

To evaluate the maternal and neonatal outcome after Forceps delivery**Prabha Mishra***Senior Resident, Department of Obstetrics and Gynecology, Shri Krishna Medical College and Hospital, Muzaffarpur, Bihar, India***Received: 03-08-2020 / Revised: 11-09-2020 / Accepted: 30-09-2020****Abstract**

Aim: To evaluate the maternal and neonatal outcome of forceps assisted deliveries. **Methods:** This prospective study was carried out in the Department of Obstetrics and Gynecology at Shri Krishna Medical College and Hospital Muzaffarpur, Bihar, India from march 2018 to December 2019. Total 120 cases of forceps delivery were studied for maternal outcome such as injuries, postpartum hemorrhage, need of blood transfusion and fetal outcome such as birth weight, Apgar scores at birth, neonatal intensive care unit admissions, injury, stillbirths and neonatal mortality. **Results:** 71.67 % of patients requiring forceps application were primigravida. The most common indication was fetal distress (55.84%) followed by maternal exhaustion. The most common maternal complication was extension of episiotomy 20(16.67%). A total of 35 babies had Apgar scores of less than 6 at 1 minute and required resuscitation. 5 still births were reported and 15 required NICU admission out of which 8 were put on ventilator support. 2 babies expired on the second day and rests were discharged in satisfactory condition. **Conclusions:** The second stage interventions are associated with increased maternal and neonatal morbidity. Judicial use forceps under close supervision and with proper expertise can reduce the caesarean section rates.

Keywords: Forceps, Morbidity, Maternal outcome, Neonatal outcome

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Introduction

Although there is periodic and vocal demand to delete assisted vaginal delivery, clinical experience provides recurring evidence that leaving all to nature or the scalpel will not accomplish any goals. As the health of the mother, baby and the emotional satisfaction of the family, the need for operative vaginal delivery cannot be overemphasized. Involvement in the care of the women in labour cannot be without consideration of the passage and the powers. Today one might observe that we have a better insight into the dynamic mechanism of parturition which had eluded our predecessors, but this does not necessarily make the process of labour and vaginal birth less dangerous.

As once said by an obstetrician "There are still those who think that the delivery of a woman is easy".^{1,2} The unaided human birth process is not perfect.

**Correspondence*

Dr. Prabha Mishra

Senior Resident, Department of Obstetrics and Gynecology, Shri Krishna Medical College and Hospital, Muzaffarpur, Bihar, India

E-mail: dr.prabhamishra2@gmail.com

All round the world 10% to 20% of all pregnant women receive assistance with their delivery. The last 100 years have seen a dramatic reduction in maternal mortality which can be attributed to the modern medical care including the use of operative deliveries, though there is a decreased trend over the last decade for instrumental deliveries, especially forceps application, there will always be a need for instrumental use.^{3,4} The response to either fetal dystocia or apparent fetal distress is not necessarily a cesarean section. What is required is a balanced view of the risks and benefits when any means of assisted delivery is chosen. Conversely, the attitude of vaginal delivery at an adverse outcome.⁵ Forceps has been an integral part of obstetrician's armamentarium. Since its introduction by the Chamberlain family centuries ago, this has undergone numerous modifications and has evolved into its present form. This art of instrumental delivery, though has benefited many, it has also led to numerous litigations due to poor fetal and sometimes maternal outcome leading to reluctance in its use. In this present day, when there is a universal concern regarding the alarming rise of caesarean section rates, a better understanding of this instrument will help the

patient as well as the obstetrician⁶. The increased risk of neonatal morbidity in relation to forceps delivery is long established although with careful practice overall rates of morbidity are low.⁷ Although several authors have reported the relative safety of forceps delivery many obstetricians have abandoned the use of this intervention.⁸

Material and methods

This prospective study was carried out in the Department of Obstetrics and Gynecology at Shri Krishna Medical College and Hospital Muzaffarpur, Bihar, India from March 2018 to Dec 2019, after taking the approval of the protocol review committee and institutional ethics committee. After taking informed consent detailed history was taken from the patient or the relatives if the patient was not in good condition.

