

VACUUM EXTRACTION OR FORCEPS? A COMPARISON OF MATERNAL AND NEONATAL MORBIDITY

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SUMMARY

Maternal and perinatal complications associated with the use of outlet forceps and silastic vacuum extractor were studied in 450 and 425 cases respectively. Perineal tears, vaginal and cervical tears and lacerations were observed less frequently in the vacuum extraction group. However, incidence of cephalhaematoma and neonatal jaundice was more among babies born with vacuum extraction. No difference in major neonatal morbidity was observed between the two groups. Silastic vacuum extractor appears to be a useful alternative to forceps in low vaginal instrumental deliveries.

Introduction

Vacuum extractor (VE) as devised by Malmstrom in 1954, was a metal cup connected to a hand driven pump and acted by producing a caput succedaneum or chignon that anchored the vertex to the cup. The soft, silastic vacuum cup available currently is said to be better than the metal VE. It is easier to handle and the suction is created without delay. Vacuum extractor has many advantages over forceps. It requires less space and shorter hospital stay and is associated with lower incidence of tears and lacerations. Present study was conducted to compare the maternal and neonatal morbidity in the two instrumental delivery groups.

Material and Methods

Present study was conducted over 425 patients delivered by silastic cup VE and 450 patients delivered by Wrigley's outlet forceps from September 1985 to March 1988. All patients had a singleton term pregnancy with a foetal vertex presentation. The instruments were used under the following conditions: Ruptured membranes, full dilatation of cervix and leading bony point at +3 station. Pudendal block anaesthesia was given.

The important parameters studied to analyse the maternal morbidity were perineal, vaginal or cervical tears or lacerations, bladder catheterisation and post partum anaemia (Post partum anaemia was defined as a fall in haemoglobin of 2 gm/dl or more). In new borns we specially looked for any scalp or face abrasions, caput succedaneum cephalhaematoma or fracture skull. 25 patients

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in whom VE failed, forceps extraction was done. These cases were not included in the present study.

Results

Mean maternal age, gestational age, birth weight and proportion of nulliparae were similar in the two groups (Table I). The risk of maternal complication was lower in VE group (Table II). However, the frequency of bladder catheterisation and postpartum anaemia was almost same in the two groups. Primiparae were more prone to have these complications. Neonatal complications were more in VE group (Table III). Caput succedaneum was reported five

times more frequently in the VE group. Apgar score was comparable in the two groups. By five minutes, 98% of the newborns in each groups scored 7 or more.

TABLE II
Showing Maternal Complications in the Two Groups

Complication	Vacuum Extractor (%)	Outlet forceps (%)
Complete perinatal tear	6	10
Extension of episiotomy	8	14
Vaginal Lacerations	10	14
Cervical tear	3	6
Bladder catheterisation	10	12
Postpartum anaemia	12	13
Urinary tract infection	18	20

TABLE I

Showing Characteristics of Women and Newborns in the Two Groups

Characteristics	Vacuum Extractor	Outlet forceps
Mean maternal age (years)	22.5	21.7
Percentage Nullipara	72	73
Mean gestational age (weeks)	39.4	39.5
Mean birth weight (gms)	3050	2900

Discussion

Maternal soft tissue injuries are responsible for undesirable postpartum pain and discomfort. The risk of these injuries was lower with VE than with forceps usage.

Berkus *et al* (1985) had similar results. The reason may be that application of the cup requires no additional lateral pelvic space. Neonatal morbidity

TABLE III
Showing Neonatal Complications in the Two Groups

Complication	Vacuum Extractor %	Outlet forceps %
Scalp abrasion	8	2
Face abrasion	2	12
Caput succedaneum	20	4
Cephalhaematoma	9	2
Jaundice	20	10
(S. Bilirubin more than 12 mg%)		
Phototherapy required	10	5
Fracture skull	0	0.4 (1 case)
Intracranial haemorrhage	0.04 (1 case)	0.4 (1 case)
Convulsion	0.5	0.4

related to the use of the VE remains the subject of continuing controversy whereas no increased risk of severe complications has been observed among newborns delivered with the VE. Minor neonatal complications like jaundice and cephalhaematoma are seen more frequently with VE. Earlier studies reported severe neonatal injuries associated with metal cup (Aguero *et al*, 1962). Similar to our results Meyer *et al* (1987) observed no increase in the risk of severe neonatal injuries among babies delivered with silastic VE. The reason may be that soft silastic cup is atraumatic.

However, a large percentage of babies born with VE developed jaundice and required phototherapy. Meyer *et al* (1987) had a similar observation. However, Berkus *et al* (1985) observed the same frequency of jaundice (8.3%) among babies delivered with the silastic VE and with forceps. Increased risk of neonatal jaundice with VE may be due to resorption of subcutaneous haematoma and cephalhaematoma (Arad, 1982).

We observed caput succedaneum in 20% babies delivered with the VE. A 100% frequency of chignon has been reported with metal VE usage (Greis *et al*, 1981). The difference might indicate that

as presumed silastic cup is less harmful than the metal cup (Meyer *et al*, 1987).

Cephalhaematoma was observed in 9% babies born with the VE. This could be an over estimation as Berkus *et al* (1985) observed that only one case in four of clinically diagnosed cephalhaematoma was confirmed by ultrasound examination.

The higher maternal morbidity observed in our study confirms that the forceps delivery is a more traumatic obstetrical operation than VE. Despite the increased risk of neonatal morbidity such as jaundice or cephalhaematoma, silastic VE appears to be a useful alternative to forceps in low vertex instrumental deliveries.

References

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