

Fetomaternal and neonatal outcome of triplet pregnancy

Promising results

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ABSTRACT

الأهداف: بحث المضاعفات المحتملة الناتجة عن الحمل الثلاثي، ومدى تأثيرها على الأمهات والأجنة والمواليد.

الطريقة: أُجريت هذه الدراسة الاسترجاعية في قسم النساء والولادة، مستشفى أبها للحمل والولادة، أبها، المملكة العربية السعودية. لقد قمنا بمراجعة سجلات المرضى خلال الفترة من يناير 2007م إلى ديسمبر 2009م، وشملت الدراسة 32 حالة من حالات الحمل الثلاثي.

النتائج: اتضح من هذه الدراسة أن أكثر المضاعفات حدوثاً هي الولادة المبكرة، ولم تزيد المضاعفات الأخرى كثيراً عن الولادات الأخرى. كما اتضح أن من أكثر المضاعفات التي يتعرض لها المواليد هي متلازمة ضيق التنفس مع إمكانية الشفاء منها بطرق العلاج المناسبة. وأظهرت هذه الدراسة أن نسبة وفيات المواليد تعد أكثر من غيرها وذلك بسبب قصر العمر الحملي للجنين.

خاتمة: أثبتت هذه الدراسة مدى تحسن نتائج الحمل الثلاثي وتأثيرها إيجاباً على الأمهات والمواليد. وبالرغم من صغر العدد المدرج في هذه الدراسة نظراً لندرة حدوث مثل هذه الحالات إلا أننا نستنتج أهمية تقديم المشورة للآباء فيما سوف يترتب على الحمل الثلاثي من: الولادة المبكرة، ونوع الولادة، والحاجة إلى تقليل عدد الأجنة، وعمل التطويق الوقائي للرحم.

Objectives: To determine the fetomaternal and neonatal outcomes in triplet pregnancy.

Methods: A retrospective review of 32 triplet pregnancies between January 2007 to December 2009 was carried out. This study was conducted at the Department of Obstetrics and Gynecology, Abha Maternity Hospital, Abha, Kingdom of Saudi Arabia.

Results: In this study, the most common complication was preterm labor, while other complications examined were not dramatically increased. The most common complication observed in neonates were respiratory distress syndrome with good neonatal outcome. The

study demonstrated high perinatal mortality, mostly due to extreme low gestational age at delivery.

Conclusion: We found a good maternal and neonatal outcome in patients who conceived with triplet, although the sample size is small due to a rare incidence of triplet gestation. This finding is helpful in counseling patients who had conceived triplets in terms of preterm delivery, mode of delivery, and the need for embryo reduction at earlier stages of pregnancy, as well as performing a prophylactic cervical cerclage.

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Over the last 3 decades, there has been a significant increase in the rate of high-order multiple pregnancies. For approximately more than 17 years (1980-1997), there has been a 400% rise in the rate of higher-order multiple births, and over the same time period, the singleton birth rate rose by only 6%, and the twin birth rate by 52%.¹ According to the international vital statistics, triplet births comprise the overwhelming majority of higher-order multiples, accounting for 91% of all higher-order multiple births.² Here in Saudi Arabia, local data are lacking. The twin rate for assisted reproductive technology (ART) patients increased between 1997 and 2000, reaching 444.7 per 1000 live births in 2000, whereas the triplet rate has declined

substantially from 134.3 - 98.7 per 1000 live births from 1997-2000.² Triplet pregnancies are associated with 11-fold increase in infant mortality rate when compared with singleton, and 2.2-fold increase when compared with twins,³ and higher maternal morbidity compared to twin pregnancies.⁴ The aim of our study is to describe the maternal and fetal-neonatal outcome, and complications associated with triplet pregnancies under our care.

Methods. This is a retrospective study of 32 consecutive triplet pregnancies, which occurred spontaneously or after ART. The record of mothers and triplets born between January 2007 and December 2009 in the Department of Obstetrics and Gynecology, Abha Maternity Hospital, Abha, Kingdom of Saudi Arabia (KSA) were analyzed. All were managed by the same obstetrical and pediatric team. This study was performed according to the principles of Helsinki declaration, and was approved by the hospital ethics committee. We included in this study, all triplet pregnancies confirmed by obstetric ultrasound scan. Vanishing fetus after triplet diagnosis at early pregnancy, history of preterm labor, history of recurrent miscarriage, and presence of uterine fibroid were excluded. Maternal data extracted were maternal age, parity, type of pregnancy (ART or spontaneous), mode of delivery, hospital stay, and maternal medical or surgical complications encountered. The maternal complications analyzed were preterm labor, pre-labor preterm rupture of membranes (PPROM), antepartum hemorrhage, postpartum hemorrhage, gestational diabetes, preeclampsia, and thromboembolism. Neonatal data for each neonate extracted were gestational age at delivery, delivery weight, Apgar score, admission to neonatal intensive care, hospital stay, complications, and congenital anomalies. The number of live neonates, as well as neonatal deaths and stillbirths were estimated, and perinatal mortality rate was calculated.

