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Oxytocin Treatment in Twin Pregnancy Labour

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A continuous series of 483 twin deliveries was studied. In 30% of cases, intravenous oxytocic treatment was given for labour induction or to accelerate the first stage. In 13% of twin deliveries this treatment was applied only after the first twin's birth. In the group perfused during cervix dilatation, foetal mortality rate was significantly lower than in the nontreated group. In order to understand the reason(s) for this difference, the following factors were studied in relation to oxytocic treatment: parity, obstetrical complications, second stage duration, abnormal presentations, obstetrical maneuvers, and birth weight. Contrasting with mortality data, Apgar scores of first twins were significantly lower in the oxytocin-treated group. In summary, several variables indirectly linked to oxytocic treatment could have favoured or hampered foetal outcome in the treated group. Therefore, it is difficult to ascertain if the use of oxytocics is helpful in twin pregnancy management. In the majority of cases, however, it may at least be considered harmless.

Key words: Oxytocin, Twin Labour, Obstetrical complications, Perinatal mortality

To our knowledge, there are virtually no data in the literature concerning the use of oxytocin perfusion in the management of twin pregnancy. Sometimes, however, theoretical arguments are put forward implying that this treatment can be potentially harmful to twins. This would, namely, be the case when, after the first birth, the second child is found in an abnormal position, so that maneuvers have to be performed inside a contracted uterus. In view of the frequent incidence of abnormal presentation of the second twin, this line of thinking deserves to be confronted with facts. We therefore decided to examine twins' obstetrical outcome in relation to oxytocic treatment.

In a series of 483 vaginally delivered twin pregnancies that we have studied, the rate of intravenous oxytocin administration at labour had risen from 14% to more than 50% during the last decades (Table 1). This treatment had been constantly more frequent than in the overall obstetrical population, among which its frequency also increased from about 10% to 25% over the same period.

No indication that mothers delivering twins experience a first stage of longer duration than in single pregnancies seems available [3]. Our data, however, suggest that often, in twin pregnancy labour, some kind of uterine dysfunction does occur. In our department, oxytocic treatment is generally applied with reference to a partogram that was constructed with data derived from single pregnancies [4]. In our series, the decision to use oxytocics

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during labour was found to become more frequent with increasing cervical dilatation (Table 2). This latter correlation would thus suggest that twin delivery tends to be affected with gradually worsening dyskinesia.

Among our cases, 30% had an oxytocic treatment started before the first twin's birth, while in 13% this treatment was given only to assist the second twin's delivery. No oxytocics were thus given in 57% of cases. The analysis of total and corrected foetal mortality in these three groups is given in Table 3. Among cases already treated during the first stage, the corrected mortality rate was significantly lower ($P < 0.05$) than in nontreated pregnancies.

The comparison with mothers perfused only for the second twin's birth showed no significant difference. The disparity between nontreated and treated cases essentially concerns the fate of first small twins (less than 2000g), whereas mortality rates of second twins were relatively similar in both groups.

To unravel the causal factors of this difference, a series of circumstances that might have affected foetal outcome were examined in relation to oxytocic treatment.

TABLE 1. Evolution of the Frequency of Oxytocic Treatment During Labour

Period	Twins (%)	Singletons (%)
1948–57	14	9.8
1958–67	31	19
1968–77	54	25.8

TABLE 2. Onset of Oxytocic Treatment and Cervical Dilatation in Twin Pregnancy

	Induction	2	4	6	8	10 cm
Cases treated (%)	14.4	4.8	10.4	17.6	16	36.8

TABLE 3. Twins Mortality Rate (%) and Oxytocics

		First twin		Second twin			
		< 2000 g	> 2000 g	< 2000 g	> 2000 g	Total	
Without oxytocics	TM	34.8	2.7	45.6	1.7	15.5	
	CM	30.1	1.6	36.4	1.2	11.7	$P < 0.05$
With oxytocics first stage	TM	19.4	5.6	40.6	3.9	10.6	
	CM	13.8	3.8	32.1	1.0	6.9	
With oxytocics for 2nd twin	TM	33.3	2.3	50.0	21.	10.8	
	CM	33.3	2.3	50.0	2.1	10.8	

TM: Total mortality; CM: corrected mortality (ie, after exclusion of lethal malformations and macerated stillbirths of unknown origin).

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Parity distribution could not have been involved, since, as expected, the percentage of primigravidae whose twins are known to be at higher risk [1], was somewhat greater in the treated group (37% vs 28%).

