Vaginal vs cesarean breech delivery: Maternal and neonatal outcome at Bulacan Medical Center A two-year retrospective study*

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ABSTRACT

Objective: To compare the maternal and neonatal outcome of vaginal and cesarean breech deliveries at Bulacan Medical Center

Materials and Methods: A two-year retrospective descriptive study on all patients who delivered breech by vaginal or cesarean section from January 1, 2012 to December 31, 2013. The maternal and neonatal outcomes were compared and analyzed.

Results: There were 165 deliveries included during the study period. There were 83 cases of vaginal breech delivery and 82 cases of cesarean breech delivery. The incidence and risk of postpartum hemorrhage is higher among cesarean breech delivery (7%). Febrile morbidity (p=0.0223) is significantly lower for vaginal breech births. Cesarean breech delivery is correlated with longer hospital stay (p=<0.0001). There were no significant differences on the incidence of asphyxia (5% vs 2%, RR=0.51, RD=-2%, p=0.4141), birth trauma (2% vs 1%, RR=0.51, RD=1%, p=0.5673) and sepsis (12% vs 9%, RR=0.71, RD=-4%, p=0.4582) for vaginal or cesarean breech delivery. Prolonged hospital stay is 2.10 times more likely to occur for cesarean breech deliveries compared with vaginal breech deliveries. Thus, shorter hospital stay means lesser hospital costs for both mother and babies.

Conclusion: There is no significant difference in maternal and perinatal morbidity and mortality between vaginal and cesarean breech delivery except for longer hospital stay and increased febrile morbidity for cesarean births. It is therefore safe to recommend vaginal breech delivery under hospital-specific guidelines for labor management such as strict selection of patients, high quality fetal monitoring and high level of competence among obstetricians to deliver breech.

Keywords: breech/ cesarean section/ pregnancy complications/ pregnancy outcome

INTRODUCTION

What is the safest route of delivery for both mother and the baby in breech presentation: vaginal or cesarean section? This issue has long been a topic of debate during the past decade. The management of breech presentation and its route of delivery have always been controversial and has always been a dilemma for the obstetrician.

Breech presentation at term occurs in 3-4% of pregnancies. The proportion of breech positions is higher at low gestational age compared to term pregnancy. The prevalence of breech position is about 30% at a gestational age of 24 to 26 weeks. There is a continuous decline towards term to approximately 20% at 30 weeks, 10% at 35 weeks and 2% at 40 weeks, respectively. Due to its frequent occurrence, all obstetricians will have to deal with this type of presentation and the possible obstetrical problems during breech delivery. [1]

The publication of the result of the Term Breech Trial had a major effect on obstetrical practice and led to an abrupt shift in clinical practice. The study showed that the risk of perinatal mortality, neonatal mortality, or serious neonatal morbidity was significantly lower for the planned caesarean section group than for the planned vaginal birth group (17 of 1039 [1·6%] vs 52 of 1039 [5·0%]; relative risk 0·33 [95% CI 0·19–0·56]; p<0·0001). [2]

Implementation of a policy of elective CS for breech presentation at term was recommended by American College of Obstetricians and Gynecologists in 2001.[3] Additional studies that supported the results of the Term Breech Trial was later published. [4,5,6]

While there was a general belief that planned cesarean delivery was better than planned vaginal delivery for breech deliveries, evidence was inadequate because most studies were observational and evidence suggested that improved neonatal outcomes might occur at the expense of poorer maternal outcomes.[7] The CNGOF (College National des Gynecologues et Obstetriciens Francais), through expert consensus, concluded in 2001 that "there is insufficient current evidence to allow the

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systematic performance of a CS in the case of a breech presentation." [8]

Additional reports of vaginal breech delivery that follow very specific protocols and resulted to excellent neonatal outcomes without risking the long term maternal complications of CS births followed.[9,10,11] In the light of these studies, the American College of Obstetricians and Gynecologists recommends in 2006 that the decision regarding mode of delivery should depend on the experience of the health care provider. But cesarean delivery will still be the preferred mode for most physicians because of the diminishing expertise in vaginal breech delivery. [12] That is why, the obstetrician's skills and experience for vaginal breech delivery must not disappear since there will always be imminent breech and unskilled vaginal breech delivery poses more risk for the mothers and infants. [13]

