



Int. J. Modn. Res. Revs.

Volume 3, Issue 10, pp 803-806, October, 2015

ISSN: 2347-8314

ORIGINAL ARTICLE

**COMPARISON OF MATERNAL AND FETAL OUTCOME IN OUTLET FORCEPS AND
VACUUM EXTRACTION DELIVERIES**

***¹Dr. R. Niranjana, ¹Dr. G. Manasvi and ²Prof. Latha**

¹Post Graduate, Department of Obstetrics and Gynecology, Rajah Muthiah Medical College & Hospital, Annamalai University, Annamalainagar-608 002

²Professor, Department of Obstetrics and Gynecology, Rajah Muthiah Medical College & Hospital, Annamalai University, Annamalainagar-608 002

Article History: Received 15th September, 2015, Accepted 9th October, 2015, Published 11th October, 2015

ABSTRACT

AIM: To compare the maternal and neonatal outcome of ventouse and forceps deliveries. **METHOD:** Prospective study of 40 consecutive ventouse and 40 cases of forceps deliveries was done and maternal and neonatal injuries compared. **BACKGROUND:** Instrumental deliveries are associated with maternal and neonatal morbidity. The choice of instrument decide the morbidity rate. **RESULTS:** 60% of forceps and 57.5% of ventouse deliveries were carried out in primigravida. Fetal distress was the indication in 50% of ventouse, 52.5% of forceps deliveries. Failure of maternal power was an indication in 32.5% of forceps and 35% of ventouse. Extension of episiotomy was seen in both the groups, while cervical tears are more commonly seen in forceps group. Babies who had ventouse deliveries have low Apgar score at one minute then forceps. **CONCLUSION:** When there is a indication for instrumental vaginal delivery, ventouse should be preferred over forceps, as it causes much less maternal morbidity in terms of perineal tears and cervical tears, while neonatal morbidities are insignificant in comparison with both the instruments.

Keywords: Instrumental delivery, forceps, vacuum, perinatal outcomes.

1. INTRODUCTION

In certain condition normal delivery cannot be allowed for various reasons, assisted vaginal delivery is the method of choice. Vaginal delivery being assisted by instruments can either be vacuum extraction or forceps, a choice based on obstetrician's competence and training¹. James Young Simpson was the first to use traction to deliver the baby. It was later modified by Malstrom in 1953. The obstetric forceps had its history from the time of Chamberlain family in the seventh century.

Forceps delivery has generally been used more frequently in America, whereas reverse in Europe². Vacuum extraction has recently gained in popularity because of new designs of vacuum cups, thereby minimizing injury to infants⁴. However, a meta-analysis of randomized trials comparing maternal and fetal outcome between vacuum extraction and forceps deliveries have found that vacuum extraction causes less maternal trauma³.

This study has been carried out to evaluate the maternal and neonatal morbidity, failure and complications associated with these two methods and to decide which is safer and more effective. [Editorial. Vacuum versus forceps. Lancet. 1984]

2. MATERIALS AND METHODS:

One year of prospective study was carried out in my institution of Rajah Muthiah Medical College during the period of Mar 2014- Apr 2015. Forty cases of forceps delivery was compared to four cases of ventouse extraction in this study. Cases were scrutinized for demographic data, gestational age, birth weight and indication for instrumental delivery. Exclusion criteria from both the groups were cases of multiple pregnancy, abnormal presentation and cephalo pelvic disproportion.

The Instruments used for vacuum extraction were metal cups of 40mm and 60mm cups. The negative pressure applied was upto 0.6kg/cm². The forceps was Wrigley's outlet forceps. During the procedure, number of times the vacuum cup was applied, the total number of pulls, number of times of detachment of the vacuum cup to delivery time and any other difficulty in carrying out the procedure were noted.

*Corresponding author: **Dr. R. Niranjana**, Department of Obstetrics and Gynecology Rajah Muthiah Medical College Hospital, Annamalai University, Chidambaram

Neonatal outcomes of interest were birth weight, Apgar score, NICU admission, cephalhaematoma and scalp injuries. Maternal outcomes of interest were genital tract injuries (vaginal tears, cervical tears, perineal tears), postpartum haemorrhage and puerperal complications. For the purpose of analyses the cases were divided into two groups. Group 1 the ventouse group and group 2 forceps group. Data was entered and analysed using Microsoft Excel and the results were expressed as proportions. Chi square test was applied to find out the significance and p value <0.05 was considered as statistically significant.

