

# Review of instrumental vaginal delivery at the Obafemi Awolowo University Teaching Hospitals Complex

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## ABSTRACT

**Background:** Instrumental vaginal delivery (IVD) is one of the signal functions of the basic emergency obstetric and newborn care. Some recent reviews point towards a sustained fall in the performance of this lifesaving procedure. With increasing caesarean section rates, institutional reviews of the practice of IVD are important to improve and sustain this art which is on the path of extinction.

**Objectives:** To determine the IVD rate at the OAUTHC over a 5-year period from January 2013 to December 2017 and to review the maternal and newborn outcomes.

**Methods:** This was a retrospective review. Case records of parturients who had either forceps or vacuum delivery during the study period were retrieved and relevant information were extracted. Data analysis was done with IBM-SPSS version 20.

**Results:** There were 10,286 deliveries and 101 IVDs over the 5-year period giving an IVD rate of 0.98%, with 0.41% for forceps and 0.57% for vacuum delivery. Seventy-one case records were available for review. Mean maternal age was  $27.21 \pm 5.8$  years and 31 (43.7%) of the parturients were primigravidae. Thirty-nine (54.9%) were booked and 66 (93%) of the procedures were performed as emergencies. Senior residents conducted most (94.4%) of the procedures and poor maternal efforts in the second stage of labor was the most common indication (43.8%). All resulted in vaginal delivery with the most common maternal complication being genital tract laceration, most notably first and second-degree perineal tears. Of the 66 livebirths, neonatal ward admission rate was 45.5%. There was an early neonatal death which followed a traumatic vacuum delivery.

**Conclusion and Recommendations:** The IVD rate at OAUTHC is low, with higher preference for vacuum delivery. Appropriate case selection is evident, and poor maternal effort in second stage of labor remained the leading indication. The neonatal admission rate is high. Training and retraining of resident doctors is necessary towards increasing the conduct and ensuring better outcome.

**Key words:** Forceps delivery; instrumental vaginal delivery; maternal complications; neonatal outcomes; vacuum delivery.

## Introduction

Instrumental vaginal delivery is the delivery of a baby vaginally using an instrument for assistance.<sup>[1]</sup> The advent of obstetric forceps and use of ventouse devices have

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revolutionized obstetric practice. Despite the use of newer designs of ventouse cups which have greatly reduced the risk of injury to the baby, and forceps availability as against its rarity in the era of the Chamberlains, many authorities believe that these vital obstetric arts are moving towards extinction.<sup>[2,3]</sup>

At a period when instrumental vaginal delivery has become one of the seven signal functions of basic emergency obstetric and newborn care (BEmONC) towards addressing the causes of maternal and newborn morbidity and mortality, it is imperative that institutional practices are reviewed.<sup>[4]</sup> The increasing rates of caesarean section globally, although majorly attributed to improvement in surgical techniques, antibiotic choices and better blood transfusion services, the highly litigation-prone field of obstetrics has a tremendous impact on this surge. A significant proportion of obstetricians now prefer caesarean section to instrumental delivery, thus making assisted vaginal delivery, especially forceps delivery, an art that is gradually being lost.<sup>[3,5]</sup>

While approximately 12% of deliveries are by instrumental vaginal delivery in the United Kingdom and 4.5% in the USA, incidence ranging from 0.69% to 4.52% have been reported in Nigeria.<sup>[1,6-8]</sup> A review conducted in our center about three decades earlier revealed an incidence of 1.6% for vacuum deliveries.<sup>[9]</sup>

### Aim

This study aimed to determine the instrumental delivery rate and evaluating maternal and newborn outcome at the Obafemi Awolowo University Teaching Hospitals Complex, Ile-Ife, Osun State, Nigeria.

### Materials and Methods

This was a retrospective study involving the review of case records of women with singleton pregnancies who had either vacuum or forceps delivery at the Obafemi Awolowo University Teaching Hospitals Complex, Ile-Ife over a 5-year period (1<sup>st</sup> January 2013 to 31<sup>st</sup> December 2017). Using the labor ward registers and ICD-10 coding for forceps and vacuum delivery, the case records numbers were obtained and permission was sought to retrieve and review the patients' records from the health records department of the hospital. Information pertaining to sociodemography, parity, indication for instrumental delivery, and newborn and maternal outcomes were retrieved on a purpose-designed proforma, and for neonates admitted into the neonatal ward, the clinical condition and outcome of care were checked up. The delivery statistics over the period was obtained from the Statistics unit of the health records department. The data

were entered into a prepared spreadsheet and analyzed using the IBM-SPSS version 20.

### Results

Over the study period, there were 101 instrumental vaginal deliveries and 10,286 total deliveries, giving an instrumental delivery rate of 0.98% out of which 59 (0.57%) were vacuum delivery and 42 (0.41%) were forceps delivery. Out of the 101 cases, 71 case records were available for review, giving a retrieval rate of 70.3%.

The mean age of the women was  $27.21 \pm 5.8$  years with a range of 16–46 years. Of the 71 reviewed cases, 31 parturients (43.7%) were primigravidae, whereas the rest had 1 or more parous experiences with only 2 (2.8%) being grandmultipara. Pertinent obstetric characteristics of parturients are shown in Table 1.

All the reviewed cases were successful. Fifty-nine (83.1%) were performed on fetuses  $\geq 37$  weeks whereas 22 (31.0%) occurred in post-dated pregnancies. Important procedural considerations are shown in Table 2.

First and second-degree perineal tears occurred in eight (11.2%), third / fourth-degree in one (1.4%), and cervical laceration in 4 (5.6%). Other maternal complications are as depicted in Table 3.

