

Is routine caesarean section necessary for breech-breech and breech-transverse twin gestations?

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Objective. To determine if perinatal outcome is affected by the route of delivery in breech-breech and breech-transverse twin gestations.

Design. Prospective observational study.

Setting. Umtata General Hospital, a referral hospital for approximately 32 rural hospitals throughout the former Transkei.

Subjects. Twin gestations with breech-breech and breech-transverse presentations.

Main outcome measures. Birth weights, 5-minute Apgar scores and neonatal mortality rates among 41 women who underwent vaginal delivery were compared with those of 27 who underwent transverse lower-segment caesarean sections.

Results. A total of 68 women were involved in the study. Forty-one were delivered vaginally and 27 underwent transverse lower-segment caesarean sections. The vaginal delivery group consisted of 35 breech-breech and 6 breech-transverse twin gestations, while the caesarean section group comprised 25 breech-breech and 2 breech-transverse presentations. Both twin I and twin II in the caesarean section group were bigger than their respective counterparts delivered vaginally ($P < 0.02$ for twin I and $P < 0.01$ for twin II). There were no statistically significant differences in either 5-minute Apgar scores or neonatal mortality rates between the two groups.

Conclusion. Vaginal delivery of breech-breech and breech-transverse twin gestations appears a reasonable option provided criteria for vaginal breech delivery are adhered to.

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The optimal mode of delivery of non-vertex twins will continue to generate controversy as long as obstetricians base management protocols on anecdotal data or retrospective studies. While current literature concentrates on the mode of delivery of the non-vertex second twin,¹⁻⁶ there is virtually no prospective study on the mode of

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delivery of breech-breech and breech-transverse twins. Suggestions by Chervenak *et al.*⁷ that such fetuses are best delivered by caesarean section are not based on incontrovertible scientific data.

Our study attempts to throw some light on whether routine caesarean section is always necessary for breech-breech and breech-transverse twin gestations. Permission for the study was obtained from the local ethics committee.

Patients and methods

Between 1 February 1989 and 31 January 1992, 478 twin deliveries took place at Umtata General Hospital. Sixty-eight mothers with breech-breech and breech-transverse presentations were assigned either to vaginal delivery or caesarean section. The diagnosis of twin pregnancy had been confirmed prior to the onset of labour in all but 4 patients in whom the diagnosis was suspected clinically during labour. Ultrasound examination a week or two prior to delivery included estimation of fetal age and weight, presentation, localisation of the placenta, amniotic fluid volume and exclusion of gross fetal abnormalities. The presentations were confirmed clinically during early labour. The attending physician was allowed the choice of mode of delivery after evaluation of the patient. All patients assigned to vaginal delivery had to satisfy the following criteria: (i) estimated fetal weight less than 3 500 g; (ii) well-flexed fetal head; (iii) no footling breech presentation; and (iv) clinically adequate maternal pelvis. Three patients who had a transverse lower segment scar had to undergo a repeat elective caesarean section.

Only one twin at a time could be monitored by continuous external cardiotocography. The other twin was monitored intermittently with a fetal stethoscope. Progress of labour was assessed on a partogram. All first twins were delivered by assisted breech delivery. The presentation of the second twin was ascertained clinically after the delivery of the first twin, given that we do not have an ultrasound machine in our labour ward. When the second twin was in a breech presentation, assisted breech delivery was preferred except in cases where there was evidence of fetal distress. When the lie of the second twin was transverse, internal podalic version and total breech extraction were performed by one of the authors (J.K.E.). All other deliveries were performed either by an experienced registrar or an 'advanced' midwife under supervision. Only local anaesthesia and a mediolateral episiotomy were used.

In the group delivered abdominally, caesarean section was effected through a transverse lower-segment incision, and general or spinal anaesthesia was used. All caesarean sections were performed by a consultant obstetrician or an experienced registrar.

Apgar scores were assigned by the attending senior midwife or a paediatric registrar when resuscitation was required. Further paediatric care was determined by neonatal outcome. Only babies with birth weights of 1 000 g and above were included in the analysis of 5-minute Apgar scores and neonatal mortality.

Statistical analysis was by the paired and unpaired *t*-test, chi-square test (with Yates correction) and Fisher's exact test where necessary. Values of *P* < 0.05 were statistically significant.

Results

The 68 twin pairs that satisfied the study criteria constituted 14.2% of all twin deliveries. Twenty-seven were allocated to the caesarean section group and 41 to the vaginal delivery group. The presentations at the time of admission are detailed in Table I. In the caesarean section group there were 25 breech-breech and 2 breech-transverse presentations compared with 35 and 6 respectively in the vaginal delivery group. The caesarean section group included 3 pairs of twins originally allocated to the vaginal delivery group but who had to be delivered abdominally because of fetopelvic disproportion. There were 13 elective caesarean sections, and 14 patients were in labour with cervical dilatation < 6 cm at the time of admission.

