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Cesarean Delivery of the Second Twin After the Vaginal Birth of the First Twin: Misfortune or Mismanagement?

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Abstract. The perinatal characteristics of 16 vaginal-abdominal deliveries of twins were evaluated. The primary indication for the cesarean delivery was compound vertex presentation (n = 4), prolapsed umbilical cord (n = 4), transverse lie (n = 7), and mentoposterior face presentation (n = 1). Ther outcome of Twin A was not different from that of Twin B. About 90% of the twins were eventually discharged on time. A significant correlation ($R = 0.9722$, $p < 0.0003$) was found between the reported rates of combined deliveries and cesareans in twins. The data suggest that a higher rate of combined deliveries is expected in practices where abdominal deliveries are performed more often in twin gestations, while in obstetric services with low cesarean rates in twins, combined deliveries seem to be unfortunate occurrences dictated by unexpected intrapartum events.

Key words: Cesarean delivery, Presentation, Twins

In 1967, cesarean delivery of the second twin after vaginal birth of the first twin was considered "an unusual obstetric procedure and... has not been thought sufficiently common or important to merit a separate article" [9]. Twenty years elapsed before this relative uncommon procedure was discussed in an Editorial [5]. Indeed, such an event was reported less than three dozen times until 1984 [1,6-8,10,12]. However, in the second half of the last decade, several authors reported increasingly higher rates of vaginal-abdominal deliveries ranging from 0.33% to 9% of all twin deliveries [3,13-16]. Constantine and Redman [4] noted with alarm an increasing tendency towards cesarean delivery of the second twin after vaginal birth of the first twin, from 0.6% to 6.5% in the periods 1974-83 and 1984-86, respectively. This rise, however, did not improve their perinatal mortality rates for twins nor were there fewer neonatal deaths secondary to

asphyxia. Since only few studies on this subject were published [4,14,16], we conducted a retrospective evaluation of our twin population in order to appreciate the perinatal impact of vaginal birth followed by abdominal delivery of twin pairs.

MATERIAL AND METHODS

In the study period 1980-1989, there were 560 twin deliveries weighing more than 500 g at the Kaplan Hospital, Rehovot, Israel. The study group comprised 16 pairs (2.86%) in which the second twin was delivered by cesarean after the vaginal birth of its first cotwin. Twinning was diagnosed before labor and the first twin was in cephalic presentation in all cases. Since we allow vaginal birth for pairs with a vertex first twin, except in patients with previous uterine scar, no elective cesareans were performed for malpresentation of the second twin. Plain X-ray was done for all pairs with nonvertex presentation of the second twin to exclude head deflexion of a breech second twin, to document the dependecy of a transverse second and to observe the intertwin relationship [2]. Intrapartum sonography was used after the delivery of the first twin to define changes in presentation of the second twin not revealed by manual examination [2].

The deliveries were attended by two obstetricians (including one senior) and two neonatologists. Following the delivery of the first twin, there was no attempt for external version of the second twin in transverse lie or in breech presentation. A low isthmic transverse incision under ongoing epidural analgesia or under general anesthesia was performed in all cases, including cases with a transverse lie [19]. In cases of a prolapsed umbilical cord, we used the method described by Katz et al [11] to alleviate the pressure off the umbilical cord.

The following variables were evaluated: 1) maternal age and 2) parity, 3) gestational age at delivery (estimated by menstrual history and first trimester sonography), 4) presentation combination, 5) indication for admission, 6) interval between the deliveries, 7) indication for the cesarean birth of the second twin, 8) birth weight of both twins, 9) intertwin percent difference of birth weight (the heavier twin = 100%), 10) Apgar scores at 1 and 5 minutes of both twins, 11) postpartum maternal complications, and 12) neonatal mortality and morbidity. Comparisons were made between the two twins and to several comparable data from our general twin population.

The EPISTAT program was used for statistical analysis. The paired Student's t-test was used to compare the means of continuous samples, and Fisher's exact test for categoric variables. Pearson's correlation coefficient was used to assess the possible relationship between paired variables and the probability of a given Pearson R value was evaluated using the t distribution. A p-value less than 0.05 was considered statistically significant.

RESULTS

Table 1 shows the maternal and perinatal characteristics of the study group. The mean maternal age and parity was not different from the respective means of our general twin population. Four of the six vertex-second twins were found to be in compound presentation after the delivery of the first twin, the fifth had a cord presentation and the sixth

Table 1 - Maternal and perinatal characteristics

	N	Mean ± SD
Maternal age		29.9 ± 5.5
Parity		2.8 ± 1.8
Primiparas	4	
Gestational age (wk)		38.5 ± 1.3
Presentation combination		
Vertex-vertex	6	
Vertex-breech	3	
Vertex-transverse	7	
Indication for admission		
Contractions	12	
Rupture of membranes	3	
Home delivery of 1st twin	1	
Duration of labor[a] (hr)		2.4 ± 2.5

[a] n = 15, due to home delivery of 1st twin.

eventually presented with a mentoposterior face. One patient, gravida 7 para 6, delivered her first twin at home and 45 minutes later delivered her second twin by cesarean section because of prolapse of cord. Table 2 summarizes the perioperative and neonatal characteristics of the study group. There was no significant birth weight difference between Twin A and Twin B, as shown by the analysis of the mean birth weight and the mean birth weight discordancy. The cesarean delivery of the second twin was carried out at a mean interval of 44 ± 21 minutes. Five-minutes Apgar scores < 7 were noted in two second twins only (no significant difference, intertwin comparison). There was no

Table 2 - Perioperative and postnatal characteristics

	N	Mean ± SD
Interval between deliveries (min)		44.0 ± 21.0
Primary indication for cesarean		
Prolapse/presentation of cord	4	
Compound presentation	4	
Transverse lie	7	
Face presentation (mentoposterior)	1	
Birth weight (g)		
Twin A[a]		2577 ± 293
Twin B[a]		2500 ± 492
Discordance (%)		10.7 ± 9.2
Rate of discordance > 15%	4	

[a] No significant difference.

