



Retrospective study of maternal and perinatal outcomes of instrumental vaginal delivery in tertiary care hospital

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Abstract

Background: To evaluate maternal and perinatal outcomes of instrumental vaginal delivery in tertiary care hospital

Material and methods: The present study included patients who underwent instrumental vaginal delivery during the study period. Sample size for the present study included 100 subjects who underwent instrumental vaginal delivery. The present was a retrospective one in which data recorded were analysed. Following the delivery of the placenta, a mandatory per speculum examination was conducted at the labor table to detect cervicovaginal injuries. All patients received intravenous antibiotics for three days and were discharged on day four. A Performa was made. Details in relation to maternal and perinatal outcome were recorded separately. All these findings were recorded in a Microsoft Excel sheet and analysed using descriptive statistics.

Results: Data of 100 patients was analysed. Out of 100 subjects, vacuum assisted delivery was carried out in 50 cases while forceps assisted delivery was carried out in the remaining 50 cases. While evaluating maternal complications, cervical laceration, vaginal laceration, PPH requiring blood transfusion and extension of episiotomy were commonly encountered. While analysing perinatal outcome, jaundice, facial marks and abrasions and scalp injuries were commonly encountered.

Conclusion: Instrumental vaginal delivery remains useful procedure if applied judiciously by a trained obstetrician.

Keywords: Instrumental vaginal delivery, forceps delivery, vacuum delivery, maternal and foetal outcome.

Introduction

Instrumental vaginal delivery is defined as vaginal delivery accomplished with the aid of instruments which can be vacuum or forceps. It is carried out in the maternal interest, foetal interest or both. It is a procedure with a long history spanning more than two centuries and

had undergone modifications and refinement to the present day. The frequency of instrumental vaginal delivery varies from one country to another, and even in the same country, from one obstetric unit to another. The instrumental delivery (IVD) rate thus varies greatly between settings and the ideal rate is unknown.¹⁻³

Established risk factors for requiring instrumental delivery include advanced maternal age, high body mass index (BMI), epidural analgesia, and high birth weight. It is uncertain, however, whether or how these factors influence the outcome of instrumental delivery. The conflation of factors predicting the need for instrumental delivery with factors predicting the likelihood of success may be inappropriate and misleading in intra-partum decision-making. The alternative to attempting instrumental delivery, however, is to directly perform second stage cesarean delivery, which also carries a high burden of morbidity.⁴⁻⁶ Hence; the present study aimed to evaluate the maternal and neonatal outcomes associated with the use of vacuum and forceps at a tertiary care centre.

Material and methods

The present study included patients who underwent instrumental vaginal delivery during the study period. Sample size for the present study included 100 subjects who underwent instrumental vaginal delivery. The present was a retrospective one in which data recorded were analysed. Procedure for forceps deliveries involved using short-curved outlet forceps, while vacuum deliveries were performed with silastic cups. After the baby was delivered, active management of the third stage of labor was performed, and prophylactic 600 mcg misoprostol was administered. Following the delivery of the placenta, a mandatory per speculum examination was conducted at the labor table to detect cervicovaginal injuries. All patients received intravenous antibiotics for three days and were discharged on day four. A Performa was made. Details in relation to maternal and perinatal outcome were recorded separately. All these findings were recorded in a Microsoft Excel sheet and analysed using descriptive statistics.

Results

Data of 100 patients was analysed. Out of 100 subjects, vacuum assisted delivery was carried out in 50 cases while forceps assisted delivery was carried out in the remaining 50 cases. Majority of the subjects belonged to the age group of 25 to 35 years. In majority of the cases, subjects gave negative history of previous vaginal delivery. While evaluating maternal complications, cervical laceration, vaginal laceration, PPH requiring blood transfusion and extension of episiotomy were commonly encountered. While analysing perinatal outcome, jaundice, facial marks and abrasions and scalp injuries were commonly encountered.

Table 1: Demographic data

Demographic		Vacuum (n=50)	Forceps (n=50)
Maternal age (years)	Less than 25	12	14
	25 to 35	24	21
	More than 35	14	15

Previous vaginal deliveries	Zero	26	25
	One to two	10	12
	More than two	14	13

Table 2:Complications

Complications		Vacuum (n=50)	Forceps (n=50)
Maternal	Cervical laceration	3	2
	Vaginal laceration	4	3
	PPH requiring blood transfusion	4	5
	Extension of episiotomy	2	3
Perinatal outcome	Jaundice	4	8
	Facial marks and abrasions	0	5
	Scalp injuries	2	3

Discussion

Operative or assisted vaginal delivery (OVD) is a vaginal birth in which an instrument is needed to facilitate the delivery and is accomplished using a vacuum device or forceps. Over 700 different types of obstetrical forceps have been known so far in history. Both vacuum and forceps deliveries require a skilled and experienced obstetrician. There are various types of vacuums available. However, in Sultan Qaboos University Hospital (SQUH) only two types are used. One is the plastic Kiwi OmniCup, and the second is a metal cup. Moreover, outlet forceps are the main type of forceps used. The indications for application are similar for both instruments and are categorized as either for fetal indications (mainly non-reassuring fetal status) or maternal indications, including poor maternal effort and medical conditions that require shortening of the second stage of labor (e.g., cardiac diseases).⁷⁻¹⁰ Hence; the present study aimed to evaluate the maternal and neonatal outcomes associated with the use of vacuum and forceps at a tertiary care centre.

