



Mode of Delivery in Multiple Birth of Higher Order

M. Feingold, C. Cetrulo, M. Peters, A. Chaudhury, S. Shmoys, O. Geifman

Department of Maternal Fetal Medicine, Tufts University School of Medicine, St. Margaret's Hospital for Women, Boston, Massachusetts, USA

Abstract. A retrospective review of triplets delivered at a Boston perinatal center from 1977 to 1986 was performed. Comparison was made between this group (study group) and previously published data on triplets in our institution (control group). Since 1977 there was a more liberal use of abdominal delivery. Cesarean sections (CS) of all triplets with malpresentation was our protocol. Of the 15 sets of triplet pregnancies in the study group, 11 were delivered by CS and 4 by vaginal delivery, vs only 1 CS in the control group which consisted also of 15 triplets. The corrected mortality rate in the study group was lower than in the control group (2.6% vs 7.1%) but did not reach statistical significance. Apgar scores at 1 and 5 minutes were significantly higher in the study group ($P < 0.002$). Apgar scores for the third triplet were also higher in the study group ($P < 0.05$). In comparing the combined mortality and morbidity between the study group and the control group, no difference was found in the first triplet, but those of the second and third triplets were significantly lower in the study group. Of interest is the finding that the combined mortality and morbidity was not different statistically among the first, second, and third triplets in the study group, while in the control group an increase from the first to the third triplet was noted (21%, 31%, and 43%, respectively). A more liberal approach toward abdominal delivery of pregnancies of higher fetal number is advocated.

Key words: Triplets, Cesarean section, Neonatal mortality

INTRODUCTION

The incidence of multiple births involving more than two infants has increased significantly due to the introduction of ovulation induction agents [2,11]. The increasing use of

ultrasound enables the obstetrician to diagnose this condition early. This has allowed many of these pregnancies to be referred to high-risk centers, resulting in more experience and the development of protocols for this condition. Triplet pregnancy is a high-risk obstetric event because of difficulty of early diagnosis, antepartum complications and increased incidence of both delivery complication and neonatal mortality [12].

There is no consensus on the mode of delivery of triplets; there are few reports, some of which recommend cesarean section (CS) and some vaginal delivery [3,4,6,13,14]. Any such conclusion is unsupported by significant data because of the low number of patients in each series. Another issue that emerges from some of those studies is that the morbidity and mortality of the 3rd triplet is much higher than that of the 1st and 2nd ones [4,6,10]. In our study we will address these controversial issues.

MATERIAL AND METHODS

A retrospective review of triplets delivered at St. Margaret's in 1977-1986 was carried out. Comparison was made between this group (study group) and previously published data on triplets in our institution (control group). There were 31,041 deliveries during the years 1977-1986 and 15 of them were of triplets, giving an incidence of 1:2074. The control group consists also of 15 sets of triplets that were delivered during the years 1954-1976 of a total of 104,093 deliveries (1:6953).

All records were reviewed and information regarding the prenatal period, delivery and perinatal outcome was obtained. Morbidity was defined as Apgar scores of less than 6 at 1 and 5 minutes.

RESULTS

The mean gestational age of the triplets in the study group 1 was 32.1+3.4 weeks and the mean birthweight of triplet 1, 2, and 3 were 1755 g, 1729 g, and 1740 g, respectively (Table 1). In the control group, the mean gestational age was 34.8+3.18 weeks and the mean birthweight was 1845 g, 1875 g, and 1772 g, respectively.

Table 1 – Mean gestational age and birthweight

	Study group	Control study
Mean gestational age (weeks)	32.1 + 3.44	34.8 + 3.18
Mean birthweight (g)		
1	1755	1845
2	1729	1875
3	1740	1772
Statistical significance	no	no

At the beginning of the study period, a management protocol which consisted of CS

for all deliveries with a presentation other than vertex/vertex/vertex (v/v/v) was adopted. The 15 deliveries in the study group included 11 CS and 4 vaginal deliveries – 2 v/v/v, 1 v/v/anencephalus, and 1 v/transverse (internal podalic rotation)/v of a 22-week pregnancy.

During the time period of the control group there was no specific protocol for the delivery of triplets and 14 were delivered vaginally and only 1 by CS. There was no difference in the mortality of the two groups and even though the corrected mortality was lower in the study group, it did not reach statistical significance (Table 2).

Comparing the Apgar scores in the two groups, there were significantly less babies with 1- and 5-minute Apgars of less than 6 in the study group (Table 3).

When we compared the mortality and morbidity of the third triplet we found no difference in mortality, but the Apgar scores of those in the study group were significantly lower than those of the control (Table 4).

Table 2 – Perinatal mortality

	Mortality (%)	Corrected mortality (%)
Study group	7/45 (15)	1/39 (2.6)
Control group	6/45 (13)	3/42 (7.4)
Statistical significance	No	No

Table 3 – Perinatal morbidity

	Apgar < 6 (%)	
	1 min	5 min
Study group	6/39 (15.4)	0/39 (0)
Control group	12/38 (32)	9/42 (21)
Statistical significance	P < 0.002	Yes

Table 4 – Perinatal mortality and morbidity of 3rd triplet

	Corrected mortality (%)	Apgar < 6 (%)	
		1 min	5 min
Study group	1/12 (8.3)	2/12 (16.6)	0/12 (0)
Control group	2/14 (14.2)	5/14 (36)	unavailable
Statistical significance	No	P < 0.05	

Morbidity and mortality increased from 21% for the first baby to 31% for the second, and 43% for the third baby in the control group (Table 5). This statistical increase was not observed in the study group (7%, 21%, and 16.6%, respectively). This finding is not affected by the time difference between the study and the control group as each triplet in the two groups act as control of the other ones. The combined mortality and morbidity of the triplets of group 1 and group 2 did not differ, in the first triplet, but those of the second and third triplets were significantly lower in the study group (Table 5).

