



The Northwestern University Triplet Study III: Neonatal Outcome

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Abstract. Limited data suggest that cesarean section (CS) may be the preferred method of delivery for triplets. Despite this, it is also felt that the third triplet is at great risk at delivery. We reviewed our experience of 14 triplet pregnancies at Northwestern University between 1981 and 1985. All deliveries were attended by neonatal teams in sufficient number to resuscitate each infant. Of the 14 pregnancies, two ended in pre-viable loss. Thirty-six infants were born from 12 pregnancies of a mean gestational age of 33 weeks (28-38 weeks). The overall survival was 97.3%. Two women delivered vaginally. While the first was successful, the second resulted in vaginal delivery of the first two triplets followed by emergency CS for the third. That infant had a cord blood pH of 6.96 (BE-19), was resuscitated and survived. All 10 CS were successful. The mean cord blood gas tensions and pH were normal. In addition, Apgar scores, the requirement for mechanical ventilation or supplemental oxygen, and mortality did not differ between the first and third-born triplet. These observations suggest that CS was beneficial. Our very low mortality rate supports the concept that CS delivery and aggressive neonatal resuscitation and therapy greatly enhances survival.

Key words: Triplets, Cesarean section, Neonatal resuscitation

INTRODUCTION

Because of the increased success of infertility therapy, triplet pregnancy is no longer a rarity. The reported higher neonatal mortality in multiple vs singleton pregnancy is felt to be related to an increased incidence of prematurity. Limited data suggest that being third

in birth order increases the risk of neonatal morbidity and mortality [5]. As a result, elective cesarean section (CS) has been proposed as the preferred method for delivery of triplets [3,6].

Since these observations concerning triplet pregnancies are so limited, we reviewed our experience at the McGaw Medical Center of Northwestern University Medical School. Specifically, we wished to determine if the third infant has a greater risk of morbidity and mortality than the firstborn triplet, and we wanted to examine the effect of CS delivery upon neonatal outcome. Implicit in our review was the assessment of our aggressive neonatal resuscitation and intensive care upon infant well being.

MATERIALS AND METHODS

Routine obstetrical management included frequent fetal assessment by serial ultrasound and physical examination, tocolytic therapy when needed, fetal heart rate monitoring, and fetal lung maturity assessment [4]. All deliveries were attended by neonatology teams in sufficient number to resuscitate each infant. The teams consisted of at least one physician a neonatal intensive care nurse, and a respiratory therapist. The equipment available included endotracheal tubes, umbilical artery catheterization sets, supplemental oxygen, intravenous fluids, and radiant warmers. Blood pressure and arterial blood gas tension measurements were often obtained. Delivery room care included the use of mechanical ventilation, umbilical artery catheterization, and fluid administration.

RESULTS

Between May 1981 and December 1985 14 women with triplet pregnancies received care at Prentice Women's Hospital and Evanston Hospital of the McGaw Medical Center at Northwestern University. Two-thirds of the women required ovulation-inducing medications to achieve their pregnancies. Two pregnancies resulted in previsible loss at less than 26 weeks of gestation. Thus 36 infants were born from 12 pregnancies at a mean gestational age of 33 weeks (28-38 weeks); 10 of the 12 pregnancies (86%) resulted in delivery prior to 37 weeks. There were 9 white and 3 Hispanic sets and the male:female ratio was 1:1. The overall survival was 97.3%. The one neonatal death occurred in a 30-week gestation firstborn infant who died of severe respiratory distress syndrome.

One of the two vaginal attempted deliveries was uneventful at 36 weeks. In the other, a 35-week gestation, the first two infants were successfully delivered while the third required emergency cesarean section. The infant had a cord pH of 6.96 (-19), was resuscitated by a neonatology team present in the delivery room and survived.

All 10 CS were successful. The mean cord arterial blood gas tension and pH were normal in the third triplet even though 83% were nonvertex. In addition, Apgar scores and the requirement for mechanical ventilation or supplemental oxygen did not differ between the first and thirdborn triplet. These observations suggest that CS was beneficial. The thirdborn tended to have a greater hematocrit at birth (Table).

Six premature infants had grade 1-2 IVH and two had grade 3-4 IVH. The incidence of IVH, RDS, and other complications of prematurity did not differ among siblings.

Table - Comparisons between first and third triplet

Variable	Triplet A	Triplet C	P
Weight (g)	1900 ± 352	1742 ± 262	NS
Gestational age (weeks)	33 (28-38)	33 (28-38)	NS
Apgar,			
1 min	7 (5-9)	6 (0-9)	NS
5 min	9 (8-10)	9 (7-10)	NS
Mechanical ventilation (days)	1.77 (0-10)	4.36 (0-31)	NS
Hematocrit at birth (%)	44.4	57.6	< 0.01

DISCUSSION

Our study suggests that CS may be the preferred method of delivery for triplet pregnancies. Vaginal delivery was associated with a greater risk for the third triplet to develop a combined respiratory-metabolic acidosis. That the thirdborn infant delivered by CS did not have a greater morbidity or mortality than the firstborn implies that CS reduced this risk. However, only 2 vaginal deliveries were in this series. Others have proposed that CS reduces birth order related complications in triplet pregnancies. Antoine et al [1] could find no significant differences in acid base balance related to birth order in 6 triplets delivered by CS. Itzkowic [5] studied 59 triplet pregnancies over four decades at four British hospitals and found a 36% increased mortality in thirdborn vs 15% in the firstborn.

The incidence of neonatal respiratory disease, intraventricular hemorrhage, and mortality did not differ between the first and third triplets delivered by CS. Hematocrits tended to be greater in the third triplet although no baby required treatment for polycythemia. The mechanism for this is unclear, although equivalent birth weights between the first and third triplet indicated that sibling-sibling transfusion was not responsible.

Given the high incidence of prematurity, the presence of neonatology resuscitation teams in the delivery room probably aided in triplet outcome. The third triplet, whose cord PH was 6.96, clearly benefited from this. The fact that no infant had a 5-min Apgar score less than 7 suggests effective resuscitation effort were effective.

Our very low mortality (2.7%) compares favorably with the 7-30% reported [1,2,7]. It supports the concept that CS and appropriate neonatal resuscitation and therapy greatly enhances survival. As reflected in one of the triplet sets, vaginal delivery may predispose the thirdborn to a greater risk of suffering from a combined respiratory-metabolic acidosis.

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