Data of 100 patients was analysed. Out of 100 subjects, vacuum assisted delivery was carried out in 50 cases while forceps assisted delivery was carried out in the remaining 50 cases. Majority of the subjects belonged to the age group of 25 to 35 years. In majority of the cases, subjects gave negative history of previous vaginal delivery. While evaluating maternal complications, cervical laceration, vaginal laceration, PPH requiring blood transfusion and extension of episiotomy were commonly encountered. Arango-Montoya C et al, in a similar previous study, determined the proportion of successful vaginal deliveries in women with prior cesarean section and described maternal and perinatal complications. Among 286 pregnant women included, the percentage of successful vaginal deliveries was 74.5 %. Maternal complications were identified in 3.2 % of vaginal delivery cases and in 6.8 % of cesarean births. Complications occurred in 1.3 % of all live neonates; there were 2 perinatal deaths. An association was found between successful vaginal delivery and a history of prior vaginal delivery; a Bishop score greater than 6; spontaneous labor initiation; and maternal age under 30 years. Vaginal delivery is a safe option to consider in patients with prior

cesarean section, in particular in cases of spontaneous labor initiation or prior vaginal delivery.¹¹

While analysing perinatal outcome, jaundice, facial marks and abrasions and scalp injuries were commonly encountered. In a similar study conducted by Al Riyami, N et al, authors studies records of all women who delivered at SQUH by vacuum or forceps during the study period. They collected data on maternal demographics, maternal and neonatal outcomes, and total number of deliveries. During the study period, 3.8% of deliveries were OVDs. The most common instrument used was the Kiwi OmniCup vacuum device. No significant difference was found between the type of tears and instrument used except perineal tears ($p = 0.003$), which was seen more in the vacuum group, particularly Kiwi OmniCup. Neonatal birth weight ($p = 0.046$) was significantly higher in the metallic vacuum cup group. Thirty-one neonates (6.6%) were admitted to the neonatal intensive care unit, and most were born using Kiwi OmniCup vacuum (67.7%). OVD is an ideal alternative to cesarean section with fewer maternal and neonatal complications in women who cannot deliver spontaneously if performed by a well-trained obstetrician.¹²

Conclusion

Though instrumental vaginal delivery appears to cause complications in both the mothers and babies but most of all these complications are minor in nature.

References

1. Liabsuetrakul T, Choobun T, Peeyananjarassri K, Islam QM. Antibiotic prophylaxis for operative vaginal delivery. *Cochrane Database of Systematic Reviews*. 2017; 8: CD004455.
2. Lumbiganon P, Laopaiboon M, Gülmezoglu M, Souza JP, Taneepanichkul S, Ruyan P, et al. Method of delivery and pregnancy outcomes in Asia: the WHO global survey on maternal and perinatal health 2007-08. *Lancet*. 2010; 375: 490-9.
3. Demissie K, Rhoads GG, Smulian JC, Balasubramanian BA, Gandhi K, Joseph KS, et al. Operative vaginal delivery and neonatal and infant adverse outcomes: population based retrospective analysis. *BMJ*. 2004; 329(7465): 24-9
4. O'Mahony F, Hofmeyr GJ, Menon V. Choice of instruments for assisted vaginal delivery. *Cochrane Database of Systematic Reviews*. 2010 Nov 10; 11: CD005455.
5. Adaji SE, Ameh CA. *Operative Vaginal Deliveries in Contemporary Obstetric Practice, from Preconception to postpartum*. 2012.
6. Jeon J, Na S. Vacuum extraction vaginal delivery: current trend and safety. *Obstet Gynecol Sci*. 2017;60(6):499-505.
7. Muraca GM, Sabr Y, Brant R, Cundiff GW, Joseph KS. Temporal and regional variations in operative vaginal delivery in Canada by pelvic station, 2004-2012. *J Obstet Gynaecol*. 2016;38(7):627-35.
8. Feeley C, Crossland N, Betran AP, Weeks A, Downe S, Kingdon C. Training and expertise in undertaking assisted vaginal delivery (AVD): a mixed methods

- systematic review of practitioners views and experiences. *Reprod Health*. 2021;18(1):92.
9. Liabsuetrakul T, Choobun T, Peeyanjarassri K, Islam QM. Antibiotic prophylaxis for operative vaginal delivery. *Coch Datab Systemat Rev*. 2017;8:004455.
 10. Arango-Montoya C, López-Arroyave MX, Marín-Ríos J, Colonia-Toro A, Bareño-Silva J. Successful vaginal delivery and maternal and perinatal outcomes in patients with a history of cesarean section and labor trial: cross-sectional study. *Rev Colomb Obstet Ginecol*. 2022 Dec 30;73(4):369-377.
 11. Al Riyami, N., Al Salmiyah, M., Khan, D., & Al Riyami, I. (2021). Maternal and Neonatal Outcomes of Operative Vaginal Deliveries at a Single Tertiary Center. *Oman medical journal*, 36(3), e263.