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Research Article

Learning Art of Operative Vaginal Delivery at Tertiary Care Centre

Dr Priya Yadav[1], Dr Prashant Bhingare[1], Dr Shrinivas Gadappa[1]

[1]Department of Obstetrics and Gynecology, Government Medical College Aurangabad, Maharashtra, India

ABSTRACT

Introduction: Operative vaginal delivery is now decreased due to medical litigation and due to lack of expertise and under training of residents. Here complication of operative vaginal delivery are all taught by lecturer and assistant professor. IVD is done by postgraduate residents under the guidance of lecturer, if any difficulty or complication is overtaken by Head of unit. **Objective**: To compare the fetomaternal outcome in vacuum assisted vaginal delivery and forceps assisted vaginal delivery. **Study design**: This prospective study was carried out in patients undergoing instrumental vaginal delivery during the study period. **Subjects & methodology**: This study was conducted at the Department of Obstetrics and Gynecology, Government medical college, Aurangabad during 2 years. (from 2020 to 2022) patients requiring operative vaginal delivery. Most common age group in present study was 18- 25 years in both groups (56.31 % vacuum,64.95 %- forceps). Instrumental vaginal deliveries were common in patients with >37 weeks of gestation. In present study most common indication for Instrumental vaginal delivery (vacuum & forceps) was foetal distress (48.54 and 47.42 %) followed by maternal exhausation (5.8 snd 48.64%). Facial injuries and abrasions was most common neonatal complication in present study (12%). **Conclusion**: Results of the present study indicate that both modes of instrumental vaginal delivery are safe with respect to maternal morbidity and neonatal trauma.

Key Words: *Forceps delivery, Vacuum assisted delivery, Maternal outcome, Neonatal outcome, operative vaginal delivery.*

***Corresponding Author**
Dr Priya V. Yadav
Department of Obstetrics and Gynecology, Government Medical College Aurangabad, Maharashtra, India

INTRODUCTION

Pregnancy as a physiological activity not always terminate as normal vaginal delivery; in some cases it may required some assistance to avoid risks both to mother and to fetus. Instrumental vaginal delivery includes either vacuum extraction or forceps extraction for fetal head delivery, is an important component of obstetric care. Birth rates by caesarean in the recent years have risen throughout the world. Instrumental vaginal deliveries are important for decreasing birth rates by caesarean and related morbidities[1]. They are performed when any event threatens the mother or foetus and it is a second stage labour intervention[2-4]. The commonest indications for instrumental vaginal delivery are prolonged second stage of labour, suspicion of immediate or potential fetal compromise and shortening of the second stage of labour for maternal benefit[5]. Malpresentation, incompletely dilated cervix, unengaged fetal head, cephalopelvic disproportion and fetal clotting disorder are some of the absolute contraindications. Vacuum extraction and forceps offers the option for safe delivery for the mother and the clinician. Assisted vaginal delivery avoids caesarean section, its uterine scars and its implications on future pregnancy. The success and safety of the procedure depends on the operators skill, its timing and its justified indications. Many studies suggested different maternal and neonatal outcomes between the two methods. But when compared to normal spontaneous vaginal deliveries, assisted vaginal deliveries were associated with maternal and neonatal injury and also poor maternal and neonatal outcome, especially with less trained obstetricians. It had also been reported that when compared to forceps delivery, maternal injury was less frequent in vacuum[6]. This study was done to assess the maternal and foetal outcome of vacuum and forceps assisted vaginal deliveries.

MATERIALSANDMETHOD

This prospective study was carried out in department of Obstetric & Gynaecology, Government medical college, Aurangabad. Study duration was from 2020-2022. Institutional ethical committee approval was taken for the present study. Patients undergoing instrumental vaginal delivery in study period were included in the present study. Patient records were reviewed for study purpose. All records were kept as confidential. Age ranged from 18 to 40 years and Gestational age 37 or more completed weeks. In our institute, forcep deliveries were performed by application of the short-curved outlet forceps. Vacuum deliveries were performed by application of silastic cups. In all cases of instrumental vaginal delivery, immediately after the delivery of the baby, active management of third stage of labour

