A REVIEW OF VACUUM DELIVERIES AT KOMFO ANOKYE TEACHING HOSPITAL, KUMASI

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SUMMARY

Objective: To review vacuum deliveries conducted at Komfo Anokye Teaching Hospital (KATH) Kumasi, over a one year period.

Methods: The labour records of parturients who reported at KATH between 1st January and 31st December 2000 were retrieved. The records of those who had vacuum deliveries were reviewed for baseline practices and outcomes.

Results: Three hundred and forty-one (341) patients out of 11,122 were delivered by vacuum extraction giving an incidence of 3.1%. There was a failure rate of 6.4%.

The main indication for the procedure was Prolonged 2nd stage of labour which occurred in 37.2% of parturients. The mean birth weight was 3.1kg (S.D 0.58kg).

Mild asphyxia as shown by Apgar score of 4-6 at one minute was found in 16.4% of babies. Maternal morbidity was low and limited to perineal injuries.

Conclusion: The use of vacuum extraction as a means of assisted delivery was found to be safe with reference to both maternal and fetal outcomes.

Keywords: Vacuum extraction, 2nd stage of labour, safety

INTRODUCTION

Vacuum extraction, as a means of effecting delivery, has been documented since the 18th century[1]. Since Yonge described its use in 1705, it has undergone several modifications, particularly by Simpson[2] and Malmstrom[3].

Its use is more popular in Europe and Scandinavia, but less so in the United States[4]. Its use in Ghana is very minimal. A national incidence is quoted as 0.5%[5].

As part of measures to make pregnancy and delivery safer for women in the country, the Ghana Health Service has been pursuing the policy of equipping health facilities with emergency obstetric services. Included in skills being imparted to health workers is that of vacuum delivery. This is known to be a safe aid to delivery provided certain criteria are met.

In Komfo Anokye Teaching Hospital, there exists a set of strict criteria with the use of vacuum extraction (VE). These include

1. cephalic presentation
2. station of at least +1
3. No gross disproportion
4. cervix at least 9.0cm dilated
5. moulding not more than +2

The purpose of this review was to find out the practices as pertains in a teaching hospital as well as safety of the instrument if used judiciously by following the above criteria.

METHOD

The labour records of women who were delivered by vacuum extraction during the year 2000 were retrieved from the records unit of the hospital.

A total of 11,122 deliveries were recorded between 1st January and 31st December 2000 in the Department of Obstetrics and Gynaecology, KATH. Of these, 341 were by vacuum extraction. All vacuum extractions were performed by doctors, mainly residents at various stages of training.

The age, parity, indication for the vacuum extraction (VE), birth weight, sex of the baby, APGAR scores and maternal and fetal injuries were recorded. Data analysis was done using Epi-Info 2000.

RESULTS

There was no indication in the records as to whether the labours had been spontaneous or induced. In all cases the silastic cup was used.

Three hundred and fifteen (315) records were available for analysis. The remaining 26 had incomplete data and were not included. There were 22 failures, giving a failure rate of 6.4%. There was no maternal death associated with any of the vacuum delivery.

Table 1 Age distribution

Age (years)	Number	%	Cum %
< 20	35	11.2	11.2
20-24	96	30.4	41.6
25-29	70	22.2	63.8
30-34	55	17.4	81.2
35-39	36	11.6	92.8
≥ 40	23	7.2	100.0
	315	**100**	**100.0**

The modal age group was 20-24 years. Over half of all patients were between 20 and 29 years.

Table 2 Parity distribution

Parity	Number	Percent	Cum %
0	116	36.9	36.9
1-2	95	30.0	66.9
3-4	42	13.3	80.2
5-6	29	9.2	89.4
7-8	18	5.8	95.2
≥ 9	15	4.8	100.0
	315	**100.0**	

Table 3 Indications

Indication	Number	Percent
Maternal exhaustion	34	10.9
Fetal distress	48	15.4
Mild CPD	16	5.1
Medical condition	26	8.2
Occipito-posterior position	14	4.4
Poor maternal effort	59	18.8
Prolonged 2nd stage	118	37.2
	315	**100.0**

Over a third of all vacuum extractions done were due to prolonged 2nd stage. This is defined here as non-delivery after one hour in nulliparas and 30minutes in multiparas[6], and which is not due to mild disproportion, occipito-posterior position, maternal exhaustion or poor effort.

Medical conditions constituted a little over 8% and refer to hypertensive states of pregnancy and others such as severe anaemia and cardiac diseases.

The rest of the results as presented below excluded the vacuums that failed.

