC/PAN/2025/051/0733)

Data Collection

The names and hospital identification numbers of women diagnosed with retained placenta were retrieved from the labour ward and postnatal ward registers. Their case notes were obtained from the hospital's medical records department. The case notes with incomplete records were not used for the study.

Data was collected using a structured proforma designed to extract relevant clinical and demographic information. Parameters obtained included socio-demographic characteristics, place of delivery, obstetric history and risk profiles, clinical features at presentation, treatment modalities used, need for and volume of blood transfusion, maternal complications, maternal outcomes, and fetal outcomes.

Data Analysis

Data was analyzed using the Statistical Package for the Social Sciences (IBM SPSS Statistics) Version 28. Data was presented as simple percentages in frequency tables and figures. Summary statistics were presented as mean and standard deviation where appropriate.

Results

During the study period, there were 2003 deliveries, and 24 cases of retained placenta were identified, a prevalence of 1.2%. Of these cases, 21 contained complete clinical information and were subjected to analysis. The case retrieval rate was 88% (21/24).

The socio-demographic and obstetric characteristics of the study participants are shown in Table 1. The age range was 18 to 41 years, with a mean age $\pm$ SD of 29.62 ± 6.49 , and the majority of cases (38.1%) were in the 30–34-year age group. Most of the women (52.4%) were para 2–4, while 28.6% of the cases were grand multiparous (para ≥ 5). Most women (52.4%) had secondary education, and 38.1% were engaged in business. Other occupations included farming (19.1%), civil service (14.3%), and artisan work (9.5%). A significant portion (71.4%) did not book for antenatal care, whereas 28.6% were booked. The average gestational age at delivery was 36.86 ± 2.06 weeks, with 52.4% of the deliveries being at term and 47.6% classified as preterm.

Table 1: Socio-demographic and obstetric characteristics of the study population

Characteristics		Frequencies	Percentages (%)
Age (years)	≤24	4	19.0
	25-29	5	23.8
	30-34	8	38.1
	≥35	4	19.0
	Mean ± SD	29.62 ± 6.49	
Parity	Para 0	2	9.5
	Para 1	2	9.5
	Para 2-4	11	52.4
	Para 5 and above	6	28.6
Educational level	Primary	7	33.3
	Secondary	11	52.4
	Tertiary	3	14.3
Occupation	House wife	2	9.5
	Farmer	4	19.1
	Business	8	38.1
	Artisan	2	9.5
	Civil Servant	3	14.3
	Student	1	4.8
	Unstated	1	4.8
Booking Status	Booked	6	28.6
	Unbooked	15	71.4
Gestational age at delivery	Preterm	10	47.6
	Term	11	52.4
	Mean ± SD	36.86 ± 2.06	

Age range = 18 – 41 years; Gestational Age range = 34 – 41 weeks

The place of delivery of the participants in our study is shown in Table 2.

Table 2: Place of delivery of the study population

Characteristics	Frequencies	Percentages (%)
Place of Delivery		
Home	3	14.3
Traditional Birth Attendant's Place	8	38.1
Maternity Home	3	14.3
Primary Health Center	2	9.5
General Hospital	3	14.3
DELSUTH	2	9.5

The majority (90.5%) of the patients who had retained placenta were delivered outside our hospital. Eight (38.1%) patients were delivered at the traditional birth attendants' places, while

deliveries at home, general hospital, and maternity home each accounted for 14.3% in our study. Two (9.5%) patients were delivered at DELSUTH labour ward and the primary healthcare centre.

Figure 1 illustrates the pattern of clinical features at presentation. The commonest clinical feature was a snapped cord (47.7%), followed by active vaginal bleeding (38.1%), shock (28.6%), and uterine atony (23.9%).

