Fetomaternal Outcome in Triplet Pregnancy

Syeda Batool Mazhar, Fariha Rahim and Tehmina Furukh

ABSTRACT

Objective: To determine maternal outcome as antenatal and postnatal complications and neonatal outcome as birth weight, morbidity and mortality in triplet gestation.

Study Design: Observational study.

Place and Duration of Study: Mother and Child Health (MCH) Centre, Pakistan Institute of Medical Sciences, Islamabad from May 2000 to April 2006.

Patients and Methods: All the patients with triplet pregnancy beyond 28 weeks gestation, who delivered at the study place during above period were included in the study. The primary outcome measures were frequency of maternal complications and neonatal birth, weight and morbidity. Secondary outcome measures included the frequency of assisted conception in the studied cohort.

Results: Eighteen women had triplet pregnancy beyond 28 weeks. Nine were booked, 6 non-booked and 3 of them were referred. Mean duration of gestation was 237.8 days (33.8 weeks). The antenatal complications were preterm delivery in 50%, hypertension in 50%, anemia in 44.4% and obstetric cholestasis in 5.6%. Eight patients (44.4%) suffered postpartum hemorrhage. One patient had peripartum hysterectomy and later expired in intensive care unit after three weeks. Maternal mortality ratio was 5.6%. Fifty five percent women had induction of ovulation with Clomiphene, while none had In Vitro Fertilization (IVF) or Intracytoplasmic Insemination (ICSI) or received gonadotrophins.

Fifteen sets of triplets were delivered abdominally. Mean birth weights of 1st, 2nd and 3rd triplet were 1651, 1640 and 1443 grams respectively. Five sets of triplets (27.8%) had more than 25% discordance for birth weight. The mean Apgar scores of the babies at 1 and 10 minutes after birth were 6.0 and 8.0, 5.6 and 7.5; and 5.2 and 7.0 respectively. Of the 54 infants, 18 required Neonatal Intensive Care Unit (NICU) admission and 14 were admitted in nursery. Two died shortly after birth. Total perinatal mortalities were 13 including 4 cases of intra-uterine demise. Three babies suffered from jaundice, 7 had sepsis and 8 had respiratory distress syndrome.

Conclusion: Triplet gestation had a high rate of fetomaternal complications. Majority had history of assisted conception.

Key words: Triplet gestation. Multiple pregnancy. Assisted conception. Perinatal mortality. Preterm delivery.

INTRODUCTION

The birth rates of triplets and higher order multiples in United States increased steeply between 1980 and 2001, by more than 400%. In recent years, the twin birth rate has continued to rise each year with apparent leveling-off of the triplet rate during 1999 to 2001.1 The dramatic increase in multiple births has been attributed to a shift towards bearing children at older ages, when multiples are more likely to occur naturally, and a rise in the use of assisted reproductive technologies and agents, which are more likely to result in a multiple conception.2

The natural incidence of spontaneous triplet pregnancy is approximately one in 6000-8000 births.3 In countries with high rates of multiple births, 30-50% of twin pregnancies and 75% of triplet pregnancies occur after fertility treatment.4 Ovulation induction accounted for 10-69% of triplet gestations, compared to 24-30% from In Vitro Fertilization (IVF) and 7-18% from spontaneous conceptions.5

Triplet pregnancies are at an increased risk of pregnancy complications and have higher perinatal morbidity and perinatal rates.6 Multiple births contribute disproportionately to perinatal mortality and morbidity. In 1997, only 3 percent of births in the United States were multiples, however, these accounted for 21, 14 and 13 percent of low birth infants, preterm births and infant deaths respectively.7 Neonatal complications are mainly attributable to extreme prematurity and intrauterine growth restriction.8

 Acquisition of data through this case series will help in counseling patients with triplet gestation regarding fetal and maternal complications in the local setup. The objective of this study was to determine the complications and outcome in triplet pregnancy in both the mother and the neonates.
PATIENTS AND METHODS

All the patients with triplet pregnancy beyond 28 weeks gestation, who delivered at MCH Centre, Pakistan Institute of Medical Sciences, Islamabad were included. Those women who were booked at PIMS and delivered in another hospital were excluded from the study. This observational study extended over a period of 6 years i.e. from June 2000 to May 2006.

