

# Instrumental Vaginal Delivery In The University Of Uyo Teaching Hospital, South-South Nigeria: A 10 Year Review

Collins Chukwuebuka Chikereze, Callistus Obinna Elegbua, Francis Okeke,  
Josephine Onyinyechi Okereke, Chima Chimaeze Elegbua,  
Saturday Mbereobong Etuk, Emmanuel John Ekem

Department Of Obstetrics And Gynaecology, University Of Uyo Teaching Hospital, Uyo Akwa Ibom State,  
Nigeria.

Department Of Obstetrics And Gynaecology, David Umahi Federal University Of Health Sciences Uburu,  
Ebonyi State, Nigeria.

University Of Oklahoma Health Science Center, Usa.

Department Of Public Health, Kingsley Ozumba Mbadiwe University Ideato, Imo State, Nigeria.

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## Abstract

**Background:** Instrumental vaginal delivery (IVD) is of obstetric importance and has averted impending fetomaternal morbidity and mortality. Globally, the practice is on the decline due to lack of information on the success of the procedure especially among the younger generations of obstetricians.

**Objective:** To evaluate the trend of instrumental vaginal delivery at the University of Uyo Teaching Hospital, Akwa Ibom State.

**Study Design:** A retrospective study of clients who had IVD during the study period in the University of Uyo Teaching Hospital.

**Methodology:** A total of 144 clients had instrumental vaginal delivery during the study period (1st January, 2012 - 31st December, 2021) in the University of Uyo Teaching Hospital. The delivery register was reviewed, relevant cases were identified and then the record cards of the clients were retrieved through their registration numbers and studied. Information obtained included the age, parity, estimated gestational age, booking status, type of instrumental vaginal delivery, sex of fetus, weight of fetus, condition of the perineum post procedure, Apgar scores and indications. The data collected were analysed using statistical package for social sciences (SPSS) version 26.0 and presented in tables with p-value <0.05 being significant.

**Results:** A total of 144 clients had IVD given an incidence of 1.15% of all deliveries. Prolonged second stage of labour 115(79.9%) and severe pre-eclampsia in second stage of labour 9(6.25%) were the most common indications. Some of the clients had perineal tears and 1st degree perineal tear was the commonest 16(11.13%) however, most of the clients 90(62.5%) had episiotomy before the procedure. Birth asphyxia was the commonest fetal complication.

**Conclusion:** The instrumental vaginal delivery rate of parturient in Uyo over a ten year review was low resulting in higher caesarean section rate.

**Recommendation:** Intending and practicing Obstetricians should be encouraged to acquire the basic necessary skills on instrumental vaginal delivery.

**Keywords:** Vagina, Delivery, Instrumental, Review

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Date of Submission: 07-02-2026

Date of Acceptance: 17-02-2026

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## I. Introduction

Instrumental vaginal deliveries, sometime referred to as assisted vaginal deliveries, are deliveries conducted with the aid of obstetric forceps or vacuum extractor for maternal or fetal indications to optimize fetal and maternal outcome.<sup>1-3</sup> Assisted vaginal delivery is one of the six critical functions of basic emergency obstetric care and is used to shorten the second stage of labor, and as such should be available and accessible especially in low-resource settings where the caesarean section alternative is not always feasible.<sup>1,2,4</sup>

The rate of IVD varies from one country to another, and even in the same country, from one obstetric unit to another. It ranges from 10% to 15% in the United Kingdom and averages 4.5% in the United States,<sup>5</sup> while in Istanbul and India, rates of 1.4% and 2.8% have been reported, respectively.<sup>6,7</sup> In Nigeria, the IVD rate is

between 0.69% and 3.7%.<sup>8-10</sup> While the forceps delivery rate ranged from 0.9% to 6%,<sup>11</sup> vacuum delivery rates of between 1.5% and 3.5% have been reported in Zaria, Enugu, Ilorin, Benin, Maiduguri, and Kano.<sup>12-14</sup>

The indications for IVD include delayed second stage of labour, poor progress of second stage of labour due to maternal fatigue or exhaustion, or fetal distress or non-reassuring fetal heart rate tracing in the second stage of labour.<sup>15</sup> Other maternal indications include medical conditions such as cardiac diseases, especially New York Heart Association (NYHA) class III/IV, or neurologic diseases, including uncorrected intra-cerebral vascular malformations as well as hypertensive crisis, myasthenia gravis, spinal cord injury and patients at risk of autonomic dysreflexia, and proliferative retinopathy.<sup>15</sup> Majority of the vacuum vaginal delivery procedures were conducted at term and it is the acceptable practice and most authorities consider gestational age less than 34 weeks a contraindication for vacuum delivery due to increased risk of cephalhaematoma.<sup>16</sup>

