

Foeto-maternal outcome in instrumental vaginal delivery attending a secondary hospital in Hyderabad (Aga Khan Maternal and Child Care Centre)

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Abstract

Objective: To evaluate the foeto-maternal outcome in instrumental delivery.

Methods: This retrospective record review was conducted at Aga Khan Maternal and Child Care Centre, Hyderabad, Pakistan, and comprised medical records from January 2014 to January 2016. Data related to all women with singleton pregnancy at term gestation and having undergone vacuum or forceps delivery was included. Data of women who had multiple pregnancies, caesarean section, and presentation other than cephalic, placenta previa were excluded. SPSS 19 was used for data analysis.

Results: Of the 400 participants, 255(63.75%) were aged between 22-28 years and 145(36.25%) between 29-35 years. Moreover, 268(67%) women were primigravida. Of them, 225(56.25%) presented at more than 40 weeks of the gestation. The foetal complication such as cephalohaematoma was observed in 3(0.75%) cases.

Conclusion: Instrumental vaginal delivery was found to be safe and is the best substitute of the caesarean sections.

Keywords: Instrumental deliveries, Caesarean section, Apgar score, Cephalohaematoma. (JPMA 67: 1833; 2017)

Introduction

The art of instrumental delivery (use of forceps and vacuum), though existing for centuries, has earned a disreputation due to the possibility of poor maternal and foetal outcome.¹ The incidence of instrumental vaginal delivery ranges between 10% and 20% of all deliveries.² Foetal indication commonly encountered is malposition of the foetal head with relative dystocia³ and foetal distress. Presumed foetal jeopardy may be preferable term.⁴ Medically significant maternal indications include cardio-pulmonary or vascular conditions. Maternal complications are usually those of soft tissue trauma and tend to be reported more frequently with the use of forceps than with vacuum. Foetal complications with forceps are extremely rare.⁵ Foetal injury from vacuum includes minor and occasionally severe scalp injury, including scalp bruising, subgaleal haematoma and intracranial haemorrhage.⁶ Worldwide studies have shown that vacuum deliveries are considered as a safe method when compared with the forceps deliveries.⁷ On the basis of on-going research, the reintroduction of instrumental delivery will definitely find a place in emergency obstetric care. The current study was designed to assess the foeto-maternal outcome in instrumental delivery.

Methodology

This retrospective study was conducted at Aga Khan

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Maternal and Child Care Centre (AKMCCC), Hyderabad, Pakistan, and comprised medical record from January 2014 to January 2016. Data of all women with singleton pregnancy at term gestation having undergone vacuum or forceps delivery was included, while that of women who had multiple pregnancies, caesarean section, and presentation other than cephalic, placenta previa was excluded.

Data collection was started after permission from institutional ethics review committee. Medical record files were reviewed and information was gathered on a pre-designed questionnaire. Information regarding the use of instrument (vacuum/forceps) was collected. Maternal outcome such as soft tissue injury, post-partum haemorrhage (PPH) and foetal outcomes such as Appearance, Pulse, Grimace, Activity, Respiration (Apgar) scores, cephalohaematoma and nursery admission were recorded on a pre-designed pro forma.

Maternal soft tissue traumas, PPH, retention of urine and cephalohaematoma were taken as a primary outcome.

Apgar score and nursery admissions were taken as a secondary outcome.

Data was analysed using SPSS 19. The frequencies for all variables were calculated and expressed as percentage of total sample size. Means and standard deviations (SD) for continuous variables and frequencies and percentages for categorical variables were calculated.

Results

Of the 8,455 deliveries, the number of instrumental deliveries was 400(4.73%). Of these women, 255(63.75%) were aged 22-28 years and 145(36.25%) were 29-35 years. 295(73.75%) patients weighed between 60-80kg, 78(19.50%) <60kg and 27(6.75%) >80kg. Besides, 336(84.0%) patients were booked and 64(16.0%) were non-booked. In addition, 268(67.0%) women were primigravida and 132(33.0%) were multigravida (Table-1).

Furthermore, 175(43.75%) subjects were between 38-39 weeks of gestation and 225(56.25%) were >40 weeks of gestation. Poor maternal effort was observed in 174(43.5%) cases, foetal distress in 125(31.25%) and prolonged second stage of labour in 101(25.25%) cases.

Moreover, 373(93.25%) ventous and 27(6.75%) forcep deliveries were carried out. First- and second-degree, perineal tears were observed in 17(4.25%) cases while 3rd degree and 4th degree Perineal tears were observed in 3(0.75%). Cervical and vaginal wall tears occurred in 3(0.75%) cases. Paraurethral tears were found in 1(0.25%) cases. Retention of urine was encountered in 3(0.75%) cases and PPH was observed in 2(0.5%).

In 378(94.5%) deliveries, the foetal weight was 2.5-3.5 kg and in 22(5.5%) deliveries foetal weight was 3.5-4kg. Most of the babies were born with good Apgar score at 1 and 5 minutes. In 393(98.25%) babies, the Apgar score at 1 minute was 6-9 and in 7(1.75%) babies it was 2-5. The Apgar score at 5 minutes was 8-9 in 373(93.25%) babies and 6-7 in 27(6.75%) babies. Cephalohaematoma was seen in 3(0.75%) babies, facial palsy in 6(1.5%), whereas 30(7.50%) babies were admitted into nursery for observation and were discharge in stable condition (Table-2).

