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Original Research Article

The role of forceps in current obstetrics: a retrospective study

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ABSTRACT

Background: Forceps has been an integral part of the obstetrician's armamentarium. Obstetric forceps was designed to assist extraction of the fetal head and thereby accomplish the delivery of the fetus. In this present day when there is universal concern regarding the alarming rise of cesarean section rates, a better understanding of this instrument will help the patient as well as the obstetrician.

Methods: This was a retrospective observational study done over a two-year period. Cases were enrolled in the study after satisfying the inclusion and exclusion criteria. All data compared in terms of age, parity, gestational age, indications, maternal and neonatal outcome.

Results: A total of 1150 antenatal cases were delivered out of which 42 cases were delivered by outlet forceps. Incidence of outlet forceps was 3.75%. Mean baby birth weight was 3.07 kg. No maternal mortality and morbidity recorded.

Conclusions: Obstetric forceps have a significant place in modern obstetrics as it is a lifesaving procedure for mother and fetus in many situations.

Keywords: Maternal mortality, Obstetric forceps

INTRODUCTION

Forceps has been an integral part of the obstetrician's armamentarium. Obstetric forceps was designed to assist extraction of the fetal head and thereby accomplish the delivery of the fetus. Since its introduction by the chamberlain family centuries ago, this has undergone numerous modifications. This art has benefitted many, it has also led to numerous litigations due to poor fetal and maternal outcomes leading to reluctance in its use.¹ In this present day when there is universal concern regarding the alarming rise of cesarean section rates, a better understanding of this instrument will help the patient as well as obstetrician.² The obstetric outlet forceps application is used in the interest of the mother and or baby and when properly performed can be rewarding experience and also lifesaving.^{3,4} However, potential maternal complications including severe perineal lacerations make the use of forceps controversial.⁵ This instrument has helped in avoiding numerous cesarean sections. Despite

this fact, it is seen that for the past few years, the overall rate of operative vaginal delivery is on decline. Extreme care in patient selection, skilful use of obstetric forceps with strict adherence to universal guidelines can avert or reduce the maternal and neonatal complications. This will thus help reintroduce this dying art by removing the prejudice associated with it.⁶ As once said by an obstetrician "there are still those who think that the delivery of a woman is easy".^{7,8} The unaided human birth process is not perfect. In modern day obstetrics, obstetricians should make every possible effort to retain, to train and improvise this art of forceps delivery in every possible way.⁹ This will be of prime benefit for the future generations and cornerstone of safe modern obstetrics.

Aim and objectives

To study the effectiveness of forceps delivery in modern obstetrics. To study the incidence of forceps delivery in private hospital. To study age and parity distribution,

gestational age and baby birth weight in forceps use. To evaluate the maternal and neonatal outcome of forceps delivery. To study current delivery trends.

METHODS

This was a retrospective observational study done over a two-year period (June 2020 to June 2022). Operative vaginal deliveries were examined from hospital records, out of them only forceps deliveries were included. Patient consent was obtained before application. Cases were enrolled in the study after satisfying the inclusion and exclusion criteria.

Inclusion criteria:

Singleton fetus in cephalic presentation, full dilatation, no cephalo pelvic disproportion, ruptured membrane, station + 2 or below, no contraindication for vaginal delivery.

Exclusion criteria

Multiple pregnancy, intrauterine death, fetal anomaly, mal presentation, previous LSCS, station <+2, dilatation <10 cm, unsuccessful trial of vacuum extraction.

All data compared in terms of age, parity, gestational age, indications, maternal and neonatal outcome. All deliveries were performed by an experienced obstetrician. After case selection, written valid and informed consent was obtained and obstetrical examination performed to confirm fulfilment of criteria. Maternal demographic data such as age, parity, gestational age at delivery, indication of forceps application, maternal complication were noted. Fetal monitoring was done with the use of CTG. Attending neonatologist documented the information about the baby's condition at birth. Neonatal outcome was evaluated with respect to birth weight, term or preterm, alive or still born, admission to NICU were recorded. Study mothers were followed on day 2 of delivery before discharge and following parameters were noted- general condition, vitals, pain, stool and urine passed or not, lochia nature, per vaginal examination.

Statistical analysis

The recorded data was compiled and entered in a spreadsheet computer program (Microsoft Excel 2010) and then exported to the data editor page of SPSS version 19 (SPSS Inc. Chicago, Illinois, USA). Descriptive statistics included computation of percentages and means.

RESULTS

As shown in Table 1, a total of 1150 antenatal cases were delivered out of which 42 cases were delivered by outlet forceps. All cases were booked. Forceps applications were done under xylocaine perineal infiltration. Incidence of outlet forceps was 3.75%. As shown in Table 2, maximum

patient age range was between 26 to 30 years. Mean age of patients was 29 years.

Table 1: Incidence of forceps delivery.

	Incidence	
Total no. of deliveries	1150	
Total forceps deliveries	42	3.75%

Table 2: Maternal age.

Maternal age	Number	Percentage
20-25	6	14.2
26-30	24	57.1
>30	12	28.5

Table 3: Parity distribution.