There were 66 (93%) live births and 5 (7.0%) still births in which fetal demise was diagnosed prior to the second stage of labor. Of the 66 livebirths, an early neonatal death occurred in a neonate approximately 2 hours after birth. Birth weights ranged from 2.00 to 4.28 kg with a mean of  $3.0 \pm 0.48$  kg. Forty-eight (72.7%) of the livebirths had Apgar score  $\geq 7$  at 1 min while 58 (89%) had a score of  $\geq 7$  at 5 min of life. Table 4 summarises the neonatal complications.

### Discussion

Over the 5-year period reviewed, there were 10,286 deliveries and 101 instrumental vaginal deliveries with an incidence of 0.98%. The vacuum delivery rate of 0.57% is lower than the previously reported rate of 1.6% from our center approximately three decades earlier.<sup>[9]</sup> Our instrumental delivery rate of 0.98% is lower than the 4.52%, 4.4%, 3.6%, and 1.95% reported from Lagos, Enugu, Zaria, and Jos, respectively.<sup>[10-13]</sup> It is, however higher, than 0.69% reported from Bauchi, Northern Nigeria.<sup>[14]</sup> There was a higher preference for vacuum over forceps delivery (58.4% versus 41.6%). This is in tandem with recent trends of preference for vacuum devices which are known to cause fewer maternal complications and are easier to learn and use when compared with forceps.<sup>[1,3,5]</sup>

**Table 1: Pertinent obstetric characteristics of parturients (total=71)**

Obstetric Characteristics	No	%
Booking status		
Booked	39	54.9%
Unbooked	32	45.1%
Total	71	100%
Planning of IVD		
Elective	5	7.0%
Emergency	66	93.0%
Total	71	100%
Onset of labor		
Spontaneous	65	91.5%
Induced	6	8.5%
Total	71	100%

**Table 2: Important procedural considerations (total=71)**

	No	%
Cadre of accoucheur		
Consultant	1	1.4%
Senior Registrar	67	94.4%
Registrar	3	4.2%
Total	71	100%
Type of analgesia		
Local anesthesia	69	97.2%
Epidural analgesia	2	2.8%
Total	71	100%
Indication for IVD		
Fetal distress	17	23.9%
Prolonged 2 <sup>nd</sup> stage	15	21.1%
Poor maternal effort	31	43.8%
Eclampsia/Pre-eclampsia	5	7.0%
Hemoglobinopathies	3	4.2%
Total	71	100%

**Table 3: Maternal complications (total=71)**

Complications	No	%
Extension of episiotomy	11	15.5%
Genital tract laceration	13	18.3%
Postpartum hemorrhage	11	15.5%
Urinary retention	1	1.4%
Urinary incontinence	1	1.4%
Perineal pain	4	5.6%

**Table 4: Neonatal morbidity and mortality (total=66)**

	No	%
Need for neonatal admission	30	45.5%
Neonatal asphyxia	16	24.2%
Head/facial bruising	2	3.0%
Preterm low birth weight	4	6.1%
Presumed sepsis	4	6.1%
Respiratory distress of the newborn	2	3.0%
Cephalhematomata	1	1.5%
Early neonatal death	1	1.5%

The falling incidence of IVD may not be unconnected to the easily available option of caesarean section in tertiary centers. Unfortunately, as fewer instrumental deliveries are performed, this important obstetric art may be on its way out of practice as doctors in training have fewer cases to observe and perform. Contrary to known trends, primigravidae constitute less than half of the parturients with even fewer teenagers. These groups of women are prone to dysfunctional labor and are presumably candidates for assisted vaginal delivery. However, the typical parturient in this review is that of a booked multiparous young woman.

The most common indication for IVD in this review was poor maternal effort, accounting for 43.8%. This correlates with findings from previous studies.<sup>[7,9]</sup> Fetal distress in the second stage of labor and prolonged second stage of labor are also noteworthy. All but one of the procedures were performed by resident doctors. A similar finding was reported in a review of instrumental delivery in Sokoto, northern Nigeria.<sup>[7]</sup> The often emergent need for the procedure and availability of resident doctors round-the-clock in labor room may be responsible for this finding. The 100% success rate points to the adequacy of preprocedure evaluation and careful patient selection. The most common maternal complications were genital tract laceration most commonly the first and second-degree perineal tears, and primary postpartum hemorrhage. These were also reported by Yakasai *et al.* in northern Nigeria.<sup>[15]</sup>

Thirty of the 66 live births (45.5%) were admitted in the neonatal unit for indications including birth asphyxia, preterm low birth weight, presumed sepsis, respiratory distress of the newborn, and birth injuries. All but one were discharged in satisfactory condition. The early neonatal mortality recorded occurred following vacuum delivery with subgaleal hemorrhage in a term neonate.

## Conclusion and Recommendation

Our institutional IVD rate is low and declining. There is a higher preference for the ventouse device. The neonatal admission rate is, however, significantly high with the initial indication for assisted delivery probably being a contributory factor. We recommend training and retraining of resident doctors in instrumental delivery to reduce the abysmally increasing caesarean section rates. There is a need to audit practices to improve outcomes, especially for the newborn. The health records management should be improved to increase record retrieval rate for more comprehensive reviews. Adequate documentation of procedure and outcomes is essential as this will afford quality audit of care in the near future. There is a need to have a second look at embracing IVD to reduce the presently high caesarean

section rate. Caesarean section by itself is traumatic, costly, and could be associated with dangers to the fetus and/or the mother. IVD is surely an alternative option which is very safe in properly selected cases.

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### Conflicts of interest

There are no conflicts of interest.

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