

## Comparison of Obstetrical Outcomes in Booked and Unbooked Patients of Triplet Gestation

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**Background.** With the increasing use of assisted reproductive technologies and ovulation induction, the rate of triplet pregnancies has increased dramatically. Multiple pregnancies are associated with greater risks for both mother and fetuses compared with a singleton pregnancy. The aim of this study was to evaluate if a simple intervention like antenatal care could improve obstetrical outcome in patients with triplet pregnancy.

**Methods.** The study was conducted at the Department of Obstetrics and Gynaecology, Services Hospital Lahore, from 1<sup>st</sup> January 1998 to 31<sup>st</sup> December 2003. Twelve women, including 6 booked and 6 unbooked patients, with triplet pregnancies of  $\geq 24$  weeks of gestation, who presented at the department, during the study period, were studied. Obstetrical outcomes including length of fetal gestational age at delivery, birth weights, apgar scores and neonatal assessment, admission in neonatal intensive care and stillbirths / neonatal deaths were recorded.

**Results.** The average maternal age was 30.3 years and average maternal weight was 63.25 Kg. Ten women had conceived by ovulation induction while two had conceived spontaneously. The average gestational age at delivery in unbooked patients was 32 weeks and was 34.8 weeks in booked women. Caesarean section was the preferred mode of delivery. However, two unbooked patients presented in active labour at 29 and 30 weeks delivered vaginally. Among the booked patients 15 babies were live-born with apgar score  $\geq 7$ , two babies required admission, one baby died of sepsis in nursery and there were no intrauterine deaths. Among the unbooked patients only 3 babies were live-born with apgar score  $\geq 7$ , five babies were admitted in neonatal nursery, 7 babies died in the first week of life and there were three intrauterine fetal deaths.

**Conclusion.** Antenatal management improved the obstetrical outcome of triplet pregnancy.

**Key Words.** Antenatal care, Obstetrical Outcome.

### Introduction

With the increasing use of assisted reproductive technologies and ovulation induction, the rate of triplet pregnancies has increased dramatically over the past 2 decades.<sup>1</sup> The majority of triplet pregnancies are achieved with infertility treatments and are trizygotic, and thus, trichorionic / triamniotic.<sup>1</sup> The incidence of triplet pregnancy in a hospital with IVF unit attached is reported to be 1 in 860 live births.<sup>2</sup> Between 1980 and 2000, twin births rose by 74% compared with a rise of 44.8% in triplet and higher-order multiple births, with triplets accounting for 92% of the latter.<sup>3</sup> The risk of multiple pregnancies for women undergoing ovulation induction is increased to 2040%. Obstetricians now encounter an increasing number of triplet and higher-order pregnancies.

Multiple pregnancies are associated with greater risks for both mother and fetuses compared with a singleton pregnancy. The maternal risks are increased symptoms of early pregnancy, increased risk of miscarriage, vanishing twin syndrome,

discomfort and pressure problems, anaemia, hypertension and preeclampsia, antepartum haemorrhage, hydramnios, preterm labour/delivery, risk of an operative delivery, postpartum haemorrhage and postnatal problems. Fetal risks include single fetal death, intrauterine growth restriction, congenital anomalies, twin reversed arterial perfusion sequence acardiac monster or chorioangiopagus parasiticus, conjoint twins, twin-twin transfusion syndrome, the stuck twin phenomenon, cord accidents, risk of asphyxia, twin entrapment, prematurity, stillbirth and neonatal death.

Multiple pregnancy is a high-risk pregnancies that should be managed in hospital by experienced obstetrician in collaboration with neonatologist. The current study was designed to evaluate the obstetrical outcomes in patients with triplet pregnancy, with and without antenatal care and highlights the improved obstetrical outcomes with proper antenatal care.

### Patients and Methods

This case series was conducted at Department of

Lahore, and the data was retrospectively collected over 6 years period from 1<sup>st</sup> January 1998 to 31<sup>st</sup> December 2003. Twelve patients with triplet pregnancy, including 6 booked and 6 unbooked patients, who presented in Department of Obstetrics and Gynaecology during the study period, were selected. This analysis was limited to triplet pregnancies presenting at  $\geq 24$  weeks of gestation by last menstrual period and first-trimester ultrasound scan, or best obstetrical estimate (a combination of clinical and ultrasonographic estimates); thus excluding those which could have ended in miscarriage.