Table-1: Maternal Demographic characteristics (total no: 400).

Variables	Total n=400	Percentage
Age (Years)		
22-28 years	255	63.75%
29-35 years	145	36.25%
Weight (Kg) <60		
60-80	295	73.75%
>80	27	6.75%
Booking Status		
Booked	336	84.00%
Non-booked	64	16.00%
Parity		
Primigravida	268	67.00%
Multigravida	132	33.00%

Table-2: Maternal and foetal outcome in Instrumental delivery.

Variables	Total no=400	Min-Max Or Percentage
Gestational age (Weeks)		
38-39 weeks	175	43.75%
>40 weeks	225	56.25%
Mode of Delivery		
Ventous	373	93.25%
Forceps	27	6.75%
Indication for Instrumental deliveries		
Poor maternal efforts	174	43.50%
Foetal distress	125	31.25%
Prolonged second stage	101	25.25%
Maternal Complications		
1st & 2nd degree tear	17	4.25%
3rd & 4th degree	3	0.75%
Cervical and vaginal wall tear	3	0.75%
Paraurethral tear	1	0.25%
Retention of urine	3	0.75%
PPH	2	0.50%
Apgar @1min (n=400)		
6-9-Jun	393	98.25%
2-5-Feb	7	1.75%
Apgar @ 5min (n=400)		
6-9-Aug	373	93.25%
6-7-Jun	27	6.75%
Birth weight (kg)		
2.5-3.5kg	378	94.50%
3.5-4 kg	22	5.50%
Cephalohaematoma	3	0.75%
Facial palsy	6	1.50%
Nursery admission	30	7.50%

PPH: Post-partum haemorrhage.

Discussion

About 10-20% of all worldwide deliveries need some form of intervention. About 6-12% of these interventions are instrumental vaginal deliveries. In our study, the rate of instrumental delivery was 4.7%. In a study conducted in the United States, the rate of instrumental delivery was 10-15% which is quite higher than our study.⁸

In our study, a majority of the instrumental deliveries were conducted by vacuum extraction. A similar rate of vacuum deliveries were noted in a study done in Federal Teaching Hospital Abakaliki (FETHA),⁹ but lower rates (1.7%) were observed in studies done in Maiduguri and Lagos. The rate was 3.1% in Benin City and 3.5% in Emug.¹⁰⁻¹² In developed countries, due to the preference of lower segment caesarean section; the rate of instrumental deliveries is much lower than developing countries.

In our study, most patients were aged between 22-26

years (63.75%). In a study done in Chhattisgarh, India, the overall mean age was 23.81 ± 3.6 years.¹³ In our study, vacuum delivery was observed in 93.25% cases and forceps delivery in 6.77% cases.

A Cochrane review has reported that the pros and cons of vacuum extraction when compared with forceps delivery¹⁴ results showed that vacuum delivery almost replaced forceps delivery.¹⁵ A study conducted in Nigeria showed similar results.⁹ Globally, different training programmes introduced to promote vacuum extraction over forceps have showed that more expertise is required for correct application of forceps while vacuum delivery required less expertise having less maternal complication but more foetal complications.

In our study, most common indication of instrumental deliveries were poor maternal efforts 174(43.5%), foetal distress 125(13.25%) and prolonged second stage of labour 101(25.25%). The same results were reported by a study conducted in India.¹⁶ Other studies showed that foetal distress was the commonest indication of instrumental deliveries.^{17,18}

Maternal soft-tissue trauma is more associated with forceps deliveries as compared to vacuum extraction. In our study, 1st and 2nd degree Perineal tears were observed in 17(4.25%) cases while 3rd degree and 4th degree Perineal tears were observed in only 3(0.75%) cases. Cervical and vaginal wall tears were observed in 3(0.75%) cases while other complications such as PPH, retention of urine and Para urethral tear were less frequent. The same results were also reported by a study conducted in Baqai Medical University¹⁹ and a study by Patel RR²⁰ in 2004.

In our study foetal morbidity such as cephalohaematoma 3(0.75%) was less frequent while poor Apgar score in one minute was more frequent when compared with score in five minutes. A study conducted by Johnson and Menon showed increased rate of neonatal cephalohaematoma and retinal haemorrhage.¹⁹

Despite this finding, which also correlates with the worldwide literature as well, instrumental deliveries, especially vacuum extraction, have become the instrument of choice to reduce to maternal morbidity and minimise the risk of increasing rate of caesarean section.

In terms of limitations, we studied only instrumental deliveries and its related complications. Caesarean rate or its complications were not looked into.

Encouraging assisted vaginal deliveries may help reduce the caesarean section rate, and therefore proper techniques of instrumental deliveries should be taught. This can be done through workshops/training programmes to update and gain maximum expertise to reach the World Health Organisation's (WHO) criteria of caesarean section rates which is 10-15% to achieve better maternal and foetal outcomes.²¹

Conclusion

Instrumental deliveries were found to be safer than caesarean section and vacuum extraction as they needed less expertise and had fewer chances of maternal morbidity. Forceps deliveries needed more skills and expertise to prevent maternal complication.

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Conflict of Interest: None.

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