

Immediate Maternal Complications in Vacuum Vaginal Deliveries

Maternal
Complications in
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Deliveries

Roeda Shams and Fazia Raza

ABSTRACT

Objective: To prove that vacuum is safe and can reduce c/section rate if patient selection is proper and conducted by trained obstetrician.

Study Design: Observational retrospective

Place and Duration of Study: This study was conducted at the Department of Obstetrics & Gynaecology, Rehman Medical Institute, Peshawar KPK from July 2017 to December 2018.

Materials and Methods: A total number of 59 instrumental deliveries included. All patients were closely followed throughout labour while maintaining partogram, prolong second stage was considered to be 2-3 hours for nulliparous and 1-2 hours for multiparous women as per ward protocol. Foetal distress was diagnosed either by meconium staining or non re assuring foetal heart rate tracing. Poor maternal effort was highly subjective and more associated with prolong labour.

Results: There were 58 (98.30%) were vacuum and only one was forceps delivery. 26 (44 %) patients were nulliparous and 33 (56%) were multi parous. Most common indication for instrumental deliveries was prolong second stage [n=29(49.1%)] followed by poor maternal effort [n=19(32.2 %)] No serious maternal complications were noticed in all 59 patients. 7 (11.8%) patients went into mild to moderate post-partum haemorrhage. Five (8.4%) patients received vaginal tears. Four (6.7%) patients had perineal tears. Only one patient experienced shoulder dystocia.

Conclusion: Vacuum is not associated with serious immediate maternal complications provided it is conducted by trained obstetrician and in properly selected patients.

Key Words: Vacuum, Maternal, Complications

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INTRODUCTION

Instrumental vaginal delivery which means application of vacuum or forceps in second stage of labour to assist mother in delivering baby is key element of all obstetric care. The current operative vaginal delivery rate in United States is 1-23%.¹ Some have reported it as 10-20%.^{2,3} Although vacuum was invented long before outlet forceps by Dr. James young in 1705, but it fails to gain popularity till 1950 when it was again reintroduced with safety by Dr. Tage malmstrom.⁴ The overall rate of vacuum vaginal delivery is rising in proportion to forceps delivery. Although a good practice at instrumental delivery can reduce risk of c/section but are associated with maternal and foetal morbidity.³

The main indication of instrumental vaginal deliveries are prolong second stage of labour (2-3 hours in nulliparous and 1-2 in multiparous women), non re assuring fetal heart rate testing, shortening of second stage of labour in patients with cardiac vascular and neurological diseases and patients with poor expulsive efforts.⁵ Among these the abnormal CTG and poor maternal efforts are subjective to the observer or care giver.

The main contra indications to the use of instrumental deliveries include foetal osteogenesis imperfecta, bleeding disorder, incomplete cervical dilatation. Unengaged vertex, non-vertex presentation, cephalopelvic disproportion, foetal gestation <34 weeks.⁵

There are three types of instrumental procedures, depending upon station of vertex. Outlet (when foetal skull has reached pelvic floor and scalp visible at introitus), low (when vertex is at +2/+5) and mid-pelvic (when vertex above +2 but below 0).⁷ The selection of instrument is mostly depended upon clinical situation, Position of vertex, and expertise and comfort of care giver.

Vacuum is considered to be more maternal friendly with less maternal morbidity as compared to forceps but on contrary results in more neonatal complications.⁸

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There are 2 main types of cup hard and soft cup. Soft cups are associated with more failure but less maternal perineal tear and foetal scalp injuries.⁹

The major immediate maternal complications associated with instrumental deliveries are perineal tears, vaginal tears, cervical tears, hematomas, post-partum haemorrhage.^{10,11} The late complications includes, urinary and stool incontinence, pelvic pain and pelvic organ prolapse. The purpose of our study is to prove that vacuum extraction is associated with less maternal complications provided patient selection is proper and is conducted by trained person.

MATERIALS AND METHODS

This observational retrospective study was conducted in Rehman Medical Institute over a period of 18 months from 1st July 2017 to 31st December 2018. All patients who had instrumental deliveries were included in the study. Patient records were collected from labour register and record files. Most of the patients were booked but few were referred cases. All patients were closely followed throughout labour while maintaining partogram. prolong second stage was considered to be 2-3 hours for nulliparous and 1-2 hours for multiparous women as per ward protocol. Fetal distress was diagnosed either by meconium staining or non reassuring fetal heart rate tracing. Poor maternal effort was highly subjective and more associated with prolong labour. Instrumental delivery was decided and conducted by consultant. The instrument of choice was mainly soft vacuum cup due to consultant comfort and maternal safety. Only low or outlet vacuum were applied. The data was collected in term of gravidity, whether labour was spontaneous or induced, indication for instrumental delivery, maternal complications and selection of instrument. The data was analysed through SPSS-23.