Evaluation by obstetrical history and examination was done. Maternal age, maternal weights, parity, infertility treatment, gestational age at booking and antenatal complications were recorded. Main outcome measures were length of fetal gestational ages at delivery, birth weights, apgar scores and neonatal assessment, admission in neonatal intensive care and stillbirths/neonatal deaths. Data was tabulated and comparison of obstetrical outcomes between booked and unbooked patients was done.

## Results

Twelve women with triplet pregnancies of  $\geq 24$  weeks of gestation were selected for the study. The 6 unbooked patients came to Labour ward with pre-term labour, premature rupture of membranes or preeclampsia and were delivered in the Department of Obstetrics and Gynaecology. 6 patients with triplet pregnancy were booked in the first trimester for antenatal care their obstetrical history, examination, infertility treatment, antenatal record, antenatal complications, delivery record and fetal /

neonatal assessment was evaluated.

There were 6 nullipara and 6 multipara women in our study. The average maternal age was 30.3 years (range 24-36 years) and average maternal weight was 63.25 Kg (range 53-75kg). The antenatal assessment and antenatal complications of the patients in the study group are shown in Table 1.

10 patients had conceived by ovulation induction and two patients had conceived spontaneously. Antenatal complications that occurred in our patients included hyperemesis gravidarum, cervical incompetence requiring cervical cerclage, pregnancy induced hypertension, preeclampsia, preterm labour and premature rupture of membranes. The average gestational age at delivery in unbooked patients was 32.0 weeks (range 29-35 weeks) and was 34.8 weeks (range 33-37 weeks) in booked patients who received regular antenatal care. Table 2 shows the obstetrical outcomes of the booked and unbooked patients with triplet pregnancies.

Caesarean section was the preferred mode of delivery in view of better fetal outcome. However, two patients presenting in active labour at 29 and 30 weeks delivered vaginally. They had no previous antenatal record or ultrasound report at presentation and diagnosis of a multiple pregnancy was made on palpation of multiple fetal parts and delivery of three babies confirmed the diagnosis.

At birth the babies were received by paediatric residents. Assessment and resuscitation was performed. Among the booked patients 15 babies were live-born with apgar score  $\geq 7$ , two babies required admission in neonatal nursery and were discharged after 12 weeks, however one baby died of sepsis in nursery after 4 days and there were no intrauterine deaths. Among the unbooked patients only 3 babies were

**Table 1.** Obstetrical assessment of patients with triplet pregnancy.

Case No.	Age (Years)	Maternal Weight (Kg)	Parity	Booked/Unbooked	Gestational Age at Booking	Infertility Treatment	Antenatal Complications
1.	24	53	Nulliparous	Unbooked	26 weeks	Ovulation Induction	Premature rupture of membranes
2.	34	68	Multiparous	Unbooked	34 weeks	Ovulation Induction	Preterm labour
3.	29	62	Multiparous	Unbooked	32 weeks	Spontaneous Conception	Premature rupture of membranes
4.	25	58	Nulliparous	Unbooked	31 weeks	Ovulation Induction	Preeclampsia
5.	27	54	Multiparous	Unbooked	28 weeks	Spontaneous Conception	Premature rupture of membranes
6.	31	55	Multiparous	Unbooked	33 weeks	Ovulation Induction	Preterm labour
7.	36	72	Nulliparous	Booked	7 weeks	Ovulation Induction	Hyperemesis Gravidarum
8.	35	61	Multiparous	Booked	13 weeks	Ovulation Induction	Preeclampsia
9.	33	62	Nulliparous	Booked	9 weeks	Ovulation Induction	Pregnancy induced Hypertension
10.	31	68	Nulliparous	Booked	7 weeks	Ovulation Induction	Nil
11.	27	71	Nulliparous	Booked	6 weeks	Ovulation Induction	Premature rupture of membranes
12.	32	75	Multiparous	Booked	11 weeks	Ovulation Induction	Cervical incompetence requiring cervical cerclage

