# Maternal and perinatal outcome in instrumental vaginal delivery

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#### Abstract

**Background:** Amidst the continuing critical interest surrounding the ancient art of instrumental delivery an attempt is being made to study the current institutional status of instrumental vaginal delivery, and its maternal and neonatal outcome. **Aims and Objectives:** 1) To study the incidence of instrumental vaginal deliveries as practiced for the common indications. 2) To study the outcome of instrumental vaginal deliveries. **Material and Methods:** This was a prospective interventional study conducted in the study period of 2 Years. Women were recruited only after a written informed valid consent and the mode of attempted instrumental vaginal delivery was in accordance to the operator's analysis and judgment, **Observation:** 1) Maximum Women belong to 20-24 age group 2) 79.5% instrumental vaginal delivery were in primigravida women. 3) Incidence of instrumental vaginal delivery was 1.05%. 4) Foetal distress was the commonest indication both in forceps and vacuum group. 5) The success rate of instrumental vaginal delivery was 95.4%. 6) Episiotomy extension was the commonest complication noted in 10.9% of cases. 7) At one minute 29% babies had Apgar score <7. superficial mark, retinal hemorrhage, hyperbilirubinemia were common neonatal morbidity. 8) NICU admission rate was 10.9%. **Conclusion:** Instrumental vaginal delivery has an on going role in modern obstetrics and is safe and effective mode of delivery in the hand of trained obstetrician when used at right time and with correct technique.

Key Words: vaginal delivery.

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# **INTRODUCTION**

Few chapters in the history of medicine and none in the history of obstetrics are of greater interest than the one which deals with the invention an evolution of the obstetric forceps<sup>1</sup>. Forceps and ventouse are used today quite differently, and in quite different situations, than they were 50 years ago. The purpose of this study to review application of instrumental vaginal delivery and explain the role in current obstetric practice. The ultimate management decision must be that mode of delivery

which will provide the "best" baby with the least risk of maternal morbidity or injury. Instrumental vaginal delivery definitely remains a ray of hope when minor disproportion, prolonged second stage, fatigued mother and distressed unborn are concerned. When spontaneous vaginal delivery does not occur within a reasonable time, a successful operative vaginal delivery trial avoids cesarean section with its antecedent uterine scar and implications for a future pregnancy. The incidence of assisted vaginal delivery shows considerable variation, but the range is usually between 10% and 20% of all deliveries appropriate selection and poroficiency in execution of maneuver remains the unmeasurable variables that often determine the results of trials<sup>2</sup>. Thus, amidst the continuing critical interest surrounding this ancient art, an attempt is being made to study the current institutional status of instrumental vaginal delivery, and its maternal and neonatal outcome.

# **MATERIAL AND METHODS**

This was a prospective interventional study conducted in the study period of 2 Years. Women were recruited only

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after a written informed valid consent and the mode of attempted instrumental vaginal delivery was in accordance to the operator's analysis and judgment. This study has been approved by the institutional Ethical Committee. In the study the type of forceps and vacuum application was low and outlet only, in accordance with amerrican academy of paediatrics and american college of obstetrician and gynaecologist 2002 classification<sup>3</sup>.

#### **Inclusion Criteria**

All cases with indications of instrumental vaginal delivery fulfilling criteria for forceps /vacuum application.

## **Exclusion Criteria**

Suspicion of cephalopelvic disproportion, Fetal head palpable per abdominally, Non cephalic presentations, face and brow presentations, Prematurity (as vacuum is contraindicated.)

# **OBSERVATIONS**

- 1. Following are the observations of for study 1. Maximum women (55%) belong to 20-24 years age group.
- 2. 79.5% instrumental vaginal deliveries were in primigravid women.
- 3. Total 20816 deliveries occurred during this period out of which 220 were instrumental vaginal deliveries. The incidents of instrumental vaginal delivery was 1.09 %.
- 4. Fetal distress was the commonest indication ( 62.72%) both in forceps (68.33%) and vacuum group (56%)
- 5. Four cases in forceps group fail to deliver by instrument, two of this were delivered by vacuum and other required caesarean section. Six cases in

vacuum group failed, four of delivered by forceps application and two delivered spontaneously with good uterine contraction.

- 6. Episotomy extentsion was the commenest complication noted in 10.9 % cases of instrumental vaginal deliveries, followed by perineal tear in 8.18 %.
- At one minute 29% babies had Apgar score < 7, were as Apgar score improved at 5 minutes and only 14 % had Apgar score < 7 at five minutes.</li>
- 8. Superficial mark was significantly more common with forceps deliveries on the other hand retinal haemorrhages were significantly greater with vacuum deliveries.
- 9. NICU admission rate was 10.9 %

 Table 1: Age distribution of Women with Instrumental Vaginal

 Delivery

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Age (Years)	Forcep	os n=120	Vacuu	m n= 100	Total n=220		
	No.	%	No.	%	No.	%	
15-19	16	13.3	06	6	22	10	
20-24	72	60	49	49	121	55	
25-29	24	20	36	36	60	27.2	
30-34	08	6.6	09	9	17	7.7	
Total	120	100	100	100	220	100	

 Table 2: Parity wise Distribution of Women with Instrumental

vaginai Delivery									
Parity -	Forcep	Forceps n=120		m n= 100	Total n=220				
	No.	%	No.	%	No.	%			
0	96	80	79	79	175	79.5			
1	16	13.3	07	7	23	10.4			
2	06	5	06	6	12	5.4			
3	02	1.6	04	4	06	2.7			
>4	0	0	04	4	04	1.8			
Total	120	100	100	100	220	100			

