

Fetomaternal Outcome of Instrumental Vaginal Delivery at Nepalgunj Medical College Teaching Hospital Kohalpur

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ABSTRACT

Introduction: Instrumental vaginal delivery is performed in second stage of labor to expedite delivery with aim to decrease cesarean section rate. Worldwide 10-20% of laboring women need obstetrics intervention for delivery. **Aims:** To evaluate the indication and fetomaternal outcome of instrumental vaginal delivery. **Methods:** This is a hospital based cross-sectional study conducted at the department of obstetrics and gynecology. The study was done from July 2021 to July 2022 for a period of one year. Data were collected, recorded in standard proforma and analyzed by using SPSS version 20. **Results:** The out of 6123 deliveries, 149(2.4%) had instrumental vaginal delivery. Out of 149 participants, 41.6% were between 20-24 years, 10.7% were of age group 15-19 years and 4% ladies were of >35 years. Instrument delivery was more frequently applied in primigravida in comparison to multigravida (57.3% vs 42.3%) $p=0.046$. The most common indication for instrumentation was poor maternal effort (41%) followed by fetal distress (33.6%). About 14.1% had postpartum haemorrhage, 3.4% had vulval hematoma, and 38.3% babies had Neonatal Intensive Care unit admission. **Conclusion:** Poor maternal effort and fetal distress were the common indications for instrumental delivery with some fetomaternal complications. In spite of the complications, if used by an expertise, instrumental delivery can reduce the need of cesarean section.

Keywords: Fetomaternal Outcome, Indications, Instrumental vaginal delivery, primigravida

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INTRODUCTION

Instrumental Vaginal Delivery is performed in second stage of labor to expedite delivery in certain maternal and fetal condition with aim to decrease the cesarean section rate. Worldwide 10-20 % of laboring women need obstetrics intervention for delivery.¹ Instrumental vaginal delivery is applying obstetric forceps or vacuum to effect in vaginal delivery of the fetus. Forceps assisted delivery had 3.4 times more risk of maternal complications as compared to vacuum assisted delivery.² Instrumental vaginal delivery decrease the cesarean section rate, solve the complicated situation in second stage of labor by right use of forceps or vacuum in to the skilled hand but can produce maternal and neonatal morbidity with unskilled hand.³ Maternal indication of instrumental vaginal delivery can be prolonged second stage of labor, severe preeclampsia, maternal exhaustion, elective shortening of second stage of labor. Fetal indication is fetal distress, after coming head in breech presentation.⁴ Being a tertiary care centre of this region, complicated cases are referred to our hospital. Many of these need cesarean section or instrumental delivery. Hence the study was done to evaluate the indication and fetomaternal

outcome of instrumental vaginal delivery which was not done earlier.

METHODS

The hospital based cross sectional study conducted at Nepalgunj Medical College and Teaching Hospital, from July 2021 to July 2022. Ethical clearance was taken from Institutional review committee. All women with singleton term pregnancy that underwent vacuum or forceps delivery were included. Data of women who had multiple pregnancies (twins, triplets), cesarean section, non cephalic presentation, placenta previa were excluded. All the women were explained about the procedure, its complication. Informed consent was taken. Data were collected according to predesigned proforma, information like age, parity, types of instrumental vaginal delivery, indication of instrumental vaginal delivery and fetomaternal outcome were recorded.

Statistical Analysis:

Data were collected, recorded in standard proforma and analyzed by using version 20 of SPSS.

RESULTS

Out of 149 participants, 41.6% were of age group (20-24yrs). The overall mean age was 24.93 ± 0.99. 57.7% were primigravida and 42.3% were multigravida. Table I

Age group(yrs)	Frequency	Percentage (%)
15-19	16	10.7
20-24	62	41.6
25-29	44	29.5
30-34	21	14.1
>35	6	4
Total	149	100
Parity	Frequency	Percentage (%)
Multi	63	42.3
Primi	86	57.7
Total	149	100

Table I: Distribution according to age and parity

6123 deliveries were conducted in the study period. Out of which 149 (2.4%) participants had to undergo some sort of instrumental delivery. 42.3% needed forceps delivery and 57.7% vacuum delivery. Figure 1

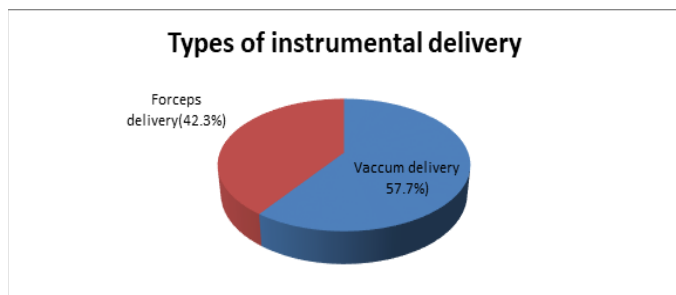


Figure 1: Types of instrumental delivery

The most common indication for instrumental delivery was poor maternal effort (40.93%) followed by fetal distress (33.55%). The use of forceps application was common for poor maternal effort (49.20%) and the use of vacuum application was common in fetal distress (37.20%). Table II

Indication of Instrumental vaginal delivery	Mode of delivery		Total
	Forceps	Vacuum	
Fetal Distress	18 (28.57%)	32 (37.20%)	50 (33.55%)
Prolonged Second Stage Of Labor	11 (17.46%)	10 (11.62%)	21 (14.09%)
To Cut Short Second Stage Of Labor	3 (4.76%)	14 (16.27%)	17 (11.40%)
Poor Maternal Effort	31 (49.20%)	30 (34.88%)	61 (40.93%)
Total	63 (100%)	86 (100%)	149 (100%)