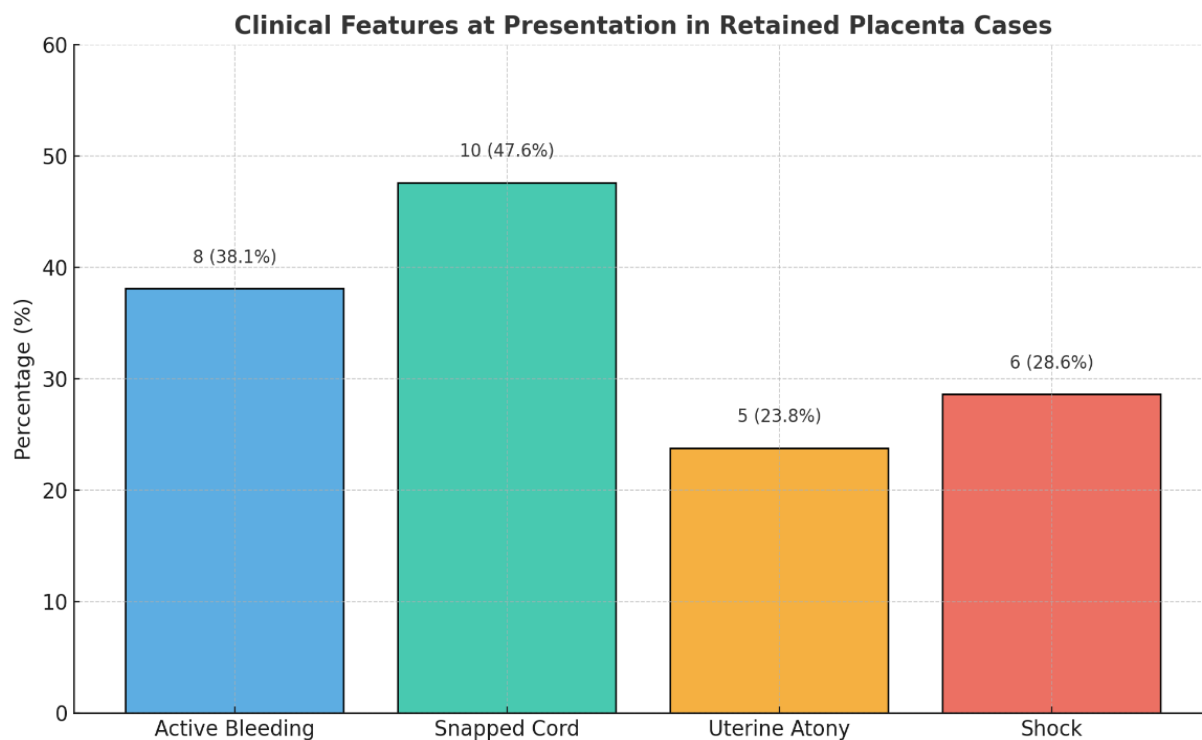
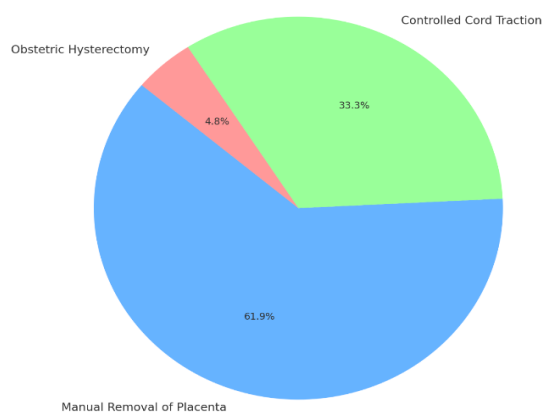


Figure 1: Bar Chart showing the clinical features at presentation

Figure 2 illustrates the treatment modalities for retained placenta following vaginal delivery.

Treatment Modalities for Retained Placenta at DELSUTH (n = 21)



One patient (4.8%) had an obstetric hysterectomy due to the retained placenta

Figure 2: Treatment modalities for retained placenta

In our study, the majority of patients (61.9%) underwent manual removal of the placenta, while controlled cord traction was employed in 33.3% of

cases. One patient (4.8%) had an obstetric hysterectomy due to the retained placenta

Maternal and fetal complications among the participants in the study are presented in Table 3. Postpartum haemorrhage (PPH) was experienced by 81.0% of the participants, and 85.7% of them received blood transfusions. The number of blood units transfused ranged from one to four or more, with 57.1% receiving two units. Additional maternal complications included anemia (57.1%), endometritis (28.6%), and admission to the ICU (4.8%). One patient underwent a hysterectomy (4.8%). In terms of neonatal outcomes, stillbirths occurred in 19.0% of cases, while 47.6% of the neonates were admitted into the Neonatal Intensive Care Unit (NICU). Among live births, prematurity affected 23.8% of newborns, with neonatal sepsis occurring at the same rate (23.8%). Neonatal jaundice was present in 19.0% of cases, while birth asphyxia and neonatal death each occurred in 4.8% of deliveries.

Table 3: Maternal and neonatal complications of the study group

Characteristics	Frequencies	Percentages
Maternal complications		
Postpartum haemorrhage	17	81.0
Anaemia	12	57.1
Had Blood transfusion	18	85.7
Units of blood transfused		
1	2	9.5
2	12	57.1
3	2	9.5
4 or more	3	14.3
Endometritis	6	28.6
Hysterectomy	1	4.8
ICU admission	1	4.8
Neonatal complications		
Still births	4	19.0
Neonatal resuscitation	3	14.3
NICU Admission	10	47.6
Prematurity	5	23.8
Neonatal Jaundice	4	19.0
Neonatal Asphyxia	1	4.8
Neonatal Sepsis	5	23.8
Mortality	1	4.8

PPH – Postpartum Haemorrhage

Discussion

Retained placenta remains an issue of concern in maternal and reproductive health because of the increased maternal morbidity and mortality associated with it.

