

# A retrospective study of instrumental delivery in district hospital Chamarajanagar

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## Abstract

**Background:** Instrumental vaginal delivery or operative vaginal delivery (OVD) is a part of emergency obstetric care. Instrumental deliveries are as low as 1.5% to as high as 15% of total deliveries in various countries. Current studies have shown that the cesarean delivery rate has increased over the past decade, while the operative vaginal delivery rate has decreased overall, although both rates vary enormously around the world. Decrease in instrumental vaginal deliveries in the present decade may be due to increase in trends of cesarean deliveries, lack of resident education, patient preference for cesarean delivery than OVD or may be due to the fear of litigation. **Aims and Objectives:** To evaluate trends of OVD, the maternal and neonatal morbidity associated with OVD also to formulate a hospital based protocol for instrumental vaginal deliveries. **Materials and Methods:** This is a retrospective study in our hospital where, case records of the women who underwent instrumental vaginal delivery were retrieved from medical record section of the hospital. The details like age, parity, gestational age, indications for OVD, type of instrumental delivery, complications to mother and new born were recorded in the designed proforma. **Results:** There were 10274 deliveries in our hospital over a period of three years out of which 193 (1.88%) were instrumental vaginal deliveries with 144 (1.4%) vacuum and 49 (0.48%) forceps deliveries. In our study most commonly OVD was seen in primigravida in the age group of 20-25 years, mean gestational age was 38.4 weeks. Most common indication for vacuum delivery was maternal exhaustion (56%) followed by fetal distress (28%). On the other hand most common indication for forceps delivery was fetal distress (62%). APGAR score was low at one and five min, it improved with NICU stay for 24-72hr stay. Third degree perineal tear was seen more commonly with forceps and cephal haematoma was more so in vacuum deliveries. **Conclusion:** Incidence of instrumental vaginal delivery is 1.88%. Vacuum deliveries were more common than forceps deliveries with ratio of 3:1. Extension of perineal tears are more with forceps and cephal haematoma is common in vacuum deliveries but comparably both are safe for operative vaginal deliveries. Type of OVD can be individualized, OVD can be a safe and alternative to cesarean delivery in selected patients. Junior obstetricians need more training and confidence for applying forceps and also for proper selection of the patients.

**Key words:** Operative vaginal delivery, Forceps delivery, Ventouse delivery, Second stage of labour.

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## INTRODUCTION

Instrumental vaginal delivery or operative vaginal delivery (OVD) is a part of emergency obstetric care. It is the delivery of the newborn vaginally by applying either vacuum or forceps. These type of deliveries are conducted in second stage of labour either for maternal or fetal indications. Maternal indications like maternal exhaustion, prolonged second stage, to cut short second stage, in maternal diseases like cardiac diseases, severe anaemia, severe preeclampsia, post cesarean pregnancy. OVD is done for fetal indications like fetal distress, after coming head of breech etc. Instrumental deliveries are as

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low as 1.5% to as high as 15% of total deliveries in various countries.<sup>1</sup> Current studies have shown that the cesarean delivery rate has increased over the past decade, while the operative vaginal delivery rate has decreased overall, although both rates vary enormously around the world.<sup>2</sup> It has been seen in AA Merriam *et al*<sup>3</sup> on analysis of total of 22 598 971 vaginal deliveries between 2005 to 2013 shown 1083 318(4.8%) vacuum assisted and 237 792(1.1%) were by forceps. Both vacuum and forceps deliveries decreased over the study period; i.e vacuum deliveries decreased from 5.8% in 2005 to 4.1% in 2013 and forceps deliveries decreased from 1.4% to 0.9% during the same period. Decrease in instrumental vaginal deliveries in the present decade may be due to increase in trends of cesarean deliveries, lack of resident education, patient preference for cesarean delivery than OVD and fear of litigation.<sup>3,4,5,6</sup> This study was undertaken to evaluate trends of OVD, the maternal and neonatal morbidity associated with OVD also to formulate a hospital based protocol for instrumental vaginal deliveries.

## AIMS AND OBJECTIVES

To study trends of instrumental vaginal deliveries, maternal and neonatal complications associated with OVD and to formulate hospital based protocol for instrumental vaginal deliveries.

