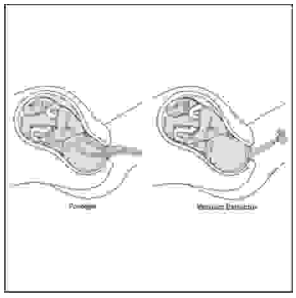
ORIGINAL **PROF-1235**

VACUUM EXTRACTION AND FORCEPS DELIVERIES;

COMPARISON OF MATERNAL AND NEONATAL COMPLICATIONS



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ABSTRACT… Objective: To compare the maternal and neonatal complications after instrumental deliveries. **Design:** Prospective study. **Setting:** At MH Rawalpindi. **Period:** Six months from April 15, 2006 to October 14, 2006. **Results:** Total 96 instrumental deliveries were carried out; of which 46 were ventouse and 50 were forceps deliveries. 58% of forceps deliveries were carried out in nulliparous and 42% in mulitparous patients as compared to 61% of ventouse deliveries in nulliparous and 39% in multiparous patients. Fetal distress was indication in 68% of forceps deliveries and 61% ventouse deliveries. Prolong second stage (>1 hr) was the second commonest indication i.e., in 18% of forceps deliveries and 13% of ventouse deliveries. Success rate was 90% in ventouse and 97% in forceps deliveries. Extension of episiotomy was more likely to occur with ventouse deliveries and third degree perineal tear occurred more with forceps deliveries. 14 babies were admitted to NICU and 90% of them were due to meconium staining. There was only one intrapartum death in the ventouse delivery group and that was due to intrapartum asphyxia. **Conclusion:** Forceps are more likely to be used in primigravidas and less likely to fail. Most common indication of instrumental deliveries is fetal distress followed by prolonged second stage. Cephalhaematoma and jaundice are more common in ventouse deliveries. Extension of episiotomy and low apgar score at one minute is more likely to occur with ventouse deliveries where as third degree perineal tear and subconjuctival haemorrhage are more likely to occur in forceps deliveries.

Key words: Ventouse, vacuum, forceps.

INTRODUCTION

Instrumental vaginal delivery is defined as delivery of a baby vaginally using an instrument for assistance[1]. Assisted deliveries using ventouse have never been as popular as using forceps in certain countries. This may be due to inadequate training, poorly maintained equipment, poor choice of patients and the innate conservatism of many doctors[2]. Now there is gradual move away from forceps towards ventouse largely due to perception that ventouse is easier and safer to use. It is conceivable that instrumental delivery rate may fall over next decade because of several factors.

There is general tendency to decrease intervention because of realization that length of second stage is not as critical as previously thought[3,4,5]. In addition the increasing use of the mobile epidural mix is likely to be associated with less intervention for failure to progress. There is a little doubt, however, that the right equipment in the right hands can achieve impressive and safe result.

The aim of study was to compare maternal and neonatal complications after instrumental deliveries.

PATIENTS AND METHODS

This was a prospective study carried out at Gynae Department of MH Rawalpindi of all instrumental deliveries during six months period from April 15, 2006 to October 14, 2006. The data collected included age, parity, birth weight, apgar score, indication of instrumental delivery, neonatal and maternal morbidity and mortality. The aim of this study was to compare the maternal and fetal outcome of forceps and ventouse deliveries.

RESULTS

Table I shows the distribution of patients according to type of instrumental delivery and their parity. There were total 96 instrumental deliveries, among which 50 were forceps and 46 were ventouse deliveries i.e, 29(58%) of forceps deliveries were in nulliparous and 21(42%) were in multiparous patients. 28(61%) of ventouse deliveries were in nulliparous and 18(39%) were in multiparous patients.

