Original Article

Women with Breech Presentation in Previous Cesarean Section. The Controversy Continues

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Objective: The study was undertaken to evaluate the outcome of offering a trial of vaginal delivery to women with breech presentation in women with a previous cesarean section (CS). .

Material and Methods: All women who attended the obstetric unit at the King Khalid University Hospital (KKUH) Riyadh, with a history of one CS and breech presentation in the current pregnancy were enrolled in this prospective study. Trial of vaginal delivery was allowed as per the selection protocol including mother's request. Outcome of pregnancies were compared among those who ended in vaginal delivery and emergency CS or elective CS.

Results: Of the 172 women with a history of one previous CS and a breech presentation in the current pregnancy, 115 (66.9%) were allowed a trail of vaginal delivery and the remaining 57(33.1%) underwent elective repeat CS. In the trial group, vaginal delivery was achieved in 44 (25.6 %) and 71 (41.3%) ended in emergency CS. The success rate for vaginal delivery was 25.6%. Maternal morbidity was significantly higher in elective CS group (77.2%) compared with vaginal delivery (2.3 %) and emergency CS groups (56.3 %). The Apgar score of < 7 at 1 and 5 minutes respectively did not differ significantly between the babies born by vaginal route and those born by CS. Corrected neonatal morbidity also did not differ significantly among the three groups. There was no maternal or neonatal mortality.

Conclusion: The favorable outcome of vaginal delivery in women with a previous CS and a current breech in this study suggests that a trial of vaginal delivery can be safely offered to women who meet the protocol criteria. However, the sample size will have to be expanded in future studies for firm conclusion to be drawn.

Keywords: Breech presentation, previous cesarean section, vaginal birth after cesarean section (VBAC), trial of labor, breech delivery.

Introduction

There has recently been a renewal of interest in vaginal births in both cephalic and breech presentation after one previous caesarean delivery. Numerous studies support the contention that a trial of vaginal delivery in cephalic presentation is an appropriate option for women with a previous caesarean section (CS).[1-6] These reports show that a policy of vaginal birth after caesarean delivery in selected women will result in decreased maternal morbidity, shorter hospital stays and less of a burden on blood bank and nursing facilities[7] without an increase in perinatal morbidity.[1-6]

The preferred mode of delivery for breech presentation has been in debate for many years and is still controversial even today. The first prospective report on the mode of delivery of a breech fetus without prior CS was published in 1978. It concluded that it seems reasonable to allow vaginal delivery in carefully selected cases of term frank breech presentation.[8]

Many other investigators have contributed to the overall improvement in outcome of breech in labor and this has resulted in a modern approach to the breech fetus.[9,10] Numerous studies have shown that planned vaginal delivery of singleton breech fetuses is a safe clinical option in selected group of women.[11-15]

Since women and obstetricians are increasingly interested in vaginal birth in cephalic presentation after a previous caesarean section (VBAC), the obvious question of whether management alternatives should be extended to women with breech presentation and a previous CS has arisen. For women who arrive in labor with a breech presentation and have a scarred uterus from a previous CS, the consensus has been that these women should have a repeat CS.[16] VBAC however, in a woman with a breech presentation is a controversial issue in contemporary obstetrics, since little data exists on the safety and success of this procedure.

The objective of this study was to assess the impact of vaginal breech delivery after a prior CS, especially when a trial of vaginal delivery is desired by some women.

Material and Methods

All women in this prospective evaluation were delivered at the King Khalid University Hospital (KKUH), a tertiary centre which is the teaching institution of the King Saud University in Riyadh. All women who presented to the delivery unit with a history of a previous CS and a breech presentation in the current pregnancy were recruited in the study. Antenatal selection for offering a trial of vaginal breech delivery after one CS was based on the following inclusion criteria: mother's request, singleton pregnancy, frank or complete breech presentation, adequate pelvimetry. Radiological pelvimetry (erect lateral) was used routinely in the second gravida (first labor after caesarean section), but only selectively in parous women. A clinical or ultrasonographic estimation of fetal weight of not more than 3500 gms and the flexed attitude of fetal head should also be known. Exclusion criteria included previous classical CS if known, inadequate pelvic dimensions, grade II-IV hypertension, intra-uterine growth restriction (IUGR) and fetal head extension diagnosed by ultrasound. Induction of labor was performed for obstetric indication, mainly post-term pregnancies. Syntocinon augmentation was used sparingly in labor. Monitoring of fetal heart rate and uterine contractions was done on a continuous basis in labor. The total number of women studied was categorized into three groups based on the actual mode of delivery for analysis, namely vaginal delivery, emergency cesarean section and elective cesarean section groups. Data was analyzed using goldstat statistical analysis software package. The t test and Chi square tests were used to determine the significance of the difference between the groups. A p value of < 0.05 was considered significant.

