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Retrospective study of maternal and perinatal outcomes of instrumental vaginal delivery in tertiary care hospital

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Abstract
Background: An operative vaginal delivery (OVD) includes obstetrics forceps and /or vacuum assisted delivery to accelerate the second stage of labor and offers the option to accomplish safe delivery for the mother and the clinician. A successful assisted vaginal delivery avoids caesarean section, its associated morbidity and its implications for the future pregnancy.
Design: Retrospective study.
Aim and Objective: To determine maternal and perinatal outcomes associated with instrumental vaginal delivery.
Methods: It was a retrospective analysis of 202 vaginal deliveries via OVD conducted from August 2021 to July 2022 at Department of Obstetrics and Gynaecology, Government Medical College Jammu, a tertiary care hospital. Information about the OVD was obtained from labor room register and individual indoor case file. Analysis of data was done to find out the incidence and maternal and perinatal outcome in OVD.
Results: Of 202 women, 170 (84.16%) and 32 (15.84%) had vacuum and forceps deliveries, respectively. The use of instruments was more frequent in infants with higher birth weight and gestational age. There were no significant differences in APGAR scores between the two groups. Two main indications of instrumental deliveries were fetal distress and prolonged second stage labor. Forceps, compared with vacuum, more often caused perineal tears and postpartum hemorrhage. Cephalhematoma was found to be more common in vacuum. Neonatal outcomes were similar in both types of instrumental deliveries.
Conclusion: OVD helps in improving maternal and perinatal outcomes and reduces the caesarean delivery rate. The most important factor to determine the safety of the instrument is the operator rather than the instrument.

Keywords: Operative vaginal delivery, vacuum delivery, forceps delivery

Introduction
Among all deliveries the rate of normal vaginal deliveries varies between 75-90%. Out of them the rate of operative vaginal delivery (OVD) is around 11.2%. OVD refers to assisted vaginal delivery to speed up the second stage of labor thereby decreasing the rate of primary cesarean section [1]. The commonly used instruments for operative vaginal delivery are forceps and vacuum extraction. The choice of the operator is foremost among procedural variations in assisted vaginal birth, and this in itself is governed by the clinical presentation, local practice, and geographical location [2]. A successful operative vaginal delivery avoids unnecessary caesarean section, its concomitant uterine scar and its implications in future pregnancies [3, 4].

Maternal indications for OVD include [5]
- Exhaustion following prolonged labour,
- Failure to progress in the second stage of labour
- Medical conditions such as pre-eclampsia, placental abruption
- Acquired or congenital heart disease.

Fetal indications include
a) Fetal distress in the second stage of labour either due to the maternal condition or occurring independently of it.
There is an increased risk of maternal and fetal complications compared to spontaneous vaginal delivery. Maternal complications include

a) Cervical, vaginal and perineal tears, an extension of an episiotomy
b) Postpartum hemorrhage
c) Rupture of the uterus or even the bladder

Fetal complications include
a) Intracranial damage
b) cephalhematoma
c) brachial plexus injury
d) convulsions
e) subconjunctival Injury

Material and Methods
This was a single centre retrospective study conducted at Department of Obstetrics and Gynaecology GMC, Jammu, a tertiary care hospital from 1st August 2021 to 31st July 2022.In present study, total vaginal deliveries were 10806, out of which 202 had instrumental vaginal deliveries.Information about the OVD was obtained from labor room register and individual indoor case file. Analysis of data was done to find out the incidence of maternal and perinatal outcomes in OVD.

Inclusion Criteria
- Singleton pregnancy from 34 weeks of gestation
- Term pregnancy

Exclusion Criteria
- Pregnant women who had multiple pregnancies,
- Cephalopelvic disproportion,
- Preterm (<34 weeks of gestation), placenta previa
- Presentation other than cephalic.

Results
In our study, the mean age of women was 25.21±4.73 years in the ventouse and forceps group. Out of 202 deliveries, 84.16% of ventouse and 15.84% of forceps deliveries were carried out. The mean birth weight was 3.12±0.38 kg. Fetal distress was most common indication for instrument application in second stage of labor accounting 33.53% in ventouse and 31.9% in forceps but it is not statistically significant. Other indications were prolonged second stage of labor which was seen in 22.94% of ventouse and 23% of forceps deliveries. Poor maternal efforts were found in 18.23% of forceps and 12.5% of ventouse delivery. Maternal distress was observed in 14.7% of ventouse and 15.62% of forceps delivery.