'Elective caesarean for all' policy has a negative impact on training that further reduces the number of practitioners with the skills and experience necessary to deliver a breech vaginally, safely.[14] Once the skills and experience of obstetricians to deliver breech are lost, it will contribute to the continuing rise in cesarean section rates throughout the world. [15]

Hence, there is indeed a great need to balance the fetal complications of vaginal breech delivery against the short-term and long-term maternal risks associated with cesarean section.

GENERAL OBJECTIVES

To compare the maternal and neonatal outcome of vaginal and cesarean breech deliveries at Bulacan Medical Center.

SPECIFIC OBJECTIVES

1. To present the demographic profile of the study population
2. To determine the incidence and risks of maternal complications such as postpartum hemorrhage, febrile morbidity and prolonged hospital stay between vaginal and CS breech delivery.
3. To determine the incidence and risks of perinatal complications such as asphyxia, birth trauma, sepsis and prolonged hospital stay between vaginal and CS breech delivery.

MATERIALS AND METHODS

Study Design: A 2-year retrospective descriptive study

Methodology: A retrospective review of all medical charts and records of all the mother and baby who delivered by vaginal or cesarean breech delivery from January 1, 2012 to December 31, 2013 at Bulacan Medical Center

Inclusion Criteria: Subjects were all term, singleton vaginal and CS breech deliveries with no co-morbidities. All these breech deliveries were conducted by senior residents on duty.

Exclusion Criteria: Those subjects with the following: cord prolapse, placenta previa, abruptio placenta, ruptured membranes, preterm and with previous cesarean births and multiple pregnancy. The long term outcomes of the neonates were also not included. Intrauterine fetal deaths and those with maternal co-morbidities were likewise not included in the study.

Statistical Analysis:

Sample size

Based on the 95% confidence level, 5% margin of error and data from previous study, a minimum sample size of this study is 133.

Data Analysis

Data were encoded in Microsoft excel after abstracted from the patients charts. Checking for the consistencies and completeness of the data were done before the statistical analysis using the Stata 12.

Descriptive statistics were computed to summarize the data. For continuous variables such as age and duration, means and standard deviations were calculated. Categorical data (e.g. modes of delivery, parity) presented as frequencies and percentages.

Fisher's exact test or Chi-square test used to compare the percentage of occurrence of categorical variables according to modes of delivery. Comparison of continuous profile and outcome variables according to modes of delivery assessed using Analysis of Variance. P-value less than or equal to 0.05 alpha level were considered significant. Fisher's exact test or Chi-square test used to compare the percentage of occurrence of categorical variables. Comparison of continuous profile and outcome variables according to modes of delivery assessed using Independent T-test. Risk ratio and risk difference were computed to determine the magnitude of incidence comparing groups.

P-value less than or equal to 0.05 were considered significant.

RESULTS

During the study period, one hundred sixty five cases aged 16-42 years old with breech presentation were

included. Fifty percent (n = 83) of these patients delivered vaginally. The average age of mothers (p=0.6150), gestational age (p=0.0809) and birth weight (p=.0564) according to mode of delivery do not vary as shown in Table 1. Forty-five percent of patients were primipara and 55% were multipara. As shown in Table 1, vaginal breech delivery was significantly higher among multipara (60% vs 38%). Conversely, the CS breech delivery was significantly higher among primipara (62% vs 40%). Forty-seven percent of patients presented as frank breech. Fifty-four percent of frank breech presented babies delivered by cesarean section and 54% of footling breech presented babies delivered vaginally. There was no significant difference on the mode of delivery between frank and footling breech presentations (p=0.3128).

As shown in Table 2, the incidence and risk of postpartum hemorrhage is higher among those who delivered by cesarean section (7%) but not significantly associated with the mode of delivery (p=0.1423). Postpartum hemorrhage is 3 times more likely to occur in CS than vaginal breech delivery. There were no cases of febrile morbidity observed among vaginal breech deliveries, and this is significant as compared to CS breech deliveries (RD=6%, p=0.0223). Moreover, CS breech delivery is significantly correlated with longer hospital stay (RD=77%, p<0.0001).

