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RESEARCH ARTICLE

A COMPARATIVE STUDY OF SHORT TERM MATERNAL AND NEONATAL OUTCOME OF OPERATIVE VAGINAL DELIVERY AND SPONTANEOUS VAGINAL DELIVERY

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ABSTRACT

Background: Off late there have been a gradual decline in instrumental delivery and a rise in cesarean births. This may reflect a perception of the practitioner that caesarean section has less morbidity. However this has not been supported by evidence. Instrumental delivery could potentially reduce not only the risks associated with caesarean delivery but reduce the cost of obstetric care.
Aims and Objectives: The present study was aimed at to compare short term maternal and neonatal outcome of operative vaginal delivery and spontaneous vaginal delivery.
Material and Method: The present study was conducted on 256 subjects admitted in labour ward of tertiary care teaching institute KNH Shimla. Subjects were divided in two groups. Group-I included subjects who underwent operative vaginal delivery, either forceps or ventouse and Group-II included subjects who underwent spontaneous vaginal delivery. The Maternal outcome measures were extension of episiotomy, 3rd or 4th degree perineal tears, cervical tears, multiple vaginal lacerations and vulval haematomas, post partum hemorrhage. Neonatal outcome measures were APGAR at 1and 5 minute, any injuries, admission to neonatal intensive care unit.
Statistical measures: Results were analyzed with Chi square and Student't test and odd ratios and confidence intervals were calculated using SPSS v16 and open epi softwares.
Results: Maternal complications, extension of episiotomy (X^2 5.69 P value 0.01 OR 2), multiple vaginal lacerations (X^2 5.48 P value 0.01 OR 5.32 ,cervical tears, post partum hemorrhage were significantly more in group-I. APGAR less than 7 at five minute was observed in 2.3% in group-I and 0.79% in group-II. Neonatal injuries, scalp abrasion, facial bruises, cephalhematoma were significantly more in group-I ($p < 0.05$).
Conclusion: Operative vaginal delivery appears to cause more complications in neonates and mothers, but most of these complications were minor in nature. The experienced operator can anticipate many satisfying occasions when the forceps and ventouse may solve some of his/her perplexing problems. Obstetrician must, therefore, make every effort to retain these skills, to modify and improve them in every possible way.

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INTRODUCTION

Operative vaginal delivery refers to a delivery in which the operator uses forceps or a vacuum device to assist the mother in transitioning the fetus to extrauterine life. (John, 2008) The instrument is applied to the fetal head and then the operator uses traction to extract the fetus, typically during a contraction while the mother is pushing. The termination of labour by forceps or ventouse is indicated in any condition threatening mother or fetus provided it can be accomplished safely. The indications for operative vaginal delivery are either fetal or maternal. These indications includes prolonged second stage of labor, shortening of the second stage for maternal benefit, and suspicion of immediate or potential fetal compromise. Off late there have been a gradual decline in instrumental delivery. This may reflect a perception of the practitioner that caesarean section has less morbidity. However this has not been supported by evidence (Alfredo and Luis, 2011). Instrumental delivery could potentially reduce not only the risks associated with caesarean delivery but reduce the cost of obstetric care. In view of all this the present study was planned to compare maternal and neonatal outcome of operative vaginal delivery and spontaneous vaginal delivery.

Aims and Objectives

The present study was aimed at to compare short term maternal and neonatal outcome of operative vaginal delivery and spontaneous vaginal delivery.

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MATERIALS AND METHODS

The present prospective study was conducted in the department of obstetrics & gynecology, Kamla Nehru State Hospital for Mother & child, IGMC Shimla from 1st June 2012 to 31st May 2013. Subjects were divided in two groups. Group-I included 126subjects who underwent operative vaginal delivery, either forceps or ventouse and Group-II included 126consecutive subjects comparable with regard to age, parity, and gestation subjects who underwent spontaneous vaginal delivery. Inclusion criteria was, singleton live pregnancy with cephalic presentation, no major congenital malformations, full dilatation of cervix, membranes ruptured, Vertex below +2, no cephalopelvic disproportion. Exclusion Criteria were, fetal distress in first stage of labor, Placenta previa or unexplained vaginal bleeding, malpositions, contracted pelvis & breech delivery. Detailed history of subjects was taken with special reference to obstetrics history both present and past. Gestational age at the time of admission to labour room was calculated from the last menstrual period. Past and family history was taken. Duration of labour pains, rupture of membranes if present was recorded at the time of admission to labour room. Detailed general physical, systemic and obstetrics examination was done and labour was managed partographically. Mode of delivery, period of gestation at delivery, was recorded. Subjects who underwent operative vaginal delivery, informed consent was taken and indication for forceps / ventouse was recorded. Third stage of labour was actively managed and amount of blood loss noted. The Maternal outcome measured were extension of episiotomy, 3rd or 4th degree perineal tears, cervical tears, multiple vaginal lacerations, vulval hematomas & post partum hemorrhage. Neonatal outcome measured were APGAR at 1and 5 minute, injuries & admission to neonatal intensive care unit.

