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Original Research Article

# FETO-MATERNAL OUTCOME FOLLOWING VENTOUSE ASSISTED VAGINAL DELIVERY IN MANIPUR: A LONGITUDINAL STUDY

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## Abstract

**Background:** Assisted vaginal delivery (AVD) offers the option of an operative procedure to safely and quickly remove the infant, mother and the obstetrician from a difficult and even hazardous situation. Vacuum extraction (VE) has recently gained in popularity because of new designs of vacuum cups with reduced risk of injury to the neonate. The present study reviews the clinical use of vacuum extractor delivery instruments in modern obstetric management. The present study was done to assess the fetal outcome following ventouse assisted vaginal delivery. The secondary aim was to assess the maternal outcome. **Materials and Methods:** An observational longitudinal study was taken up in the department of Obstetrics & Gynecology during the period of July 2020 to May 2023. Pregnant women of any gravida who delivered by ventouse assisted vaginal delivery who fulfilled the inclusion criteria of singleton pregnancy with vertex presentation, well flexed head, engaged head, fully dilated cervix, ruptured membrane with indications to hasten delivery were the study participants. Mothers with severe intra-uterine growth retarded fetus, intra-uterine fetal death or congenital abnormalities, known or suspected fetal coagulopathy, macrosmia, soft tissue obstruction in pelvis, severe vaginal or cervical infection and mothers not willing to participate in the study were excluded. A sample size of 98 was scientifically calculated. Participants were recruited consecutively until the sample size was reached. They were assessed at baseline, during intervention and followed up until discharged from hospital. Fetal outcome variables were low APGAR score, admission into NICU, cephalohematoma, retinal hemorrhage and superficial scalp injuries. The maternal outcome variables were episiotomy extension, vaginal wall tear, cervical tear, perineal tears and post-partum hemorrhage. **Result:** The median duration of labor was 11.5 hours with a range of 05-18 hours. Majority of the indications of ventouse delivery was because of poor maternal effort (PME) (38; 38.8%). This was followed by PME combined with fetal distress (FD) (14; 14.3%) and FD alone (12; 12.2%). Prolonged second stage (PSS) and shortened second stage (SSS) were other indicators. The mean traction time for ventouse delivery was 05 minutes with a range of 05-09 minutes. Almost all the participants (97; 99%) had successful delivery by ventouse. For a single case (1%) it had to transgress to Caesarean section. The median birth weight for the newborns was 3.2kg with a range of 2.5-4.0kg. The APGAR SCORE at birth was 09 for 80 (81.6%) newborns. All the newborns had an APGAR SCORE of ≥7 at 05 minutes. The median time of resolving the chignon was 13.1 hours with a range of 09-18 hours. Regarding maternal complications, nearly three-fourths of them (71; 72.4%) had an uneventful delivery. For the remaining mild to moderate complications occurred. Vaginal laceration was the most common complication (16; 16.3%). Regarding fetal complications, majority (81; 82.6%) had no complications. No severe complication happened. Scalp abrasion was the commonest complication (09; 9.2%). **Conclusion:** Vacuum delivery is safe both to mothers and newborns, but mild to moderate complications like vaginal laceration (16.3%), cervical tear (3.1%), extension of episiotomy wound (7.1%) and post-partum hemorrhage (4.1%) can arise in a quarter of the mothers. Newborns might have some mild to moderate morbidities like cephalhematoma (3.1%), scalp abrasion (9.2%), NICU admission, jaundice, birth asphyxia etc. in one-sixth of them.


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## INTRODUCTION

Assisted vaginal delivery (AVD) offers the option of an operative procedure to safely and quickly remove the infant, mother and the obstetrician from a difficult and even hazardous situation. The incidence of AVD ranges from 10%-20% of all the deliveries.[1]

The art of instrumental delivery, whether by using forceps or vacuum extractor, although existing for centuries, has earned dis-reputation due to possibility of poor maternal and fetal outcome. On the basis of ongoing research, the re-introduction of instrumental delivery will definitely find a place in emergency obstetric care.[2]

Vacuum extraction (VE) has recently gained in popularity because of new designs of vacuum cups with reduced risk of injury to the neonate.[3] During the last decade there is decrease in the use of VE, consequently resulting to an increase in caesarean section (CS) rates.[4] A successful AVD avoids CS, its attendant uterine scar and its implications for future pregnancy.[5] A meta-analysis of 10 clinical trials concluded that vacuum assisted deliveries were associated with significantly less maternal trauma than forceps deliveries, including a lower rate of severe perineal injury. Vacuum devices were also associated with reduced need for general and regional anesthesia, and with less post-partum pain. Therefore, the present study reviews the clinical use of vacuum extractor delivery instruments in modern obstetric management.