The data of women with triplet pregnancy was collected on a specially designed proforma. The maternal demographics including age, height, weight and parity were noted. The history of infertility treatment, past history and family history of multiple gestations was also observed. Obstetric outcomes including length of gestation at delivery and antenatal admissions were assessed. The data regarding antenatal complications, intrapartum details and postpartum complications was also collected. Neonatal outcome included birth weights, gender and Apgar scores at 1 and 10 minutes. Data was also analyzed for birth weight discordance among triplets. Birth weight discordance was calculated as the difference in birth weight between the largest and the smallest triplet’s weight and expressed as percentage of the largest triplet’s weight. Neonates were followed-up to one week of life.

Main outcome measures were maternal complications (i.e. anemia, preterm labour, pregnancy induced hypertension, postpartum hemorrhage etc.), neonatal morbidity and mortality. Secondary outcome measures included incidence of assisted conception.

Anemia was defined as hemoglobin concentration less than 11 g/dl. For study purposes, neonatal morbidity was defined as admission in Neonatal Intensive Care Unit (NICU) for 24 hours or more. Those babies who required observation were kept in an intermediate nursery. Data was entered and statistical analysis was performed using the statistical package SPSS version 12. Mean ± SD was calculated for numeric variables, whereas frequency distribution and their percentages were calculated for categorical variables.

RESULTS

A total of 19,954 patients were delivered in MCH Centre during the study period, of which, 18 were triplets resulting in a frequency of 1 in 1108. The mean age of women was 26.8 years. Mean weight was 66.5 kg and mean height was 155.8 cm (Table I). Among the 18 women with triplet pregnancy, 9 (50%) were booked, 6 (33.3%) were non-booked and 3 (16.6%) were referred, 2 from Islamabad capital territory and one from District Headquarter Hospital, Rawalpindi for tertiary care. Five women (27.8%) were primigravidae and the rest 13 (22.2%) were multiparous.

Nine women (50%) had family history of multiple pregnancies, one (5.6%) had previous history of multiple pregnancy, while one of them was herself a twin. Fifty-five percent had induction of ovulation with Clomiphene citrate, while rest of the women had spontaneous pregnancy. Three women (16.6%) had history of previous one caesarean section and required a repeat caesarean section.

During the antenatal period, preterm labour, anemia and pregnancy induced hypertension were the major complicating factors (Table II). One patient suffered from obstetric cholestasis of pregnancy. Other complications included hyperemesis gravidarum and intrauterine demise of one of the fetuses.

Seven (38.9%) women had antenatal admissions, 4 women were hospitalized once, while 3 of them were admitted twice. The mean duration of hospital stay was 19.5 days (ranges: 3-45). Presentation of the leading triplet was breech in 9 (50%) patients and cephalic in 9 (50%) patients. Among 18 sets of triplets, 11 (61.6%) had dichorionic placentae, 6 (33.3%) had trichorionic placentae and one (5.6%) had monochorionic placenta. Only one woman had a monoamniotic (5.6%), one (5.6%) diamniotic and 16 (88.8%) had triamniotic pregnancy.

Mean gestation at the time of delivery was 237.8 days i.e. 33.8 weeks. Fifteen sets of triplets were delivered preterm, 2 at term and one was postterm. Among preterm, 8 delivered between 33-36 completed weeks of gestation. Eight women presented with labour pains (44.4%), 5 with hypertension (27.8%) and 5 with premature rupture of membranes (27.8%)

Vaginal delivery was planned in 5 (27.8%) patients as all of them presented with preterm labour at less than 30 weeks gestation. In 2 of them, emergency caesarean section had to be performed due to dysfunctional labour and intrapartum death of the first triplet. Thus, caesarean section was performed for 15 patients. Eight women (44.4%) suffered from postpartum hemorrhage. One of the patients had postpartum hysterectomy for obstetric cholestasis.

Table I: Maternal demographics (n=18).

<table>
<thead>
<tr>
<th>Demographic variables</th>
<th>Mean ± SD</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>26.8 ± 3.89</td>
<td>22-35</td>
</tr>
<tr>
<td>Height (cm)</td>
<td>155.8 ± 3.96</td>
<td>146-164</td>
</tr>
<tr>
<td>Weight (kg)</td>
<td>66.5 ± 8.26</td>
<td>55-90</td>
</tr>
<tr>
<td>Gestation (days)</td>
<td>237.8 ± 24.6</td>
<td>196-287</td>
</tr>
</tbody>
</table>

Table II: Maternal complications (n=18).