Methodology

All cases of forceps deliveries over this period were included, a total of 120, all of which were singleton pregnancies with fetus in cephalic presentation. The forceps used were Wrigley's outlet forceps. Right mediolateral episiotomy and perineal infiltration was

done as a routine. Cases were scrutinized for demographic data, gestational age and indication for instrumental delivery. The various indications for forceps delivery were fetal distress, failure of descent of head, to cut short second stage of labor, poor maternal efforts. Maternal outcomes of interest were genital tract injuries (uterine rupture, vaginal wall tear, cervical tear, vulvo-vaginal hematoma, III and IV degree perineal tears and paraurethral tears), extended episiotomy, postpartum hemorrhage, need of blood transfusion and length of hospital stay. Neonatal outcomes of interest were birth weight, apgar scores, scalp and facial injuries, NICU admission, stillbirth, neonatal mortality.

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

Table 1: Sociodemographic profile

Characteristics	Groups	Number	Percentage
Age (years)	<20	22	18.33
	20 -30	52	43.33
	30-40	38	31.67
	>40	8	6.67
Parity	Primi	86	71.67
	Multi	34	28.33
Gestational age (weeks)	<37	4	3.33
	37 – 40	97	80.83
	>40	19	15.84
Area	Urban	70	58.34
	Rural	50	41.66
Work status	House wife	74	61.66
	Working	46	38.34

Table 2: Indications of forceps application

Indication	Number	Percentage
Non reassuring fetal heart rate	67	55.84
Maternal exhaustion	20	16.67
Failure of descent of head	15	12.5
Cut short second stage of labour	11	9.16
Previous LSCS	04	3.33
Eclampsia	02	1.67
Severe Anemia	01	0.83

Table 3: Maternal morbidity

Morbidity conditions	Number	Percentage
Episiotomy extension	20	16.67
Maternal injuries	18	15
(a) Vaginal and cervical lacerations	06	5.0
(b) Third and fourth degree perineal tear	04	3.33
(c) Paraurethral tear	02	1.67
(d) Vulvo vaginal hematoma	04	3.33
(e) Uterine rupture	02	1.67
Postpartum hemorrhage requiring blood transfusion	08	6.67
Increased length of hospital stay (>48h)	10	8.33

Table 4: Birth weights

Birth weight (g)	Number	Percentage
< 2000	5	4.17
2000 - 3000	62	51.65
3000 – 4000	44	36.67

>4000	9	7.5
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Table 5: Neonatal morbidity

Morbidity	Number	Percentage
Low apgar score at 1 min		
0-3	13	10.83
4-6	22	18.33
Low apgar score at 5 min		
0-3	8	6.67
4-6	10	8.30
NICU admission	15	12.5
Scalp and facial marks and bruises	13	10.83
Facial palsy	4	3.33
Subconjunctival hemorrhage	2	1.67
Stillbirths	5	4.17
Perinatal deaths	2	1.67

DISCUSSION

In our study 71.67% cases requiring forceps application were primigravida, a finding similar to the reported rates in an earlier study.⁹ Episiotomy was given as a routine in all the patients as was also seen in another study.¹⁰ The most frequent indication for forceps application in our study was non-reassuring fetal heart rate followed by maternal exhaustion. In a study in Texas University the most common indication was fetal compromise and failure to deliver spontaneously with maximum maternal effort, which agrees with our present study.¹¹ Our findings differed from Singh A et al, where cutting short of second stage of labor was the chief indication followed by prolonged 2nd stage.¹²