Table 1: Maternal and neonatal characteristics

		Ventouse (170)	Foreceps (32)	P Value
Parity	PRIMI	138 (81.17%)	22 (68.75%)	NS
	MULTI	32 (18.82%)	10 (31.25%)	NS
Gestational Age	<37 weeks	10 (5.8%)	2 (6.25%)	NS
	37-40 weeks	25 (14.70%)	8 (25.00%)	NS
	>40 weeks	135 (79.41%)	22 (68.75%)	NS
Birth Weight	2-2.5 kg	6 (3.5%)	3 (9.30%)	NS
	2.5-3 kg	48 (28.23%)	10 (31.25%)	NS
	3-3.5kg	82 (48.23%)	14 (43.75%)	NS
	3.5- 4 kg	34 (20.00%)	5 (15.62%)	NS
APGAR at 1 min	0-3	16 (9.40%)	2 (6.25%)	NS
	4-6	140 (82.35%)	27 (84.27%)	NS
	7-10	14 (8.2%)	3 (9.37%)	NS
APGAR at 5 mins	0-3	4 (2.30%)	2 (6.25%)	NS
	4-6	11 (6.50%)	1 (3.12%)	NS
	7-10	155 (91.18%)	29 (90.62%)	NS

Table 2: Indications for application of ventouse and/or forceps.

Indication	Ventouse	Foreceps
Fetal Distress	57 (33.53%)	10 (31.9%)
Prolonged 2nd Stage	39 (22.94%)	7 (23.0%)
Maternal Distress	25 (14.7%)	5 (15.62%)
Poor maternal Effort	31 (18.23%)	4 (12.5%)
Eclampsia	8 (4.7%)	1 (3.1%)
Severe Preeclampsia	6 (3.5%)	2 (6.25%)
Preterm		0
Anemia	4 (2.3%)	3 (9.37%)

Table 3: Maternal morbidity in instrumental vaginal delivery

S. No	Maternal morbidity	Ventouse	Foreceps
1.	Extension of episiotomy	10 (5.9%)	3 (9.3%)
2.	Vaginal/cervical laceration	12 (7%)	5 (15.62%)
3.	Postpartum haemorrhage	12 (6.9%)	5 (15.62%)
4.	Need for blood transfusion	13 (7.6%)	6 (18.75%)
5.	Episiotomy wound complications	3 (1.76%)	5 (15.62%)

Table 4: Neonatal morbidty and mortality

Variable	Ventouse (170)	Foreceps (32)
Cephalhematoma	13 (7.6%)	1 (3.1%)
Instrumental brusing	3 (1.7%)	4 (12.5%)
Subconjuctival hemorrhage	3 (1.7%)	2 (6.25%)
Birth asphyxia	4 (2.35%)	1 (3.1%)
Nicu admissions	8 (4.7%)	3 (9.3%)
Neonatal deaths	2 (1.1%)	1 (3.1%)

Discussion
Historically, the development of the ventouse was preceded by the obstetric forceps by many decades but recently this has been superceded by the ventouse in some of the countries [7]. Our study was done to determine the neonatal and maternal morbidity and complications associated with instrumental-assisted vaginal delivery. Being an important tool in modern era instrumental deliveries are helpful in avoiding cesarean section and its associated morbidity and implications for future pregnancies. Despite being an emergency intervention, the use of instrumental-assisted vaginal delivery has progressively declined which is likely due to the fear of its interventional complications to the neonatal and maternal health and the declining skills of operators in conducting instrumental deliveries leading to increase in the rate of cesarean section and its future implications.

In our study, primigravida and fetal distress were the most common indications for instrumental deliveries in both vacuum and forceps groups. A similar where fetal distress was (56.2%), prolonged second stage of labor was (24.0%), was noticed in the study done by Zenebe *et al.* [8] Table 3 shows that in our study maternal morbidity was comparatively less in the ventouse group as compared to the forceps group, which is almost similar to the results of the Cochrane Database [9]. Regarding neonatal outcomes, the risk of neonatal complications were higher in infants delivered by forceps compared to vacuum. There were 13 cases of Cephalhematoma which is far less than 9.4% and 5.2% reported for vacuum deliveries and forceps deliveries respectively in a systemic review [10]. In our study, fetal distress was the most common indication for instrumental delivery, hence timely recognition of fetal distress and required intervention in 2nd stage of labor by operative vaginal delivery leads to favorable neonatal outcome. But these complications may not be truly related to the instrumental intervention as asphyxia may be the outcome of the onset of labor that indicated the need of intervention than the operative vaginal delivery