RESULTS

Total number of instrumental deliveries were 59. out of these 58 (98.30%) were vacuum and only one was forceps delivery. 26 (44 %) patients were nulliparous and 33 (56%) were multi parous. Most common indication for instrumental deliveries was prolong second stage (n=29(49.1%)) followed by poor maternal effort [n=19(32.2 %)], meconium staining [n=10(16.9%)] and to shorten second stage was only in one patient with cardiac problem. Thirty one patients (52.4%) had spontaneous labour and 20(15.25%) were induced. 8 patients had trial of labour after c/section. No serious maternal complications were noticed in all 59 patients. Seven (11.8%) patients went into mild to moderate post-partum haemorrhages, with no need for blood transfusions or surgical intervention. 5(8.4%) patients received vaginal tears. 4(6.7%) patients had perineal tears out of which 2 were first degree and 2 second degree. None had received sphincter injury. Only one patient experienced shoulder dystocia.

Table No.1: Type of instruments (n=59)

Type of Instruments	2017(July – Dec) (n=26)	2018(Jan –Jun) (n=33)
Vacuum delivery	26	32 (98.30%)
Forceps delivery	None	1 (1.70%)

Table No.2: Frequency of parity

Parity	2017(July – Dec)	2018(Jan – Dec)
Primigravidas	20	6 (44%)
Multigravidas	20	13 (56%)

Table No.3: Complications

Complications	2017 (July–Dec)	2018 (Jan –Dec)
Vaginal tears	3	2 (8.4%)
Perineal tears	None	4 (6.7%)
Post-partum haemorrhages	4	3 (11.8%)
Shoulder dystocia	None	1

Table No.4: Frequency of delivery

Variable	2017 July –Dec)	2018 (Jan –Dec)
Spontaneous labour	13	18 (52.4%)
Induced labour	11	9 (15.25%)
VBAC	2	6 (13.5%)

DISCUSSION

Instrumental deliveries are an important component of all obstetric unit worldwide. It is an alternative to caesarean delivery. There is substantial evidence that instrumental deliveries increases maternal morbidity. Vacuum in comparison to forceps has been shown to carry less maternal morbidity. This make it more likely to be opted by obstetrician. In our study the instrument of choice was vacuum with forceps used only in 1 patient. Our findings were consistent with studies in developing countries^{15,16}. While In study of S hehla Raza including 100 patients, forceps deliveries were more frequent (68% as compared to vacuum 32%).²² Another study conducted in Suhel Hospital forceps was commonest mode of delivery (52.4%) followed by vacuum (44.5%) deliveries.¹³

A randomized control trail conducted on 118 patients maternal soft tissue trauma was observed in 36.1%¹¹ in vacuum while it was only 28% in our study. In our study instrumental deliveries were more common in multiparous (56%) as compared to nulliparous (44%). while many other study including Suhel hospital studies have shown increase trend of instrumental deliveries in nulliparous women^{11,14,17,18}. Our study shows no relationship of increase in rate of instrumental delivery with induction of labour. Instrumental deliveries were more common in spontaneous deliveries (52.4%) then in induced labour (15.25%)

The most common indication for instrumental deliveries was prolong second stage(49.1%), followed by poor maternal effort (32.2%) and meconium staining(16.9%). This is not consistent with other studies, where poor maternal effort¹⁹ and foetal distress was common indication.^{20,21}

The most common maternal complication was postpartum haemorrhages (11.8%) followed by vaginal tears (8.4%), perineal tears(6.7%) and with only one patient having shoulder dystocia. Only 1st and 2nd degree perineal tears were observed with no sphincter injuries. No cervical tear was observed. These results were in consistence with many studies showing that no serious maternal complication is associated with ventouse delivery in comparison to forcep.^{8,9,18-20.}

CONCLUSION

Soft vacuum cup is not associated with serious immediate maternal complications provided it is conducted by trained obstetrician and in properly selected patients.

Author's Contribution:

Concept & Design of Study:	Roeda Shams
Drafting:	Fazia Raza
Data Analysis:	Fazia Raza
Revisiting Critically:	Roeda Shams, Fazia Raza
Final Approval of version:	Roeda Shams

Conflict of Interest: The study has no conflict of interest to declare by any author.