Table 5 – Combined mortality and morbidity

	Triplet (%)			Total (%)	Statistical significance
	1	2	3		
Study group	1/13 (7)	3/14 (21)	2/12 (16.6)	6/39 (15)	No
Control group	3/14 (21)	4/13 (31)	6/14 (43)	13/41 (31.7)	P < 0.05
Statistical significance	No	P < 0.05	P < 0.05	P < 0.02	

DISCUSSION

CS is found to be a preferable mode of delivery in some reports of triplet pregnancies [3,4,6,14], whereas others suggest vaginal delivery as preferable [7,10,12]. Deale and Cronje [4] reported one of the most extensive recent surveys on triplets. They reviewed 367 triplet deliveries in 452 hospitals and found that the 5 minute Apgar scores of the 3rd baby were significantly higher when delivery occurred by CS ($P < 0.03$). Furthermore, the chance of survival for the 3rd baby was improved with CS compared with other delivery methods ($P < 0.025$).

In contrast, Itzkowic [7] considered vaginal delivery as reasonable after 34 weeks gestation in uncomplicated triplet pregnancies. However, in his review of 59 triplets, all 27 babies delivered by CS survived while the 9 stillbirths and 32 neonatal deaths all followed vaginal delivery. Some authors are undecided on the best mode of delivery [6] while others relate the decision to the obstetrician CS confidence with vaginal maneuvers [10]. In our study we were able to compare two groups which differ mainly by the mode of delivery (73.3% vs 6.7% of CS rate in the study group and control group, respectively).

The more liberal approach to abdominal delivery in our study group resulted in less babies with 1- and 5 minute Apgar scores of less than 6; this was also true looking separately at the 3rd triplet. Many studies on twin pregnancies report increased mortality and morbidity for the second twin [2,5,8,9]. The same is true for triplets. In many of the studies reporting the outcome of each baby in the set, there was a progressive increase in mortality and morbidity for the 3rd baby [4,13].

In our study we found that the combined mortality and morbidity was not different statistically among triplets 1, 2, 3 in group one, while in group two an increase from the

first to the third triplets was noted (21%, 31% and 43%, respectively). Of interest is also our finding that the combined mortality and morbidity of the second and third triplets in the study group were significantly lower than those of the control group.

The corrected perinatal mortality of the study group was 26/1000. These results are among the lowest perinatal mortalities reported [3,4,7]. Even though the corrected perinatal mortality of the control group did not reach statistical significance they were almost three times higher than those of the study group (71/1000).

We conclude that the major difference in the two groups was the more liberal approach toward CS which led to an improvement in perinatal mortality and morbidity, especially of the second and third triplets. Therefore, all triplet pregnancies with a presentation of other than vertex/vertex/vertex should be delivered by CS.

REFERENCES

1. Belendorg G, Breckwold M, Neale Ch (1970): *Clinical Application of Human Gonadotropins*. Stuttgart: Thieme, p 4.
2. Camilleri AP (1963): In defence of the second twin. *J Obstet Gynecol Br Commonw* 70:258-261.
3. Daw E (1974): Triplet pregnancy. *Br J Obstet Gynaecol* 85:505-509.
4. Deale CJC, Cronje HS (1984): A review of 367 triplet pregnancies. *S Afr Med J* 66:92-94.
5. Emerich J, Rogoza Z, Sylwestrowicz W (1974): Developmental defects and mortality rate of fetuses and newborn from multiple pregnancies. *Acta Genet Med Gemellol (Suppl)* 22:20-25.
6. Holcberg G, Biale Y, Lewenthal H, Lusler V (1982): Outcome of pregnancy in 31 triplet gestations. *Obstet Gynecol* 59:472-476.
7. Itzkowic D (1979): A survey of 59 triplet pregnancies. *Br J Obstet Gynaecol* 86:23-28.
8. Kanppila A, Jouppila P, Koivito M et al (1975): Twin pregnancy: A clinical study of 335 cases. *Acta Obstet Gynecol Scand* 44:5-20.
9. Koivisto M, Jouppila P, Kanppila A et al (1975): Twin pregnancy: Neonatal morbidity and mortality. *Acta Obstet Gynecol. Scand* 44:21-30.
10. Loucopoulos A, Jewelewicz R (1982): Management of multifetal pregnancies: Sixteen years experience at the Sloane Hospital for Women. *Am J Obstet Gynecol* 143:902-905.
11. Lunefeld B, Isler V (1978): *Diagnosis and Treatment of Functional Infertility*. Berlin: Grosse, 78-83.
12. McFee JG, Lord EL, Jeffrey RL, et al (1974): Multiple gestations of higher fetal number. *Obstet Gynecol* 44:99.
13. Michlewitz H, Kennedy J, Kawada C, Kennison R (1981): Triplet pregnancies. *J Reprod Med* 26: 243-246.
14. Shenker JG, Simha A (1975): Quintuplet pregnancy. *Obstet Gynecol* 45:590-594.

Correspondence: Dr. Michael Feingold, Maternal Fetal Medicine, St. Margaret's Hospital, 90 Cushing Ave., Boston, MA 02125, USA.