Analysis of the data was performed using Statistical Package for Social Sciences version 16 (IBM® SPSS® Statistics, Chicago, IL, USA).

Results. The records of all babies delivered up until one year of age were reviewed, and all had no complications, and had normal growth charts. Maternal characteristics were analyzed, and the mean maternal age was 30 years (range 18-39), and the mean parity was 1 (range 0-4). Seventeen patients were pregnant as an outcome of intra cytoplasmic sperm injection (ICSI) treatment, which accounts for 53.1% of triplets pregnancies. Two patients had spontaneous triplet

pregnancies (6.3%), while 3 patients had clomiphene citrate induced triplet pregnancies (9.4%). Three patients of the studied group (9.4%) had abortions at the second trimester (before 24 weeks of gestation), and one of these patients had hepatic vein thrombosis. The frequency of each complication is illustrated in Table 1. There were no detectable late neonatal complications. Of the studied group, 62.5% were admitted due to preterm labor, while 21.9% had pre-labor preterm rupture of membranes. In all, 12 patients had a prophylactic cervical cerclage. The mean gestational age at delivery for those who had a cerclage was 32 weeks, while those who had no cerclage delivered at 30.8 weeks, and this difference was not statically significant ($p=0.38$, 95% confidence interval [CI]; 4.2-1.7). Description of all maternal complications are shown in Table 1. All patients who did not go into spontaneous labor were delivered by elective cesarean section at the end of 36 weeks of gestation. Neonatal baseline characteristics of all triplets born are shown in Table 2. The mean gestational age at delivery was 31.3 weeks, while the mean delivery weight was 1404.6 grams. One of the studied group had one set of monozygotic twin, and the other, the third fetus had a separate placenta, and this pregnancy was a result of ICSI, and the patient went into labor at 34 weeks of gestation. We encountered 2 babies with congenital anomalies in 2 different pregnancies: one had a ventricular septal defect treated medically; and the other had a congenital hip dislocation treated surgically after one year. The most common neonatal complication was hyaline membrane disease, which was observed in 42.5% of cases, and this complication also carried the highest mortality rate among neonates. There were 3 sets of triplets delivered after 36 weeks of gestation, while the others were delivered earlier. The occurrence of each complication is illustrated in Table 3.

Discussion. This study represents the maternofetal complications, which are encountered at a triplet pregnancy from a single center. Although the size of the study is small due to the rare prevalence of such condition, it might add important information to the literature with regard to the natural history of triplet pregnancy conceived via different methods of conception in KSA. The triplet birth rate has generally increased worldwide since the 1970's.⁵ Two important factors associated with these are the tendencies toward increased maternal age, which may be associated with higher rates of spontaneous multiple births,⁶ and the rising use of medical assistance to become pregnant.⁷

A triplet pregnancy has significant implications for the mother, infant, family, and society as a whole.

Table 1 - Triplet pregnancy and maternal complications (N=32).

Item	n	(%)
Spontaneous triplet pregnancies	2	(6.3)
Clomiphene citrate induced triplet	3	(9.4)
Triplet pregnancies due to ICSI	17	(53.1)
Triplet pregnancies after HMG	10	(31.2)
Preeclampsia	1	(3.1)
Postpartum hemorrhage	1	(3.1)
Admission for preterm labor	20	(62.5)
Preterm pre-labor rupture of membranes	7	(21.9)
Thromboembolism*	1	(3.1)
Cervical cerclage	12	(37.5)
Hospital stay, days (mean ± SD)	21.4 ± 18.3	

*one patient had hepatic vein thrombosis.
 ICSI - Intracytoplasmic sperm injection, HMG - human menopausal gonadotropin, SD - standard deviation,

Table 2 - Baseline neonatal characteristics of triplet.

Variables	Triplet A	Triplet B	Triplet C
Birth weight, gm	1457 ± 582	1419 ± 580	1338 ± 605
Apgar 1, minutes	4.5 ± 2.5	4.9 ± 2.2	4.4 ± 2.5
Apgar 5, minutes	6.8 ± 2.9	7.2 ± 2.2	6.5 ± 3.1
Length of hospital stay, days	9.9 ± 13.9	10.2 ± 12.2	12 ± 16.4
Gestational age, weeks	31.3 ± 3.95		

Data are presented as mean ± standard deviation.

Triplet pregnancies are reported to have high rates of complications, the most common of which is preterm delivery.⁸ The recent literature on triplet pregnancies reports delivery to occur at a mean gestation of approximately 32-34 weeks.⁸ In addition, there is a 2-fold increase in risk of maternal mortality over singleton pregnancies.

