

Originals

Clinical Evaluation of Breech Deliveries Over a Fifteen-Year Period at a Hospital in Ota, Japan

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SUMMARY

Objective : To examine the characteristics and perinatal outcome of pregnancies with breech presentation.

Methods : Breech deliveries were divided into four groups : primipara vaginal delivery group (PV-multipara vaginal delivery group (MV-G), planned cesarean section group (PC-G), and emergency cesarean section group (EC-G). The maternal age, gestational week, neonatal birth weight, and Apgar score were compared.

Results : There were no significant differences in maternal age, gestational week as well as neonatal birth weight among the four groups. An Apgar score at 1 minute of less than 6 points was seen in 0 %, 11.1 %, 15.3 %, and 20 % of the PC, MV, PV and EC-Gs, respectively. (PV-G and PC-G were compared to obtain $p < 0.05$) Although, no neonate in this study had an Apgar score at 5 minutes of less than 6 points.

Conclusion : There was no significant difference of perinatal outcome between vaginal delivery and cesarean section for breech presentation at term.

Key Words : breech delivery, planned caesarean section, neonatal outcome

INTRODUCTION

Breech deliveries occur in approximately 3.5 % of all deliveries¹⁾. Compared to vertex deliveries, there are high frequencies of fetal hypoxemia due to umbilical cord compression at delivery, forelying and prolapse of the umbilical cord among breech deliveries²⁾. In addition, a subsequent fetal head delivery at a breech delivery may be difficult³⁾. Therefore, there are high risks associated with breech deliveries. Due to the recent increase in malpractice lawsuits, cesarean section

(C-section) is frequently chosen for breech deliveries in many countries. Although C-section is a relatively safe surgery, some potential problems may occur. The frequency of maternal complications after a C-section delivery (for example hemorrhagic shock, septic shock, postoperative pulmonary embolism, bowel obstruction) is significantly higher than that after a vaginal delivery⁴⁾, and the length of hospitalization is longer among women who undergo C-section delivery. Therefore, simply electing to perform C-sections for all breech deliveries should be avoided. It is essential to carefully decide how to deliver a breech presentation on a case-by-case basis. We performed a retrospective study of cases of breech delivery at Motojima General Hospital over a fifteen-year period to study the indications for vaginal breech delivery.

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Table 1 The following criteria for trying a vaginal delivery in our department

- 1) More than 37 weeks of gestation
- 2) An estimated body weight of fetus 2,500–3,500 grams
- 3) A frank breech or complete breech position
- 4) No overextension of the fetal neck
- 5) No placental site abnormality
- 6) No forelying of the umbilical cord
- 7) No maternal complications that may affect the delivery.
- 8) The pelvis is in no way contracted by X-ray pelvimetry

Table 2 Total number of deliveries and breech delivery situations during the past fifteen years in our department.

years	Total deliveries	Breech pregnancies	Vaginal deliveries	Planned C-sections	Emergency C-sections
1990	95	3	2	1	0
1991	85	4	2	2	0
1992	134	3	3	0	0
1993	152	4	3	1	0
1994	81	2	0	2	0
1995	201	5	1	4	0
1996	161	2	0	2	0
1997	154	6	0	3	3
1998	180	6	0	6	0
1999	193	3	1	2	0
2000	209	4	2	2	0
2001	178	5	3	2	0
2002	190	4	2	1	1
2003	187	2	2	0	0
2004	205	3	1	1	1
Total	2405	56 (2.32) ^a	22 (39.2) ^b	29 (51.7) ^b	5 (8.9) ^b

^a values are numbers (%) to total deliveries.

^b values are numbers (%) to breech pregnancies.

PATIENTS AND METHODS

This study included cases of singleton breech presentation that were delivered after 37 weeks of gestation during the period between January 1989 and December 2003 at Motojima General Hospital. 56 cases of singleton breech presentation (38 primiparas, 18 multiparas) were included in this study. The cases were divided into four groups according to the method of delivery : primipara vaginal delivery group (PV-G), multipara vaginal delivery group (MV-G), planned C-section group (PC-G), and emergency C-section group (EC-G). Among the four groups, the following factors were compared and evaluated. The annual rate of

breech deliveries, the percentages of primiparas and multiparas, maternal age, gestational week, neonatal birth weight, and the neonatal Apgar scores.