One may wonder if oxytocics had improved first twins' fate by alleviating the effects of labour, namely, by shortening the second stage. Such was not the case, for neither in primiparae or multiparae could a significant difference of second stage duration be found between treated and nontreated cases (Fig. 1).

Toxemia had happened more frequently in pregnancies treated with oxytocics, but was not found responsible for any perinatal death in either group. Both populations showed comparable rates of other major complications (Table 4).

Also, frequencies of instrumental or manual extractions of first twins were similar in nontreated and treated pregnancies. However, this latter group contained a considerably higher rate of first twin breech presentation (Table 5). This can be explained by the facts that, in our department, oxytocic perfusion is standard policy in the second stage of breech delivery, and that a number of these cases had remained undiagnosed as twin pregnancies.

Further analysis indicated that the difference in first twins' corrected mortality between oxytocin-treated and nontreated cases, lies in neonatal deaths associated with no other apparent complication than low birth weight (Table 6).

The comparison of birth weight distributions of perfused and nonperfused cases showed that small twins had been somewhat more frequent in the nontreated group (Fig. 2). This difference may result from a higher frequency, among nontreated cases, of premature deliveries which are obviously less prone to be given intravenous oxytocics. Although the overall distributions of first twins' weight are comparable, the slight difference in favour of the treated group may at least partly explain the difference of mortality, since, in our series, babies under 1500g had suffered a corrected death rate of 60%.

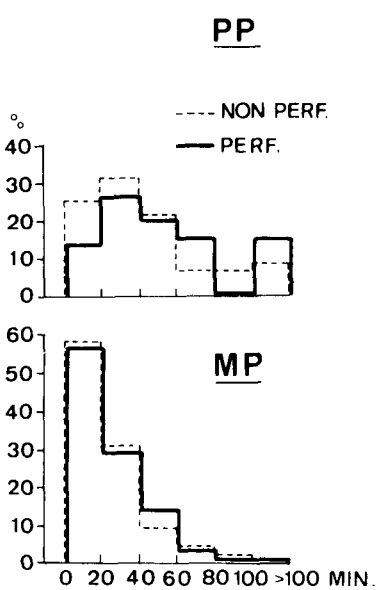

Fig. 1. Distribution of second-stage duration for the first twin with (PERF.) or without (NON PERF.) oxytocic treatment, and by parity (PP & MP: primiparae and multiparae, respectively).

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TABLE 4. Complications in Twin Pregnancies and Oxytocics

	Without oxytocics (%)	With oxytocics first stage (%)
Toxemia	14.4	10.8
Third trimester hemorrhage	1.4	2.1
Premature membrane rupture	7.5	11.5
Amniotic infection	0.7	0.7
Cord prolapse		
T1	2.5	4.3
T2	4.6	4.3

TABLE 5. Abnormal Presentations and Artificial Extractions of Twins and Oxytocics

	Without oxytocics (%)		With oxytocics first stage (%)
Ventouse or forceps			
T1	7.8		9.4
T2	4.9		6.5
Major maneuvers			
T1	1.4		0.7
T2			
Total breech extraction	5.3		6.5
Podalic version	11.7	$P = 0.055$	5.8
Abnormal presentations			
T1			
Breech	15.1	$P < 0.001$	43.1
Transverse	1.4		0
T2			
Breech	44.8		43.9
Transverse	11.3		10.8

TABLE 6. First Twins', Corrected Mortality and Oxytocics

Cause	Without oxytocics			With oxytocics first stage	
Neonatal, without obstetrical complications: < 1.5 kg	16	7.1%	$P < 0.03$	3	2.9%
1.5–2.5 kg	4			1	
Major maneuvers: < 1.5 kg	3	1.1%		1	2.2%
> 1.5 kg	3			3	
Miscellaneous					
Abruptio placentae	2			–	
Severe isoimmunization	2			2	
Intertwin transfusion syndrome	1			–	

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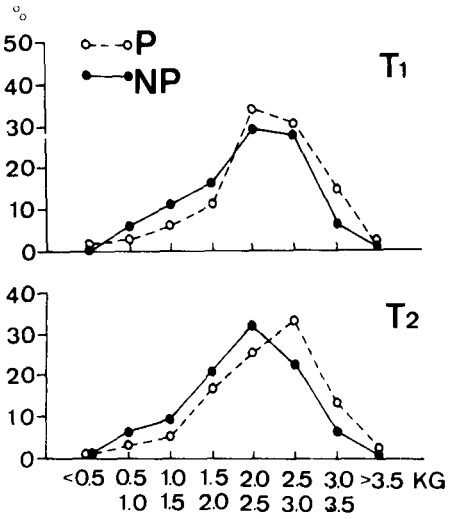

Fig. 2. Birth weight distribution of first (T1) and second (T2) twins with (P) or without (NP) oxytocic treatment.