Regarding maternal injuries, in our study the most common complication was extended episiotomy (15%) followed by cervical and vaginal lacerations, complete perineal tear, and paraurethral tear. Johnson et al reported a high incidence of maternal third and fourth degree perineal lacerations and vaginal lacerations with the use of forceps.¹³ While a study in Cameroon reported only minor cervical and vaginal lacerations in cases of instrumental deliveries.¹⁴ Minor vaginal and cervical lacerations were managed by taking extra

sutures during episiotomy repair. We noted 4 (3.33%) cases of third and fourth degree perineal tears both were primigravida and had baby weight of more than 3.6 kg. These tears were carefully sutured under proper light in the operation theatre. The patients were kept on a liquid diet for one day and a soft diet with stool softener for another 2-3 days. According to Eskander O et al risk factors for such tears include nulliparity, high birth weight babies and instrumental delivery for occipito-posterior position of the head, instrumental delivery for occipito anterior position of head reduces the risk of severe perineal tear.¹⁵ Complete perineal tears can also occur in unassisted vaginal deliveries in cases of large for gestational age babies, short or rigid perineum, face to pubis delivery, poor perineal support during delivery, sudden extension of the head and shoulder dystocia. In a study of long term follow up after forceps delivery it was concluded that though anal sphincter injury was associated with forceps delivery in the past, however, significant faecal and urinary incontinence was not.¹⁶ In our study there was only two case of uterine rupture. This patient had a cesarean delivery 4 years back and was undergoing trial of labour. Labour was augmented with oxytocin which might have caused hyperstimulation leading to non-

reassuring fetal heart rate and need of immediate delivery using forceps. Hyperstimulation in a scarred uterus may be a possible explanation of rupture because if caused by the instrument, it generally results from a mid-cavity application of forceps, while in our study only outlet forceps were applied. In a 10 year analysis of uterine rupture Sahu L reported 125 cases of rupture in unscarred uterus out of which only 2 resulted due to instrumental deliveries.¹⁷ Women undergoing trial of vaginal birth after caesarean section already have an increased risk of intrapartum scar rupture of 0.74%.¹⁸ Postpartum hemorrhage occurred in 8 patients who were managed with help of fluids uterotonics and blood transfusion. No significant difference was found in pph rates amongst the normal and assisted vaginal delivery groups by A Shamsa et al.¹⁹

Regarding perinatal outcome, forceps application was required in 28 babies weighing over 3.5 kg and 19 babies over 40 weeks of gestational age. Our findings were similar to another study where the use of instruments was more frequent in infants with higher birth weight and gestational age.²⁰ 35 babies had poor apgar scores of less than 6 at 1 min requiring immediate resuscitation. Meconium staining was present in most of these cases. Abnormal fetal heart rate patterns were the indication for forceps application in the majority of them. Fetal compromise as such might have caused the poor apgar scores in these babies rather than the forceps application. The decision of cesarean section in second stage for fetal distress with a deeply engaged head would have led to even worse neonatal outcome by further delaying the delivery due to time taken to shift the patient to an operation theatre and a difficult head delivery during cesarean section.

Garretta K *et al* in their study found no difference in apgar scores of newborn delivered by caesarean section in 2nd stage.²¹ 13 babies suffered instrumental marks and bruises but majority of these were small and superficial. 4 cases of facial palsy were also noted. Observational data on instrumental deliveries have suggested that they are associated with neonatal injuries so careful practice can minimize these risks. There were 5 stillbirths in our study and high fetal mortality could be because of late arrivals and manipulation by untrained birth attendants before coming to hospital. 15 babies required NICU admission out of which 13 were discharged within 3 days. 2 early neonatal deaths were reported.

Conclusion

Operative vaginal procedures, mainly forceps delivery, have a long history and still have a place in

contemporary obstetric practice. It should be used with great caution and the delivery be supervised by trained personnel. It is a reasonable option for the obstetrician to cut down the cesarean section rates in the second stage of labour but the patient must be counselled regarding the risks and benefits of alternative approaches. Skilful use of obstetric forceps with strict adherence to guidelines can minimize the maternal and neonatal morbidity.

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