In addition, we studied the difference in the method of breech delivery by the presence or absence of a previous delivery and the reason for emergency C-section. Table 1 shows the criteria for trying a vaginal delivery in breech presentation cases used in our department.

After the risks of the different delivery methods were explained, the method of delivery was decided by the physicians and the patient. Informed consent for the planned method of delivery was obtained.

Statistical analysis : Data were analyzed using the

Table 3 Comparison of breech delivery methods by presence or absence of previous deliveries.

	Primipara breech Delivery (N = 38)	Multipara breech Delivery (N = 18)	<i>p</i>
Vagina Delivery	13 (34.1) ^a	9 (50.0)	0.243
Planned Cesarean Section	21 (55.3)	8 (44.4)	
Emergency Cesarean Section	4 (10.6)	1 (5.6)	

^a Values are numbers (%)

χ^2 test. Statistical significance was set at $p < 0.05$. All statistical analyses were performed using SPSS II software (version 11.0.1 for Windows; SPSS, Inc., Chicago, IL).

RESULTS

The total number of deliveries at our hospital during the 15-year period between 1989 and 2003 is shown in Table 2. The annual number of breech presentations was 2–6 cases per year, and the annual rate of breech delivery among the total number of deliveries averaged 2.32%. Among the 56 cases of breech presentation, 22 cases (39.3%) underwent vaginal delivery, 29 cases (51.8%) underwent planned C-section, and 5 cases (8.9%) underwent emergency C-section. Therefore, the number of cases in which vaginal delivery was planned was 27 cases, and the success rate of vaginal deliveries was 81.5% (22/27), which is similar to that observed at other hospitals^{5,6}.

Compared with the multiparas, the primiparas had a lower rate of vaginal delivery and higher rates of planned C-section and emergency C-section, although the differences were not significant (Table 3).

The reasons for emergency C-section in the 5 cases are shown in Table 4. Among the 5 cases who underwent emergency C-section, 3 cases had an unsuccessful vaginal delivery because of prolonged labor. 1 case had a change in presentation from breech presentation to footling presentation during the delivery, and 1 case showed variable deceleration of the fetal heart rate on

Table 4 Causes for emergency cesarean section

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| (1) Unsuccessful of vaginal delivery : 3cases
Prolonged labor of the first stage ; 2 cases
Prolonged labor of the second stage ; 1case |
| (2) Variable deceleration : 1 case |
| (3) Change of presentation during delivery : 1 case
breech presentation → footling presentation |

electronic fetal heart rate monitoring. Among the 5 cases, 1 case had a neonatal Apgar score at 1 minute of less than 6 points. Although, at 5 minutes, all five cases had an Apgar score above 8 points. There were no complications during the C-section. The length of time between the time point at which it was decided to perform C-section and the time of delivery was within 30 minutes in all five cases.

Table 5 shows the maternal profiles and neonatal prognosis in the different breech delivery methods. There were no significant differences in the maternal age, gestational week, nor neonatal birth weight among the four groups.

The length of the delivery time was significantly shorter in the MV-G than in the PV-G.

A neonatal Apgar score at 1 minute of less than 6 points was not seen in the PC-G, but was seen in 15.3% of the PV-G, 11.1% of the MV-G, and 20% of the EC-G.

As for the Apgar score at 5 minutes, no neonate in this study had a score less than 6 points.

Table 5 Comparison of maternal profiles and neonatal prognosis in each method of breech delivery.

