An Analysis of Operative Vaginal Delivery in a Rural Hospital

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Research Article

Abstract: **Introduction:** The 2nd stage of labour is a dynamic event and may require assistance, assisted vaginal delivery, with the use of forceps or vacuum/ventouse, offers the option to accomplish safe delivery for the mother and the clinician. A successful assisted vaginal delivery avoids caesarean section, its attendant uterine scar and its implications for future pregnancy. **Materials and Methods:** The prospective study of 100 cases was conducted over 1 year period from August 2012 to August 2013 in Department of OBG at Adichunchanagiri Institute of Medical Sciences, B G Nagara, Karnataka. **Results and Discussion:** The rate of operative vaginal delivery in the study period was 8.3%,and the ratio between forceps and vacuum delivery was 1:3. Out of 100 operative vaginal deliveries, 71% were vacuum and 29% forceps-assisted. There was no significant difference between vacuum-assisted and forceps-assisted deliveries as regards to maternal age (23 ± 5 years and 22 ± 5 years, respectively), parity- primigravida (84.5% in vacuum and 82.1% in forceps delivery), gestational age at labour (38 ± 2weeks) and Mean birth weight (3kg ± 300g). This correlates with the comparative study by S Abha *et al*. **Conclusion:** This study shows that the application of either forceps/vacuum are safe alternatives in complicated deliveries, in selected population of singleton live term pregnancy, with cephalic presentation and birth weight of 2.5- 4 kg. Each instrument appears to have its own advantages and disadvantages. The choice of instruments is subjective and based on assessment of the clinical circumstances and the skill of obstetrician.

Keywords: vacuum, forceps, instrumental delivery.

Introduction

The 2nd stage of labour is a dynamic event and may require assistance. Assisted vaginal delivery, with the use of forceps or vacuum/ventouse, offers the option to accomplish safe delivery for the mother and the clinician. A successful assisted vaginal delivery avoids caesarean section, its attendant uterine scar and its implications for future pregnancy. Modern obstetric practice has witnessed an increase in the caesarean section trend. Reintroduction of this art-operative vaginal delivery will definitely find a place in emergency obstetric care. This study was designed to assess the feto-maternal outcome of vacuum and forceps assisted vaginal delivery.

Materials and Methods

The prospective study of 100 cases was conducted over 1 year period from August 2012 to August 2013 in Department of OBG at Adichunchanagiri Institute of Medical Sciences, B G Nagara, Karnataka. The inclusion criteria included all singleton live term pregnancies with cephalic presentation like Multiple births, Still births, Fetal anomalies, Birth weight <2kg and >4kg, Non-cephalic presentations and Gestational age <37weeks were excluded from the study

Methodology

A detailed history was taken and obstetric examination done. The various indications for instrumental delivery were maternal exhaustion, fetal distress, prolonged 2nd stage of labor and to cut short 2nd stage of labor. After case selection, a written and informed consent was taken. After the prerequisites were fulfilled, delivery was accomplished with either vacuum or forceps application. Maternal demographic data such as Maternal age, Parity, Gestational age at delivery and Delivery characteristics such as Estimated fetal weight, Indications of operative vaginal delivery, Station of fetal head and Type of application, Presence of persistent occipito posterior position Presence/absence of cord around the neck were analyzed and documented. Sialistic cup was used in vacuum extraction. Forceps deliveries were performed using short curved outlet Wrigley's forceps. Maternal morbidity was analyzed in terms of Perineal lacerations/episiotomy extension(2nd and 3rd degree tears)/cervical tears, Peri-urethral lacerations and Traumatic Postpartum Hemorrhage. Neonatal morbidity were investigated on Low APGAR score(<4 and <7 at 1 and 5 minutes respectively), Unexplained convulsions, Neonatal hyperbilirubinemia, Neonatal trauma(scalp and facial injuries, bruise marks, clavicular fractures), Cephalhematoma, Birth asphyxia/RDS, Neonatal sepsis, NICU admissions.