3.RESULTS:

The mean age of subject was between 25-27yrs. 60% of forceps deliveries and 57.5% of ventouse deliveries were carried out in primigravida (Table 1). Fetal distress was the ventouse deliveries. Poor maternal efforts were found in 32.5% in forceps group and 35% in ventouse group 50% in

forceps group. (Table 2) Prolonged 2nd stage of labour was encountered in 2.5% of forceps and 2.5% of commonest indication in 52.5% in ventouse as compared to Prophylactic indications were observed in 12.5% in forceps and in 7.5% in the ventouse group. Perineal tears were observed in 7.5% in forceps and 2.5% in the ventouse group. (Table 3) No significant differences was found in the blood loss in both the groups. 95% of instrumental deliveries were between 37-40 weeks of gestation. Only 4 cases were beyond 40 weeks of gestation. Face marks with abrasions was seen in 9 cases of forceps whereas neonatal jaundice seen only in one case.(Table 4) Attempted ventouse delivery was successful in 96% as compared to 95% in forceps group. Perineal and cervical tears are more common in forceps compared to ventouse delivery. Attempted ventouse delivered babies have lower Apgar score at one minute than attempted forceps.2 cases in forceps and 4 cases in vacuum required admission to neonatal intensive care unit.

TABLE 1: Distribution of cases according to parity

PARITY		FORCEPS	VACCUM	TOTAL
0	FREQUENCY	24	23	47
	PERCENT	60	57.5	58.75
1	FREQUENCY	13	15	28
	PERCENT	32.5	37.5	35
>1	FREQUENCY	3	2	5
	PERCENT	7.5	5	2.25
TOTAL		40	40	80

TABLE 2: Indication for instrumental deliveries

INDICATIONS		GROUPS		TOTAL
		FORCEPS	VACCUM	
FETAL DISTRESS	FREQUENCY	20	21	41
	PERCENT	50	52.5	51.25
FAILURE OF MATERNAL POWER	FREQUENCY	13	14	27
	PERCENT	32.5	35	33.75
PROPHYLATIC FOR VBAC	FREQUENCY	3	2	5
	PERCENT	7.5	5	6.25
PROPHYLATIC FOR PPH	FREQUENCY	1	-	1
	PERCENT	2.5	-	1.25
PROPHYLATIC FOR ANEMIA	FREQUENCY	1	1	2
	PERCENT	2.5	2.5	2.5
PROLONGED 2 ND STAGE OF LABOUR	FREQUENCY	1	1	2
	PERCENT	2.5	2.5	2.5
OTHERS	FREQUENCY	1	1	2
	PERCENT	2.5	2.5	2.5
TOTAL		40	40	80

TABLE 3 : Distribution of cases according to maternal trauma:

MATERNAL MORBIDITY		GROUPS		TOTAL
		FORCEPS	VACCUM	
ONLY LMLE	FREQUENCY	34	37	71
	PERCENT	85	92.5	88.75
FIRST DEGREE TEAR	FREQUENCY	3	1	4
	PERCENT	7.5	2.5	5
SECOND DEGREE TEAR	FREQUENCY	-	-	-
	PERCENT	-	-	-
CERVICAL TEAR	FREQUENCY	1	-	1
	PERCENT	2.5	-	1.25
VAGINAL LACERATION	FREQUENCY	1	-	1
	PERCENT	2.5	-	1.25
PPH	FREQUENCY	1	2	3
	PERCENT	2.5	5	3.75
NONE	FREQUENCY	-	-	-
	PERCENT	-	-	-
TOTAL		40	40	80

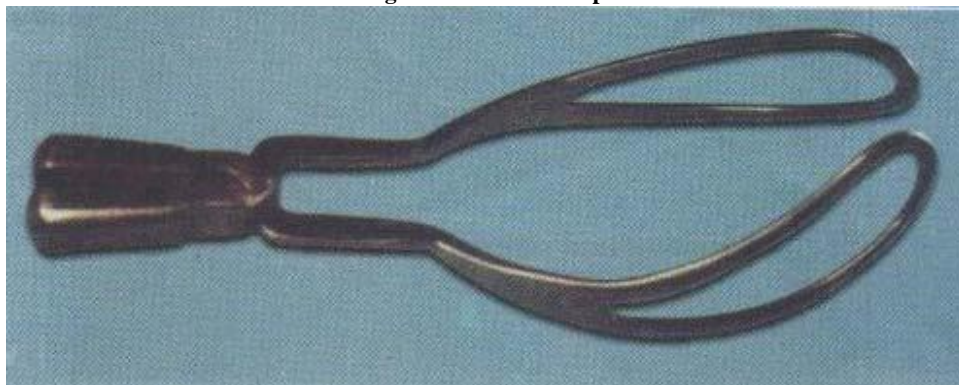
TABLE 4: Neonatal morbidity in both forceps and vacuum group:

FETAL MORBIDITY		GROUPS		TOTAL
		FORCEPS	VACCUM	
RESPIRATORY DISTRESS	FREQUENCY	5	6	11
	PERCENT	12.5	15	13.75
CEPHAL HEMATOMA	FREQUENCY	-	-	-
	PERCENT	-	-	-
RDS+NICU ADMISSION	FREQUENCY	2	4	6
	PERCENT	5	10	7.5
JAUNDICE	FREQUENCY	-	1	1
	PERCENT	-	2.5	1.25
FACE MARK+ ABRASIONS	FREQUENCY	9	-	9
	PERCENT	22.5	-	11.25
NORMAL	FREQUENCY	24	29	53
	PERCENT	60	72.5	66.25
TOTAL		40	40	80

