



Obstetrical Profile of Twin Pregnancies: A Retrospective Review of 11 Years (1969-1979) at Hôpital Notre-Dame, Montréal, Canada

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Four hundred and thirty-four twins delivered from 220 women at Notre-Dame Hospital were studied during a period of 11 years (1969-1979). The maternal, fetal, and neonatal outcome was compared before and after 1974, the year ultrasonography and other changes in perinatal care were introduced in our institution. Early diagnosis occurred more frequently after 1974, together with increased antenatal hospitalization. Preeclampsia and hepatic cholestasis occurred in 19.5% and 9.5% of women, respectively. Preterm delivery occurred in 42.2% of the cases. The corrected fetal mortality rate was 30.2/1,000 and corrected perinatal mortality rate was 74.9/1,000. About 90% of the neonatal deaths occurred in infants born before 36 weeks. Internal version and complete extraction of the second twin increased the neonatal mortality sixfold compared to spontaneous delivery. Availability of ultrasound examination significantly reduced preterm delivery.

Key words: Twins, Antenatal care, Ultrasound, Presentation, Toxemia, Cholestasis, Prematurity, Perinatal mortality, Antenatal hospitalization, Intrauterine growth retardation

INTRODUCTION

Twin pregnancy is a high-risk pregnancy. The perinatal mortality rate in the literature ranges from 100 to 130 per 1,000 [5,9]. Recent studies in the province of Quebec have reported perinatal mortality rates of 86.5 [4] and 101.2 [6] per 1,000. Most perinatal mortality was attributable to preterm delivery and intrauterine growth retardation. Factors which may improve the outcome of twin pregnancies are early diagnosis and bed rest [8], although more epidemiological evidence is needed before implementation of these two interventions will become widespread.

This work is a retrospective study of maternal, fetal, and perinatal outcomes of twin pregnancies delivered at Notre-Dame Hospital between 1969 and 1979. The timing of the diagnosis, the mode of delivery, the maternal complications, and the fetal and perinatal

mortality were analyzed. Several changes occurred in our hospital in 1974: the routine use of ultrasound, fetal monitoring before and during labor, use of betamimetics and betamethasone, and organization of an intensive-care unit in neonatology. Therefore, two periods (before 1974 and after 1974) could be compared to evaluate the influence of these changes on the outcome of twin pregnancies.

PATIENTS AND METHODS

Medical records from 220 women with twin pregnancy who delivered at Notre-Dame Hospital between January 1, 1969, and December 31, 1979, were analyzed. Only 434 records of neonates were studied as six were excluded: One was a dipegus monster and five fetuses died before 20 weeks. There were 108 women and 213 neonates in the first period (1969–1973) and 112 women and 221 neonates in the second period (1974–1979). In general, women were followed and infants were delivered by obstetricians; in a few instances general practitioners were in charge. In all women the gestational age was estimated from the last menstrual period by the calculation of Naegele. Fetal and perinatal mortality rates were corrected by excluding lethal congenital anomalies. Statistical analysis used the chi-square test [10].

RESULTS

Timing of Diagnosis

It was possible to determine the time of diagnosis of twins in 160 women. Diagnosis was made at delivery in 36 women, during labor in 20 women, during the second half of pregnancy in 77 women, and during the first half of pregnancy in 27 women (Fig. 1). Between 1974 and 1977, significantly more twins were diagnosed earlier in gestation than previously ($X^2 = 21.41$, $P < .001$; Fig. 1).

Prenatal Care

Table 1 shows differences between the two study periods in the use of obstetrical ultrasound, antenatal hospitalization, and use of tocolytics and glucocorticoids. Antenatal hospitalization was prescribed by physicians in cases of complications or for purpose of prevention of preterm labor (between 28 to 36 weeks), but no departmental policy was implemented for routine antenatal hospitalization. Tocolytic agents were prescribed only in cases of established preterm labor. Cerclages were done on presumptive diagnosis of cervical incompetency. Barbiturates and diazepam were given equally in the two periods and the use of diuretics was refrained in the latter period.

Mode of Delivery

The incidence of presentations is reported in Table 2. The most frequent were two cephalic presentations followed by a cephalic and a breech presentation. Thus, in most instances, the first twin had a cephalic presentation (78.1%). From the 269 fetuses in cephalic presentation, 193 infants were delivered spontaneously and 76 infants were delivered with forceps. In the group of 132 breech or transverse presentations, 46 infants were delivered spontaneously, one delivery occurred with forceps on the aftercoming head, and 36 infants had partial breech extraction, while 49 infants were born after internal version and complete extraction. There was little difference in the management of delivery between the two study periods, but twice as many cesarean sections were performed in 1974 to 1979 in conjunction with a modest decrease of internal version and complete extraction (28 in the first period and 21 in the latter period).