Results

During the nine years; between 1990-1998, there were 34,954 deliveries, of which there were 3788 (10.8%) cesarean sections and 1497 (4.3%) breech presentations. One hundred and 72 (0.5%) women were with singleton breech and a previous cesarean section at 26 to 41 weeks of pregnancy. **Table 1** shows the maternal characteristics of the 172 women included in the study. Of the 172 women, 115 (66.9%) underwent trial of vaginal delivery (figure 1) and 57 (33.1%) had elective repeat CS. Of the trial group 44 (25.6%) delivered vaginally and the remaining 71 (41.3%) had emergency CS.

Table-1: Maternal characteristics of 172 women with singleton breech presentation and previous cesarean section.

Characteristics	Vaginal delivery group (I) N=44	Emergency CS group (II) N=71	Elective CS group (III) N=57	P-value
Age (Years): Mean±SD	31±6.0	31.2±6.2	30.9±5.1	0.9639
Age (cm) : Mean±SD	154.5±6.0	154.3±5.1	155.2±4.7	0.6450
Parity : Mean±SD	31±2.5	4.0±5.1	3.4±2.7	0.0913
GA at delivery (Weeks): Mean±SD	36.4±4.9	37.6±3.1	38.4±1.4	0.0121*
Unbooked	6 (13.6%)	7 (9.9%)	0(0.0%)	0.0232*
Bad Obstetric History	5 (11.4%)	14 (19.7%)	7 (12.3%)	0.3657
Medical Complications	6 (13.6%)	6 (8.5%)	6 (10.5%)	0.6771
Pelvimetry				
Adequate	6(13.6%)	16 (22.5%)	7 (12.3%)	
Inadequate	2 (4.5%)	4 (5.6%)	3 (5.3%)	0.5625
Not Known	36(81.9%)	51 (71.9%)	47 (82.4%)	df=4
Labour at Presentation				
Early Labor	318(40.9%)	44 (62%)	19 (33.3%)	
Advanced Labour	24 (54.5%)	19 (26.8%)	1 (1.8%)	
Not in labour	2 (4.6%)	8 (11.2%)	5 (8.8%)	<0.001 * †
Came Electively	0 (0.0%)	0 (0.0%)	32 (56.1%)	df=6

** = Significant ($p < 0.05$)† = $\chi 2$ test was used df = degrees of freedom*

Indications for emergency CS are shown in **Table 2.** The success rate of vaginal delivery was 25.6%.

The distribution of the outcome of pregnancies in relation to the various breech presentations in the two groups of women is presented in **Table 3.**

Evaluation of the success of vaginal delivery in relation to the type of breech is presented in Table 3.

The morbidity experiences of the 172 women included in the study are presented in the **Table 4**. Vaginal deliveries did not result in any morbidity except for the case of one woman who received blood transfusion. On the other hand, both emergency CS and elective CS cases resulted in excessive blood loss that needed blood transfusion. Febrile morbidity and administration of antibiotics for infection were required; in addition to this, 2 women in emergency CS group sustained bladder injury while one other woman underwent hysterectomy for hemorrhage.

Maternal morbidity showed statistically significant difference among the three groups ($p < 0.001$).

The mean ($\pm$ SD) maternal hospital stay in hospital was shortest in the vaginal delivery group (2.0 ± 0.0) compared with emergency CS (6.8 ± 4.1) and elective CS groups (6.9 ± 1.6). This difference in hospital stay was statistically significant among the three groups delivered by different modes ($p < 0.001$).

