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Maternal and Neonatal outcomes of Operative Vaginal Deliveries at Government Victoria Hospital, Visakhapatnam

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ABSTRACT: This research paper is about to assess the maternal and neonatal outcomes of operative vaginal deliveries at Government Victoria Hospital, Visakhapatnam. The proportion of operative vaginal deliveries was assessed along with the proportion of maternal and neonatal outcomes of kiwi cup vacuum and forceps deliveries.

KEYWORDS: Maternal and Neonatal, Kiwi cup, Forceps

I. INTRODUCTION:

Operative or assisted vaginal delivery (OVD) is a vaginal birth in which an instrument is needed to facilitate the delivery and is accomplished by the use of vacuum device or forceps. Both vacuum and forceps delivery require a skilled and experienced obstetrician. However, in Government Victoria Hospital we use plastic kiwi Omni cup and outlet forceps commonly. The indication for application is similar for both instruments except a few and are being categorized as either for fetal indications mainly non-reassuring fetal status or maternal indications like poor maternal efforts and medical conditions that require shortening of the second stage of labor. Ex: Cardiac diseases.

The internationally modern obstetric practice has witnessed an increased caesarean section rate with high concerns. It carries risks to both the woman and her baby especially if it is performed during 2nd stage of labor. Thus results in complications in future pregnancies such as an increased risk of preterm or miscarriage. This increase is multifactorial but mainly attributed to failed operative deliveries due to a lack of clinical experience and training and a lack of support from senior obstetricians. Hence operative vaginal deliveries are of important choice for decreasing birth rates by caesarean section and its related morbidities[4].

II. METHODS, INCLUSION & EXCLUSION CRITERIA:\

A retrospective cohort study was conducted in the department of Obstetrics and Gynaecology at Government Victoria Hospital with a sample size of 222 patients from October 2020 to October 2021. The hospital information system was utilized to obtain records of all women who delivered at Government Victoria Hospital, Visakhapatnam by vacuum or forceps during the study period.

Data included - maternal demographics, maternal and neonatal outcomes, and the total number of deliveries. Womenwith missing data and failed procedures were excluded from the study.

During this study: Singleton pregnancy, Live Fetus, and Cephalic presentation are included; while Multiple pregnancy, Intrauterine fetal demise, Anomalous baby, and Malpresentation are excluded[3].

III. RESULTS:

1. Maternal demographic data:

During the study period, the total number of deliveries was 5842, out of which 222 were operative vaginal deliveries accounting for 3.8% of deliveries. The mean age of the women who delivered by kiwi cup vacuum, and forceps were 27.4 years and 24.6 years respectively with no statistical difference. There were no statistical differences noted in the mean gravidity, parity, and BMI in the two groups.

Most women delivered between 37 and 40 weeks of gestation and that was statistically significant in the two groups ($p = 0.001$) - table 1.

The majority of the women in the study presented without significant medical history. The most common indication for operative vaginal delivery was for fetal bradycardia 54.5% followed by non-reassuring CTG 22%.

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Table 1: Maternal demographics for operative vaginal deliveries

CHARACTERISTICS		KIWI VACUUM	FORCEPS	p-value
Maternal age	Years (mean±SD)	27.4 ± 4.2	24.6 ± 5.1	0.093
Gravidity	Primigravida Multigravida	63 64	37 41	0.818
Parity	Nulliparous Multiparous	74 53	45 32	0.996
Gestational age (weeks) at delivery	< 37 weeks 37-40 weeks >40 weeks	8 110 9	2 68 7	**0.001**
BMI (kg/m^2)*		28.1	30.1	0.103

Table 2: Indications for operative vaginal deliveries

INDICATION	KIWI VACUUM (46)	FORCEPS (176)	TOTAL	%
Non - reassuring CTG*	7	42	49	22.07
Fetal bradycardia	9	112	121	54.5
Poor maternal effort	16	14	30	13.51
Shorten the second stage	14	8	22	9.9

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2. Maternal outcomes:

Table 3 represents the main maternal outcomes. The highest mean for estimated blood loss was 366.2 ml and was noted with the use of a kiwi cup vacuum. Episiotomy was performed in 85.9% of the women.