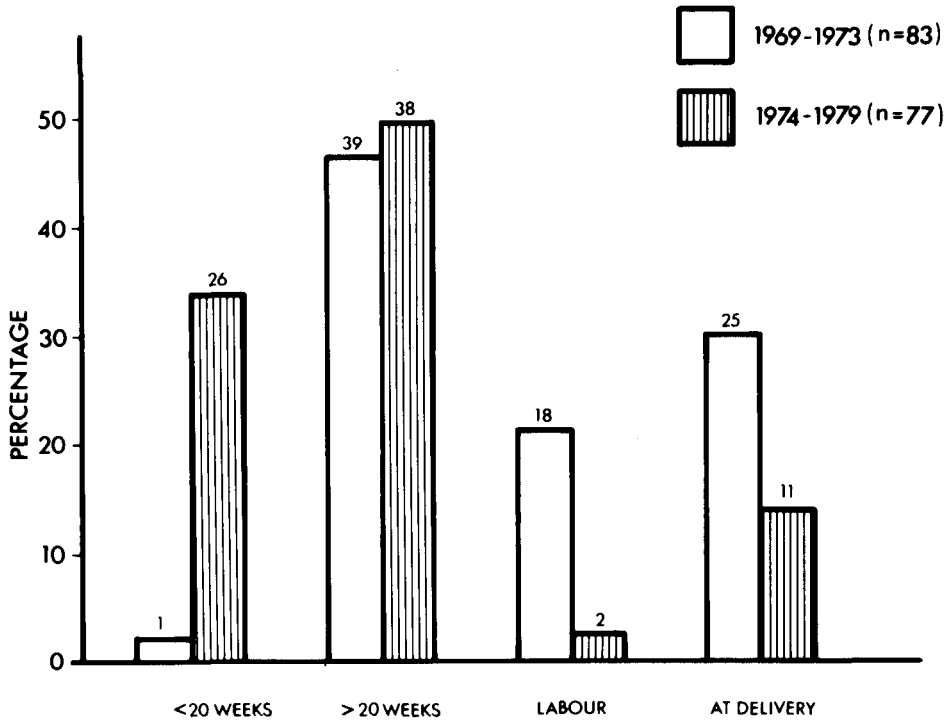


Fig. 1. Time of diagnosis of twin gestation.

TABLE 1. Antenatal Care Within the Two Periods

	1969-1973		1974-1979		P
	No.	%	No.	%	
Number of patients	108		112		
Ultrasounds	3	2.8	70	62.5	<.001
Antenatal hospitalization	18	16.6	65	58.0	<.001
Cerclage	1	0.9	1	0.8	
Betamethasone	0	—	9	8.0	<.001
Tocolytics	5	4.6	16	14.2	<.02
Barbiturate, diazepam	10	9.2	8	7.1	NS
Diuretics	11	10.1	2	1.7	<.01

TABLE 2. Mode of Presentation*

	No.	%
Cephalic-cephalic	88	41.9
Cephalic-breech	76	36.2
Breech-cephalic	23	10.9
Breech-breech	15	7.1
Cephalic-transverse	4	1.9
Breech-transverse	4	1.9

*210 women with known presentations.

TABLE 3. Maternal Complications*

	No.	%
Maternal death	1	0.4
Preeclampsia	43	19.5
Cholestasis	21	9.5
Infections		
Urine	12	5.4
Amniotic	3	1.3
Others	6	2.7
Diabetes	4	1.8
Placenta praevia	3	1.3
Abruptio	2	0.9
Premature rupture of membranes	11	5.0
Premature labor	93	42.2

*220 women.

Maternal Complications

One maternal death occurred in the second study period. The cause of death was an acute fatty necrosis of the liver associated with disseminated intravascular coagulation at 32 weeks.

Maternal morbidity is illustrated in Table 3. Preeclampsia occurred in one out of five women and hepatic cholestasis in one out of ten women. Preterm labor occurred in 93 women before 37 weeks. Premature rupture of membranes was seen in only 5% of the women. The other obstetrical complications were not increased when compared to our singleton population (unpublished data). The percentage of complications was similar in both periods.

Fetal Complications

Despite the same incidence of preterm delivery and similar mean gestational age (36.4 and 36.5 weeks, respectively), the prevalence of intrauterine growth retardation was significantly reduced during the second study period (from 25.8% to 15.8%) ($X^2 = 6.49$, $P < .01$; Table 4).