**Table 2.** Obstetrical Outcomes of 12 cases of Triplet Pregnancies.

Case No.	Gestational Weeks	Indications Age at Delivery	Birth Weights (grams)			Mode of Delivery	Perinatal Outcome		
			Triplet A	Triplet B	Triplet C		Triplet A	Triplet B	Triplet C
1.	29 weeks	Premature rupture of membranes	780	840	710	Vaginal Delivery	Death after 1 day	Death after 4 days	Intra-uterine fetal demise
2.	35 weeks	Premature labour	2280	1850	2090	Emergency Caesarean Section	Live-born Apgar score $\geq 7$	Admission in Neonatal Nursery	Live-born Apgar score $\geq 7$
3.	33 weeks	Premature rupture of membranes	1890	1750	1550	Emergency Caesarean Section	Admission in Neonatal Nursery	Admission in Neonatal Nursery	Death after 6 days
4.	31 weeks	Worsening Preeclampsia	1540	1400	1200	Emergency Caesarean Section	Admission in Neonatal Nursery	Death after 5 days	Intra-uterine fetal demise
5.	30 weeks	Premature rupture Of membranes	1200	1110	990	Vaginal Delivery	Death after 4 days	Death after 3 hours	Intrauterine fetal demise
6.	34 weeks	Preterm Labour	2090	1700	1900	Emergency Caesarean Section	Live-born Apgar score $\geq 7$	Death after 10 days	Admission in Neonatal Nursery
7.	36 weeks	Elective Delivery at Term				Emergency Caesarean Section	Live-born Apgar score $\geq 7$	Death after 10 days	Admission in Neonatal Nursery
8.	34 weeks	Worsening Preeclampsia	2500	2100	2300	Elective Caesarean Section	Live-born Apgar score $\geq 7$	Live-born Apgar score $\geq 7$	Live-born Apgar score $\geq 7$
9.	35 weeks	Pregnancy induced hypertension	2300	2100	1900	Emergency Caesarean Section	Live-born Apgar score $\geq 7$	Live-born Apgar score $\geq 7$	Admission in Neonatal Nursery
10.	37 weeks	Elective Delivery at Term	3000	2700	2800	Elective Caesarean Section	Live-born Apgar score $\geq 7$	Live-born Apgar score $\geq 7$	Live-born Apgar score $\geq 7$
11.	33 weeks	Premature rupture of membranes	2000	1950	1782	Emergency Caesarean Section	Live-born Apgar score $\geq 7$	Live-born Apgar score $\geq 7$	Death after 1 week
12.	34 weeks	Preterm Labour	2300	1950	2080	Emergency Caesarean Section	Live-born Apgar score $\geq 7$	Admission in Neonatal Nursery	Live-born Apgar score $\geq 7$

Admitted in neonatal nursery and were sent home on recovery. 7 babies died in the first week of life, mostly due to complications of prematurity. There were three intrauterine fetal deaths among the unbooked patients.

## Discussion

Multiple pregnancy significantly increases the risk of maternal, fetal, and neonatal complications, as well as economic costs<sup>4</sup>. Although there is little information available regarding the outcome of triplet pregnancies, it is likely that these cases will be more common in the future and obstetricians will be faced with management of multiple pregnancies more often, therefore an understanding of the possible risks and formulation of strategies to minimize these risks should be practiced.

Preeclampsia, preterm premature rupture of membranes (PPROM), and gestation of < 32 weeks were the factors that were identified to be associated most strongly with poor fetal and neonatal outcomes

in our study, this correlated with the study by Yokoyama et al where these factors were associated with neonatal death and handicap among children of multiple pregnancy<sup>5</sup>.

Preterm delivery is almost 6 times more common in twins and 10 times more common in triplets compared with singleton births<sup>6</sup>; and is the most common cause of perinatal morbidity and mortality in patients with multiple gestation<sup>7</sup>. In our study most of the admissions in neonatal nursery and neonatal deaths were due to complications of prematurity. Triplets are born an average of 7 weeks earlier and at one half the weight of the average singleton (1698 g at 32.2 weeks vs 3358g at 39.3 weeks)<sup>8</sup>. Because of their skewed birth weight and gestational age distributions, triplets are 12 times more likely to die during the first year of life compared with singleton infants<sup>8</sup>. Subsequent handicap among survivors, which is estimated to occur at > 20% for at least one child in the sibship, is also a risk for triplets<sup>5</sup>. However,

However, perinatal mortality and morbidity rates are reduced in preterm deliveries which occur beyond 32 weeks of gestation<sup>9</sup>.