Figure 1: Vacuum cup



Figure 2: Outlet forceps



4.DISCUSSION:

In our study 60% of cases were primigravida in the forceps group compared to 57.5% in the ventouse group, a finding similar to respond rates in the earlier study. For vacuum assisted delivery, commonest indication were poor maternal efforts followed by fetal distress and prolonged second stage. However, different studies report fetal distress as the commonest indication for vacuum assisted deliveries.^{5,8} Episiotomy was done in the ventouse group, especially in

2nd gravidas, but it was given in all the patients undergoing forceps delivery. Likewise, another study also reported a higher incidence of maternal trauma with forceps delivery compared to vacuum extraction.^{10,11,12} Correspondingly, we found that perineal tears, cervical tears, haematoma and postpartum haemorrhage are more often associated with forceps deliveries. Our study also reported lesser neonatal trauma with ventouse when compared to forceps deliveries. Other studies have also reported higher incidence of neonatal trauma with forceps deliveries.^{2,3,4,9,13,14} In our

study cephalhaematoma not seen in both forceps and ventouse groups. It occurs more frequently with vacuum extraction than with the forceps group. Apart from causing neonatal jaundice, it is rarely of any clinical significance^{2,3}. In vacuum assisted deliveries, 5% of babies had Apgar score less than 5 at 1 minute, 2% in the forceps group. According to earlier reported studies, the rates of neonates with less Apgar scores was significantly higher after forceps compared with vacuum delivery.^{9,10} Incidence of neonatal jaundice is higher in the ventouse group than the forceps group.⁸ In our study neonatal jaundice is seen in vacuum extraction where bilirubin levels were raised and phototherapy was needed. Exchange transfusion was not needed. [Baker,1995.]

Our study reported a very less failure rate in both the forceps and vacuum group. That failures was most frequently associated with unsuspected cephalo pelvic disproportion followed by malpositions.

5. CONCLUSION:

When there is an indication for instrumental vaginal delivery, ventouse should be preferred over forceps, as it causes much less maternal morbidity and insignificant neonatal morbidities. Proper use of vacuum extractor, appropriate negative pressure, and preventing cervical or vaginal tissues from entering the cup will further help in minimizing both maternal as well as neonatal morbidity.

REFERENCES:

1. Editorial. Vacuum versus Forceps. *Lancet*. 1984 Jan 21;(8639):144.
2. Lomas J, Enkin M. Variations in operative delivery rates. In: Chalmers I, Enkin M, Keirse MNJC, eds. *Effective care in pregnancy and child birth*. Vol. 2. Oxford, England: Oxford University Press, 1991:1182-95
3. Johanson RB, Vacuum extraction vs forceps delivery. Oxford, England: The Cochrane library: pregnancy and the childbirth database, 2000, Disk Issue I

4. Johanson RB, Rice C, Doyle M, et al. A randomized prospective study comparing the new vacuum extractor policy with forceps delivery. *Br J Obstet Gynaecol*. 1993;100(6):524-30
5. Giri A, Vaidya A. Maternal and fetal outcomes of vacuum assisted delivery. *Postgraduate Medical Journal of National Academy of Medical Sciences*. 2008;8(1):48-56
6. Prapas N, Kalogiannidis I, Masoura S, et al. Operative vaginal delivery in singleton term pregnancies: short-term maternal and neonatal outcomes. *Hippokratia*. 2009 Jan;13(1):41-5
7. Akhtar S. Comparison of maternal and infant outcomes between vacuum extraction and forceps deliveries. *Pakistan Armed forces journal*. 2006;2(1):25-31
8. Mesleh RA, AL Sawadi HM, Kurdi AM. Comparison of maternal and infant outcomes between vacuum extraction and forceps deliveries. *Saudi Medical Journal*. 2002;23(7):811-3.
9. Achanna S, Monga D. Outcome of forceps delivery versus vacuum extraction- a review of 200 cases. *Singapore Med J*. 1994 Dec;35 (6):605-8
10. Caeter J. The vacuum extractor. In: *Textbook of Obstetrics and Gynaecology*. London: Churchill- Livingstone. 1990;8:107-26
11. Johnson JH, Figueroa R, Garry D, Ellimian A, Maulik D. Immediate maternal and neonatal effects of forceps and vacuum assisted deliveries. *Obstet Gynaecol*. 2004;103(3):513-8
12. Gachiri JR, Rogo KO. Foetal and maternal outcome of vacuum extraction. *East Afr Med J*. 1991;68(7):539-46.
13. Baker PN. The place of Mid forceps deliveries in the modern obstetric practice. *Current Obst and Gynaecol*. 1995;5:225-9
14. Baskett TF, Fanning CA, Young DC. A Prospective observational study of 1000 vacuum assisted deliveries with the omni cup device. *J Obstet Gynaecol Can*. 2008; 300(7):573-80.