Table I. Presentation of twins at admission

	Allocated route of delivery			
	Vaginal (N = 41)		Caesarean section (N = 27)	
	No.	%	No.	%
Breech-breech	35	85.4	25	92.6
Breech-transverse	6	14.6	2	7.4

In the vaginal delivery group all 41 first twins were delivered by assisted breech delivery. Of the 35 second twins in breech presentation, 27 underwent assisted breech delivery while 8 were delivered by total breech extraction because of fetal bradycardia. Only 5 patients required synthetic oxytocin augmentation after the delivery of the first twin. The 6 second twins in transverse lie were delivered by internal podalic version and total breech extraction.

A comparison of birth weights of infants in the vaginal delivery group and those in the caesarean group shows remarkable differences. These are illustrated in Table II. There was no statistically significant difference in the birth weights of twin I and twin II delivered either vaginally or by caesarean section. However, both twin I and twin II in the caesarean section group were bigger than their respective counterparts delivered vaginally (*P* < 0.02 for twin I and *P* < 0.01 for twin II).

Table II. Birth weight of twins delivered according to mode of delivery

Birth weight (g)	Twin I		Twin II	
	Vaginal delivery (N = 41)	Caesarean section (N = 27)	Vaginal delivery (N = 41)	Caesarean section (N = 27)
Mean ± SD	2 086 ± 696	2 483 ± 578	2 105 ± 606	2 497 ± 509
Range	750 - 2 850	1 100 - 3 400	800 - 3 270	1 520 - 3 480
		<i>t</i> = 2.55 <i>P</i> < 0.02		<i>t</i> = 2.88 <i>P</i> < 0.01

Five-minute Apgar scores and neonatal mortality rates (NMRs) for babies weighing 1 000 g and above are depicted in Tables III - VI. An Apgar score ≤ 7 occurred more frequently in twin II delivered vaginally, compared with his counterpart delivered by caesarean section or twin I delivered either vaginally or by caesarean section. These differences, however, did not attain statistical significance. There was also no difference in the Apgar scores of twin I

and twin II delivered by caesarean section. It is pertinent to note that none of the 6 second twins in transverse lie who were delivered by internal podalic version and total breech extraction had Apgar scores ≤ 7 .

Among first twins there was a higher NMR in those delivered vaginally than in those delivered abdominally, although this difference was not statistically significant ($P < 0.2$). However, among second twins there was no difference at all in the two groups. Overall, the slightly increased NMR in twins delivered vaginally occurred mainly in the group with birth weights of 1 000 - 1 499 g (6 deaths out of 7 compared to 1 out of 2 in the caesarean section group). The corrected NMR (corrected for birth weight $< 1 500$ g) shows that no death occurred in second twins delivered vaginally. The rationale for the corrected NMR is based on the experience of others who failed to demonstrate an increased risk for the non-vertex second twin delivered vaginally with a birth weight $\geq 1 500$ g.^{4,8}

Discussion

Poor perinatal outcomes associated with singleton vaginal breech deliveries have been extrapolated to non-vertex twins, with a resultant increase in caesarean section rates, in spite of the finding by Buekens *et al.*⁹ that there is no significant difference in perinatal outcome or 5-minute Apgar scores ≤ 7 between breech twins and singleton breeches. Most studies have concentrated on the delivery of the non-vertex second

twin. While some studies recommended that the non-vertex second twin be delivered by caesarean section,^{1,3,10,11} others support vaginal delivery.^{4,6,7,12-14} The above controversy persists because all the studies quoted above are retrospective. In fact, the only prospective randomised study on the delivery of the non-vertex second twin known to us is the one by Rabinovic *et al.*⁵ in which they showed that in twins with vertex-breech and vertex-transverse presentations neonatal outcome was not significantly influenced by the mode of delivery after the 35th week of gestation.

Our study on the optimal mode of delivery of breech-breech and breech-transverse twins introduces another controversy into a subject that is characterised by dogmas instead of hard scientific data. In fact Chervenak *et al.*⁷ stated categorically that caesarean section is indicated when the first twin is non-vertex, although they conceded that fears of non-vertex vaginal delivery may not be warranted and that vaginal delivery may be proved safe in well-defined cases. We believe that our study is a direct challenge to the above assertion. In spite of the small number of patients involved, our results definitely suggest that vaginal delivery is safe for both first and second non-vertex twins with birth weights $> 1 500$ g and that caesarean section improves 5-minute Apgar scores only slightly. The very small number of babies in the group with birth weights of 1 000 - 1 499 g makes it difficult to make any recommendations about their optimal mode of delivery, especially in an institution where neonatal services are inadequate. In view of the extremely high NMR associated with vaginal delivery in this weight category,