along with prophylactic 800 mcg misoprostol was given. After delivery of placenta, a compulsory per speculum examination at the labour table to look for cervicovaginal injuries was conducted. All the cases were given intravenous antibiotics for three days. These patients were discharged on day 4. Patients included with singleton pregnancy, Gestational age 37 or more completed weeks, patients having indication for operative vaginal delivery (fetal distress, prolong 2nd stage of labour, maternal cardiopulmonary conditions, preeclampsia, maternal exhaustion, patients fulfilling pre-requisite for operative vaginal delivery (fully dilated cervix, station below 0, ruptured membranes and empty bladder). While patients with non-cephalic presentations (breech, face and brow), expected fetal bleeding disorders, Cephalopelvic disproportion and Position of head other than occipito anterior. For each patient detailed history was taken including demographic information (name, age, address, parity) present pregnancy (LMP, EDD, and any other problem during pregnancy), present labour and obstetrical history was asked. Per abdominal (fundal height, lie, presentation, fetal heart rate, palpable contraction duration intensity interval) and per vaginal (cervical dilatation, station, position of head, membranes and color of liquor) examination was carried out. Maternal outcome (lacerations, extension of episiotomy, vulvovaginal hematoma, immediate bladder and urethral injuries, third and fourth degree perineal tears, failure of instrument, postpartum hemorrhage and maternal satisfaction) and fetal outcome (Apgar score, nursery admission, shoulder dystocia, facial trauma, skull trauma and cephalohematoma) was noted. All findings were noted in Microsoft excel sheet. Statistical analysis was done using descriptive statistics.

RESULTS

In present study total 200 patients were included.

DEMOGRAPHIC PROFILE

PARAMETERS	VACUUM (N)	VACUUM (%)	FORCEPS (N)	FORCEPS (%)
MATERNAL AGE				
18-25	58	56.31	63	64.95
26-30	30	29.13	19	19.59
31-35	11	10.68	14	14.43
>35	04	3.88	01	1.03
GESTATIONAL AGE				
28-34	0	0	2	2.06
34.1-37	0	0	8	8.24
>37	103	100	87	89.69
PARITY				
Primigravida	59	57.28	53	54.64
Gravida 2-Gravida 4	44	42.17	40	41.23
Gravida 5 and above	02	1.94	02	2.06

INDICATION FOR INSTRUMENTAL VAGINAL DELIVERY

INDICATION	VACUUM (N)	VACUUM (%)	FORCEPS (N)	FORCEPS (%)
Fetal distress	53	48.54	46	47.42
Maternal Exhaustion	06	5.58	21	21.64
Prolonged second stage of labour.	12	11.65	19	19.59
Heart disease	5	4.85	04	4.13

The above show distribution of patients according to indication of operative vaginal delivery. It was observed that most of cases in Vacuum group and Forceps group was having indication of fetal distress i.e.48.54% and 47.42% respectively. The other indication in Vacuum group and Forceps group was prolonged second stage of labouri.e.11.65% and 19.59% respectively.

MATERNALAND FOETAL COMPLICATION-

MATERNAL COMPLICATION	Vacuum		Forceps		Total	
	N=103	%	N=97	%	N=200	%
Vaginal Laceration	14	13.59	12	12.37	26	13
Extension of episiotomy	6	5.8	4	4.12	10	5
PPH-atonic	8	7.7	6	6.18	14	7

FETAL COMPLICATION	Vacuum		Forceps		Total	
	N=103	%	N=97	%	N=200	%
Facial marks and abrasion	0	0	24	12	24	12
Cephalhematoma	2	1.9	2	2.06	4	2
Scalp injuires	1	0.97	2	2.06	3	1.5

The above show distribution of cases according to maternal complications. It was observed that most of patients in Vacuum group and Forceps group was having vaginal laceration i.e. 13.59 % and 12.37 % respectively. Extension of episiotomy was observed in 5.8 % and 4.12 % in vacuum and forceps respectively. The above show distribution of patients according to fetal complications. It was observed that majority of cases in Forceps group was having facial marks and abrasion i.e.12%.Theother complication in Vacuum group and forceps group was Cephalhematoma i.e. 1.9 %. and 2.06 respectively.

FOETAL OUTCOME-

	VACUUM		FORCEPS	
APGAR SCORE	N=103	%	N=97	%
<7	6	5.8	6	6.18
≥7	97	94.17	91	93.8
NICU ADMISSION	14	13.5	18	18.56
LIVE BIRTH	103	100	97	100

The above show distribution of patients according to APGAR score at 5 minute. It was observed that majority of patients in Vacuum group and Forceps group was with APGAR score more than 7 i.e.94.17 % and 93.8 % respectively. The above show distribution of patients according to fetal outcome. Some babies needed NICU admission ie 13.5 % and 18.56 % in vacuum and forceps group respectively. There was no still birth in both the groups.