**Aims & Objectives:** The present study was done to assess the fetal outcome following ventouse assisted vaginal delivery. The secondary aim was to assess the maternal outcome, also.

## MATERIALS AND METHODS

An observational longitudinal study was taken up in the department of Obstetrics & Gynecology during the period of July 2020 to May 2023. Pregnant women of any gravida who delivered by ventouse assisted vaginal delivery who fulfilled the inclusion criteria of singleton pregnancy with vertex presentation, well flexed head, engaged head, fully dilated cervix, ruptured membrane with indications to hasten delivery were the study participants. Mothers with severe intra-uterine growth retarded fetus, intra-uterine fetal death or congenital abnormalities, known or suspected fetal coagulopathy, macrosmia, soft tissue obstruction in pelvis, severe vaginal or cervical infection and mothers not willing to participate in the study were excluded.

Taking an estimate of 14% vacuum assisted deliveries from a previous study,[7] with an absolute allowable error of 7% and a confidence level of 95%, a sample size of 98 calculated. Participants were recruited consecutively until the sample size was reached.

Data was collected by interviewing the mother as well the patient attendant by using a pre-designed and pre-tested questionnaire. It had sections on socio-demography, clinical history, examination and investigation details and the treatment accorded at the time of admission. Follow-up details were recorded during the hospital stay, the intervention and also at the time of discharge. Fetal outcome variables were low APGAR score, admission into NICU, cephalohematoma, retinal hemorrhage and superficial scalp injuries. The maternal outcome variables were episiotomy extension, vaginal wall tear, cervical tear, perineal tears and post-partum hemorrhage.

Data collected were analyzed by using SPSSv21. Only descriptive analyses were done. Prior informed verbal consent was obtained from the study participants. Confidentiality of participating mothers and their data was maintained.

## RESULTS

Completed data sets could be obtained from 98 mothers. There was no refusal. The mean age (SD) of the participants was 25.5 (5.5) years. Except for 11 participants, the others were booked cases (87; 89%). First gravida participants comprised two-thirds of them (63; 64.3%) followed by 2nd gravida and 3rd gravida and so on. The mean period of gestation was 40 weeks with a range of 37-43 weeks. A total of 05 participants (5.1%) had negative Rh typing. Twenty participants (20.1%) were found to be anemic on admission.

The median duration of labor was 11.5 hours with a range of 05-18 hours. Majority of the indications of ventouse delivery was because of poor maternal effort (PME) (38; 38.8%). This was followed by PME combined with fetal distress (FD) (14; 14.3%) and FD alone (12; 12.2%). Prolonged second stage (PSS) and shortened second stage (SSS) were other indicators. [Table 1]

Ventouse was applied when the cervix was fully dilated to 79 (80.6%) participants while for the rest it was applied when cervix was dilated by 09 cm. The cervix was fully effaced in majority of them (87, 88%). In more than half of them (52; 53.1%) ventouse was applied when the station was 3. This was followed by station at 2 (41; 41.8%) and others. The commonest position of occiput was occipito-anterior (96; 98%).

The mean traction time for ventouse delivery was 05 minutes with a range of 05-09 minutes. Almost all the participants (97; 99%) had successful delivery by ventouse. For a single case (1%) it had to transgress to Caesarean section. The median birth weight for the newborns was 3.2kg with a range of 2.5-4.0kg. The APGAR SCORE at birth was 09 for 80 (81.6%) newborns [Table 2]. All the newborns had an APGAR SCORE of ≥7 at 05 minutes.

The median time of resolving the chignon was 13.1 hours with a range of 09-18 hours.

Regarding maternal complications, nearly three-fourths of them (71; 72.4%) had an uneventful


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delivery. For the remaining mild to moderate complications occurred. Vaginal laceration was the most common complication (16; 16.3%). Regarding fetal complications, majority (81; 82.6%) had no complications. No severe complication happened. Scalp abrasion was the commonest complication (09; 9.2%).