Some of the maternal and fetal complications associated with IVD include perineal tear, primary postpartum haemorrhage, birth asphyxia and cephalhaematoma<sup>8,17-20</sup>. Perineal tear usually from extension of an episiotomy or incases where episiotomy wasn't considered necessary has been reported as the commonest complications<sup>17</sup>. However, findings from other studies recorded primary postpartum haemorrhage as the most common complication.<sup>8,17</sup>

Birth asphyxia was said to be the most common neonatal complication associated with IVD<sup>17</sup>. A similar study conducted in India showed cephalhaematoma as the most common neonatal complication.<sup>19</sup>

Instrumental vaginal deliveries still maintain a place of importance in modern obstetric practice however, information concerning it is absolutely fading away especially in low income countries where the practice is essentially needed because of its cost effectiveness and strong aversion for caesarean section. Thus, the reduction of awareness of IVD represents a knowledge gap which this study unravelled. this study sought to evaluate the trend of instrumental vaginal delivery at the University of Uyo Teaching Hospital, Akwa Ibom State.

## II. Materials And Method

This was a retrospective study of clients who had instrumental vaginal delivery during the study period (1st January, 2012 - 31st December, 2021) in the University of Uyo Teaching Hospital. The delivery register was reviewed, relevant cases were identified and then the record cards of the clients were retrieved through their registration numbers and studied. Information obtained included the age, parity, estimated gestational age, booking status, type of instrumental vaginal delivery, sex of fetus, weight of fetus, condition of the perineum post procedure, Apgar scores and indications. The data collected were analysed using statistical package for social sciences (SPSS) version 26.0 and presented in tables with p-value <0.05 being significant.

## III. Results

The study was conducted over a period of 10 years (1st January, 2012 - 31st December, 2021). A total of 12564 women delivered during the study period and 144 (1.15%) out of these had instrumental vaginal delivery.

**Table 1** showed the socio demographic characteristics of women who had a form of instrumental vagina delivery, the age range of 26-35years had the highest frequency 100(69.4%), para 1 patients were noted to have the highest number of instrumental vagina delivery 76(52.8%), then para 2 had 44 women (30.5%), patients at an estimated gestational age of 37 – 40wks had the highest number of instrumental vagina delivery 114 (79.17).

**Table 2** showed the routes of delivery. A total of 12564 women delivered during the study period, 5763(45.8%) delivered via caesarean section, 8 women had destructive delivery, 69 had vagina breech delivery, spontaneous vertex delivery 6580 patients (52.4%), instrumental vaginal deliveries 144 (1.15%).

**Table 3** showed the Various indications for instrumental vagina delivery, prolonged second stage of labour had the highest frequency 115(79.9%) then severe pre -eclampsia with 9(6.25%).

**Table 4** showed types of instrumental delivery, biosocial variables and outcome of the deliveries. Vacuum delivery 127 (88%) was frequently conducted than forceps delivery 17 (12%). Majority of the patients who had this procedure were booked patients 110 (76%) and most of the babies delivered were average sized 120(83.3%). The 1<sup>st</sup> minute APGAR of 8 and 9 87(60.4%) and 5<sup>th</sup> minute APGAR of 8 and 9 125(86.80%) were recorded among these babies and most of the babies were male 76(53%). The mothers who had episiotomy were 90(62.5%) however, some had perineal tear with 1<sup>st</sup> degree perineal tear as the highest 16 (11.13%), 20 patients had intact perineum ( 13.9%).

**Table 1: Socio Demographic Parameters Of Mothers In The Study Population**

Age range	Frequency (n)	Percentage %
0 – 17	2	1.40
18 –25	25	17.40
26-35	100	69.4
36-45	17	11.80
46-55	0	0

Parity	Frequency	Percentage
1	76	52.8
2	44	30.5
3	19	13.22
4	3	2.1
5	1	0.69
6	1	0.69
7	0	0
<b>Gestational age(weeks)</b>		
WEEKS	Frequency	Percentage
< 37	16	11.11
37 – 40	114	79.17
>40	14	9.72

**Table 2: Routes Of Delivery Of Mothers In The Study Population.**

Mode of delivery	Frequency	Percentages
Caesarean section	5763	45.8
Destructive delivery	8	0.06
Vagina Breech delivery	69	0.59
Spontaneous Vertex delivery	6580	52.4
Instrumental vaginal deliveries	144	1.15
<b>Total</b>	<b>12564</b>	<b>100</b>

**Table 3: Indications For Instrumental Vagina Delivery**

Indication	Frequency (n)	Percentages (%)
Antepartum Haemorrhage	8	5.5
Eclampsia	6	4.2
IUFD	1	0.65
Pregnancy induced hypertension	5	3.5
Prolonged 2 <sup>nd</sup> stage of labour	115	79.9
Severe pre-eclampsia	9	6.25
<b>Total</b>	<b>144</b>	<b>100</b>