Neonatal outcome and morbidity is shown in **Table 5.** Newborns in the vaginal delivery group had significantly lower mean birth weights (2688 gms) than the newborns in emergency (2961gms) and elective CS groups (3209 gms) ($p = 0.0027$), corresponding to the difference in the gestational age at delivery in weeks .

An apgar score of < 7 at 1 minute was found to be in similar proportions in the three groups, and 5-minute apgar score of < 7 was found in 4.5%, 1.4% and 1.8% of infants among the three groups respectively. However this difference was not statistically significant ($p = 0.2189$).

Table-2: Indications for cesarean section in emergency cesarean section group (group II)

Indications	Number (%)
Failure to progress	32(45.0)
Prolonged rupture of membranes	1 (1.4)
Fetal distress	38 (53.6)
Total	71 (100.0)

Table-3a: Type of breech in 100 women delivered vaginally and by emergency cesarean section.

Type of breech	Type of delivery Vaginal delivery	Emerg. CS	No (%)
Frank (Extended)	15 (36.6%)	10 (17.0%)	0.0313 *
Complete (Flexed)	20 (48.8%)	46 (77.9%)	0.0028 *
Footling	6 (14.6%)	3 (5.1%)	0.1546
Total	41 (100%)	59 (100%)	

** =Significant ($p < 0.05$)*

Table-3b: The success of the Trial-of-Labor in 100 women in relation to the type of breech.

Type of breech	Type of delivery Vaginal delivery	Emerg. CS	Total
Frank (Extended)	15(60.0%)	10(40.0%)	25(100%)
Complete (Flexed)	20(30.3%)	46 (69.7%)	66(100%)
Footling	6(66.7%)	3(33.3%)	9(100%)
Total	41(41.0%)	59(59.0%)	100(100%)

Table-4: Maternal morbidity in women with breech fetuses and previous cesarean delivered by different modes.

Hospital stay and maternal morbidity	Veginal delivery n=44 group-I	Type of delivery Emergency CS n=71 group-II	Elective CS n=57 group-III
Hospital stay(days): § (mean±SD)	2.0 ± 0.0	6.8± 4.1	6.9 ± 1.6
Excessive blood loss (anemia)	0(0.0 %)	12(17.0%)	10(17.5%)
Blood transfusion	1(2.3%)	3(4.2%)	2(3.5%)
Antibiotics for infection	0(0.0%)	13(18.3%)	28(49.1%)
Fever	0(0.0%)	9(12.7%)	4(7.0%)
Bladder injury	0(0.0%)	2(2.8%)	0(0.0%)
Hysterectomy	0(0.0%)	1(1.4%)	0(0.0%)
ΨTotal maternal morbidity *			44

*§ = $p < 0.001$ (significant) Ψ = $\chi 2$ test was used; degrees of freedom = 2; * =$p < 0.001$ (significant)*

Table-5: Neonatal outcomes in the vaginal delivery and the CS groups

Characteristics	Vaginal delivery group (I) N=44	Emergency CS group (II) N=71	Elective CS group (III) N=57	P-value
Birth Weight (gm): Mean± SD	2688.3±874.6	2961.2±795.0	3209.1± 538.6	0.0027*
Apgar Score at 1 min [as n (%)]				
1-6 (<7)	316(36.4)	23(32.4)	19(33.4)	0.9089 †
7-10 (> 7)	28(63.6)	48(67.6)	38(66.7)	
Apgar Score at 5 min [as n (%)]				
1-6 (<7)	2(4.5)	1(1.4)	1(1.8)	
7-10 (> 7)	42(96.5)	6 (8.5%)	56(98.2)	0.2189 †
NICU Admission:				
Neonatal Morbidity (n = 25)	11(25.0%)	13(18.3)	1(1.8%)	0.0085 *†
Corrected Neonatal Morbidity (n=4)	2(4.5%)	2(2.8%)	0(0.0%)	0.3184 †
Reasons for NICU Admission				
1- Prematurity	8	8	0	
2- IUGR	0	1	1	
3-Neonatal sepsis	0	1	0	
4- Cyanosed foot	1	0	0	
5- Respiratory distress	1	0	0	
6- Hyaline membrane disease (HMD)	0	1	0	
7- Congenital anomlies	1	2	0	

*IUGR= Intrauterine growth retardation. †= χ2 test was used; degrees of freedom =2 . * = Significant (p< 0.05)*

Table-6: Summary of studies of Trial of Labor in patients with previous CS, and breech presentation in current pregnancy.