Table-I. Distribution of patients according to parity and type of instrumental deliveries

Instrumental deliveries	Total No of pts	Nulliparous		Multiparous	
		No of pts	%age	No of pts	%age
Forceps deliveries	50	29	58%	21	42%
Ventouse	46	28	61%	18	39%

Table II shows indications of instrumental deliveries. Fetal distress was most common indication for instrumental deliveries i.e, 34(68%) in forceps and 28(61%) in ventouse deliveries. Prolong second stage was second most common indication i.e, 9(18%) of forceps deliveries and 6(13%) of ventouse deliveries. Maternal exhaustion was indication in 4(8%) of forceps deliveries and 4(9%) of ventouse deliveries whereas 2(4%) of forceps deliveries and 2(4%) of ventouse deliveries were due to elective shortening of second stage of labour. Malposition was indication in 1(2%) of forceps and 6(13%) of ventouse deliveries.

Table III shows neonatal complications after instrumental deliveries. Among neonates delivered by ventouse extraction 3(6%) had jaundice, 2(4%) had cephalhaematoma and there was only 1(2%) intra-partum death due to intrapartum asphyxia. Among forceps deliveries 1(2%) had subconjuctival haemorrhage and 2(4%) had jaundice.

Table-II. Distribution of patients according to indications of instrumental delivery

Indications	Forceps (%age)	Ventouse (%age)
Fetal Distress	34(68%)	28(61%)
Malposition	1(2%)	6(13%)
Prolonged 2nd stage of labor ≥1 hr	9(18%)	6(13%)
Maternal exhaustion	4(8%)	4(9%)
Elective shortening of 2nd stage like PIH, cardiac disease	2(4%)	2(4%)

Table-III. Neonatal complications following instrumental delivery		
Indications	**Ventouse (%age)**	**Forceps (%age)**
Facial nerve damage	-	-
Intracranial haemorrhage	-	-
Retinal haemorrhage	-	-
Sub conjunctival haemorrhage	1(2%)	-
Echymosis	-	-
Jaundice	2(4%)	3(6%)
Cephalhamatoma	-	2(4%)
Fetal death	-	1(2%)
None	47 (94%)	40(87%)

Table IV shows distribution of neonates according to apgar score. Neonates delivered by ventouse had low apgar score (<6/10) at one minute (3% vs. 20%), where as there was not much difference in apgar score at five minutes (that is 10/10 in 96% of ventouse deliveries vs. 98% of forceps deliveries).

Table-IV. Relationship of apgar score to the type of instrumental delivery			
Type of instrumental delivery	**Apgar score at 1 minute**		**Apgar score at 5 minutes**
-	<6/10	≥6/10	10/10
Forceps	10(20%)	40(80%)	49 (98%)
Ventouse	14(30%)	32(69%)	44(96%)

Table V shows maternal morbidity following instrumental deliveries. Patients delivered by ventouse were less likely to have epistiotomy (91% versus 94%). Ventouse deliveries were more likely to have extension of episiotomy (15% vs. 10%). Forceps deliveries were more likely to sustain third degree perineal tear (4% vs. 0%).

Table-V. Maternal morbidity following instrumental delivery		
Trauma	**Ventouse(%age)**	**Forceps (%age)**
Episiotomy	42(91%)	47(94%)
Extension of episiostomy	7(15%)	5(10%)
Third degree perineal tear	-	2(4%)

DISCUSSION

The incidence of operative vaginal delivery over all is 10% of all vaginal deliveries although it varies widely[6]. The frequency of instrumental delivery in our unit is 3.8%. Each instrument has certain advantages over other. Birth trauma is significantly more likely to occur with ventouse than forceps[7]. Failure is more likely with ventouse than forceps. This is presumably because it is not possible to pull with as much force as when using forceps. There is less pain and less requirement for analgesia with ventouse at delivery and 24 hours later[8]. Serious maternal perineal or vaginal trauma is more likely with the use of forceps[9]. Ventouse is associated with increased incidence of cephalhaematoma, retinal haemorrhage and intracranial haemorrhage[10]. Scalp lacerations and facial nerve palsy are more common with forceps delivery[10]. Jaundice requiring phototherapy is equally common. Long term neurodevelopmental studies of children born by instrumental delivery and those who had SVD found no difference in neurological status or cognitive development[11].