Statistical measures

Results were analyzed with Chi square and Student' t test and odd ratios and confidence intervals were calculated using SPSS v16 and open epi softwares.

RESULTS

Results are shown in Table 1-3. There was no significant difference in maternal age, gestational age at delivery and birth weight ($p > 0.05$). The 2nd stage of labour was significantly longer in group-I. Blood loss was significantly more in group-I($p < 0.05$). Mean APGAR score was lower in group-I($p< 0.05$). Maternal and neonatal stay was significantly longer in group-I($p <0.05$). Extension of episiotomy, multiple vaginal lacerations and post partum hemorrhage was significantly more in operative vaginal delivery group($p < 0.05$).Neonatal injuries, scalp abrasion, facial bruises, cephalhematoma were significantly more in group-I ($p < 0.05$).

DISCUSSION

When an operative intervention is required in the second stage of labor, the options, risks, and benefits of instrumented delivery must be considered and weighed up. Therefore an instrumented vaginal delivery deserves as much consideration, thought, and preparation as its alternative. The safety and success of these procedures hinges on a systematic approach to the issue. None of the studies on operative vaginal delivery, published off late, have documented increased risk of perinatal mortality and even maternal morbidity is acceptably low. In the present study, on comparing the base line characterstics, the mean maternal age (Table -1) was comparable with study by Carmona *et al*. (1995). The mean gestational age was 38.66

Table 1. Mean ± SD of various parameters in study and control groups

	Group-I (n=126)	GroupII (n=126)	Statistical significance
Age	26.36±4.3	25.96±4.3	P value 0.47 t 0.72 df 250 CI 95% (-0.68 , 1.48)
Gestational age	38.66±0.81	38.62±0.80	t 0.38 df 250 P value 0.74 CI95% (-0.16 , 0 .62)
Duration of 2nd stage	58.16±30.2	34.33±6.83	t 6.3 df 250 p value 0.00 CI95% (5.14,10.02)
Blood loss	370.74 ± 95.2	170.6 ± 34.7	t 24.45 df 250 p value 0.00 CI 95%(113.20 ,- 108.43)
APGAR at 1 minute	6.46± 0.82	6.97 ±0.11	t-6.39 df 250 p value 0.003 CI 95% (-0.61, -0.32)
APGAR at 5 minute	8.64 ± 0.72	8.99 ± 0.72	t -2.2 df 250 p value 0.01 CI 95%(-0.276 - 0.022)
Birth weight	2.76 ± 0.28	2.83 ± 0.85	t -1.94 df 250 p value 0 .05 CI 95% (-1.34 -0.001)
Fall in HB	1.5 ± 0.64	0.6 ± 0.32	t 10.9 df 250 p value 0.00 CI 95%(0.52, -0 .75)
Maternal postnatal stay	2.20 ±0.67	2.04 ±0.32	t 2.40 df 250 p value 0.01 CI 95%(0.029 , 0.28)
Neonatal stay	2.31 ±0.638	2.05± 0.279	t 4.22 df 250 p value 0.00 CI 95%(0.14 , 0.38)

Table 2. Maternal morbidity

Morbidity	Group-I N=126 7(%)	Group-II N= 126(%)	Statistical significance
Extension of episiotomy	39(30.9)	11(8.7)	X2 19.56 P value 0.00 OR 4.68
Multiple Vaginal lacerations	15(11.9)	0	X^2 15.95 P value 0.00006
Cervical tear	6(4.76)	0	X^2 6.14 P value 0.01
3^0perineal tear	3(2.3)	0	X^2 3.03 P value 0.08
Periurethral tear	5(3.9)	0	X^2 5.1 P value 0.02
Vulval hematoma	4(3.17)	1(1.5)	$X^2$1.83 P value 0.17 OR 4.09
Post partum hemorrhage	15(11.9)	4(3.17)	X^2 6.88 P value 0.008 OR 4.12