Table II: Indication of Instrumental Vaginal Delivery

58.38% women had no complication following instrumental delivery. Whereas 14.09% had post postpartum hemorrhage, 3.35% had vulval hematoma, 15.43% had vaginal tear and 8.7% had cervical tear. Overall 38.25% babies needed NICU admission. About (63.95%) ladies had no complication during vacuum delivery and (50.79%) ladies had no complication during forceps delivery, so maternal complications were less with vacuum as compared to forceps delivery. Among the babies delivered by forceps, 49.20% had no complications. Similarly among the babies who were delivered by vacuum, 22.09% babies had no complications. Rest all needed either NICU observation or admission. Requirement of NICU care was more with vacuum delivery (41.86%) as compared to forceps delivery i.e. (33.33%). There were 2(1.34%) still births. Table III

Maternal Complications	Mode of delivery		Total
	Forceps	Vacuum	
Cervical Tear	7 (11.11%)	6 (6.97%)	13 (8.7%)
Vaginal Tear	12 (19.04%)	11 (12.79%)	23 (15.43%)
Post Partum Hemorrhage	10 (15.87%)	11 (12.79%)	21 (14.09%)
Vulva Hematoma	2 (3.17%)	3 (3.4%)	5 (3.35%)
No Complications	32 (50.79%)	55 (63.95%)	87 (58.38%)
Total	63 (100%)	86 (100%)	149 (100%)
Fetal Complications	Forceps	Vacuum	Total
No Complications	31 (49.20%)	19 (22.09%)	50 (33.55%)
NICU observation	10 (15.87%)	30 (34.88%)	40 (26.84%)
NICU admission	21 (33.33%)	36 (41.86%)	57 (38.25%)
Still Birth	1 (1.58%)	1 (1.16%)	2 (1.34%)
Total	63 (100%)	86 (100%)	149 (100%)

NICU(Neonatal intensive care unit)

Table III: Fetomaternal Outcome of Instrumental Vaginal Delivery

Instrumental vaginal delivery both forceps and vacuum was more in primigravida as compared to multigravida and the result was statistically significant(P=0.046). Table IV

Instrumental Delivery	Multi	Primi	Total	p Value
Forceps	26	37	63	0.046
Vacuum	37	49	86	
Total	63	86	149	

Table I: Instrumental Vaginal Delivery (IVD) In-relation to Parity

DISCUSSION

The worldwide incidence of instrumental vaginal delivery is 10-15%. In USA incidence is 4.5% and in UK 10-15%. The rate of instrumental vaginal delivery was 2.4% at our centre. According to the study conducted by Kerriakos R⁵ and Hubena Z⁷ incidence was 10-15% and 10.3% respectively. According to N.Jabben et al⁸, Lamichhane B⁹, Faisal S et al¹⁰ and Rawal S et al¹¹ the incidence of instrumental delivery was (4.73%, 2.03%, 2.8% and 2.6%) respectively which is similar to our study.

In our study maximum participants were of age group 20-24 years (41.6%) which is similar to study done by Shimalis et al.⁴ In their study mean age was 24.94 years and in Hubena Z⁷ mean age was 24.7 years. Our mean age was 24.93 ± 0.99. Primigravida is one of the major factors for the need of instrumental delivery. In our study maximum participants were primigravida (57.7%) and multigravida was 42.3% (p=0.046). This was similar to the study done by N.Jabben et al⁸ where primigravida ladies who had instrumental vaginal delivery were (67%) and multigravida were 33%. Women with low parity are more prone to exhaustion, uterine inertia as compared to multiparity. So the incidence of instrumental delivery is high in primigravida.¹⁰ The similar results were shown in the study done by Prapas N¹² and Aliyu LD¹³ where primigravida required more instrumental deliveries.

In our study, 42.3% had forceps delivery and 57.7% had vacuum delivery but in study done by Hubena Z⁷ 79.3% had forceps delivery and 20% had vacuum delivery. The incidence of forceps delivery was double to our study. Forceps delivery is safe in expert hands and incidence of instrumental delivery is different in different institutional practice. According to N.Jabben et al.⁸ 93.25% had vacuum delivery and only 6.76% had forceps delivery. According to Lamichhane B⁹ where incidence of vacuum delivery was 78.47% and forceps delivery was 21.52%. The forceps delivery was low as compared to our study. According to our study the commonest indication for instrumental vaginal delivery was poor maternal effort and fetal distress. But in the study conducted by Hubena Z⁷ fetal distress in second stage of labor (56.2%) was common indication for instrumental vaginal delivery.

58.4% mother had no complications but about 41.6% had complications. Which is quite high? Among them 14.1% had postpartum haemorrhage, 8.7% had cervical tear, 15.4% had vaginal tear and 3.4% had vulval haematoma. Similarly 38.3% babies needed NICU admission with 1.34% still birth. In the study done by Egbodo CO et al.⁶ 35.6% instrumental vaginal delivery was done for maternal exhaustion and among the women who underwent instrumental deliveries, 7.15% had postpartum haemorrhage, 11.90% had perineal tear with a 2.5% still birth. When compared with our study the results were quite similar and indicate that the instrumental delivery is associated with higher maternal complications.

LIMITATIONS

The limitations of this study were a short duration and a single centre study. It's a descriptive study with no

comparison with any other method like cesarean section.

CONCLUSION

Poor maternal effort and fetal distress were the common indications for instrumental delivery. Primigravida should be considered as the major factor where this method is needed. The complications were found to be high. In spite of the complications, if used by an expertise, instrumental delivery can reduce the need of cesarean section and also can prevent from the life threatening complications of second stage of labor.

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