<table>
<thead>
<tr>
<th>Complications</th>
<th>Value</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preterm labour</td>
<td>9</td>
<td>50%</td>
</tr>
<tr>
<td>Hypertension</td>
<td>9</td>
<td>50%</td>
</tr>
<tr>
<td>Anemia</td>
<td>8</td>
<td>44.4%</td>
</tr>
<tr>
<td>PPH</td>
<td>8</td>
<td>44.4%</td>
</tr>
<tr>
<td>Hyperemesis gravidarum</td>
<td>2</td>
<td>11.1%</td>
</tr>
<tr>
<td>Obstetric cholestasis</td>
<td>1</td>
<td>5.5%</td>
</tr>
</tbody>
</table>
intractable postpartum hemorrhage. That patient presented with jaundice at the gestation of 257 days and developed disseminated intravascular coagulation. She suffered massive postpartum hemorrhage. Initially, B-Lynch suture was applied and internal iliac vessels were ligated but postpartum hysterectomy had to be performed. She expired in the intensive care unit after 20 days.

Among 54 babies, 27 were males and 27 females. Mean birth weights of 1st, 2nd and 3rd triplets were 1651, 1640 and 1443 grams respectively. All the newborns were Low Birth Weight (LBW), while 24 (44.4%) had Very Low Birth Weight (VLBW). The mean Apgar scores of the babies at 1 and 10 minutes after birth were 6.0 and 8.0, 5.6 and 7.5, and 5.2 and 7.0 respectively. Among the 18 sets of triplets, 5 (27.8%) had more than 25% discordance for birth weight.

Among the 54 delivered newborns, 18 (33.3%) babies required intensive care (NICU) admission. Five of them were leading triplets (9.2%), 7 (12.9%) were 2nd triplets and 6 (11.1%) were 3rd triplets, while 13 babies were admitted in intermediate nursery. Three babies suffered from icterus, 7 had sepsis and 8 developed respiratory distress syndrome (Table III). Two babies died immediately after birth in the operation theatre due to very low birth weight. The perinatal mortalities were 13 including 4 intrauterine deaths. The perinatal mortality rate in the present study was 240/1000 live births. Only one of the babies had congenital anomalies with distended abdomen due to ascites.

### Table III: Neonatal outcome (n=54).

<table>
<thead>
<tr>
<th>Condition</th>
<th>Value</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Early neonatal death</td>
<td>9</td>
<td>16.6%</td>
</tr>
<tr>
<td>Sepsis</td>
<td>7</td>
<td>14.5%</td>
</tr>
<tr>
<td>RDS</td>
<td>7</td>
<td>14.5%</td>
</tr>
<tr>
<td>IUds</td>
<td>4</td>
<td>7.4%</td>
</tr>
<tr>
<td>Jaundice</td>
<td>3</td>
<td>6.2%</td>
</tr>
</tbody>
</table>

**DISCUSSION**

The frequency of triplet gestation in our study population was 1 in 1108 women and birth rate was 90/100,000 births. In United States, the triplet or higher birth rate in 1980 was 37/100,000 births and rose to 184/100,000 births in 2002. A relatively higher rate can be explained on the basis of MCH Centre (PIMS) being a referral centre in the region for mothers as well as the neonatal care. The frequency of triplets and higher order multiples can be estimated by Hellin hypothesis. This formula predicts that if the incidence of twins is ‘n’, the incidence of triplets will be the square of ‘n’, quadruplets the cube of ‘n’ and so on.9

The mean age of mother in this study was 26.8 years in contrast to previous studies, which reported that bearing children at older age results in multiple gestations.2 The average maternal age was 30.3 years (ranges 24-36 years) in a local study.10

In the present study, the mean gestation was 237.8 days (33.8 weeks). The mean gestational age at birth is inversely related to plurality. In a large study of births in the United States, mean gestational age was 39 weeks in singletons, 35.8 weeks in twins and 32.5 weeks in triplets.1 A large epidemiologic analysis found that only 16% remain undelivered at 36 weeks of gestation.11

The major complicating factors in this study were preterm labour, anemia and PIH. All of these complications were observed in twin gestation at Sir Ganga Ram Hospital.12 In another study from Jordan, there were no significant differences between twins and triplets group in maternal antepartum or neonatal complications.13

Preterm delivery is the most significant complication of triplet gestation, approximately 75-100% of triplets are born prematurely.14 It is the only complication that occurred significantly more often in the triplet than in twin gestation.15 In this study, 7 (43.7%) women presented with preterm labour, while 15 had preterm delivery. PPROM is another cause of prematurity, the incidence being 15-30% in three series including 300 triplet pregnancies.16 We observed PPROM in 27.8% women in this case series.