REFERENCES

- Clark SL, Belfort MA, Hankins GD, et al. Variation in the rates of operative delivery in the United States. *Am J Obstet Gynecol* 2007; 196:526.e1–e5.
- Johanson RB, Rice C, Doyle M, Anyanwu, Ibrahim J, et al. A randomized prospective study comparing the new vacuum extractor policy with forceps delivery. *Br J Obstet Gynecol* 1993;100:524-30
- John LB, Nischintha S, Ghose S. Outcome of forceps delivery in a teaching hospital: a 2 years experience. *J Nat Sci Biol Med* 2014;5:155-7.
- Malmström T. The vacuum extractor: an obstetrical instrument. *Obstet Gynecol Scand* 1957;36:5–50.
- The American College of Obstetricians and Gynecologists (ACOG), authors Operative Vaginal Delivery. Washington, DC: ACOG; 2000.
- Macones GA, Hankins GD, Spong CY. The 2008 National Institute of Child Health and Human Development workshop report on electronic fetal monitoring: update on definitions, interpretation, and research guidelines. *Obstet Gynecol* 2008; 112:661–6.
- The American College of Obstetricians and Gynecologists (ACOG), authors Operative Vaginal Delivery. Washington DC: ACOG; 1994.
- Johanson RB, Menon BK. Vacuum extraction versus forceps for assisted vaginal delivery. *Cochrane Database Syst Rev* 2000;2: CD000224
- Johanson R, Menon V. Soft versus rigid vacuum extractor cups for assisted vaginal delivery. *Cochrane Database Syst Rev* 2000;2:CD000446.
- Dell DL, Sightler SE, Plauché WC. Soft cup vacuum extraction: a comparison of outlet delivery. *Obstet Gynecol* 1985; 66:624–8.
- Angioli R, Gomez-Marin O, Cantuaría G, O'Sullivan MJ. Severe perineal lacerations during vaginal delivery: the University of Miami experience. *Am J Obstet Gynecol* 2000;182: 1083–5.
- Johanson RB, Heycock E, Carter J, et al. Maternal and child health after assisted vaginal delivery: five-year follow up of a randomized controlled study comparing forceps and ventouse. *Br J Obstet Gynaecol* 1999; 106:544–9.
- Gebre S, Hailu A. Complications of Instrumental Vaginal Deliveries and Associated Factors in Suhl General Hospital, Shire, North-West Tigray, Ethiopia. *J Gen Pract (Los Angel)* 2017;5:300.
- Adaji SE, Shittu SO, Sule ST. Operative vaginal deliveries in Zaria, Nigeria. *Ann Afr Med* 2009;8: 95-9.
- Mapas N, Kalogiannidis I, Masoura S, Diamanti E, Makedos A, et al. Operative vaginal delivery in singleton term pregnancies: Short-term maternal and neonatal outcomes. *Hippokratia* 2009;13:41-5.
- Lumbiganon P, Laopaiboon M, Gülmezoglu AM, Souza JP, Taneepanichskul S, et al. Method of delivery and pregnancy outcomes in Asia: The WHO global survey on maternal and perinatal health 2007-08. *Lancet* 2010; 375: 490-99.
- Jabeen N, Baloch R, Malhi P, Zahiruddin S, Mawani K. Foeto-maternal outcome in instrumental vaginal delivery attending a secondary hospital in Hyderabad (Aga Khan Maternal and Child Care Centre). *J Pak Med Assoc* 2017; 67(12):1833-6.
- Thomas F, Baskett, Cora A, Fanning, D, Christopher Young A prospective observational study of 1000 vacuum assisted deliveries with the Omni Cup device. *J Obstet Gynaecol* 2008.
- Nag U, Burra KC, Kodali M. Comparison of maternal and neonatal outcome between vacuum extraction and forceps deliveries. *IJRRMS* 2013;3(1).
- Giri A, Vaidya A. Maternal and fetal outcome of vacuum assisted delivery. *Postgraduate Medical J Nat Acad Med Sci* 2008;8(1):48-56.
- Zenebe H, Ahadu W, Yibeltal S. Prevalence and Outcome of Operative Vaginal Delivery among Mothers Who Gave Birth at Jimma University Medical Center, Southwest Ethiopia *J Preg* 2018; 7423475:12.
- Raza S, Anjum F, Haider G. Complications of instrumental delivery in primiparus patients and foetomaternal outcome. *Medical Forum* 2017; 57:1-7.