Traditional measures to prevent preterm labour such as frequent office visits and cervical examinations, cessation of work, bed rest, home nursing care and home uterine monitoring are unproven and unnecessary in multiple gestations. More recently, sonographic measurement of cervical length has shown promise in the quantification of risk of preterm delivery in a singleton as well as multiple gestation<sup>10,11</sup>. Iams et al<sup>12</sup> demonstrated in a landmark study, that the risk of preterm delivery is inversely proportional to the length of the cervix measured by transvaginal ultrasonography at 20 and 24 weeks of gestation and cervical length  $\geq 3$  cm was found to be reassuring. The presence of fetal fibronectin in cervicovaginal secretions at 24 weeks of gestation is also a useful marker for prediction of preterm delivery<sup>13</sup>. Similarly, the presence of bacterial vaginosis is associated with an increased risk of preterm birth, although it is not as strong a predictor as fetal fibronectin or cervical ultrasound scanning<sup>14</sup>.

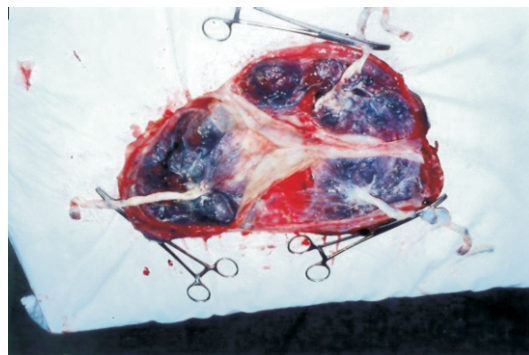
Women attending infertility clinics should be educated with regard to many of the specific risks of multiple gestations as a component of pre-conception management<sup>15</sup>. Regular antenatal care; including strategies that could improve birth weight, length of gestation and early detection of complications would help to reduce these adverse perinatal outcomes. Multifetal pregnancy reduction is a frequently offered therapeutic modality in some centres<sup>16</sup>; although there is still controversy regarding the perinatal and neonatal benefits of reducing triplets to twins. However it was observed in our study that compared with pregnancies without a fetal or neonatal death; those pregnancies with intrauterine fetal death were significantly shorter and more likely to have premature rupture of membranes (PROM). The mothers with a fetal death were also significantly younger and had lower overall weight gain during pregnancy. Likewise, pregnancies with neonatal death were significantly shorter and more likely to have PROM or preterm labour and most of the neonatal deaths occurred as a result of complications of pre-maturity.

In the analysis of literature on multiple pregnancies several studies confirm the association between rates of maternal weight gain and fetal growth, birth weight, and length of

gestation, particularly the pregravid weight-for-height status of the mother. Adequate maternal weight gain by 24 weeks of gestation is shown to be an important factor that influence fetal growth and, indirectly, length of gestation<sup>17</sup>.



**Figure 1.** Healthy triplets delivered by caesarean section with their mother.



**Figure 2.** Triamniotic and trichorionic placenta following triplet delivery.

These findings can be translated into three clinically relevant guidelines: (1) aggressively treat hyperemesis, because weight loss or inadequate gain before 24 weeks of gestation adversely affects fetal growth and outcome; (2) underweight women need to gain to their ideal weight-for-height in the first third of pregnancy (as rehabilitative nutrition) in addition to needed gestational weight gain; and (3) maternal weight gain by 24 weeks is critically important for fetal growth, because most triplet pregnancies will not go further than 34 weeks into the third trimester.

## Conclusion

It was concluded from the study the outcomes of triplet pregnancies improve with proper antenatal care. Proper counseling, improving the nutritional Status of mother before and during infertility treatments and therapeutic

weight gain during multiple pregnancy have the potential to dramatically improve the course and outcome of these high-risk pregnancies.

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