Table 3. Neonatal morbidity

	Group –I N=126 (%)	Group-II N=126(%)	Statistical significance
Scalp injury	11(8.7)	0	X^2 11.5 P value 0.0006
Facial injury	10(7.9)	0	X^2 10.41 P value 0.001
Cephalhaematoma	11(8.7)	0	X^2 11.5 P value 0.0006
Jaundice	11(8.7)	2(1.5)	X^2 6.57 P value 0.01OR 5.93
Convulsions	3(2.3)	0	X^2 3.03 P value 0.08
ICH	2(1.6)	0	X^2 2.016 P value 0.15
Admission in NICU	**30(23.8)**	9(7.14)	$X^2$14.69 P value 0. 0001 OR 4.33

wks and 38.62 weeks in group –I and group-II respectively, which is comparable with the study conducted by Carmona *et al*. (1995) who reported mean gestational age of 40.1 weeks in spontaneous and forceps group. In the present study episiotomies were given to all subjects in group-I and 80 % subjects in group-II. There were 30.9% and 8.7% extension of episiotomy in group-I and group-II respectively. Singhal *et al*. (2010) reported 19% and 7% extension of episiotomy in operative and spontaneous delivery group. In the study conducted by Johanson *et al*. (1993) extension of episiotomy was observed in 33.8 % subjects in operative vaginal delivery group which is comparable to our study. Multiple vaginal lacerations were observed in 11.9% subjects in group-I and none in group-II. In the study conducted by Gardella *et al*. (2001) vaginal lacerations were observed in 10 % and 2.33% subjects in operative and spontaneous vaginal deliveries respectively which is comparable to our study. In our study cervical tears were observed in 4.76% subjects in group-I and none in group-II ($p < 0.05$). Singh *et al*. (2011) in their study observed cervical tears in 6.6% subjects in operative vaginal deliveries which is comparable to our study. PPH was observed in 11.9% and 3.7% subjects in group-I and group-II($p < 0.05$). Shihadeh *et al*. (2001) in their study reported PPH in 6.14% subjects in operative vaginal deliveries which is lower than the present study, reason for which could be small sample size in our study.

The mean birth weight in group –I and group-II was 2.76 and 2.83 kgs respectively. In the study conducted by Singhal *et al*. (2010) mean birth weight of neonates was 2.77 and 2.76 kgs in operative and spontaneous vaginal delivery group respectively which is comparable to our study. In present study mean APGAR score at 1 and 5 minute was 6.46 and 8.64 in group –I respectively and 6.97 and 8.99 in group-II respectively. In the study conducted by Singhal *et al*. (2010), mean APGAR score at 1 minute was 6.64 and 7.27 in group-I and group-II respectively ($p <0.05$) and was 8.05 and 8.39 respectively at 5 minute ($p < 0.05$) which is comparable to our study. The difference may not be related to mode of delivery but due to the operative intervention done for fetal distress. In the present study cephalhematoma was observed in 8.7% subjects in group-I and none in group-II ($p < 0.05$). Demissie *et al*. (2004) in their study observed cephalhematoma in 8.36 % and 1.7% subjects in operative and spontaneous delivery groups which is comparable to our study. Neonatal jaundice was observed in 8.7% and 1.5% subjects in group-I and group-II respectively ($p< 0.05$). Achanna *et al*. (1994) in their study observed neonatal jaundice in 9.5% subjects in operative vaginal deliveries which is comparable to our study. Admission to NICU was observed in 23.8% and 7.14% subjects in group-I and group –II ($p < 0.05$). In the study conducted by Singhal *et al*. (2010) 32% neonates in operative vaginal delivery group and 7 % in spontaneous vaginal delivery group were admitted to NICU ($p < 0.05$) which is comparable to our study.

Conclusion

Operative vaginal delivery appears to cause more complications in neonates and mothers, but most of these complications were minor in nature. A successful assisted vaginal delivery avoids caesarean section, its attendant uterine scar and its implications for future pregnancy. Reintroduction of this art will definitely find a place in emergency obstetric care. The experienced operator can anticipate many satisfying occasions when the forceps and ventouse may solve some of his/her perplexing problems. The major factor which determines the safety of the instrument is the operator rather than the instrument. Obstetrician must, therefore, make every effort to retain these skills, to modify and improve them in every possible way.

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