In our study, the prevalence of retained placenta was 1.2%, which is similar to the 1.02% reported in Calabar³ and 0.98% in Port Harcourt¹ but lower than the 1.8% and 1.7% reported in Irua and Sokoto,^{13, 15} respectively. The incidence is higher than the 0.53% reported in this study of Ekiti¹⁴ and 0.33% reported in Iraq.¹⁶ This difference can be due to variations in the proportion of unbooked women who underwent unsupervised deliveries and later sought hospital care for retained placenta. Furthermore, the differences in prevalence observed across studies probably reflect both variations in the study populations and the varying time periods of the studies.

The mean age at presentation in this study was 29.62 ± 6.49 years, with the majority of the women (38.1%) aged 30–34 years, which is comparable to the age range reported in Ekiti¹⁴ and Pakistan.¹² It is, however, higher than the age range of 20–29 years reported in Calabar and Port Harcourt.^{1, 3} While retained placenta has been associated with advanced maternal age (≥35 years) as reported in Iraq,¹⁶ our findings did not show a predominance among older

women. We found only 19% of retained placenta in women with advanced maternal age. The higher proportion in the 30–35 years age range may be a reflection of the reproductive age group of the study population. The 30–35 years is within the peak age group of childbearing in the southern part of Nigeria. The younger age distribution observed in this research may indicate Nigeria's tendency towards early reproductive age. In contrast, findings from higher-income nations show a trend of advanced maternal age resulting from postponed childbearing.¹⁷

The majority of women in our study were multiparous, having given birth two to four times. This agrees with the reported parities in Calabar, Irua, Ekiti, and Iraq.^{3, 13, 14, 16} The finding of retained placenta in this subset may be due to repeated pregnancies and delivery, which increases the formation of fibrous tissues that hinder efficient contraction of the uterus that enhances successful placental separation and delivery. Women with low educational status were more in our study, as only 14.3% had a tertiary education, while 33.3% had primary education, and 52.4% had secondary education. Our finding is similar to the reports from Calabar³ and Port Harcourt,¹ where 10.9% and 8% of the patients, respectively, had tertiary education. Our finding is not surprising, as education has the potential of enhancing women's knowledge and utilization of health care facilities during pregnancy and delivery, which ultimately reduces adverse pregnancy outcomes. The low level of education observed in this study may have played a major role in increasing the risk of retained placenta by limiting awareness of maternal health, access to antenatal and delivery services, and the ability to make decisions regarding timely obstetric care.

The majority of the patients (71.4%) were unbooked for antenatal care. This is in agreement with the studies conducted in Calabar and Ekiti, where 68.1% and 81% of the study population were unbooked for antenatal care, respectively.^{3, 14} In developing countries like ours, utilization of antenatal care is low, partly due to out of pocket payment for maternal services, and so, most pregnancies and deliveries are supervised by unskilled birth attendants. The substandard management of the third stage of labour eventually leads to adverse outcomes, including retained placenta with its complications.

The majority of patients in our study were delivered outside of the hospital, with only 9.5% delivering in

DELSUTH's labour ward. A significant proportion (38.1%) of patients gave birth at a traditional attendant's place. The untrained birth attendants often wrongly manage the third stage of labour and don't refer the women promptly, leading to complications. The significant number of women who gave birth outside of our hospital might be related to the low educational status of our study population, which has a high rate of unbooked cases. Furthermore, our hospital is a fee-paying tertiary healthcare centre, and the costs associated with maternal services may not be affordable for some.

The majority (47.6%) of our patients presented with a snapped umbilical cord, which is higher than the 25% reported in Irua,¹³ but lower than the 78% reported in Port Harcourt.¹ This study also found that 38.1% of the patients presented with active vaginal bleeding; which is comparable to the 48% in Port Harcourt¹ and 37.5% in Irua.¹³ Twenty nine percent of the patients were in haemorrhagic shock at presentation, which is lower than the 52.5% reported in Sokoto,¹⁵ but higher than the 9.1% and 14% reported in Ekiti¹⁴ and Port Harcourt,¹ respectively. We recorded 23.8% of our patients with uterine atony, which was comparable to the 26% reported in Port Harcourt.¹⁰ This variation may be due to delays in seeking professional assistance during labour and the peculiarities of the study populations. Additionally, inadequate antenatal care, poor perinatal risk anticipation, lack of skilled third-stage management, and excessive or uncoordinated cord traction largely contribute to the varied clinical presentations.