As shown in Table 3, there were no significant differences on incidence of asphyxia (5% vs 2%, RR=0.51, RD=-2%, p=0.4141), birth trauma (2% vs 1%, RR=0.51, RD=1%, p=0.5673) and sepsis (12% vs 9%, RR=0.71, RD=-4%, p=0.4582) according to mode of breech deliveries (vaginal vs cesarean section). There were 4 cases of birth asphyxia, with AS <7 on delivery, however, these babies were resuscitated and was discharged improved. Birth trauma for vaginal breech delivery occurred in 2% of cases such as hematoma on buttocks and legs. On the other hand, a case of scrotal swelling was noted from a CS delivered breech baby, which may be due to prolonged labor and not due to the procedure itself. Prolonged hospital stay (>1 day) is 2 times more likely to occur for CS breech deliveries compared with vaginal breech deliveries (96% vs 46%, RR=2.10, RD=51%, p<0.0001).

Table 1: Profile of patients

Variables	Vaginal Breech Delivery (n=83)	CS Breech Delivery (n=82)	p-value
Maternal age, y	26.3 ± 7.0	25.8 ± 6.2	0.6150
Gestational Age	38.3 ± 1.2	38.7 ± 1.1	0.0809
Birth weight, kg	2.8 ± 0.4	2.9 ± 0.4	0.0564
Parity			
Primipara (n=74)	28 (38%)	46 (62%)	0.0039
Multipara (n=91)	55 (60%)	36 (40%)	
Presentation			
Frank (n=78)	36 (46%)	42 (54%)	0.3128
Footling (n=87)	47 (54%)	40 (46%)	

Table 2: Maternal outcomes according to mode of breech deliveries

Variables	Vaginal Breech Delivery n=83)	CS Breech Delivery (n=82)	Risk Ratio (Risk Difference)	p-value
Postpartum hemorrhage	2 (2%)	6 (7%)	3.04 (0.05)	0.1423
Febrile Morbidity	0 (0%)	5 (6%)	(0.06)	0.0223
Prolonged Hospital Stay (>3days)	0 (0%)	63 (77%)	(0.77)	<0.0001

Table 3. Perinatal Outcomes according to mode of breech deliveries

Variables	Vaginal Breech Delivery n=83)	CS Breech Delivery (n=82)	Risk Ratio (Risk Difference)	p-value
Birth Asphyxia (AS<7)	4 (5%)	2 (2%)	0.51 (-0.02)	0.4141
Birth trauma	2 (2%)	1 (1%)	0.51 (-0.01)	0.5673
Sepsis	10 (12%)	7 (9%)	0.71 (-0.04)	0.4582
Prolonged Hospital Stay (>1day)	38 (46%)	79 (96%)	2.10 (0.51)	<0.0001

DISCUSSION

The recommendation of cesarean delivery for breech is obviously an increase in cesarean section rate. [16] In 1985, the WHO affirmed that, "There is no justification for any region to have CS rates higher than 10-15%." [17] Moreover, cesarean delivery was associated with high maternal and neonatal complication s thereby resulting to increased health-care costs. [18] According to WHO in 2013, births by cesarean section in the Philippines were 10% as compared to the Western Pacific region which is 24%. [19] Primary cesarean section rates at our institution for the year 2012 and 2013 were 12.3% and 8.88% consecutively.

Most common indication for cesarean section was due to malpresentation (2.54%) followed by dystocia (1.99%) (Department of Obstetrics and Gynecology, Census, 2012 – 2013, unpublished). From these data, although the Philippine cesarean section rate is still acceptable, from the census of our institution, we can see that malpresentation has increased and even took over dystocia as the most common indication for doing cesarean section.