Table 4 Birth weight

Weight (kg)	Frequency	Percent
< 2.5	58	19.8
2.6-3.0	77	26.3
3.1-3.5	96	32.8
3.6-4.0	38	12.9
≥ 4.1	24	8.2
	293	**100.0**

The mean birth weight was 3.1kg with a standard deviation of 0.58kg. There were 171 males (58.4%) and 122 females (41.6%).

Table 5 Weight stratified by sex

Weight (kg)	Male %	Female %	Total
< 2.5	35 (60.3)	23 (39.7)	58
2.6-3.0	46 (59.7)	31 (40.3)	77
3.1-3.5	48 (50.0)	48 (50.0)	96
3.6-4.0	27 (71.0)	11 (29.0)	38
≥ 4.1	15 (62.5)	9 (37.5)	24
	171	**122**	**293**

There was a preponderance of males in all weight groups except the modal group of 3.1-3.5kg.

Table 6 Apgar scores

Score	Apgar at 1 min	Apgar at 5 min
0-3	9 (3.1%)	2 (0.7%)
4-6	48 (16.4%)	21 (7.2%)
7-10	236 (80.5%)	270 (92.1%)
	293	**293**

Seven (7) of the babies were stillbirths. Twenty mothers sustained 1st and 2nd degree perineal tears. Eight had vaginal lacerations whilst 2 had cervical tears.

One hundred and thirty-five (45.8%) of parturients had episiotomies performed on them. None of the mothers given episiotomy sustained any genital injury.

Seventeen of the babies sustained scalp lacerations, 11 had cephalhaematomas whilst 3 sustained humero/clavicular fractures.

DISCUSSION

In skilled hands the vacuum extractor is a useful aid to the management of the 2nd stage of labour. Its use has improved ever since it was first used by Yonge in the 17th century.

This study shows an incidence of 3.1% vacuum deliveries in Komfo Anokye Teaching Hospital (KATH) which is about 6 times higher than the national average of 0.5%. This is not unexpected since KATH is a tertiary referral hospital.

A failure rate of 6.4% was recorded. This compares favorably with other studies where failure rates have been between 0.7-10%[4,6] though a few others have failure rates much higher[7,8]. All the vacuum extractions that failed were delivered by Caesarean section since forceps delivery, the alternative is hardly practised in the hospital. Moreover, serious concerns have been raised about using forceps after failed attempts at vacuum extraction[4].

About two-thirds of parturients were of low parity, 0-2. More than half were below 30 years.

The commonest indications for vacuum delivery were prolonged 2nd stage and poor maternal effort. These constituted 56% of the procedures. Fetal distress was suspected in 15.4%.

Seven of the babies were fresh stillbirths, giving a neonatal mortality incidence of the procedure as 2.3%. The hospital's neonatal mortality rate for the same period was 6.1/1000 live births. Their demise had not been diagnosed before the vacuum extraction. Mild asphyxia as indicated by Apgar score of 4-6 at one minute was found in 16.4% of the babies.

The mean weight of babies delivered by vacuum was 3.1kg (SD 0.58) which is higher than the mean weight of spontaneous vaginal deliveries of 2.9kg in KATH, but less than that of babies delivered by caesarean sections, which is 3.2kg for the hospital[9].

Almost 60% of the babies were males and dominated all weight groups except the modal weight of 3.1-3.5kg where there were equal numbers of males and females.

As recommended by the WHO, the hospital practices the policy of selective episiotomy. In this review, 45.8% of the women were given episiotomies as judged by need. This compares favorably with an incidence of 47.9% found by Morhe et al[10]. The rest (54.2%) were delivered without the aid of episiotomies.

The hospital has an episiotomy rate of 17.4% for all vaginal deliveries[10]. No anaesthesia was used except local infiltration with xylocaine in parturients who had episiotomies.

Maternal injuries were few. There were 20 (6.9%) with various degrees of perineal tears, 8 (2.7%) with vaginal lacerations and 2 (0.4%) with cervical lacerations. There was no maternal death associated with the procedure.

The major birth injury was scalp abrasion. Together with cephalhaematoma, a 9.5% incidence of birth injuries was noted. There were no records of any injuries beyond what was immediately recognized at or soon after birth.

CONCLUSION

Vacuum deliveries have been a great help in the second stage in Komfo Anokye Teaching Hospital, without which over 3% of the deliveries might have been subjected to caesarean sections.

Maternal and fetal outcomes have been good as evidenced by the low incidences of neonatal and morbidity and mortality. No maternal mortality was associated with the procedure and morbidity was quite low.

Bearing in mind the fact that KATH trains house officers and residents who are later posted to the district hospitals, it is good practice that these doctors are being trained and exposed to the use of the vacuum extractor applying a set of strict criteria for patient selection.

This is in line with The Ghana Health Service's policy of equipping district doctors and midwives with emergency obstetric skills which include the performance of vacuum deliveries.

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