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correlation between the interdelivery time interval and the frequency of 1-min and 5-min Apgar score < 7 of the second twin. Seven mothers had an unremarkable postoperative course, seven had a febrile postoperative course requiring antibiotic therapy, and two had postoperative hemorrhage due to atony managed by uterine muscle stimulants and blood transfusion. Only one mother was hospitalized longer (plus three days) than the usual six-days postcesarean period. There were no neonatal mortalities. Twenty-nine of the 32 neonates (90.6%) were discharged with their mothers, one was a 1600 g term second twin that needed assisted respiration and phototherapy (discharged on day 27), and two were a 1870/1680 g pair delivered at 40 weeks' gestation but who needed assisted respiration and phototherapy (discharged on day 50). No case with the twin transfusion syndrome was seen.

DISCUSSION

From the patient's perspective, cesarean delivery of the second twin after she has already gone through labor and delivery may seem to be a misfortune, if not mismanagement. The opinions voiced by several authors on this subject are similarly divided. Schnell and Anton [17] criticized Baltzer[1] who described this event as "a rare indication for a cesarean delivery of the second twin" and commented that such indication may not actually exist. In contrast, other authors [8] were of the opinion that far better judgment is exercised by choosing combined vaginal-abdominal delivery than by attempting a difficult manipulation that is dangerous for both mother and fetus. Indeed, the latter argument may be the prime etiology for the epidemic use of combined vaginal-abdominal twin delivery.

Our data point to several conclusions. Firstly, the rate of combined vaginal-abdominal deliveries was relatively low (2.86%), similar to reported rates in the 1960s and 1970s [6,9,10] and by obstetric services that do not routinely perform cesareans for vertex-nonvertex twin gestations [3,13]. The rates of cesareans performed for the second twin only were directly related to the cesarean rates in the general twin population (Table 3, $R = 0.9722$, $p < 0.0003$), in contrast to the observation made by Rattan et al [14]. This significant relationship may suggest that in practices where cesareans for twins are done more frequently, vaginal-abdominal deliveries are expected to occur more often. This may be explained by the lack of experience in operative vaginal manoeuvres, as also suggested by Constantine and Redman [4].

Secondly, our data show that intrapartum events were the main reasons for the cesarean delivery of the second twin, confirming other observations that cited transverse lie, fetal distress, contracted cervix, prolapsed cord, placental abruption, extreme discordancy, and failed versions or extractions as primary indications for combined delivery [4,8,12]. Our data show that these events may occur in vertex-vertex combinations in at least one third of the cases. Although these complications are to be considered in every twin delivery, most of them are not amenable to antepartum diagnosis. Nevertheless, the ultimate outcome was generally favourable and similar to that of the first twin.

Finally, our low combined delivery rate reflects the notion expressed by Siler [18] that vaginal operative procedures would help reduce the cesarean birth rate. This, however, may not be accomplished without proper medical education and training un-

Table 3 - Reported cesarean and combined vaginal-abdominal delivery rates[a]

Source	No. of twins	Cesarean rate (%)	Combined delivery rate (%)	Rate per 100 cesareans
Constantine & Redman [4][b]	535	18.5	0.6	3.2
Ho & Wu [10]	177	19.2	1.69	8.8
Evrard & Gold [6]	206	16.8	1.94	11.5
Present study	560	24.3	2.86	11.7
Chervenak et al [3][d]	135	26.6	3.7	13.9
Samra et al [16]	510	36.1	4.3	11.9
Rattan et al [14]	352	38.3	5.96	15.5
Constantine & Redman [4][c]	186	40.8	6.5	15.9
Rayburn et al [15]	186	37	9	24.3

[a] The cesarean rates in twins and the combined delivery rates were significantly correlated ($R = 0.9722$, $p. < 0.0003$).
[b] 1974-83.
[c] 1984-6.
[d] Considering only vertex-nonvertex pairs.

der the supervision of obstetricians experienced in vaginal operative deliveries. The difference between our series and that of Rattan et al [14] may therefore reflect the difference in the general attitude towards vaginal operative obstetrics.

The question whether a cesarean delivery of the second twin after the vaginal birth of the first twin represent misfortune or mismanagement cannot be answered at present since our as well as other series are essentially retrospective and relatively small. The problem discussed by Fougner and Wilson, and Johnson, Grannum and Hobbins (in letters to the Am J Obstet Gynecol 1984, 150:329-30) is similarly confusing. While relatively rare cases of birth trauma following extraction procedures could be interpreted as "either evidence of obstetric skill or divine Providence" (Fougner and Wilson), maternal complications resulting from cesarean section for the second twin may cause an "attack by members of the legal profession for performing an unnecessary surgical intervention" (Johnson, Grannum and Hobbins). However, those that are alarmed from the increased rate of combined deliveries and are of the opinion that such deliveries result from mismanagement must show that completion of the planned vaginal birth by dexterous obstetric manipulation is definitely superior to a cesarean section for the second twin. Moreover, those advocating the abdominal route for the delivery of all twins but the vertex-vertex combination, may nevertheless encounter combined twin deliveries, though in a much lower rate.

It is concluded that the expected increased rate of combined deliveries should be considered as an unavoidable payoff for increased rate of cesarean deliveries in general and in twin gestations in particular.

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