Parity	Number	Percentage
Primigravida	37	88
multigravida	5	11.9

As shown in Table 3, primigravida were 37 (88%) and 5 (11.9%) were multigravida. As shown in Table 4, 5 (11.9%) forceps delivery was less than 37 weeks, 32 (76.1%) were between 37-40 weeks and 5 (11.9%) were postdated. As shown in Table 5, mean baby birth weight was 3.07 kg. Maximum number (78.5%) of babies were found between the birth weight group 2.5-3.5 kg. As shown in Table 6, Most common indication for forceps application was fetal distress (54.7%) followed by maternal exhaustion (28.5%). Incidence of outlet forceps was most common among primigravida patients and incidence decreased as parity increased. There were no neonatal morbidity and mortality. No blood transfusions were performed. No maternal mortality recorded.

Table 4: Gestational age.

Gestational age	Number	Percentage
<37 weeks	5	11.9
37-40 weeks	32	76.1
>40 weeks	5	11.9

Table 5: Baby birth weight.

Baby birth weight (kg)	Number	Percentage
≤2.5	1	2.3
2.5-3.5	33	78.5
≥3.5	8	19

Table 6: Indication of forceps.

Indication	Number	Percentage
Fetal distress	23	54.7
Maternal exhaustion	12	28.5
Prolonged second stage	7	16.6

DISCUSSION

In the present study all women underwent uneventful forceps assisted vaginal delivery. A prospective study observed that women were more likely to prefer a future vaginal delivery after a successful forceps delivery.¹⁰ These women were more likely to achieve a vaginal delivery in subsequent pregnancies as compared to primary cesarean delivery.¹¹

As shown in Table 1, a total of 1150 booked antenatal cases were delivered out of which 42 cases were delivered by forceps application. So, the incidence of forceps delivery in our study was 3.75% which was comparable to Philip et al 5.34%, 5.65% by Chowdhury et al and 2.76% in Jaiswal et al study.^{6,12,13}

According to ACOG 2011, incidence of outlet forceps was 0.8%. High incidence may be due to 24-hour availability of skilled obstetrician, cesarean section facility, anesthetist, pediatrician and good antenatal and postnatal care.

As shown in Table 2, in our study the mean maternal age was 29 years and maximum patient age range was 26-30 years (57.1%).

As shown in Table 3, in our study 88% were primigravida and 11.9% were multigravida. Mishra et al also found 71.6% primi and 28.3% multigravida.¹ Pitale et al also found 75% primi and 25% multigravida and Iyengar et al and John et al also found 76% primi and 24% multigravida and 65% primi and 35% multigravida respectively.^{9,14,15}

As shown in Table 4, in our study maximum forceps was applied in 37-40 weeks (76.1%), 11.9% in less than 37 weeks and 11.9% in more than 40 weeks. Mishra et al also found 80.8% in 37-40 weeks and 15.8% in >40 weeks' gestational age.¹ Iyengar et al also found major forceps application in term (74%) patients.¹⁵

Minor vaginal lacerations were managed with extra sutures during episiotomy repair. Proper perineal support is important to prevent perineal tears.

As shown in Table 5, in our study the mean baby birth weight was 3.07 kg. Majority of babies had a birth weight between 2.5 to 3.5 kg (78.5%). Philip et al, Jaiswal et al and Iyengar et al also found that most babies were healthy and appropriate for gestational age.^{12,13,15}

As shown in Table 6, the most common indication was fetal distress, found in 54.7% patients, followed by maternal exhaustion in 28.5% and prolonged second stage in 16.6% patients. Similar results were also found by Jaiswal et al, Mishra et al, Philip et al.^{1,12,13}

There was no neonatal death in our study. We have sent all the babies delivered by forceps routinely for observation

and transferred to mother within 24-48 hours. No maternal mortality was found.

There are some limitations. Sample size: the study has a limited sample size, which could affect the generalizability of the findings to larger populations. Selection bias: the sample may not be representative of the general population, as the study only include patients from Bhoraskar hospital, Indore. Retrospective nature: the study is retrospective in nature, relying on medical records and data that may not capture all relevant information. Ethical concerns: the use of forceps in obstetrics can be controversial, and the study may raise ethical concerns if forceps are used in situations where alternative methods could be more appropriate. Confounding factors: the study may not control for all potential confounding factors, such as maternal age, medical history, and obstetric complications, which could impact the outcomes. Variability in forceps use: the study may not account for variability in the technique and proficiency of different clinicians in using forceps, which could impact the outcomes. Long-term outcomes: the study may not assess long-term outcomes, such as the impact of forceps on the baby's development and cognitive function.

CONCLUSION

Obstetric forceps have a significant place in modern obstetrics as it is a lifesaving procedure for mother and fetus in many situations. Prophylactic use of forceps is a safe alternative to cut short the second stage of labour and to decrease the rates of cesarean deliveries and related morbidity and mortality. Sound clinical evaluation and adherence to ground rule and skilled operators will minimize the risk of failure and complications. Outlet forceps is a reasonable option but the patient must be counselled regarding risk and benefits of it and proper written informed consent should be obtained. Proper selection of cases, sound clinical examination, strict adherence to guidelines, timely decision for forceps application, availability of senior obstetrician, anesthetist, pediatrician, blood transfusion and intensive care facility minimize the risk of failure and complications. Incidence of forceps delivery was 3.75% in our study. Mean maternal age was 29 years. Most common indication was fetal distress (54.7%). Most commonly forceps application was in primigravida and between 37-40 weeks. Most babies were between 2.5 to 3.5 kg. All babies were alive and were with good Apgar scores. No maternal mortality occurred in our study.

Forceps delivery offers advantages over cesarean section including the potential for future spontaneous vaginal deliveries. Training should be encouraged to develop the expertise of this art of forceps delivery.

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Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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