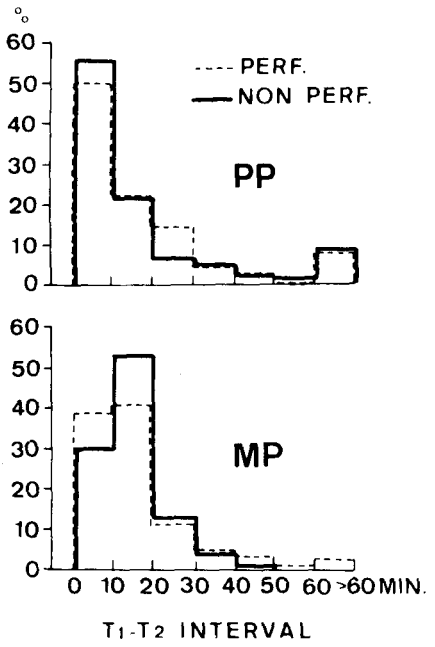

Fig. 3. Birth interval by parity and oxytocic treatment.

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TABLE 7. Low Apgar Scores (< 7) and Oxytocics

	First twin					Second twin			
	Total no. of twins	Low scores (%)				Total no. of twins	Low scores (%)		
		< 2000 g	> 2000 g	Total			< 2000 g	> 2000 g	Total
Without oxytocics	225	19.2	7.5	10.7	P<0.01	229	40	17.8	23.1
With oxytocics first stage	121	30.8	16.8	19.8		113	36.4	23.1	25.7
With oxytocics for 2nd twin	51	30	4.9	9.8		51	55.6	14.3	21.6

In contrast to mortality data, it appeared that first twins with an Apgar score under 7 had been significantly ($P < 0.01$) more frequent in the oxytocin-treated group, whereas no such difference applies to second twins (Table 7). This observation does not necessarily imply that oxytocics during labour are detrimental to first twins. The high frequency of bad scores may be due to the effects of dysfunctional labour which had required oxytocic treatment.

Some difference between the treated and nontreated group was also found in relation to second twin management. Although transverse presentation of the second baby had been equally frequent in both groups, more internal podalic versions were performed on second twins among nonperfused cases (Table 5). Closer scrutiny indicated that, in the nontreated group, one-fourth of these maneuvers had been effected on cephalic presentations, whereas, in the oxytocin group, they were applied exclusively on transverse lies. Therefore, one may wonder if oxytocic perfusion was responsible for partial elimination of these risky manipulations. It may be that it merely gave the obstetrician more confidence in waiting for spontaneous delivery, for oxytocic perfusion started during labour did not shorten birth interval (Fig. 3).

To summarize, it appears that several variables linked indirectly to oxytocic treatment could have had positive or negative effects on the mortality and well-being of one or both twins. Therefore, it is difficult to assess whether this treatment may be helpful in the management of twin pregnancy. We believe that, in the majority of cases, it can be considered harmless, but feel, however, that caution should be exercised in cases of transverse presentation of the second baby or at risk of twin locking.

In our series, the sole instance where oxytocic perfusion could be directly incriminated in foetal loss was an extreme case of double cephalic compaction, which this treatment had clearly aggravated before the condition was finally recognized [2].

REFERENCES

1. Farr V (1975): Prognosis for the babies, early and late. In MacGillivray I, Nylander PPS, Corney G, (eds): "Human Multiple Reproduction." London: W. B. Saunders, pp 188–211.
2. Lahaye M, Feroy F, Picard C (1959): Enclavement de deux jumeaux en présentation du sommet. Bull Soc Royale Belge Gynocol Obstet 29:413–420.
3. MacGillivray I (1975): Labour in multiple pregnancies. In MacGillivray I, Nylander PPS, Corney G (eds): "Human Multiple Reproduction." London: W.B. Saunders, pp 147–164.
4. Rodesch F, Ehman-Ellinger C, Wilkin P, Hubinont PO (1965): Introduction, use and results of a new partogram. J Obstet Gynecol Br Commonw 72:930–935.