Reference	Total No of breech with previous CS	No. In TOL	NO. Of VBAC	Success Rate%
1. Clark et al 1984	63	08	05	63%
2. Paul et al 1985	72	13	06	46%
3. Dhal et al 1987	590	16	15	94%
4. Ophir et al 1989	71	47	37	78.7%
5. Samo et al 1989	137	27	13	48%
6. El Gammal et al 1990	86	33	33	100%
7. Al Nuaim 2007	172	115	44	38.3%

Compared to babies born by CS, babies born vaginally had an estimated risk of having a low apgar score 1 of < 7 equal to 1.29 (95% CI, 0.60 - 2.78) and the estimated risk of a low apgar score 5 of <7 equal to 1.46 (95% CI , 0.7 - 1.46). Therefore, the risk of having a low apgar score of < 7 at 1 and 5 minutes did not differ significantly between the babies born via vaginal route compared to those born by CS.

With regard to NICU admissions, it was observed that significantly higher proportion (25%) of the newborns from vaginal delivery group were admitted to NICU compared to 18.3% from emergency CS and 1.8% from elective CS group (p = 0.0085).

Discussion

Vaginal birth after a caesarean delivery in a woman with a cephalic presentation has received much attention over the last several years and has been

found to be an acceptable option in carefully selected groups of women.[1-6] On the other hand, management of breech presentation in such cases and which occurs in 3-4 % of pregnancies, has been and still is a debatable issue. In the study of the term breech trial which was conducted in a large randomized study (Hannah et al) has shown that the neonatal risks associated with term breech births are much higher among planned vaginal deliveries, and therefore recommended that cesarean deliveries should be planned for all such women.[17] Several other studies published later have reported that vaginal breech delivery may be justified in carefully selected groups of women and should be an option for those women who wish to avoid a repeat CS.[11-15]

Breech presentation in a prior CS, however, has become a virtual indication for elective repeat CS. The rate now approaches 100% in some centers. The justification for the liberal use of CS in breech presentation has been the relatively high mortality and morbidity rates associated with vaginal breech delivery in these and which could be lowered. However, the delivery of breech presenting fetuses by elective CS has not been shown to be a sure way of avoiding these fetal problems.

Some authors have attempted to broaden the acceptance criteria for VBAC to include breech presentation in current pregnancy. Few small series have been reported, of women with previous CS and current breech presentation who delivered vaginally with an acceptable success and low complication rates.[19-24] It was proposed that with a specific protocol the management of breech presentation in women with a previous CS some could be delivered vaginally without an increase in perinatal mortality and morbidity.

Clark et al[19] reported on 63 women with a scarred uterus and breech presentation at term in the current pregnancy. In their retrospective study, of the 8 women who had a trial of vaginal delivery, this was achieved in 5 (63 %) and the other 3 underwent repeat CS for other indications. Paul et al[20] had 72 women with scarred uterus in their prospective series, 13 of which were allowed trail of vaginal delivery, 6(46%) delivered vaginally without complication. In the study by Dhall et al [21] , 590 cases with previous CS were allowed a vaginal delivery, of which 16 were breech presentation, of which 15 (94%) delivered vaginally without any complications. Ophir et al [22] retrospectively reviewed 71 cases of breech presentation with scarred uterus. Of the 47 women allowed a trail of vaginal delivery, 37(78. %) gave birth vaginally. Neonatal morbidity did not differ for women who were delivered vaginally or by CS and maternal febrile morbidity was reported to be higher in the CS group than in the vaginal delivery group. Sarno et al[23] described a prospective series of 137 women with breech presentation and previous CS, of whom 27 women were selected for trail of vaginal delivery based on their protocol criteria. Thirteen of these women (48 %) had a successful vaginal delivery with no increase in fetal morbidity. The fetal outcome was comparable to that in women who underwent a repeat CS and that failed trail of vaginal delivery did not increase adverse fetal and maternal outcomes. Hence they proposed that a trail of vaginal delivery is reasonable in carefully selected cases of breech presentation after a previous CS.