Our study presents similar results with the literature in term of maternal complications. Postnatally, there are reports of an increased rate of neonatal morbidity including respiratory distress syndrome (RDS).^{8,9} Consistent with our expectation, mortality was focused in those pregnancies that delivered at the very premature end of the spectrum, indeed all cases in infants born before 24 weeks gestation died. The perinatal mortality rate of 149/1000 birth was higher compared to the reported rates of 41-121/1000.^{8,10} The overall survival of triplets was quiet reasonable, but there are very limited data available on neurodevelopmental follow up of triplets, which makes it difficult to estimate the long term outcome on those triplets delivered . A small study reported that the overall cognitive and neurological outcome of high organ multiple pregnancy surviving the neonatal period is good, but that minor neurocognitive

Table 3 - Fetal and neonatal outcomes (N=96).

Outcome	n	(%)
Abortion	3	(3.1)
Preterm births less than 36 weeks	29	(90.6)
Preterm births beyond 36 weeks.	3	(9.4)
Live births	74	(85.0)
Stillbirths	3	(3.4)
Neonatal death	10	(11.4)
Neonatal intensive care admission.	73	(83.9)
Hyaline membrane disease	37	(42.5)
Neonatal sepsis	8	(9.2)
Congenital malformation	2	(2.3)
Perinatal mortality	149 per 1000 births	

deficits are frequent.¹⁰ Although the data described in the current study are from a single center, it represents a fairly homogeneous pattern of management, and there are some limitations. Specifically, there is quite a small number of studied sample, and this means it is not possible to perform meaningful comparisons within the cohort, such as the outcomes of triplet pregnancies conceived spontaneously, versus those conceived using assisted techniques. The Cochrane Review suggests that embryo reduction reduces the rate of preterm delivery, with a number needed to treat 7 (95% CI; 5-9) however, there is an increased rate of miscarriage, with a number needed to treat 26 (95% CI; 14-193).¹² This suggests that embryo reduction may have a role in reducing prematurity, there is still a lack of data on the effect, if any, on subsequent long term neurodevelopmental outcome.

In conclusion, although the expected outcome of a triplet pregnancy is thought to be much dramatic, the result of this study along with others in the literature is contradicting this concept. The need to offer selective fetal reduction to parents expecting triplets should be re-evaluated. Larger studies are needed to further evaluate this issue.

References

- Centers for Disease Control and Prevention. Contribution of assisted reproduction technology and ovulation-inducing drugs to triplet and higher-order multiple births-United States 1980-1997. *JAMA* 2000; 284: 299-300.
- Reynolds MA, Schieve LA, Martin JA, Jeng G, Macaluso M. Trends in multiple births conceived using assisted reproductive technology, United States, 1997-2000. *Pediatrics* 2003; 111; 1159-1162.
- Tarter JG, Khoury A, Barton JR, Jacques DL, Sibai BM. Demographic and obstetric factors influencing pregnancy outcome in twin gestations. *Am J Obstet Gynecol* 2002; 186: 910-912.

4. Wen SW, Demissie K, Yang Q, Walker MC. Maternal morbidity and obstetric complications in triplet pregnancies and quadruplet and higher-order multiple pregnancies. *Am J Obstet Gynecol* 2004; 191: 254-258.
5. Ward Platt MP, Glinianaia SV, Rankin J, Wright C, Renwick M. The North of England Multiple Pregnancy Register: five-year results of data collection. *Twin Res Hum Genet* 2006; 9: 913-918.
6. Blickstein I, Keith LG. Outcome of triplets and high-order multiple pregnancies. *Curr Opin Obstet Gynecol* 2003; 15: 113-117.
7. Shinwell ES, Blickstein I, Lusky A, Reichman B. Excess risk of mortality in very low birthweight triplets: a national, population based study. *Arch Dis Child Fetal Neonatal Ed* 2003; 88: 36-40.
8. Devine PC, Malone FD, Athanassiou A, Harvey-Wilkes K, D'Alton ME. Maternal and neonatal outcome of 100 consecutive triplet pregnancies. *Am J Perinatol* 2001; 18: 225-235.
9. Adesiyun AG, Eseigbe E. Triplet gestation: clinical outcome of 14 cases. *Ann Afr Med* 2007; 6: 12-16.
10. Garite TJ, Clark RH, Elliott JP, Thorp JA. Twins and triplets: the effect of plurality and growth on neonatal outcome compared with singleton infants. *Am J Obstet Gynecol* 2004; 191: 700-707.
11. Hahn A, Neubauer BA, Schröder H, Gosch A. Neurological, cognitive, and behavioural outcome of higher order multiple births. *Neuropediatrics* 2009; 40: 255-259.
12. Papageorghiou AT, Avgidou K, Bakoulas V, Sebire NJ, Nicolaides KH. Risks of miscarriage and early preterm birth in trichorionic triplet pregnancies with embryo reduction versus expectant management: new data and systematic review. *Hum Reprod* 2006; 21: 1912-1917.

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Al-Kadri HM, Tariq S, Tamim HM. Risk factors for postpartum hemorrhage among Saudi women. *Saudi Med J* 2009; 30: 1305-1310.

Fida NM, Al-Aama J, Nichols W, Nichols W, Alqahtani M. A prospective study of congenital malformations among live born neonates at a University Hospital in Western Saudi Arabia. *Saudi Med J* 2007; 28: 1367-1373.