

Outcome of Breech Deliveries in Cameroonian Nulliparous Women

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Abstract

Objective To evaluate nulliparous breech delivery so as to determine prognostic factors for an unsafe vaginal delivery (VD).

Methods This retrospective and descriptive study was carried out in the University Teaching Hospital Yaoundé–Cameroon, from January 1, 2005 to December 31, 2009. Files of 126 women with singletons in breech presentation and normal fetal heart beats at a gestational age ≥ 32 weeks were reviewed with a trial of VD ordered in 104. The parameters recorded were mother's age, gestational age, mode of delivery, birth weight, 5th minute Apgar scores, neonatal outcome, and use of episiotomy.

Results The results showed that 84 (66.7 %) had a successful VD. Failure of VD or poor Apgar score after VD were observed if fetal weight $\geq 3,500$ or $< 1,800$ g, footling breech, maternal age > 28 or < 19 years, post term, and rigid cervix.

Conclusions Elective cesarean section should be systematic if the unsafe circumstances above mentioned are present.

Keywords Nullipara · Breech delivery · Vaginal breech delivery · Cesarean section · Apgar score

Introduction

Breech delivery is associated with adverse fetal outcomes during pregnancy, labor, delivery, and the post-partum [1–3]. Such adverse outcomes are more frequent among nulliparous than among multiparous women [2, 4, 5]. It is for this reason that some obstetricians opt for routine cesarean section in all cases of breech presentation among nulliparous women [6]. Such an approach could not become universally acceptable because the cost of cesarean section in developing countries is not affordable by all pregnant women. Moreover, cesarean section is associated with a non-negligible maternal morbidity [7, 8]. For these reasons, therefore, trial of vaginal delivery (VD) could be offered in some nulliparous women with fetus in breech presentation.

Criteria for determining mode of delivery in our study were as follows: if the pelvis was adequate, the breech being frank or complete and the estimated fetal weight 3500 g, then a trial of vaginal breech delivery (VBD) was offered, provided no other obstetric complications were present. All cases of labor for VBD were monitored closely: fetal heart rates were electronically monitored; blood pressure and temperature were taken every 2 h. A partogram was opened at 4-cm dilatation. Cases of dynamic dystocia without underlying factors like uterine fibroids were augmented with oxytocin as it has been recommended by some authors [9]. Vaginal examination was performed every 2 h. However, an elective cesarean section was offered in any of the following situations: estimated fetal

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weight $\geq 3,500$ g, inadequate pelvis, footling breech presentation, nulliparous women >32 years (based on the fact that we had noticed in our daily practice that VBD among these women was associated with an increased risk of poor neonatal outcome), and in the presence of any other obstetrical complications or severe medical diseases, complicating pregnancies. Emergency cesarean sections were performed in cases of failed attempts at VBD, such as poor progress, acute fetal distress (AFD) and cord prolapse. To avoid intervention delay, cesarean section kits have been made available in the theater. Hence, emergency cesarean section was done within 30 min after the decision has been taken.

Neonatal well-being was evaluated using the Apgar score. All cases of VBD were conducted by obstetricians or skilled residents. Given that breech delivery is associated with an increased risk of poor neonatal outcomes in nulliparous women, the aim of this study, therefore, was to evaluate nulliparous VBD so as to determine prognostic factors for an unsafe VBD and to recommend elective cesarean section for those cases.

Materials and Methods

This was a retrospective and descriptive study from 01/01/2005 to 12/31/2009 both days inclusive. The case files of all nulliparous women who delivered in CHU Yaoundé during the 5-year study period and delivery room records were reviewed. The selection criteria were a gestational age ≥ 32 weeks (validated by ultrasound examination performed before 20 weeks gestation) as calculated from the last menstrual period, a singleton in breech presentation, and normal fetal heart beats.

The following data were collected in each case : mother's age, gestational age, mode of delivery, birth weight, Apgar scores at 5th minute, neonatal outcome, use of episiotomy (in cases of VBD), maternal morbidity, and mortality. This study was approved by the institutional ethics committee. Data were analyzed using the statistical software SPSS 14.0. The Student's *t* test (two tails) and the Fisher's exact test were used for comparison. The significance level was 0.05.