**Table 1: Distribution of participants by indication of ventouse delivery**

| Indication for ventouse | Frequency | Percentage |
|---|---|---|
| PME | 38 | 38.8 |
| PME+FD | 14 | 14.3 |
| FD | 12 | 12.2 |
| PSS | 10 | 10.2 |
| SSS | 09 | 9.2 |
| PSS+FD | 06 | 6.1 |
| SSS+FD | 04 | 4.1 |
| PME+PSS | 03 | 3.1 |
| PSS+PME | 02 | 2.0 |

**Table 2: Distribution of newborns by APGAR SCORE at birth**

| APGAR SCORE at birth | Frequency | Percentage |
|---|---|---|
| 07 | 01 | 1.0 |
| 08 | 17 | 17.3 |
| 09 | 80 | 81.6 |

## DISCUSSION

The most common indications for ventouse delivery in the present study was found to be poor maternal efforts (38.8%) which was followed by fetal distress (12.2%), prolonged second stage of labor (10.2%) and to shorten second stage of labor (9.2%). The same results were found in a study conducted in Pakistan by Jabeen N et al in 2017.[2] Prapas N et al found similar findings.[8] Other studies showed fetal distress as the commonest indication fir instrumental delivery.[9,10]

The mean APGAR Score in the present study was found to be 08 while majority had an score of 09. This finding is comparable to the study finding made by Achanna S et al.[11] The same study also found that, all the chignons resided within a period of 24 hours just like the current study found.

In the current study maternal morbidity was present in 27.6% of them which is comparable to findings made by previous scholars from different parts of the world.[12,13] The most common fetal complication in our study was scalp abrasion (9.2%) followed by cephalohematoma (3.1%), NICU admission (2%) Jaundice (2%) and asphyxia (1%). This finding is comparable with findings made by Achanna S and Baskett TF et al.[11,14]

## CONCLUSION

Vacuum delivery is safe both to mothers and newborns, but mild to moderate complications like vaginal laceration (16.3%), cervical tear (3.1%), extension of episiotomy wound (7.1%) and post-partum hemorrhage (4.1%) can arise in a quarter of the mothers. Newborns might have some mild to moderate morbidities like cephalhematoma (3.1%), scalp abrasion (9.2%), NICU admission, jaundice, birth asphyxia etc. in one-sixth of them.

No mortality among mothers and newborns were found. Hence, this can be the instrument of choice when intervention is needed during second stage of labor.

## REFERENCES


1. Huma N, Muntiha S, Shabana P, Azra S. Feto-maternal morbidity associated with vacuum versus forceps delivery. Pak J Surg. 2012;28(2):126-9.
2. Nigar J, Rahela M, Pushpa M, Sana Z, Kiran M. Feto-maternal outcome in instrumental vaginal delivery attending a secondary hospital in Hyderabad (Age Khan Maternal and Child Care Centre). J Pak Med Assoc. 67(12):1833-6.
3. Priyanka C, Neeta B, Bineeta G, Archna T, Anjali C. Comparative study of feto-maternal outcome in instrumental vaginal delivery at tertiary health level hospital in Uttarakhand state: Int J Reprod Contracept Obstet Gynecol. 2016 Oct;5(10):3294-9.
4. Katarina A. Neonatal complications following burth by vacuum extraction: Thesis for doctoral degree (PhD) Department of Women's and Children's health. Karolinska Institute, Stockholm, Sweden; 2017
5. Singh A, Rathore P. A comparative study of feto-maternal outcome in instrumental vaginal delivery. J Obstet Gynecol India. 2011;61(6):663-6.
6. Chenoy R, Johanson R. A randomized prospective study comparing delivery with metal and silicone vacuum extractor cups. Br J Obstet Gynecol. 1992:360-3.
7. Devi L, Putta V, Spencer JP. Assisted vaginal delivery using the vacuum extractor. Am Fam Physician. 2000;62:1316-20.
8. Prapas N, Kalogiannids I, Masoura S, Diamanti E, Makeds A, Drossu D. Operative vaginal delivery in singleton term pregnancy: short term maternal and perineal outcomes, Hippocratia 2009;13(1):41-5.
9. Giri A, Vaidya A. Maternal and fetal outcome of vacuum assisted delivery. Post-graduate Medical J Natt Acad Med Sci. 2008;8:48-56.
10. Mesleh RA, AL-Sawadi HM, Kurdi AM. Comparison of maternal and infant outcomes between vacuum extraction and forceps deliveries. Saudi M J. 2002;23:811-3.
11. Achanna S, Monga D. Outcome of forceps delivery versus vacuum extraction – a review of 200 cases. Singapore Med J. 1994;35:605-8.
12. Yarrow C, Benoit HG, Klein MC. Outcome after ventouse assisted delivery. Can Farm Physician 2004;50:1109-14.
13. Gachiri JR, Rogo KO. Fetal and maternal outcomes of ventouse extraction. East Afr Med J. 1991 July;68(7):539-48.
14. Baskett TF, Calder AA, Kumaran SA. Editors. Assisted Vaginal Delivery. Murrkerr's – operative obstetrics. 11th ed. London: Saunders Elsevier; 2007




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