Table 3: Indication of Instrumental Vaginal Deliveries									
Indication	Forcep	s n=120	Vacuum	n= 100	Total	Total n=220			
indication	No.	%	No.	%	No.	%			
Fetal distress	82	68.3	56	56	138	62.72			
Maternal exhaustion	12	10	26	26	38	17.2			
Prolonged 2 <sup>nd</sup> stage	14	11.66	12	12	26	11.81			
Pre-eclampsia, Eclampsia	6	5	4	4	10	4.54			
Heart disease	6	5	2	2	8	3.634			
Total	120	100	100	100	220	100			

Table 4: Immediate Material Morbidity in Instrumental Vaginal Deliveries

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Motornal Morkidity	Forceps n=120		Vacuum n= 100		Total n=220		P value	
Waternal Worbluity	No.	%	No.	%	No.	%		
Episiotomy extension	17	14.16	7	7	24	10.9	0.089	
Perineal tear								
Total	13	10.83	5	5	18	8.18	0.11	
2 <sup>nd</sup> degree	9	7.5	3	3	12	5.45	0.11	
3 <sup>rd</sup> degree	2	1.66	2	2	2	4		
4 <sup>th</sup> degree	2	1.66	0	0	2	0.9		
Post partum	5	4.16	2	2	7	3.18	0.45	

Hemorrgage							
Requirement of blood transfusion	7	5.83	3	3	10	4.54	0.35
Vaginal laceration	8	6.66	2	2	10	4.54	0.11
Vaginal hematoma	1	0.83	0	0	1	0.45	1
Cervical tear	-	-	1	1	1	0.45	0.45

Table 5: Neonatal Morbidity in Instrumental Vaginal Deliveris									
Necretel Merhidity	Forceps n=120		Vacuum	n= 100	Total n=220		P value		
Neonatal Morbidity	No.	%	No.	%	No.	%			
Superficial mark	24	20	2	2	26	11.81	0.00		
Retinal Homorrhage	4/50	8	12/50	24	16/50	32	0.02		
Hyperbilirubinemia Requiring phototherapy	9	7.5	15	15	24	10.9	0.07		
Irritabiltiy	8	6.66	12	12	20	9.09	0.17		
Sucking difficulty	8	6.66	10	10	18	8.18	0.36		
Intracranial USG Done	11		16	-	27	-	-		
Abnormality Detected	0	-	0	-	0	-	-		
Sepsis	1	0.83	2	2	3	1.36	0.59		
Cephalhematoma	0	0	2	2	2	0.9	0.2		
Facial palsy	2	1.66	0	0	2	0.9	0.5		
convulsion	2	1.66	0	0	2	0.9	0.5		

#### **DISCUSSION**

Instrumental vaginal deliveries was more common in primigravida (79.5%) and in age group of 20-24 years. the incidence of instrumental vaginal deliveries was higher in primi gravid women probably because of rigid perineum, minor degree of relative cephalo pelvic disproportion and uterine inertia. In the present study, fetal distress was the most common indication of instrumental vaginal delivery (62.72%). Williams et  $al^4$ noted that 55% of forcep deliveries and 48% of vaccum assisted deliveries were for fetal distress. Episiotomy extensions and perineal tears were the commonest complications encountered in the present study. Episiotomy extensions occurred in 24 cases (10.9%), perineal tears was present in 8.18% cases. P.K. Devi<sup>5</sup> found perineal trauma in 9% of outlet forceps. Dell et al recorded a 22% rate of perineal trauma in forceps group versus 33% in vacuum group. In the present study there were 10 cases of vaginal lacerations, 8 in forceps group (6.66%) and 2in vacuum group (2%). Dell et al reported a stastically significant increased incidence of vaginal laceration in forcep group37.7% versus 5.5% in vacuum group. Instrumental vaginal delivery is a risk factor for development of postpartum haemorrhage, both atonic (because of sudden decompression of uterus), traumatic (due to associated local perineal tauma) and mixed. In the present study the incidence of pph in forceps and vacuum group was 4.16% and 2% respectively. The difference was not statistically significant. Accordingly there was need of blood transfusion in 5.837% of forcep deliveries and 3% of vacuum ones. Williams et al reported a

11% incidence of pph in his study of 100 cases of instrumental vaginal deliveries. In the present study, the Apgar score of <7at 1 minute was present in 29.09% of babies of instrumental vaginal deliveries, 30% in forceps group and 28% in vacuum group. Williams et al had incidence of 10% in forceps group and 6% in vacuum group. The higher incidence of foetal distress as indication and also an already compromised fetus at admission due to late referrals could be the Contributing factor for low Apgar score in the present study. 10% babies in the vacuum group and 6.6% in the Forcep group exhibited suckling problems in the present study. excessive irritability was present in 12% and 6.6% of vacuum and forceps delivered babies respectively. Facial palsy was seen in 2 cases of forceps delivered babies in the present study; same as reported by Johanston etal<sup>6</sup>. There was no case of Erbs palsy in the present study. convulsions were seen in 2 babies of forceps group. Neonatal hyperbilirubinemia and hence need of phototherapy was reported more with vacuum delivered babies (15% vs 7.5% in forceps deliveries).55% of vacuum delivered neonates vs none in the forceps group required phototherapy in the study of Dell  $etal^7$  as compared to 20% and 10% by Williams et al. Forcep mark was the commonest morbidity observed in the present study, in about 20% cases. Dell et al reported an incidence of 71% of superficial marks in the forcep group versus 41% in the vaccum group.

## **CONCLUSION**

Instrumental vaginal delivery has an ongoing role in modern obstetrics and is a safe and effective mode of

delivery in the hands of trained accoucheur, when used at right time and with the correct technique.

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