

FETAL OUTCOME IN VACUUM AND FORCEPS DELIVERIES

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SUMMARY

Vacuum is considered to be safer than forceps by most of the authors, though controversy continues. Out of 11,625 deliveries over a period of four years, 260 (2.23%) were vacuum extractions while 425 (3.65%) were forceps deliveries. Fetal outcome and neonatal complications associated with these vacuum and forceps deliveries were evaluated in this study. Incidence of scalp lacerations, cephalhematoma and jaundice was more among babies born with vacuum extractions, though no difference was found in major morbidity in both groups. Perinatal mortality was 3.07% in vacuum and 6.35% in forceps deliveries. Thus, in terms of fetal outcome vacuum appears to be safer than forceps.

INTRODUCTION

Controversy regarding superiority of vacuum of forceps is a nonending issue. Though most of the authors consider vacuum better than forceps, Agüero and Alvarez (1962) found vacuum to be as traumatic as forceps and suggested that vacuum should not be used indiscriminately as a substitute for obstetric forceps. In an interesting study, Mishell and Kelly (1962) found that compressive force exerted by forceps is as high as 1500 gms per sq. cm., while for vacuum it is only 75 gms per sq. cm.

To evaluate efficacy of vacuum and forceps in terms of fetal outcome, vacuum and forceps deliveries over a period of four years were analysed in this study.

MATERIALS AND METHODS

From January 1985 to December 1988, over a period of four years, there were 260 vacuum extractions and 425 forceps deliveries at B. Y. L. Nair Ch. Hospital. All vacuum and forceps deliveries were included in this study irrespective of indications, period of gestation or any associated complications. Vacuum extractions were undertaken using metallic cup of Malmstrom variety, while most of the forceps deliveries were outlet or low midcavity forceps applications. All deliveries were conducted with due precautions to avoid complications and were attended by pediatricians. After birth, babies were carefully examined by neonatologists, to rule out any soft tissue or bony injuries. In the neonatal period, babies were closely monitored and any complications were appropriately dealt with.

To find out whether the observed differences

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of fetal complications in two groups were statistically significant, a 'Z' test was applied and results were compared.

RESULTS AND ANALYSIS

From January 1985 to December 1988, the total number of deliveries were 11,625. During this period, there were 260 vacuum and 425 forceps deliveries giving an incidence of 2.23% for vacuum deliveries and 3.65% for forceps deliveries. Out of 260 vacuum deliveries, 207 (79.61%) attended ANC clinic while among 425 forceps, 358 i.e. 84.23% patients were registered for ANC. Fetal distress, meconium staining of amniotic fluid and prolonged labour accounted for common indications for vacuum and forceps deliveries.

Age and Parity Distribution

Most of the patients in both groups were young, primiparas with age of 25 years or less. Out of 260 patients delivered with vacuum, 203 i.e. 78.07% were below 25 years of age, while out of 425 forceps deliveries 350 i.e. 82.35% were 25 years or less. (Table I)

In vacuum deliveries out of 260 patients, 165 i.e. 63.46% were primiparas while out of 425 forceps deliveries, 317 i.e. 74.58% were primipara. (Table II)

Perinatal Mortality

Among 260 babies delivered with vacuum, 3 (1.5%) were fresh stillbirths while 5 (1.92%) were neonatal deaths, with incidence of perinatal

Table - I

Age Distribution

Age in years	Vacuum	Forceps
20 years or less	102 (39.23%)	169 (39.76%)
21 to 25 years	101 (38.84%)	181 (42.58%)
26 to 30 years	49 (18.84%)	58 (13.64%)
31 years & more	8 (3.07%)	17 (4.0%)
Total	260	225

Table - II

Parity Distribution

Parity	Vacuum	Forceps
Primipara	165 (63.46%)	317 (74.58%)
Second para	52 (22.0%)	59 (13.88%)
Third para & more	43 (16.53%)	49 (11.52%)
Total	260	425

mortality as 3.07%. All the 3 stillbirths were due to asphyxia. Out of 5 neonatal deaths, 3 were due to prematurity, one due to septicaemia and one due to intracranial haemorrhage.