El Gammal et al[24] had 86 women in their retrospective study who were with scarred uterus and breech fetuses, of whom all 33 (100%) selected for trail of labor, delivered vaginally, with slightly higher neonatal morbidity though, but lower maternal morbidity than those delivered by CS. They advocated that breech in previous cesarean can be safely delivered vaginally if attended by a senior obstetrician, with pelvimetry, ultrasound assessment of fetal weight, in addition to other necessary prerequisites of safety which should be met prior to attempting any vaginal breech delivery with cesarean section scar. There are still some doubts, however, as to whether pelvimetry selects cases accurately for vaginal delivery or whether knowledge of pelvic adequacy gives the obstetrician confidence in allowing a woman a trial of vaginal breech delivery.[25] Some regard X-ray measurements as unnecessary but a view still prevails that pelvimetry may have a role as part of the selection process for the mode of delivery for women with breech presentation.[26]

The present study comprises of the largest number of women with previous CS and current breech presentation, (n=115) who were allowed trial of vaginal delivery. This has demonstrated a success rate of trial of vaginal delivery of 25.6% in selected women with breech presentation and a previous CS, and maternal morbidity was significantly higher in the elective CS group compared to vaginal delivery group. The corrected neonatal morbidity did not show any significant difference between the vaginal delivery and CS groups. The reason for higher rate of NICU admissions from vaginal delivery group could be attributed to higher proportion of premature infants in this group. When the premature infants, IUGR and congenitally malformed neonates were excluded

From each of the three sub groups to compute the neonatal morbidity that could be attributed to the mode of delivery, no significant difference was found among the three groups (p= 0.3184). There was no neonatal mortality in any of the three groups however.

Lack of experienced staff in delivering the fetus presenting by the breech, is now so widely recognized by the obstetricians and the pregnant women alike, that an increasing number of units are opting for elective CS. Many consultants are now advising elective CS at 38 weeks in every case and insisting that their junior staff should do the same.

Younger staff will then have less opportunity to gain experience and are less confident, and consequently so are the pregnant women. We must face the reality that breech delivery will continue to occur. It may not be possible to pursue a policy of no vaginal breech delivery. The basic skills required for the proper selection and the skills in delivering fetuses presenting by the breech will be lost. In addition, this policy fails to take into account some points: first, from time to time, women with breech presentation will arrive at full cervical dilation, and there is no sufficient time to perform CS; second, the second twin is often delivered as breech, and third, there are some women who would want to have vaginal breech delivery and will not agree to a CS. The net result is that an increased rate of CS for singleton or twin breech will inevitably result in there being no one left capable of delivering a breech vaginally.

Conclusion

The optimal management of breech presentation at term remains a lively debating issue in graduate examinations, on the labour ward, and in the obstetric literature. The opinion of many has been polarized by their personal experiences, good or bad, and there have been no prospective randomized trials of sufficient size to resolve this issue. In the absence of such information, obstetricians have to rely on data derived from retrospective analyses which are few in this context, as individual series do not contain a sufficient number of women to gain a true estimate of neonatal risks.

Lack of a prospectively randomized trial with adequate size had perpetuated the controversy just as the author's opinion was influenced by her own experiences as well as by several retrospective and small prospective studies. The data of this study suggests that approximately 26% of women with an earlier caesarean and a current breech fetus who meet protocol criteria can be expected to deliver vaginally. The trial seems justified since in this study, the fetal outcome was comparable to that in women who underwent a repeat caesarean section. The favorable outcome of the neonates who were delivered vaginally, and the established maternal risks associated with caesarean section, support the concept that in selected group of women with breech presentation after a previous CS, a vaginal delivery can be performed without increased risks to either mother or infant. However, careful obstetrical assessment is required to reach a decision to offer vaginal delivery.

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