Results

During the 5-year study period, there were 11,071 deliveries conducted. Of these, there were 3,321 nulliparous women with a breech presentation in 142 cases, an incidence of 4.2 %. A total of 126 met our inclusion criteria and were delivered either by VBB or by cesarean section. Mean age of this study population was 24.4 ± 5.1 years with a range

from 14 to 37 years. The gestational ages ranged from 32 to 43 weeks with a mean of 38.6 ± 2.9 weeks.

The breech was frank in 50 cases (39.7 %), complete in 60 cases (47.6 %) and footling in 16 cases (12.7 %). Of the 126 cases selected, 104 were offered VBD trial, and 84 (80.7 %) of them had successful VBD. VBD occurred in 52 cases (61.9 %) without episiotomy, and in 32 cases (38.1 %), after—sometimes large—mediolateral episiotomy. Fetal birth weights ranged from 1,504 to 4,313 g with a mean of $2,990 \pm 701$ g. Fetal weight was higher in the group delivered by cesarean section ($P = 0.0103$) (Table 1). A total of 26 neonates had birth weights $\geq 3,500$ g (Table 1). The excessive birth weights ($\geq 3,500$ g) were underestimated in 12 cases (9.6 %) where weights that ranged from 3,590 to 3,850 g (mean 3,680 g) were thought to be less than 3,500 g.

There were 42 cesarean deliveries of which 22 (52.4 %) were elective and 20 (47.8 %) were emergencies. The main indication for emergency cesarean section in this study was stationary labor; 10 cases (50 %) (Table 2). The indications for elective cesarean section in our series were fetal weight $\geq 3,500$ g (12/22 or 55 % with two women having inadequate pelvis), maternal age >32 years (6/22 or 28 % with one woman having inadequate pelvis), and footling breech (4/22 or 19 %). Therefore, while the most frequent indication for elective cesarean section in our series was estimated fetal weight $\geq 3,500$ g, stationary labor was the most frequent indication for emergency cesarean sections (Table 2).

In our series, 18 neonates with birth weight $\geq 3,500$ g were delivered by cesarean section: 12 electively and 6 as emergencies with the following indications: stationary labor (four cases), AFD (one case), and cord prolapse (one case). Eight other neonates with birth weights $\geq 3,500$ g (underestimated) were delivered vaginally (two neonates with good Apgar score at 5th minute had birth weight of 3,625 and 3,710).

A total of 8 neonates out of 84 (9.5 %) of the VBD group had poor Apgar score (<7) at the 5th minute. Among those who had an elective cesarean section, none had a poor Apgar score at the 5th minute. However, among those who had an emergency cesarean section, 2/20 (10 %) had a poor Apgar score at the 5th minute. The indication for the emergency cesarean section in these two cases was AFD: one in a 30-year-old patient carrying a fetus of 3,120 g, and the other in a 22-year-old patient carrying a fetus of 3,750 g (weight underestimated).

There was a statistically significant difference in mean 5th minute Apgar score between the group of elective and that of emergency cesarean sections ($P = 0.0391$) (Table 3). The difference in mean 5th minute Apgar scores between the elective cesarean section group and that of the VBD group was also statistically significant ($P = 0.0443$) (Table 3).

Table 1 Distribution of birth weight groups by route of delivery

Birth weight (g)	VBD No (%)	CS No (%)	Total No (%)
1,500–1,999	3 (3.6)	3 (7.1)	6 (4.8)
2,000–2,499	17 (20.2)	3 (7.1)	20 (15.9)
2,500–2,999	20 (23.8)	4 (9.5)	24 (19.0)
3,000–3,499	36 (42.8)	14 (33.4)	50 (39.7)
3,500–3,999	5 (6.0)	13 (31.0)	18 (14.3)
4,000–4,499	3 (3.6)	5 (11.9)	8 (6.3)
Total	84 (100)	42 (100)	126 (100)
Mean birth weights	2,922 ± 572	3,281 ± 580	3,041 ± 575

When mean birth weight in the VBD group was compared to that of the CS group, the *P* value was 0.0103