All types of perineal tears were noted more in women who had a vacuum than forceps delivery and that was statistically significant p = 0.003. Cervical tears were noted in 1.5% and vaginal tears were noted in 16.7% of women with no differences noted with the type of instrument used.

Table 3: Maternal outcomes of operative vaginal deliveries

MATERNAL OUTCOMES			TYPE OF INSTRUMENT n(%)		TOTAL	%	p-value
			KIWI VACUUM	FORCEPS			
Estimated Blood Loss*(ml) (mean ± SD)			366.2±250.3	344±155.8	358.6±218.9		0.522
Episiotomy n(%)		**Yes**	35 (18.3)	25 (11.13)	191	85.9	0.522
		Type 1	23 (60.5)	15 (39.5)	38	19.9	**0.003**
		Type 2	6 (54.5)	5 (45.5)	11	5.76	
		Type 3	3 (60)	2 (40)	5	2.62	
	Tears	**Type 4**	1 (100)	0	1	0.52	
	Cervical n(%)		2 (66.7)	1 (33.3)	3	1.57	0.857
	Vaginal n(%)		31 (96.8)	1 (3.2)	32	16.7	0.798

3. Neonatal outcomes:

In Table 4, the mean birth weight for neonates was 3.0 kg and there was a significant difference between instruments used (p = 0.046) with the larger weight noted with kiwi Omnicup.32 (6.9%) neonates were admitted to the neonatal intensive care unit. Jaundice was present in 5.9% of neonates. There were injuries in 3.9% of neonates out of a total number of instrumental deliveries. The mean Apgar score at 1 minute was 8 while at 5 minutes was 10.

Table 4: Maternal outcomes of operative vaginal deliveries

OUTCOMES	KIWI VACUUM	FORCEPS	TOTAL	%	p-value
BW*(kg) (mean±SD)	3.0±0.5	2.8±0.6	3±0.5		0.046
Admission to NICU n(%)	22 (66.7)	10 (33.3)	32	6.9	0.243
Jaundice n(%)	9 (60)	6 (40)	15	5.9	0.537
Injuries n(%)	5 (55.5)	4 (44.5)	9	3.9	0.177

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Apgar score at 1 minute (mean±SD)	8.4±1.3	8.4±1.2	8.4±1.3		0.999
Apgar score at 5 minutes (mean±SD)	9.6±0.7	9.7±0.9	9.6±0.9		0.701

IV. DISCUSSIONS:

Operative vaginal deliveries are an important choice for decreasing birth rates by caesarean section and its related morbidities and with an incidence of 3.8% of total births in my study. Most women who had OVD's in our cohorts were young and overweight. Fetal bradycardia and non-reassuring CTG were the most common indications for vacuum and forceps deliveries respectively[1].

Estimated blood loss ranged between 100 to 2500 ml with the highest noted with the use of kiwi cupvacuum. Majority of tears presented with kiwi cup vacuum. In the study, no significant difference was

found between the type of tears and the instrument used except with perineal tears (p =0.003). There was an association between the instrument used and the degree of perineal tears. Majority of tears presented with the kiwi cup vacuum group[5].

Neonatal birth weight was larger in the vacuum group.32 neonates were admitted to NICU & Neonatal jaundice was noted in 5.9%. The low incidence in our study could be explained by less neonatalcomplication rates, skilled obstetricians, good nutrition of women who regularly breastfeed their infants. 9

neonates had injuries, which was mostly caput succedaneum especially when applying kiwi cup vacuum (55.5%). The result of the study can be used in counselling women who achieve full dilatation at a low station but are unable to deliver spontaneously[6]. Moreover, this information can be used to support the practice of operative vaginal delivery as an ideal alternative to immediate caesarean delivery from a low station and thus may help lower the rate of primary caesarean delivery by active training of the obstetricians.

V. CONCLUSION:

Operative vaginal deliveries should be performed by an experienced obstetrician for better perinatal outcomes. It accounted for 3.8% of deliveries at Government Victoria Hospital, Visakhapatnam, and resulted in good outcomes. Though complications like perineal tears can be minimized but cannot be completely controlled even in most experienced hands. Most of the neonatal outcomes were similar in both types of instrumental deliveries[2]. The safety of the instrument is dependent mainly on the operator's skills and correct selection of patients. Enhanced training of obstetricians in instrumental delivery may aid in further reducing the prevailing caesarean section rates.

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