Results

Table 1: Maternal age

Maternal Age	Vacuum	Forceps	Total
<20years	19	9	28
21-29years	50	20	70
>30 years	2	-	2

P-value- NS

Table 2: Parity

Parity	Vacuum	Forceps	Total
Primigravida	60	23	83
Multigravida	11	6	17

P-value- NS

Table 3: Gestational age

Gestational Age	Vacuum	Forceps	Total
37-40 weeks	52	21	73
>40 weeks	19	8	27

P-value- NS

Table 4: Birth weight

Birth Weight	Vacuum	Forceps	Total
<2.5kg	17	6	23
2.5-3.5 kg	50	20	70
3.5-4 kg	4	3	7

P-value- NS

Table 5: Indication

	Vacuum	Forceps	Total
Presence of fetal Persistent Occipito Posterior Position	9	2	11
Presence of loop of cord around the neck	14	5	19

Table 6: Indication for application

	Vacuum	Forceps	Total
1. Failed maternal efforts	20	5	25
2. Fetal distress/MSAF	19	5	24
3. Failure of descent	4	4	8
4. Prolonged 2nd stage	9	3	12
5. Persistent occipito posterior/ failure of rotation	9	2	11
6. Cut short the 2nd stage of labour Cardiac disease Severe anaemia Eclampsia/ severe PE VBAC	3 2 5 -	1 2 2 2	4 4 7 2

Table 7: Type of Application

Type of Application	Vacuum	Forceps	Total
1. Outlet application	35	12	47
2. Low-cavity application	26	12	38
3. Mid- cavity application	10	5	15

Table 8: Maternal Morbidity

Maternal morbidity	Vacuum	Forceps	P Value	Total
Perineal lacerations/ episiotomy extensions/ cervical tears	(32%) (23% of VD)	16 (30%) (75% of FD)	Significant	33(62%)
Peri- uretheral lacerations	4 (7.5%)	5 (9.4%)	-	9(17%)
PPH	5 (9.4%)	6 (11.3%)	-	11(21%)
Total	26	27		53

Table 9: Neonatal Morbidity

Neonatal morbidity	Vacuum	Forceps	Total
Low APGAR <4 AT 1 MINUTE <7 AT 5 MINUTE	2 (3%) 4 (6%)	4 (6%) 5 (7%)	6 9
2. Neonatal trauma	-	3 (4%)	3

3.Respiratory distress	6 (9%)	1 (1%)	7
4. Neonatal hyperbilirubinemia	12 (18.4%)	3 (4%)	15
5. Feed intolerance	1 (1%)	4 (6%)	5
6. Convulsions	1 (1%)	6 (9%)	7
7. Prolonged NICU admissions	4 (6%)	9 (13.8%)	13

Discussion

The rate of operative vaginal delivery in the study period was 8.3%,and the ratio between forceps and vacuum delivery was 1:3. Out of 100 operative vaginal deliveries, 71% were vacuum and 29% forceps-assisted. There was no significant difference between vacuum-assisted and forceps-assisted deliveries as regards to maternal age (23 ± 5 years and 22 ± 5 years, respectively), parity- primigravida(84.5% in vacuum and 82.1% in forceps delivery) gestational age at labour (38 ± 2weeks) and Mean birth weight (3kg ± 300g) This correlates with the comparative study by S Abha *et al*. Instrumental delivery was preferred in outlet and low-cavity application with vacuum being the instrument of choice while mid-pelvic and deep transverse arrest were mainly completed by cesarean section. The popularity of the vacuum appears to be due to the new designs of cups with reduced risk of injury to the mother. This supports the comparative study by S W Wen *et al* and B S Patel *et al*. The indications for operative vaginal delivery was similar between the 2 study groups. Maternal exhaustion was the most common indication followed by fetal distress and to shorten the 2nd stage of labor where down bearing effort is not encouraged. Similar to the population based study conducted by Prapas *et al*. There was significant difference in maternal morbidity between the 2 study group. Perineal lacerations/episiotomy extensions/cervical tears accounted for 62% of maternal complications.(23% of vacuum delivery and 75% of forceps delivery) PPH accounts for 21% and Peri-uretheral lacerations for 17% of maternal morbidity. Study correlates with the comparative study of S Abha *et al*. Low Apgar score at 1 and 5minute,neonatal trauma and bruising marks, feeding intolerance, convulsions and admission to the NICU was significantly higher among those delivered by forceps. There was an increased risk of neonatal hyperbilirubinemia in infants who underwent vacuum delivery Correlates with the short term study of N Prapas *et al*.

Conclusion

This study shows that the application of either forceps/vacuum are safe alternatives in complicated deliveries, in selected population of singleton live term pregnancy, with cephalic presentation and birth weight of 2.5- 4 kg. Each instrument appears to have its own advantages and disadvantages. The choice of instruments is subjective and based on assessment of the clinical circumstances and the skill of obstetrician. In experienced hands, no difference has been found in morbidity associated with the 2 methods. Opting for caesarean section in 2nd stage may not be the best option as it has its own morbidity. It is essential that adequate training must be imparted to the obstetricians to use the instruments safely. Morbidity can be reduced by gaining the necessary skills, learning the limitations of the instruments and most importantly knowing when to adopt and abandon the procedure

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Consent was taken from the institutional ethics committee.

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