**Table 4: Types Of Instrumental Vaginal Delivery, Biosocial Variables And Outcome Of The Deliveries**

Type of IVD	Frequency (n)	Percentages (%)
Forcep	17	12
Vacuum	127	88
<b>BOOKING STATUS</b>		
Booked	110	76
Unbooked	34	24
<b>BIRTH WEIGHT(KG)</b>		
< 2.5	13	9.00
2.5-3.5	120	83.3
>3.5	11	7.70
<b>1<sup>ST</sup> Minute Apgar</b>		
< 5	16	11.1
6 and 7	41	28.50
8 and 9	87	60.4
<b>5<sup>TH</sup> Minute Apgar</b>		
< 5	6	4.2
6 and 7	13	9.0
8 and 9	125	86.80
<b>SEX OF FETUS</b>		
FEMALE	68	47
MALE	76	53
<b>CONDITION OF PERINEUM POST PROCEDURE</b>		
1 <sup>ST</sup> Degree perineal tear	16	11.13
2 <sup>nd</sup> Degree perineal tear	12	8.33
3 <sup>rd</sup> Degree perineal tear	2	1.38
4 <sup>TH</sup> Degree perineal tear	2	1.38
Cervical tear	2	1.38
Episiotomy	90	62.5

Intact perineum	20	13.9
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#### IV. Discussion

The instrumental vaginal delivery rate in this study was 1.15% of total deliveries, which was low when compared to 3.7% reported in Abakiliki, 3.6% reported in zaria and 1.95% in Jos.<sup>2,9,11</sup> It was also lower than the value obtained 1.61% in a similar study carried out in the same Tertiary Health Facility where this index study was conducted however, it was a 5 year review as opposed to a 10 year review of this current study.<sup>17</sup> The instrumental vaginal delivery rate observed in this study was also lower than the recommended rate of 8.5% by the Royal college of Obstetrics and Gynaecology (RCOG) and much lower than the rates in developed countries.<sup>15</sup> However, it was higher than 0.69% reported in Bauchi and 0.67% in Rivers State Portharcourt in Nigeria.<sup>1</sup>

In this study, the majority of the instrumental deliveries were conducted with vacuum extraction, by application of silastic cups, while the forceps delivery was performed by application of low outlet forceps (wrigley's forceps). The preference for vacuum over forceps as the instrument of choice found in this study was similar to findings from previous related study.<sup>12</sup>

The reasons for the low rate of instrumental deliveries include a preference for caesarean section in conditions ideal for forceps or vacuum extraction by contemporary obstetricians probably due to medico-legal reasons or lack of skill.<sup>9</sup> Over the years, there has been a gradual shift from the use of forceps to the vacuum propably due to the fact that the vacuum is safer, the skill is more easily acquired, and it has an in-built safety mechanism.<sup>10</sup> On the contrary, application of forceps is more difficult technically and requires more time to acquire the skill.<sup>10</sup>

Most of the instrumental deliveries in this study were done on booked women with low parity (Para 1 and 2) and this was similar to the reports from a related study conducted in the same study area as the index study.<sup>17</sup> This was not in agreement with the findings in Bauchi and Zaria in Nigeria where most of these procedures were carried out on primigravidae (52.2% and 78.6%) respectively due to delays in second stage of labour resulting from maternal exhaustion, anxiety, and uterine inertia.<sup>1,11</sup>

The Majority of the vacuum procedures were carried out at term which is the acceptable practice. Most authorities consider it a contraindication if the gestational age is less than 34 weeks due to increased risk of cephalhaematoma.<sup>16</sup>

The most common maternal complication observed in this study was perineal tears which arose from extension of an episiotomy or incases where episiotomy was not considered necessary. However, it was at variance with the findings from other studies which showed primary postpartum haemorrhage as the most common complication.<sup>8, 17</sup>

Birth asphyxia was the most common neonatal complication, occurring in most of the neonates delivered by the parturients. This was not surprising considering the different indications for which the procedures were carried out. This finding was comparable with the previous reports from a similar study in Portharcourt, Nigeria.<sup>17</sup> However, the findings in the index study was not in accordance with the reports from India study which showed cephalhaematoma as the most common neonatal complication.<sup>19</sup>

#### V. Conclusion

The instrumental vaginal delivery rate of parturient in Uyo over a ten year review was low resulting in higher caesarean section rate.

#### Recommendations

1. Hands on training for residents doctors on the use of forceps and Ventouse should be encouraged.
2. Regular clinical meetings as regards instrumental vaginal delivery should be made routine in all medical training institutes.
3. Intending and practicing Obstetricians should be encouraged to acquire the basic necessary skills on instrumental vaginal delivery.

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