	Primipara Vaginal Delivery	Multipara vaginal delivery	Planned cesarean section	Emergency cesarean section	<i>p</i>
Maternal age (mean age)	28.0	30.7	30.3	27.1	
Gestation length (mean weeks, day)	39 w 4 d	38 w 1 d	37 w 6 d	38 w 3 d	
Length of delivery (mean hours minutes)	10 h 44 m	6 h 2 m	0.01
Neonatal birth weight (mean grams)	3068	3076	2968	3016	
Apgar score less than 6 points (at one minute)	2	1	0	1	*0.04
Apgar score less than 6 points (at five minute)	0	0	0	0	

* compared to data of primipara vaginal delivery and planned cesarean section

DISCUSSION

In our study, the number of neonates with an Apgar score at 1 minute of less than 6 points was 2 cases (15.3 %) in the PV-G, 1 case (11.1 %) in the MV-G, and no case in the PC-G. However, no case in the vaginal delivery groups had an Apgar score at 5 minutes of less than 6 points. The neonatal Apgar scores of the PV-G and MV-G did not significantly differ. It is suggested that the neonatal prognosis after vaginal delivery of breech presentation in primiparas is not worse than that in multiparas. If the criteria for vaginal delivery trial are fulfilled, vaginal delivery of breech presentation in primiparas is fully possible. There were no cases with an apger score at 5 minutes of less than 6 points in all groups. It is therefore suggested that the neonatal prognosis after a planned C-section is not necessarily better than that after a vaginal delivery for breech presentation.

Further studies are needed to determine whether vaginal delivery or planned C-section for breech presentation results in better neonatal prognosis. In a recent study⁷⁾, 2,088 cases with frank or complete breech presentation after 37 weeks of gestation who fulfilled vaginal breech delivery criteria were randomly divided into two groups, the planned C-section group and vaginal delivery group, and the maternal and neonatal prognoses were compared; the study found that neonatal morbidity and mortality in the perinatal peri-

od were significantly lower in the planned C-section group than in the vaginal delivery group. There were no significant differences in the rates of maternal morbidity and mortality between the two groups. Therefore, the authors concluded that it was desirable to choose planned C-section for singleton breech presentation after 37 weeks of gestation. However, estimation of fetal body weight by ultrasonography was performed in only 60 % of the cases in their study. As for assessment of the pelvis, clinical evaluation alone was performed in 90 % of the cases and x-ray, MRI, or CT was performed in only 10 % of the cases. The management of breech presentation is not sufficient compared to the numerous other facilities. It cannot be denied that there was a possibility that vaginal delivery was tried with having overlooked the cases which were unsuitable for vaginal breech delivery.

Some studies reported that there was no significant difference in neonatal prognosis between the vaginal delivery and planned C-section groups for breech presentation, and that the rate of maternal complications was significantly higher in the planned C-section group^{5,6)}. In studies in which vaginal delivery was performed for breech presentation under the following criteria, i.e., delivery at term or near term, estimated fetal body weight of 2,000 – 4,000 grams, pelvic diameter was certain size, simple breech presentation and no fetal head overextension, the perinatal mortality was 0 % and the rate of serious morbidity was 0 – 1.2 %^{8,9)}.

Umbilical cord prolapse is seen in 4–7% of all breech presentations²⁾. However, umbilical cord relapse was seen in about 0.4% of frank breech presentation cases, which was similar to the rate among vertex presentation cases¹⁰⁾. There is no consensus at present as to whether planned C-section should be performed for breech presentation or whether vaginal delivery can be performed if the criteria are fulfilled.

In our study, there was no significant difference in the short-term prognosis of infants who had been born by vaginal delivery and infants who had been born by planned C-section. In a study that followed infants for over two years, infants who had been born without deformity by vaginal simple breech delivery did not show increased risk of neural damage compared with infants with vertex presentation¹¹⁾. A study reported that there were no significant differences in the rates of serious physical damage, mental development damage, nor neurological damage in long-term prognosis between infants who had been born by planned C-section and infants who had been born by vaginal delivery for breech presentation¹²⁾.

There are some limitations in our study. The number of cases in our study was small compared with that in other reports, and long-term follow-up of the infants was not performed. It is necessary to study a larger number of cases of breech presentation and to perform long-term follow-up of such children.

Our data are of assistance in counseling women with breech presentation at term and in advising a trial of labor and vaginal delivery if that is the preference of the mother. Our data may help balance the relative safety of selected breech delivery for the infant against the potential maternal risks of cesarean delivery.

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