DISCUSSION

Most common indication for instrumental vaginal delivery (vacuum & forceps) was fetal distress (48.54 and 47.43) followed by maternal exhausation (5.58 and 21.64%). Vaginal laceration(13.59% and 12.37%)in vacuum and forceps respectively followed by extension of episiotomy (5.8% and 4.7%) were the maternal complications. During study period we noted no near miss maternal mortality in patients with instrumental vaginal delivery. Instrumental vaginal delivery (IVD) is a key element of essential obstetric care, and significantly reduces maternal and newborn morbidity and mortality especially in resource poor countries[7]. In response to the growing number of caesarean deliveries and the morbidities associated with them the instrumental vaginal delivery is a great tool to prevent the primary as well as repeat caesarean delivery. Over the years, there has been a gradual shift from the use of forceps to the vacuum. This may be because the vacuum is safer, the skill is more easily acquired, and it has an in-built safety mechanism[8]. Most common age group in present study was 18-25 years in both groups (56.31 % vacuum, 64.95 %- forceps), followed by 26-30 years age group (29.31 %- vacuum,19.59 %- forceps). Similar finding was also noted in Sonawane et al(2020) in his study done in Maharashtra were 21-25 years in both groups (vacuum-39%, forceps-41%). Majority of the vacuum procedures were carried out at term, which is the acceptable practice. Most authorities consider it a contraindication if the gestational age is less than 34 weeks, due to increased risk of cephalhaematoma[9]. The indications for instrumental vaginal delivery include delayed second stage of labour, poor progress of labour due to maternal fatigue or exhaustion, and fetal distress or non-reassuring fetal heart rate tracing the second stage of labour. Other maternal indications include medical conditions such as cardiac diseases, especially New York Heart Association (NYHA) class III/IV, or neurologic diseases, including uncorrected intra-cerebral vascular malformations as well as hypertensive crisis, myasthenia gravis, spinal cord injury patients at risk of autonomic dysreflexia, and proliferative retinopathy[10]. In present study most common indication for Instrumental vaginal delivery (vacuum & forceps) was fetal distress (48.54 % and 47.42%) followed by maternal exhaustion.(5.58 % and 21.64%)respectively. Qurram Khan et al studied the outcome of instrumental vaginal deliveries observed fetal distress was the commonest indication (62.72%) both in forceps (68.33 %) and vacuum group (56 %).We noted vaginal laceration(13.59% and 12.37%)in vacuum and forceps respectively followed by extension of episiotomy (5.8% and 4.7%) were the maternal complications. While use of forceps is associated with increased maternal perineal trauma with need for analgesia and neonatal facial injury, cephalhematoma and subgalealhemorrhage are associated with vacuum birth. Biru et al[11] noted that mother who had forceps delivery was 3.4 times more likely to develop maternal complication than mother who had vacuum delivery. Instrumental deliveries require additional vaginal examinations, higher rates of vaginal lacerations, routine bladder catheterization, insertion of instruments, all are known risk factor for endometritis and febrile morbidity. Insertion of instruments and contamination is also assumed to be one of the risk of postpartum infection because of difficulties in adhering to aseptic practices during delivery. Cephalhematoma (0.9%) was noted with vacuum delivery while facial marks and abrasions (12%) were noted with forceps delivery. Similar findings were noted in studies conducted by Qurram Khan et al (2017) were superficial mark was significantly more common with forceps deliveries. Neonates delivered with forceps have more facial injuries, whereas those delivered with vacuum have more cephalohematomas. Presently many obstetricians prefer caesarean delivery due to a concern that there may be a significantly increased risk of third/fourth degree tears, severe maternal morbidity and mortality, perinatal mortality and neonatal mortality in women with instrumental vaginal birth compared with normal/caesarean birth[12]. In present study with 200 instrumental vaginal deliveries we did not found any significant maternal & neonatal mortality / morbidity. Instrumental vaginal birth should be encouraged to improve maternal & neonatal outcome.A prospective long duration study could help to understand long term complications of instrumental vaginal delivery in near future.

CONCLUSIONS

Instrumental vaginal delivery is important component of obstetric care, useful to decrease caesarean deliveries and related morbidities .Instrumental delivery is an art which should be acquired by all post graduate residents, and unnecessary exaggerations of complications should not be feared. On the contradictory, instrumental vaginal delivery should be encouraged whenever necessary to avoid caesarean section, which will ultimately help to reduce maternal mortality and morbidity.

Ethics Approval and Consent to Participate: Institutional ethical committee approval was taken for the present study

List of Abbreviations: IVD- Instrumental vaginal delivery, NYHA-New York heart association, LMP-last menstrual period, EDD-estimated date of delivery.

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Authors Contribution: Dr PVY developed the study proposal, managed the research implementation, data collection, analyzed data and wrote the manuscript. Dr PEB developed the study protocol, assisted with data analysis and reviewed the manuscript. DR SNG assisted with development of the study proposal, reviewed preliminary results and reviewed the final manuscript. All authors have read and approved the manuscript.

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