Retain placenta in our study was managed with manual removal of placenta (MROP) in 61.9% of cases, which is lower than the 77.1% in Sokoto [15], and 87.1% and 100% recorded in Port Harcourt.^{1, 8} The significant disparity can be attributed to delayed presentation to DELSUTH and poor haemodynamic status observed in our study, which precluded the utilization of manual removal of the placenta and informed the choice of alternative treatment modality, such as prompt controlled cord traction along with simultaneous administration of oxytocin infusion. In our centre, a retained placenta is manually removed under general anaesthesia. Controlled cord traction was the treatment modality in 33.3% of our patients, which is higher than the 8.5% and 10.7% recorded in Sokoto¹⁵ and Port Harcourt.⁸ One of the patients had an obstetric hysterectomy due to placenta accreta spectrum. All the women in our study who were treated for retained placenta were administered prophylactic antibiotics, despite conflicting evidence

regarding their effectiveness.²

The major maternal complications in our study were primary postpartum haemorrhage (81.0%) and anaemia (57.1%). These complications were significant enough to warrant blood transfusion in 85.7% of patients. Our findings are higher than those reported in Calabar, Port Harcourt, and Ekiti.^{1, 3, 14} This significant difference may be due to the relatively higher rate of unbooked pregnancies and unsupervised deliveries among our study population. The other notable maternal complications included endometritis in 28.6% of cases and obstetric hysterectomy due to placenta accreta in one unbooked case (4.8%), who was subsequently admitted into the intensive care unit of our hospital. We didn't record any maternal mortality in this study, and this may be due to timely intervention at presentation, specialized care rendered, and readily available blood transfusion services in our hospital.

Neonatal complications recorded in our study were Neonatal Intensive Care Unit (NICU) admissions (47.6%), neonatal sepsis (23.8%), and stillbirths (19.0%). These outcomes emphasize the relationship between maternal and fetal health. The adverse neonatal outcomes in this study could have been caused by prolonged third stage of labour, which distracted the attending team, resulting in delayed intervention and poor-quality neonatal resuscitation, which ultimately contributed to complications such as poor Apgar scores, birth asphyxia, and neonatal death.

The strength of our research lies in its ten-year retrospective nature, which offers important insights into retained placenta at DELSUTH. As the first study of its kind conducted at our center, it presents localized, institution-specific data to guide clinical practices. Its thorough assessment of socio-demographic, clinical, and outcome variables increases its significance and provides a good foundation for future research. However, it is limited by the retrospective design, which is subject to incomplete records, and it was a single-centre hospital-based study; therefore, the findings may not be representative of the general population. The absence of long-term follow-up limits our insight into the long-term effects on both mothers and neonates. Despite the outlined limitations, the study's findings will provide essential institutional baseline data to improve maternal care.

Conclusion

Retained placenta accounted for 1.2% of deliveries in our study and was largely seen among multiparous,

unbooked women who delivered outside the tertiary facility, especially with traditional birth attendants. Snapped cord and vaginal bleeding were common presenting features, and manual removal was the main treatment. Maternal morbidity was high, with postpartum haemorrhage in 81% and blood transfusion in most cases. Neonatal outcomes were poor, with nearly half requiring NICU admission and a stillbirth rate of 19%. Overall, retained placenta in DELSUTH is strongly linked to inadequate antenatal care and unsupervised deliveries, resulting in significant maternal and neonatal complications. Despite its retrospective design, the study offers valuable institutional data to guide future interventions and emphasizes the urgent need to improve antenatal care utilization and access to skilled delivery services.

Recommendation

Improved utilization of antenatal care should be prioritized, with community education targeting unbooked pregnancies and delivery by unskilled attendants. The training of birth attendants on third-stage labour management and subsidizing maternal healthcare services is essential to reducing the burden and complications of retained placenta.

Authors' contributions

Innocent Okoacha: - Design, analysis, interpretation of data, approval of the version to be published, and agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

Jerry K. Isogun: - Conception, data collection, approval of version to be published, and agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

Amos Ekoh: - Data collection, approval of version to be published, and agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

Osamudia Okhionkpmwonyi: - Reviewing it critically for important intellectual content, approval of version to be published, and agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

Edward Aimiehinor Akhator: - Design, data collection, and approval of version to be published,

and agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

Conflict of interest

The authors declare no conflict of interest

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