Although cesarean delivery can be life-saving for the fetus, the mother, or both in certain cases, the rapid increase in the rate of cesarean births without evidence of concomitant decreases in maternal or neonatal morbidity or mortality raises significant concern that cesarean delivery is overused.[20] Cesarean section is a relatively safe procedure, yet there are documented risks for the mother and baby.[21] A large population-based study from Canada found that the risk of severe maternal morbidities—defined as hemorrhage that requires hysterectomy or transfusion, uterine rupture, anesthetic complications, shock, cardiac arrest, acute renal failure, assisted ventilation, venous thromboembolism, major infection, or in-hospital wound disruption or hematoma—was increased threefold for cesarean delivery as compared with vaginal delivery (2.7% versus 0.9%, respectively). There also are concerns regarding the long-term risks accompanying cesarean delivery, particularly those associated with subsequent pregnancies. The incidence of placental abnormalities, such as placenta previa, in future pregnancies increases with each subsequent cesarean delivery, from 1% with one prior cesarean delivery to almost 3% with three or more prior cesarean deliveries. In addition, an increasing number of prior C-sections are associated with the morbidity of placenta previa: after three cesarean deliveries, the risk that a placenta previa will be complicated by placenta accreta is nearly 40%. This combination of complications not only significantly increases maternal morbidity but also increases the risk of adverse neonatal outcomes, such as neonatal intensive care unit admission and perinatal death.[22]

The results of this study are similar to the studies that disprove the recommendation of the Term Breech Trial to do cesarean section for breech-presented babies because of lower risk of perinatal morbidity and mortality. The maternal short-term and long-term morbidities such as postpartum hemorrhage and future complications associated with cesarean section has a greater impact than the short-term fetal complications for vaginal breech births. In the same way, shorter hospital stay means lesser health care costs for both mother and baby.

The Term Breech Trial's publications have accelerated the trend to cesarean section for breech deliveries almost to the point of no return. Developing countries, as other regions of the world, are faced to the challenge of making the best use possible of the limited resources to improve the health of women and children. Obstetrical interventions should be evidence-based, and interventions effective only in high-risk groups should not be used routinely. Morbidity and mortality caused by unnecessary interventions such as cesarean section could be a substantial problem and a worldwide epidemic that could have a very serious negative health impact. [23]

CONCLUSION

The Term Breech Trial cannot be considered as a definitive answer to the question of the safest management for delivery of a breech-presenting baby at term. We have presented in this paper that there is no significant difference in maternal and perinatal morbidity and mortality between cesarean and vaginal breech delivery except for longer hospital stay and increased febrile morbidity for cesarean births.

The average age of mothers, gestational age and birth weight according to mode of delivery do not vary. The incidence and risk of having postpartum hemorrhage is higher among cesarean section. It is 3x more likely to occur in cesarean section than vaginal breech delivery. Febrile morbidity is significantly lower for vaginal breech births. CS breech delivery is also correlated with longer hospital stay.

There were no significant differences on incidence of asphyxia, birth trauma and sepsis. Prolonged hospital stay is 2 times more likely to occur for cesarean breech deliveries compared with vaginal breech deliveries. Thus, shorter hospital stay means lesser hospital costs for both mother and babies.

It is therefore safe to recommend vaginal breech delivery under hospital-specific guidelines for labor management such as strict selection of patients, high quality fetal monitoring and high level of competence among obstetricians to deliver breech.

LIMITATION

Although the research has reached its objectives, there are some limitations of the study. First, the research was conducted only for two-years, thereby limiting the sample size. Second, although all charts were exhaustively reviewed, only uncomplicated cases were included in the study. Outcome of breech deliveries that fall on the exclusion criteria were eliminated.

RECOMMENDATIONS

It is strongly recommended that these results be confirmed in a larger prospective study in our institution.

Another research to include the long term neonatal outcome of these breech births must likewise be carried out. Options for vaginal breech delivery must always be included in discussing the management for breech-presented infants in securing informed consent and strict criteria must always be observed for those who chose to deliver vaginally. It is also recommended to consider External Cephalic Version (ECV) to reduce the prevalence of breech presentation which is continuously rising in our institution under strict protocol as part of our advocacy to decrease the cesarean section rate and its complications.

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