Out of 425 babies born by forceps, 8 i.e. 1.88% were stillborn and 19 i.e. 4.47% were neonatal deaths giving incidence of perinatal mortality as 6.35% (Table III). In 8 stillbirths, 5 were fresh stillbirths due to severe intrauterine asphyxia, one was very premature and remaining two had come with loss of fetal movements. Prematurity was responsible for 13 out of 19 neonatal deaths, while 3 asphyxiated babies died

later on, one died due to septicaemia and two had intracranial haemorrhage.

The difference between perinatal mortality of two groups was found to be statistically significant ($p < 0.05$) by applying a 'Z' test.

Neonatal Complications

As seen from Table IV, scalp lacerations, cephalhematoma and jaundice were common neonatal complications in vacuum babies, while facial abrasions and scalp lacerations were common in babies delivered with forceps. (Table IV)

However, there was no significant difference

Table - III

Fetal Mortality

	Vacuum	Forceps
Stillbirths	03 (1.15%)	08 (1.88%)
Neonatal	05 (1.92%)	19 (4.47%)
Total	08 (3.07%)	27 (6.35%)

Table - IV

Neonatal Complications

	Vacuum	Forceps
Scalp	37 (14.23%)	14 (3.29%)
Face marks & Abrasions	—	38 (8.94%)
Cephalhematoma	24 (9.23%)	10 (2.35%)
Caput succedaneum	57 (21.92%)	17 (4.0%)
Jaundice	23 (8.84%)	10 (2.25%)
Nerve Palsy	02 (0.76%)	03 (0.7%)
Convulsions	05 (1.92%)	06 (1.41%)
Skull fractures	—	02 (0.47%)
Intracranial Haemorrhage	03 (1.15%)	03 (0.7%)

in both groups as far as major complications were considered. Incidence of major complications like convulsions, skull fractures and intracranial haemorrhage was 3.07% in vacuum and 2.58% in forceps babies. Similar results were obtained by Schroeder (1962) and Pendse Pandey (1988) in their studies.

DISCUSSION

Neonatal morbidity and superiority of vacuum and forceps is a controversial chapter. Mishell & Kelly (1962) found compressive force exerted by forceps to be about 20 times higher than that of vacuum. Also average traction required for forceps was 67.5 lbs compared to only 38.8 lbs required for a vacuum delivery. These observations were strengthened by Grossbard and Cohn (1962) in a study of 92 cases of vacuum when they did not find any case of major complications or brain injury. Sharma et al (1989) also did not find any increased risk of severe neonatal injury among babies delivered with vacuum, though in both studies, minor complications were reported. Pendse and Pandey (1988) reported incidence of major complications as high as 4.0% in babies delivered with forceps.

These studies suggest vacuum to be safer than forceps as far as major complications are compared, however Aguero & Alvarez (1962) found vacuum to be as traumatic as forceps and condemned its routine use as substitute for forceps.

Incidence of minor complications varies from study to study. Greis et al (1981) reported 100% frequency of caput with use of metal cup vacuum, while Sharma et al (1989) found it only in 20%

of babies. Grossbard and Cohn found incidence of scalp avulsion and cephalhematoma as 3.26% each in vacuum deliveries while incidence of soft tissue injuries in forceps deliveries, was about 20.0% (Sharma et al) and 16.0% (Pendse and Pandey).

In our study, perinatal mortality in vacuum was 3.07% and 6.35% in forceps which was slightly higher compared to other studies. However, in our study we had included even those patients who were transferred from other hospitals in a moribund state with prolonged labour with severe intrauterine asphyxia and sometimes even with loss of fetal movements. When such cases were excluded from study, a low perinatal mortality of 4.0% was obtained by Pendse & Pandey (1988).

Thus, in terms of fetal outcome, vacuum appears to be safer than forceps.

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