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Instrumental (operative) vaginal deliveries: Vacuum extraction compared with forceps delivery at Wad Medani Teaching Hospital, Sudan.

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ABSTRACT

The risks to the mother and newborn associated with the use of vacuum extractor (V.E.) in comparison with those associated with the use of low delivery forceps (L.D.F.) were studied prospectively. Sixty-nine women were enrolled in to the study, all with single, full term (37 weeks or more) babies, with cephalic presentation, required assisted vaginal deliveries. They were randomized to either vacuum group (38) or forceps (31). Third degree perineal tears, vaginal and cervical lacerations, requirement of blood transfusion were observed less frequently in the group delivered by V.E., the differences were not statistically significant. One baby in the vacuum group developed cephalohaematoma. The vacuum group had a less stay in hospital (more than 48 hours) than the forceps group and the difference is statistically significant. There were no significant differences in the mean birth weight, Apgar scores and the numbers of babies admitted to the intensive care unit. One baby delivered by forceps died shortly after birth. There was no maternal death in either group.

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Introduction. Instrumental vaginal deliveries constitute approximately 14.4 % of the total deliveries; the vast majority of these were either vacuum extractor or forceps (1). Forceps delivery rates have decreased, and the vacuum delivery rates have increased over the past 20 years, the advocators of vacuum delivery argue that, it should be chosen first for assisted vaginal delivery because it is less likely to injure the mother (2). Forceps are associated with many maternal and fetal complications like vaginal and cervical lacerations, vulval haematomas, third degree perineal tears, facial nerve injury and intraventricular hemorrhage (3-4). Although V.E. is less likely to cause maternal injuries, it is associated with neonatal morbidity such as cephalohaematoma and intracranial hemorrhage (5).

The objective of this prospective study is to compare the use of V.E. for L.D.F., regarding advantages and disadvantages of the use of each. To determine the safer instrument of the two. To train the junior staff in using the two instruments.

Methods. The patients admitted to this study are those who were admitted to the delivery room at Wad Medani Teaching Hospital (W.M.T.H.) with delayed second stage of labour, foetal distress and maternal distress during the second stage of labour during the period…….. All patients chosen for this study are those who had no contra-indication to vaginal delivery. Patients were allocated by systematical randomization for either V.E. or L.D.F. For all those patients the

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age, the parity, locality, occupation were noted. Obstetrical examination was performed to determine the fundal height, the lie of the foetus and the presentation which should be cephalic. The foetal heart beats and rate were registered. Vaginal examination was done before application of the delivery instrument to determine the cervical dilatation, position and the station of the foetal head. All deliveries were conducted by a senior registrar in obstetrics and gynaecology.

Data was entered into microcomputer using SPSS/PC batching for data analysis. Simple frequency, percentage, means and standard deviation were calculated. The data of the patients delivered by vacuum was compared with those who delivered by forceps by students' t-test, X^2 and Fishers exact test when applicable; $P< 0.05$ was regarded significant.

Results. During the period of the study one year, there were 3450 deliveries, 69 (2%) out of them were instrumental deliveries. There were 38 patients who were delivered by V.E. and 31 patients by L.F.D. The most common indications for assisted vaginal deliveries in this study were delayed second stage of labour which was noted in 23 patients (60.5%) versus 18 patients (51.6%) of the vacuum and forceps groups respectively. Foetal distress was the indication in 7 babies (18.4%) versus 5 babies (16.1%) in the vacuum and forceps groups respectively. The stations of the foetal head ranging from 0 to + 3 and there was no statistical difference between the two groups.

Table (1) shows the different maternal characters and the complication in the two groups, where the vaginal and cervical tears were slightly higher in the forceps group, but the difference was not statistically significant.

Hospital stay (more than 48 hours) was significantly less in patient in the vacuum group than in the forceps group, $P < 0.05$. Two patients in the forceps group required catheterization, because of urine retention. All patients in the vacuum group were noted to have chignon and one baby had cephalohaematoma.

Table 1: Comparison of different outcome variables in the vacuum group and the forceps group as mean (SD) or number (%) as appropriate

	Vacuum group (n = 38)	Forceps group (n = 31)	P. value
Age, in years	25.4 (5.9)	26.8 (6.8)	0.6
Priparous	27 (71.05)	23 (74.19)	0.77
Cervical tears	4 (10.53)	6 (19.3)	0.3
Vaginal tears	10 (26.3)	12 (38.7)	0.2
Blood transfusion	2 (5.2)	5 (16.3)	0.13
Post-partum urine retention	0	2 (6.4)	0.11
Stay in the hospital more than 48 hours	4 (10.5)	14 (45.1)	0.001

Table (2) shows the neonatal outcomes: mean birth weight, Apgar scores and the babies admitted to the intensive care units were not different significantly between the two groups. One

baby delivered by forceps died shortly after birth due to asphyxia. There was no maternal death in either group.

Table 2: Comparison different neonatal variables in the vacuum group and the forceps group as mean (SD) or number (%) as appropriate

	Vacuum group (n = 38)	Forceps group (n = 31)	P. value
Apgar score 1 more than 7	29 (76.3)	16 (83.8)	0.83
Apgar score 5 more than 7	29 (76.6)	26 (83.8)	0.83
Birth weight (kg)	3.07 (0.42)	3.1 (0.49)	0.54
Referral of the baby to the pediatrician	4 (10.5)	3 (9.6)	0.96

Discussion. This is a prospective study carried out in the central Sudan to estimate the adverse effects of the instrumental delivery using V.E. and L.D.F. in comparison with each other. The maternal complications were higher in the forceps group than in the vacuum group, but this didn't reach statistical significance. As noted recently by Weerasekera and Premaratne, incidence of third degree perineal and cervical tears were slightly higher in the forceps group, but the differences were not statistically significant (6). However, the maternal birth canal and genital lacerations were found to be significantly higher in the forceps group in comparison to the vacuum group (5). In Saudi Arabia it was retrospectively found that perineal tears were more common in forceps group, while extended episiotomies were common in the ventouse group (7). Nevertheless, ten trials were reviewed where the maternal complications were less in V.E. than in L.D.F.(8). The large area occupied by the forceps in the pelvis could explain the higher maternal complications in the forceps group.

In our study more patients in the forceps group required blood transfusion and catheterization than in the vacuum group, but the differences were not statistically significant. Likewise the stay in the hospital was significantly longer in the forceps than in the vacuum group. Most likely these events (maternal injuries, catheterization and blood transfusion) were related to each other and they were reflected in the longer stay in the hospital observed significantly in the forceps group. Meyer and colleagues had found the need for post-partum bladder catheterization was more common in the women delivered by forceps than in the women delivered by ventous (9).

It was obvious that cephalohaematomas were more common in babies delivered by V.E. than those delivered by L.D.F., however, the difference was not statistically significant and this is similar to other previous studies (5,8).

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Recommendations. Although the number of patients studied in this series was small, it showed that the V.E. is more kinder to the maternal and foetal tissues than forceps. Those findings were supported by other authors (5,6,7,8,9). Hence we recommend more multicentres studies as a wide scale to be done and the results of those studies should be utilized to guide the obstetricians to choose which ever instruments proved to be safer for delivery of the mother.

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