Table III. Comparison of incidence of 5-minute Apgar scores ≤ 7 in first twins in breech presentation delivered vaginally and by caesarean section

Birth weight (g)	No. of liveborn infants with Apgar scores ≤ 7 /Total No. of liveborn infants		P-value
	Caesarean section	Breech delivery	
500 - 999	-	2/2	
1 000 - 1 499	2/2	1/4	
1 500 - 1 999	0/3	1/8	
2 000 - 2 499	0/5	1/15	
2 500 - 2 999	0/12	0/12	
3 000 - 3 499	0/5	-	
Total	2/27 or 7.4%	3/39 or 7.7%	NS
Corrected total*	0/25 or 0%	2/35 or 5.7%	NS

* Corrected for birth weight $< 1 500$ g.
NS = not significant.

Table IV. Comparison of incidence of 5-minute Apgar scores ≤ 7 in second twins in non-vertex presentation delivered vaginally and by caesarean section

Birth weight (g)	No. of liveborn infants with Apgar scores ≤ 7 /Total No. of liveborn infants		P-value
	Caesarean section	Breech delivery	
500 - 999	-	2/2	
1 000 - 1 499	-	1/3	
1 500 - 1 999	0/2	3/11	
2 000 - 2 499	1/12	0/13	
2 500 - 2 999	1/9	0/10	
3 000 - 3 499	0/4	0/2	
Total	2/27 or 7.4%	4/39 or 10.3%	$P < 0.5$, NS
Corrected total*	2/27 or 7.4%	3/36 or 8.3%	NS

* Corrected for birth weight $< 1 500$ g.
NS = not significant.

Table V. Comparison of neonatal mortality in first twins in breech presentation delivered vaginally and by caesarean section

Birth weight (g)	No. of neonatal deaths/ No. of liveborn infants		P-value
	Caesarean section	Breech delivery	
500 - 999	-	2/2	
1 000 - 1 499	1/2	3/4	
1 500 - 1 999	0/3	1/8	
2 000 - 2 499	0/5	0/15	
2 500 - 2 999	0/12	0/12	
3 000 - 3 499	0/5	-	
Total	1/27 or 37/1 000	4/39 or 103/1 000	$P < 0.2$, NS
Corrected total*	0/25	1/35 or 29/1 000	NS

* Corrected for birth weight $< 1 500$ g.
NS = not significant.

Table VI. Comparison of neonatal mortality in second twins in non-vertex presentation delivered vaginally and by caesarean section

Birth weight (g)	No. of neonatal deaths/ No. of liveborn infants		P-value
	Caesarean section	Breech delivery	
500 - 999	-	2/2	
1 000 - 1 499	-	3/3	
1 500 - 1 999	0/2	0/11	
2 000 - 2 499	1/12	0/13	
2 500 - 2 999	1/9	0/10	
3 000 - 3 499	0/4	0/2	
Total	2/27 or 74/1 000	3/39 or 77/1 000	NS
Corrected total*	2/27 or 74/1 000	0/36	NS

* Corrected for birth weight $< 1 500$ g.
NS = not significant.

caesarean section may be advised. The significantly increased birth weights of first and second twins delivered by caesarean section may be due to selection bias since in 94% of patients the weights of the infants were determined sonographically prior to delivery. Our results were achieved in a situation where only one of the twins could be monitored continuously by external cardiotocography and where internal podalic version and total breech extraction were performed without ultrasound guidance and with only local anaesthesia.

While Chervenak *et al.*¹³ advocate external cephalic version under ultrasound guidance for the second non-vertex twin, Gocke *et al.*,⁶ in a comparison of primary caesarean section, external cephalic version and primary breech extraction, showed that perinatal outcome was not adversely affected by any of the above methods of delivery. Although our study did not specifically evaluate this aspect, our results suggest that primary breech extraction, as advocated by Acker *et al.*,¹² is not associated with a significantly increased NMR or depressed 5-minute Apgar scores. The only neonatal death directly related to birth asphyxia in our study occurred in a second twin delivered by caesarean section. While poor intrapartum monitoring may be an important contributing factor, like the delivery of the singleton breech, the dexterity of the accoucheur is also important, irrespective of the route of delivery. This assertion is supported by the fact that none of the second twins in transverse lie who were delivered by internal podalic version and total breech extraction had a 5-minute Apgar score ≤ 7 .

We believe that the widespread practice of delivering non-vertex first and second twins by caesarean section is not supported by prospective studies. We therefore recommend that the delivery of breech-breech and breech-transverse twins be based entirely on factors which govern singleton breech deliveries. Vaginal delivery should be permitted where sonographically determined fetal weight is between 1 500 and 3 500 g, the fetal head is not hyperextended, there is no footling breech presentation and the pelvis is adequate. We trust that this paper will stimulate more and larger prospective randomised studies on the optimal mode of delivery of non-vertex first and second twins.

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