In our study apgar score of neonates was studied. No significant difference was found in apgar score at 5 min in forceps and vacuum deliveries. This is comparable to a local study conducted at Nishter Medical Hospital Multan in which there was no marked difference in apgar score at 1 and 5 min between forceps and vacuum deliveries[12]. Similarly Cochrane systematic review of nine randomized controlled studies showed that vacuum extractor is no more likely to be associated with low 5 minutes apgar score as compared to forceps[13]. Another local study conducted at Holy Family Hospital Rawalpindi showed no marked difference in the apgar score among

two groups and that improved afterwards[14]. Regarding neonatal complications, in our study in forceps group only one neonate had sub conjuctival haemorrhage and two had jaundice. In ventouse group two had cephalhaematoma and three had jaundice. This is comparable to another study which concluded that neonates delivered with vacuum have more chance of cephalhaematoma[15].

Regarding maternal complications, our study showed increased third degree perineal tears in forceps delivery. This is comparable to study conducted by Sultan who reported increased incidence of anal sphincter damage with forceps deliveries[16].

CONCLUSION

Each instrument has its own merits and demerits. Maternal and neonatal outcome depends on indication of instrument, patient's selection and skill of operator. It is important that obstetricians learn these skills not on patients but in a skills laboratory using models tailor-made for this purpose. Long term follow-up of mothers and babies is essential.

REFERENCES

1. Campbell S, Lees C. **Operative interventions in obstetrics.** Obstetrics by Ten Teachers. 2000; 17: 285-96.

2. Constantine G. **Alternative vacuum supplies for ventouse deliveries.** Br J Obst & Gynae 1989; 96: 249-250.

3. Cohen WR. **Influence of the duration of Second stage labor on perinatal outcome and puerperal morbidity.** Obstet Gynecol 1977: 49:266-269.

4. Albers LL, Schiff M, Gorwoda JG, **The Length of active labor in normal pregnancies.** Obstet Gynecol 1996; 87: 355-359.

5. Menticoglon SM, Manning F, Harman C, Morrison I. **Perinatal outcome in relation to second-stage duration.** Am J Obstet Gynecol 1995; 173: 906-912.

6. Stephenson PA. **International differences in the use of obstetrical interventions,** WHO. EUR/ICP/MCH 112. Copenhagen: World Health organization, 1992.

7. Chan CC, m-ALATHIi, Yeo GS. **Is the vacuum extractor really the instrument of first choice?** Aust N.Z J Obst & Gynae 1999; 39:305-309.

8. Johanson RB. **Vacuum extraction versus forceps delivery for assisted vaginal delivery.** The Cochrane Database of Systematic Reviews 1999; 2:1-12.

9. Groutz A, Fait G, Lessing JB et al. **Incidence and obstetric risk factors of postpartum anal incontinence.** Scand J Gastroenterol 1999; 34: 315-318.

10. Towner D, Castro MA, Eby-Wilkens E, Gilbert WM. **Effect of mode of delivery in nulliparous women on neonatal intracranial injury.** N Engl J Med 1999; 341: 1709-1714.

11. Johanson RB, Heycock E, Carter J et al. **Maternal and child health after assisted vaginal delivery: five- year follow up of a randomised controlled study comparing forceps and ventouse.** Br J Obstet Gynaecol 1999; 106: 544-549.

12. Rubina Mustafa, Rozina Mustafa. **Perinatal and Maternal outcome in ventouse versus forceps delivery.** J Coll Physicians Surg Pak 2002; 12 (6): 345 – 7.

13. Johanson RB, Menon BKV. **Vacuum extraction versus forceps delivery. (Cochrane Review).** In: the Cochrane Library, issue-4 1999 Oxford, Update software.

14. Dr. Rubab Abid Naqvi. **One year study conducted in Obstetrics and Gynaecology Department,** Holy Family Hospital Rawalpindi, Pakistan 2004.

15. Johanson JH, Figueroa R, Garry D, Elimian A, Maulik D. **Immediate maternal and neonatal effects of forceps and vacuum assisted deliveries.** Obstet Gynecol 2004; 103 (3): 513-8.

16. Sultan AH, Kamm MA, Bartram CI, Hudson CN. **Anal sphincter trauma during instrumental delivery.** Int Obstet Gynecol 1993; 43: 263-270.