## MATERIALS AND METHODS:

This is a retrospective study done in the department of obstetrics and gynecology at Chamarajanagar institute of medical sciences, Chamarajanagar, after obtaining approval from ethical committee. Case records of the women who underwent instrumental vaginal delivery were retrieved from medical record section of the hospital from January 2016 to December 2018 over a period of three years. The details like age, parity, gestational age, indications for OVD, type of instrumental delivery, complications to mother like extension of episiotomy, atonic and traumatic post partum haemorrhage, maternal sepsis associated mortality and neonatal details like APGAR score and NICU admissions, and other neonatal morbidity and mortality were recorded in the designed proforma.. Study Period – January 2016 to December 2018 Statistical analysis was done by proportions.

## RESULTS

There were 10274 deliveries took place in our hospital over a period of three years from Jan 2016 to Dec 2018. Among them 193 (1.88%) were instrumental vaginal deliveries with 144(1.4%) vacuum and 49(0.48%) forceps deliveries. Total Instrumental vaginal deliveries were 1.6,

2.2 and 1.8% in 2016, 17 and in 2018 respectively, where as forceps deliveries decreased from 53% to 16% and vacuum deliveries increased from 17 to 44% from 2016 to 2018. In our study most commonly OVD is seen in primigravida in the age group of 20-25 years, mean gestational age is 38.4 weeks. Most common indication for vacuum delivery is maternal exhaustion (56%) followed by fetal distress (28%). On the other hand most common indication for forceps delivery was fetal distress (62%). On collection of data showed there were total of 24 ventouse delivery and 26 forceps delivery in 2016, in 2017 there were 63 vacuum and 15 forceps deliveries, where as in 2018 there were 57 vacuum and only 08 forceps deliveries. Data collection also showed most of the forceps deliveries were done by senior obstetricians. Five minute APGAR score is 4-6 (moderately abnormal) in 59 instrumental deliveries, 40 (27.8%) with vacuum and 19 (38.8%) with forceps deliveries. Most common indication was fetal distress in these deliveries. These babies improved and became normal with NICU stay of 24-72 hrs. 0-3 APGAR was seen in four babies three in vacuum and one in forceps delivery needed positive ventilation. Two of them died after 24 hrs. Third degree perineal tear was seen in fifteen (7.7%) instrumental deliveries, eight (5.5%) among vacuum and seven (14.3%) with forceps delivery, twelve (6.2%) babies had cephal haematoma, ten (7%) with vacuum and two (4%) with forceps delivery. Three patients suffered with both atonic and traumatic PPH, two with vacuum and one with forceps delivery needed blood transfusion. No maternal mortality with instrumental delivery was observed.

## DISCUSSION

In our study it has shown 193/10274 (1.88%) were instrumental vaginal deliveries over a period of three years from 2016 -18. This data is comparable to other developing countries like Africa where the incidence is 1.12%<sup>7,8</sup> but OVD are much higher in developed countries like 10% in Denmark, 10% in USA, 11% in England, 14% in Australia, and 16% in Canada.<sup>9</sup> In our study vacuum to forceps delivery ratio is 3:1, almost same of 4:1 in Zenebe Hubena *et al*.<sup>1</sup> where as forceps deliveries decreased from 53% to 16% and vacuum deliveries increased from 17 to 44% from 2016 to 2018, same trend is seen in 10 yr review of instrumental vaginal delivery by Justina O *et al*.<sup>10</sup> Data also showed most of the forceps deliveries were done by senior obstetricians and Junior obstetricians are using more of vacuum than forceps, this may be due to not having been enough training for juniors for application of forceps. Our data showed 5-minute APGAR score is abnormal more in forceps deliveries than vacuum, most of them recovered to normal within 24-72 hr of NICU stay. The reason for

more abnormal APGAR may be due to indication for application of forceps being fetal distress that of vacuum being maternal exhaustion. Among OVD in our hospital, extension of Perineal tears were common with forceps delivery than ventouse delivery same has been observed in caughey *et al*<sup>11,12</sup>, where as cephal haematoma was more commonly seen in vacuum delivery similar to Johanson *et al*.<sup>13</sup>

## CONCLUSION

Incidence of instrumental vaginal delivery was 1.88% in our hospital vacuum deliveries were more common than forceps deliveries with ratio of 3:1. APGAR score was low at birth and in 5 min but improved with NICU stay of 24-72hr. Extension of perineal tears are more with forceps and cephal haematoma is common in vacuum deliveries but comparably both are safe for operative vaginal deliveries. Type of OVD is individualized, OVD can be a safe and alternative to cesarean in selected patients. Junior obstetricians need more training and confidence for applying forceps and selection of these patients.

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