VBD vaginal breech delivery, CS cesarean section

Table 2 Indication and types of cesarean section in nulliparous breech presentation

Indications	Elective CS <i>N</i> (%)	Emergency CS <i>N</i> (%)
Fetal weight $\geq 3,500$ g	12 (28.6)	–
Stationary labor	–	10 (23.8)
Maternal age >32 years	6 (14.3)	–
AFD	–	6 (14.3)
Cord prolapse	–	4 (9.5)
Footling breech Presentation	4 (9.5)	–
Total	22 (52.4)	20 (47.6)

CS cesarean section

Subgroup analysis of the 10 cases with poor Apgar score at the 5th minute showed that there were either excessive underestimated fetal weight $\geq 3,500$ g (five cases), advanced maternal age (>28 years) (three cases) or nullipara aged <19 years (two cases). We had one case of neonatal death 3 min after delivery (birth weight of 4,200 g), in a patient who refused both elective and emergency cesarean section proposals. No obvious congenital abnormality in fetuses with breech presentation was observed in the population under study. There were brachial plexus lesions in two cases and a fracture of the humerus in one case. These lesions occurred in three fetuses whose birth weights were 3,820, 3,930, and 3,990 g respectively and whose mothers refused emergency cesarean section proposal for poor progress of labor. All the 122 other neonates were healthy when they left the hospital.

Vaginal and perineal tears (16/84) were the most frequent maternal complications noted in the VBD group. These were first- and second-degree perineal tears: 6 patients/16 were less than 19 years of age, while 10/16 were between 19 and 28 years. In all of these cases with tears, fetal weights were less than 3,500 g. No maternal complication was observed among patients who were delivered by cesarean section.

Discussion

The rate of VBD in nullipara observed in this study is 66.7 % (84/126). Similar results have been reported by other authors [10–12]. The rate observed in this study is higher than the rates observed in the other series [8]. Safe VBD is possible among nullipara if certain criteria are met. Similar conclusions have been arrived at by other authors [10, 11]. Breech delivery is considered as high risk in our institution especially in nullipara. Consequently, labor is supervised by a consultant. Then, at full dilatation, delivery is conducted by a consultant or a skilled resident. In our institution, external cephalic version is not done for nulliparous breech presentation because of the fear of associated increased fetal morbidity and mortality.

The 20 cases of the failed VBD that necessitated emergency cesarean section in our series were, in six cases, because of clinically and ultrasonographically underestimated excessive fetal weights that resulted in four cases of stationary labor and two cases of AFD. Labor was considered as stationary if vaginal examination findings during an interval of 4 h did not show any satisfactory progress in cervical dilatation or descent of the breech. In such cases, the attempt at VBD was discontinued and delivery completed by cesarean section. Six other cases were due to stationary labor with fetal weights $<3,500$ g. Among these, four cases occurred in women >28 years, and two cases in 16- and 18-year-old patients. Rigid cervix and poor perineal distension were probable explanations for the occurrence of the stationary labor and AFD in the women aged >28 in whom the fetal weight were less than 3,500 g. A cervix was said to be rigid if it was not soft and if it did not dilate normally despite good uterine contractions, the presenting part being firmly applied on the cervix. The other reasons for failed VBD in our series were cord prolapse necessitating an emergency cesarean section (four cases), AFD observed in post term pregnancies (two cases) and in normal term pregnancy (one case), one unexplained fetal distress in a 16-year-old parturient. In retrospect, elective

Table 3 Distribution of Apgar score at the 5th minute by route of delivery

Apgar score at 5th minute	VBD No (%)	Elective CS No (%)	Emerg CS No (%)	Total No (%)
<7	8 (9.5)	0 (0)	2 (10)	10 (7.9)
≥7	76 (90.5)	22 (100)	18 (90)	116 (92.1)
Total	84 (100)	22(100)	20 (100)	126 (100)
Mean Apgar score	8.4 ± 2.5	9.5 ± 0.7	8.7 ± 1.6	8.6 ± 2.0

When the mean Apgar score in the elective CS group was compared to that in the emergency CS, the *P* value was 0.0391

When the mean Apgar score in the VBD group was compared to that in the emergency CS, the *P* value was 0.5968

When the mean Apgar score in the VBD group was compared to that in the elective CS, the *P* value was 0.0443

VBD vaginal breech delivery, CS cesarean section, Emerg CS emergency cesarean section

cesarean section would have been the best option. Two neonates with excessive fetal weight of 3,625 and 3,710 g had good Apgar score at the 5th minute despite the VD; the mothers might have had a pelvis with large diameters.