Pre-eclampsia complicates 20-46% of triplet gestations compared to 5% of singleton pregnancies.16,17 In present study, the frequency of pre-eclampsia was 22.2%. Pre-eclampsia occurs earlier and is more severe in multiple gestations and HELLP syndrome is more likely.18 In one large series, the incidence of severe pregnancy related hypertensive conditions in singletons, twins and triplets was 0.5, 1.6 and 3.1 respectively; the risk of any hypertensive disorder is 6.5, 12.7 and 20 %,19

In this case series, 44.4% women were anemic. Anemia has been reported in 20-70% of higher order multifetal gestations.14

The four most common presentations of triplet pregnancy are vertex-breech-breech (18%), vertex-vertex-breech (16%), vertex-vertex-vertex (15%) and breech-breech-breech (13%).14 In this study, vertex-breech-breech (22.2%) and breech-breech-vertex (27.7%) were the most common presentations.

Most recent US data show that 10.2% of twins and 34.5% of triplets weigh less than 1500 grams. They represent more than 9-fold and more than 30-fold higher percentages of VLBW twin and triplet compared with singletons.20 Triplets had a significantly low mean birth weight (1720 gm) and gestational age at delivery (33 weeks) in California,21 which is comparable to the present study. Triplets had 5-fold increased risk of requiring neonatal intensive care compared with twins.21

In this study, intensive neonatal care was required for 18 (33.3%) babies, while it was 17% for twin gestation in another study conducted at our hospital.22
In United States, the neonatal death rate is approximately 4/1000 live births for singletons and the rate dramatically rises with increasing number at birth to 67 for quadruplets. The perinatal mortality rate in twin and triplet gestation was 108 and 500 per live births in local studies. While in this study, it was 240/1000 live births for triplet pregnancy.

For triplets, highest proportion of babies had birth weights between 1500-2499 gm in United States. In present study, all the babies were of Low Birth Weight (LBW) and 24 (44.4%) babies had Very Low Birth Weight (VLBW).

IUD rate for singleton ranges from 4.3% and rises 17% in triplet pregnancy. In this study, the intrauterine demise frequency was 7.4%. However, increased maternal age (>35 years) was a significant risk factor for fetal death comparable to younger mothers. High gravidity for age was highly protective factor for all plurality groups. As maternal age advances from 20-40 years or more, the number of triplet sets with total birth weights of more than 5000 gm increased and the number of sets with total birth weights of less than 3000 gm decreased.

The main postpartum complication of triplet pregnancy is hemorrhage, whether the delivery is by vaginal or abdominal route due to uterine atony. The incidence of postpartum hemorrhage after a triplet delivery is 10-35% while its incidence is 2-11% after all deliveries. In this study, 44.4% patients suffered postpartum hemorrhage.

Multiple gestations have a significantly higher occurrence of emergent peripartum hysterectomy than singletons. In this study of 18 women with triplet gestation, one woman had postpartum hysterectomy. The maternal mortality was 5.5%. The maternal mortality rate was 35.8/100,000 live births in twin pregnancies, while it was 99/100,000 in triplet gestation in a study conducted in Sudan.

In this study, 15 (83.3%) sets of triplets were delivered abdominally. There is a worldwide tendency to favour caesarean section in triplet pregnancies, as it reduces birth intervals between the births and problems for second and third triplets. It also safeguards the mother against injuries from blind intrauterine manipulations.

The induction of ovulation by Clomiphene was found in 55.5% of cases. In another local study, ovulation induction was present in 83.3%.

CONCLUSION

Triplet gestation was associated with high rate of fetomaternal complications. Fifty-five percent had induction of ovulation with Clomiphene.

REFERENCES