Perinatal Mortality

Fetal mortality, when corrected for lethal congenital anomalies, was similar in both periods (Table 4); however, corrected neonatal mortality was significantly reduced after the organization of an intensive-care unit from 68.2/1,000 to 23.9/1,000 ($X^2 = 4.653$, $P < .05$; Table 4). The corrected perinatal mortality rate was slightly reduced in the second study period (94.7/1,000 to 55.5/1,000; NS). The perinatal mortality rate for the 11-year period was 74.9.

Although specific factors associated with neonatal mortality are discussed elsewhere [3], 16 out of 19 neonatal deaths occurred in infants born before 36 weeks, and more than 73% were born before 32 weeks (Table 5). Clearly, the second twin had a higher risk of dying (Table 6). The maneuver associated with the worst neonatal prognosis was internal version with complete extraction (173.9/1,000), while spontaneous delivery of either cephalic or breech, or even cephalic forceps delivery, was associated with a sixfold decrease in the risk of neonatal death (Table 7).

Influence of Ultrasonic Diagnosis

Since the availability of ultrasound, 73 women had an ultrasound examination during pregnancy between 1974 to 1979. Although preterm delivery was reduced from 56% to 30% ($X^2 = 14.81$, $P < .001$), corrected perinatal mortality was unaltered.

DISCUSSION

Although this study was retrospective in design, it emphasizes several points. The threefold increase in the frequency of preeclampsia in our study, compared to the singleton preg-

TABLE 4. Fetal Complications During the Two Periods

	1969-1973		1974-1979	
	No.	Rate	No.	Rate
Preterm delivery	48	44.4%	45	40.1%
Intrauterine growth retardation	55	25.8%	35	15.8%
Fetal mortality (corrected)	6/213	28.17/1,000	7/218	32.11/1,000
Neonatal mortality (corrected)	14/205	68.2/1,000	5/209	23.9/1,000
Perinatal mortality (corrected)	20/211	94.7/1,000	12/216	55.5/1,000

TABLE 5. Corrected Neonatal Mortality According to Age of Gestation

	No.	Rate/1,000
37-40 weeks	3/342	12.4
32-36	2/140	14.3
28-31	7/24	291.6
< 27	7/28	875.0
Total	19/214	

TABLE 6. Corrected Neonatal Mortality According to the Order of Birth

	No.	Rate/1,000
First twin	7/217	32.2
Second twin	12/197	60.9
Total	19/414	(NS)

TABLE 7. Neonatal Mortality According to Mode of Delivery

	No.	Rate/1,000
Cesarian section	1/30	33.3
Cephalic		
Spontaneous	5/184	27.1
Forceps	2/72	27.7
Breech		
Spontaneous	1/44	22.7
Piper	0/1	—
Assisted	2/36	55.5
Version-great extraction	8/46	173.9

nancies, confirms the finding of our previous reports [2]. The frequency of cholestasis of pregnancy (9.5%) is increased 26-fold compared to singleton pregnancies in our hospital [1]. The reason for the higher frequency of cholestasis in our twin population is unclear.

This analysis shows that the second study period, with changes in perinatal and neonatal care, was associated with a decreased neonatal mortality and a decreased frequency of intrauterine growth retardation. However, the prematurity rate was unchanged despite a 3.5-fold increase in antenatal hospitalization. Improvement in neonatal mortality might be due only to improvements in neonatal care as fetal mortality rate was unchanged; however, the decreased frequency of intrauterine growth retardation could be related to hospital bed rest through its postulated beneficial effect on uterine blood flow.

Delivery before 37 weeks occurred in 42% of the cases. Although there is no evidence that term is 40 weeks for a twin pregnancy, 90% of the neonatal deaths were encountered in infants born before 36 weeks. Improvement of perinatal mortality might occur with early diagnosis by ultrasound [8] and with prevention of prematurity by either hospital bed rest [8] or preventive use of betamimetics [7]. However, the few observations available in published controlled clinical trials cannot provide clear evidence as yet that any intervention will improve perinatal mortality. In our series, the use of ultrasound seemed to have a positive beneficial effect on the prematurity rate, but not on the corrected perinatal mortality. This unexpected observation may generate changes in the management during labor and delivery, together with more liberal use of cesarean section.

The observation of higher risk of death for the second twin agrees with published data [4]. Internal version for the second twin increases the risk of dying sixfold. An alternate method of delivery, such as a cesarean section for a second twin with abnormal presentation, especially before 37 weeks, should be encouraged.

In summary, despite several modifications in antenatal care, we observed little improvement in perinatal mortality. Thus, other measures during the prenatal period, labor, and delivery must be sought and properly evaluated.

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