The cesarean section rate in nulliparous women with the fetus in breech presentation in our study was 33.3 %. This rate is similar to the rates ranging between 29 and 38.3 % found in other series [13]. However, it is less than the rate reported by other authors [14].

The episiotomy rate in our series was 38 %, and it is lower than the rates found in other studies [14]. Some authors have suggested systematic episiotomies during nulliparous breech delivery [14]. However, since episiotomies carry some maternal morbidities (albeit small), such as persistent perineal pains and superficial dyspareunia, we offer episiotomies electively in cases of prematurity (to reduce trauma to fetal head), and to women ≥28 years because they are more likely to have rigid, non-distending perineum and therefore more prone to perineal tears and their fetuses to head trauma. Emergency episiotomies are done to women with unexpected excessive fetal weight (suspected by large buttocks), in case of fetal distress and in cases with signs of imminent perineal tear. We do not conduct at present forceps delivery for the after coming head.

The poor Apgar scores observed in the VBD group were probably due to difficult delivery noticed in cases of underestimated fetal weights ≥3,500 g, to cord compression, and to prematurity where fetal birth weights were <1,800 g. However, it is difficult to determine whether the poor Apgar score in this last group was due to prematurity or to VBB. The other cases of poor Apgar scores were observed when the maternal age was <19 years in whom the pelvic size was just above the lower limit of normal range (in one case) showing that the pelvis was not completely mature and to poor maternal compliance (in the other case). In eight cases, VBD was conducted despite fetal weights ≥3,500 g. Those cases included six cases of underestimated excessive fetal weight and two cases in

which the women refused both elective and emergency cesarean sections proposals. This can explain why the mean 5th minute Apgar score was lower in the group of VBD compared to the group of elective cesarean section with a statistically significant difference (Table 2).

One fetus whose mother refused both elective and emergency cesarean section died 3 min after a very difficult delivery of shoulders (shoulder dystocia). Furthermore, the three fetuses with brachial plexus lesions or fracture of the humerus whose mothers refused emergency cesarean section proposal for poor progress of labor had difficult deliveries complicated by shoulder dystocia. Therefore, when cesarean section is indicated, efforts should be made to convince the mother to accept it.

The mean birth weight of the fetuses delivered by cesarean section was higher than that of those who had a VBD with a statistically significant difference ($P = 0.0103$). This has also been noticed by some authors [11]. This is because excessive fetal weight was a common indication for elective cesarean section in breech presentation. A statistically significant difference in mean 5th minute Apgar score was observed between the group of elective cesarean section and that of emergency cesarean section. This difference was due to poor Apgar score associated with AFD and cord prolapse observed in the emergency cesarean section group wherein six birth weights were above 3,500 g.

This shows that in case of nulliparous VBD trial, every arrangement must be made for rapid realization of cesarean section if there is any indication. The interval between the decision and the performing of emergency cesarean section in our institution is still long and varies from 10 to 30 min. Efforts are being made to render it shorter.

Conclusion

This study has shown that VBD is unsafe in the following well-known circumstances: inadequate pelvis, fetal weight ≥3,500 g, footling breech presentations, as well as in cases

of fetal weight <1,800 g, maternal age >28 and <19 years and post term pregnancies. Although systematic cesarean section for the delivery of nulliparous breech is not recommendable in low resource countries, elective cesarean section should be offered to women with the above mentioned unfavorable circumstances and in the presence of other obstetric complications. Whenever trial of VBD is offered, every arrangement should be made for rapid emergency cesarean section in cases of failure since fetal weight estimation is not always accurate and cord prolapse and AFD are not always predictable.

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