itself. Moreover it depends mainly on the operator's skill of application of instrument and case selection rather than which type of instrument is being used. Instrumentation trial should not be given in cases of absolute feto-pelvic disproportion with or without involving fetal distress and/ or more than one-fifth of the fetal head above the pelvic brim which itself is an indication of primary caesarean section. Moreover it is the fact that serious neonatal and maternal morbidities have been attributed to the use of multiple instruments. RCOG guidelines states that the consecutive use of forceps and vacuum should be avoided whenever possible and should not be done by inexperienced surgeons [11]. Similarly, the clinical practice guidelines of SOGC suggest that failure of the chosen method of instrumentation whether forceps and/or vacuum in a feasible time should be considered an indication for deserting of the method [12].

Conclusion

Instrumental vaginal delivery by experienced health care provider is associated with good obstetric outcomes with minimal risk. Our study concluded that ventouse application is associated with significantly less maternal trauma than with forceps. The safety of the instrument is dependent mainly on operator's skills and right judgment regarding case selection. Proper training, timing, clinical skills are important for a successful instrument assisted deliveries. And these instrumental assisted deliveries will reduce caesarean section rate to 10-15% as per WHO recommendations.

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References

1. Caughey AB, Cahill AG, Guise J.-M, Rouse DJ. Safe Prevention of the Primary Cesarean Delivery. The American Journal of Obstetrics and Gynecology. 2014;210:179-193. https://doi.org/10.1016/j.ajog.2014.01.026
2. Elfituri A, *et al*. Successful versus Unsuccessful Instrumental Deliveries- Predictors and Obstetric Outcomes. The European Journal of Obstetrics & Gynecology and Reproductive Biology. 2020;244:21-24. https://doi.org/10.1016/j.ejogrb.2019.10.050
3. Singh A, *et al*. A Comparative Study of Feto-Maternal Outcome in Instrumental Vaginal Delivery. The Journal of Obstetrics and Gynecology of India. 2011;61:663-666. https://doi.org/10.1007/s13224-011-0119-3
4. Chaudhari P, *et al*. A Comparative Study of Feto-Maternal Outcome in Instrumental Vaginal Delivery at Tertiary Health Level Hospital in Uttarakhand State. International Journal of Reproduction, Contraception, Obstetrics and Gynecology. 2016;5:3294-3300. https://doi.org/10.18203/2320-1770.ijrcog20163169
5. Elfituri A, *et al*. Successful versus Unsuccessful Instrumental Deliveries- Predictors and Obstetric Outcomes. The European Journal of Obstetrics & Gynecology and Reproductive Biology. 2020;244:21-24. https://doi.org/10.1016/j.ejogrb.2019.10.050
6. Nkwabong E, *et al*. Indications and Maternofetal Outcome of Instrumental Deliveries at the University Teaching Hospital of Yaounde, Cameroon. Tropical Doctor. 2011;41:5-7. https://doi.org/10.1258/td.2009.090406
7. Bofill JA, Parry KG, Roberts WF, Martin RW, Morrison JC, Rust OA. Forceps and vaccume delivery: A survey of north American residency programs. Obstetrics and Gynecology. 1996;88(4-1):622-5
8. Hubena Z, *et al*. Prevalence and Outcome of Operative Vaginal Delivery among Mothers Who Gave Birth at Jimma University Medical Center, Southwest Ethiopia. Journal of Pregnancy; c2018. Article ID: 7423475. https://doi.org/10.1155/2018/7423475
9. Johanson R, Menon V. Vacuum Extraction versus Forceps for Assisted Vaginal Delivery. Cochrane Database of Systematic Reviews, No. 2, CD000224; c1999. https://doi.org/10.1002/14651858.CD000224
10. O'Mahony F, Hofmeyr GJ, Menon V. Choice of Instruments for Assisted Vaginal Delivery. Cochrane Database of Systematic Reviews, No. 11, CD005455; c2010. https://doi.org/10.1002/14651858.CD005455.pub2
11. Royal College of Obstetricians & Gynaecologists. Instrumental vaginal delivery. Guideline No. 26. London: RCOG; c2005.
12. Cargill YM, Mackinnon CJ. Guidelines for operative vaginal birth. Society of obstetrician & gynecologists of Canada, SOGC clinical practice guidelines no. 148. J Obstet Gynecol Can. 2004;26:747-53.

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