VOLUME - 11, ISSUE - 06, JUNE - 2022 • PRINT ISSN No. 2277 - 8160 • DOI : 10.36106/gjra

Original Research Paper

Obstetrics & Gynaecology

PERINATAL OUTCOME OF SECOND TWIN IN COMPARISON WITH FIRST TWIN IN A TERTIARY CARE CENTRE – AN OBSERVATIONAL STUDY

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ABSTRACT

Background And Objectives: Twin pregnancy increases the incidence of perinatal morbidity and mortality by 5 to 7 times compared to singleton pregnancy. The factors responsible for increased perinatal morbidity and mortality are prematurity, Low Birth Weight (LBW), birth asphyxia, birth trauma, intrauterine fetal death and congenital malformations. Comparing with the first twin, the second twin is at increased risk for perinatal morbidity and mortality. **Methodology:** This study was conducted in Vijaya hospital, Vadapalani, Chennai. It is an observational study. Out of total 1050 patients delivered during the study period 34 twins delivered. Those women who fulfill the inclusion criteria were subjected to the study after obtaining informed written consent and the perinatal outcome was studied. All the relevant maternal and fetal informations were collected and outcome studied. **Results:** The incidence of twin pregnancy in our hospital was 3.24%. The perinatal morbidity of twin I group and twin II group were almost similar except for umbilical arterial pH with p value=0.021. However, when comparing the perinatal outcome of twin II with its corresponding twin I, statistically significant outcome noted for acidosis, TTN, RDS, NICU admission, need for resuscitation, hyperbilirubinemia and anemia with p value<0.001. **Conclusion:** To conclude in my study twin II had increased rate of acidosis, TTN, RDS, NICU admission, need for resuscitation, hyperbilirubinemia and anemia when compared with its corresponding twin I. Hence second twin needs careful intranatal and early neonatal care. Twin deliveries should ideally be planned in a tertiary health care facility for better maternal and fetal outcome.

KEYWORDS : Twin Pregnancy, Perinatal Morbidity, Birth Asphyxia

INTRODUCTION

Twin gestation shows an increasing trend over the last few decades. The significant rise in the incidence of multiple pregnancy recently is due to assisted reproductive techniques and delayed age at marriage and late planning of pregnancy. Twin gestation comprises 1-3% of all pregnancies[1]. Due to assisted reproductive techniques the reported incidence of twin pregnancy is as high as 28.6% and 9.3% for higher order multifetal pregnancies[2].

Twins can be monozygotic or dizygotic. The rate of monozygotic twin pregnancy is relatively constant at 3 to 5 per thousand births, whereas dizygotic twin pregnancy varies from 4 to 50 per thousand births depending on ethnicity, age, height, weight, parity and the availability of assisted reproduction facilities[3]. Depending on the time of splitting of the zygote, monozygotic twins can be monochorionic or dichorionic. If splitting occurs within 3 days of fertilization, it results in formation of dichorionic twins, and if it occurs after 3 days then it results in monochorionic twins. The perinatal complications in monochorionic twins are higher than dichorionic twins[4,5,6,7]. Because monochorionic twin pregnancies are at increased risk of Twin-to-Twin Transfusion Syndrome (TTTS), Twin Anemia Polycythemia Sequence (TAPS), Twin Reversed Arterial Perfusion (TRAP) and umbilical cord complications[8]. Stillbirth risk in monochorionic twins is three-fold higher than in dichorionic twins, and this risk remains high throughout pregnancy[9].

The conduct of twin delivery remains one of the most challenging events in the daily practice of obstetrics. Comparing with the first twin, the second twin is at increased risk for perinatal morbidity and mortality. This is because of the risk of premature separation of placenta after the delivery of first twin, increase in intertwin deliveryinterval[1] and the non-cephalic presentation of the second twin which needs an additional manipulation leading to poor perinatal outcome[10]. The second twin is more likely to have low Apgar scores, less favorable umbilical arterial or venous parameters, a higher incidence of respiratory distress syndrome (RDS), a higher need for intubation and NICU admission[10]. This was attributable to differences in gender, birth weight, chorionicity, presentation, mode of delivery and asphyxia.

With the above background, the current study was performed to find out the magnitude of perinatal morbidity of the second twin compared to first twin with respect to various parameters.

AIMS AND OBJECTIVES OF THE STUDY

To find out the perinatal outcome of second twin in comparison with first twin based on Gestational age at delivery, mode of delivery, intertwin delivery interval, birth weight, APGAR score, respiratory distress, NICU admission, sepsis, anemia, hyperbilirubinemia and umbilical arterial pH.

MATERIALS AND METHODS:

It is an observational study conducted in the department of Obstetrics and Gynaecology, Vijaya Hospital, Chennai which is a tertiary teaching hospital. The study was conducted in 34 twin pregnancy patients those who fulfill the inclusion criteria between September 2019 and December 2020.

Inclusion Criteria:

- Twin pregnancy confirmed by ultrasound examination
- Gestational age of 28 weeks or more, or estimated fetal weight of 1000 grams or more

Exclusion Criteria:

- Triplets or higher order pregnancy
- Fetus with congenital anomalies
- Patients with known H/O of hypertension, diabetes mellitus, chronic renal disease and other chronic medical disorders.

Statistical Analysis:

Statistical analysis was done by the statistical software STATA 11. Continuous variables were represented as Mean (SD), and categorical variables were represented as Frequency (percentage). Chi-square test or Fisher's exact test were used to assess differences in categorical data. The Mcnemar test was used to determine if there are differences on a dichotomous dependent variable between two related

groups. Student Unpaired T-test were used for differences in means of independent data. The p value of <0.05 was considered as significant.

Ethical Consideration:

The study abides by the rules of the ethical committee. No intervention causing harm to patient mentally, physically or financially is being done.

- This study was conducted at Vijaya Hospital, Chennai.
- Women with inclusion criteria were selected after explaining in detail about study design and written consent obtained.

RESULTS:

This study was conducted in 34 twin pregnancies who fulfill the inclusion criteria, the maternal factors and perinatal outcome of both fetuses were observed and compared. Among the total 34 cases, 2.94% were in age group 20-24years, 41.18 % were in age group 25-29 years, 26.47% were in age group 30-34 years, 23.53% in the age group 35-39 years and 5.88% in the age group ≥40years. 24 women were primigravida (70.59%) and 10 women were multigravida (29.41%).

In our study 70.58% of women conceived spontaneously and 29.41% conceived by ART. Out of total 34 cases DCDA contributes to 82.35%, MCDA contributes14.71% and MCMA contributes to 2.94%. The most common mode of delivery is by LSCS contributing to 82.35% and NVD contributing to 17.65%.

Table 1: Distribution Patients According To Indication For LSCS

INDICATIONS	NUMBER (n)	PERCENTAGE (%)
Malpresentation	13	46.42%
Preterm labour	9	32.14%
PPROM	6	21.4%
Repeat LSCS	4	14.29%
Maternal request	3	10.71%
APH	2	7.14%
Fetal distress	1	3.57%
Discordancy	1	3.57%
Failed induction	1	3.57%
Preeclampsia	1	3.57%

Table 1 shows out of total 28 C-section patients the most common indication was Malpresentation (46.42%) and few patients had more than one indication for LSCS. Inter-twin delivery interval was <30 mins in 94.12% and >30 mins in 5.88%.

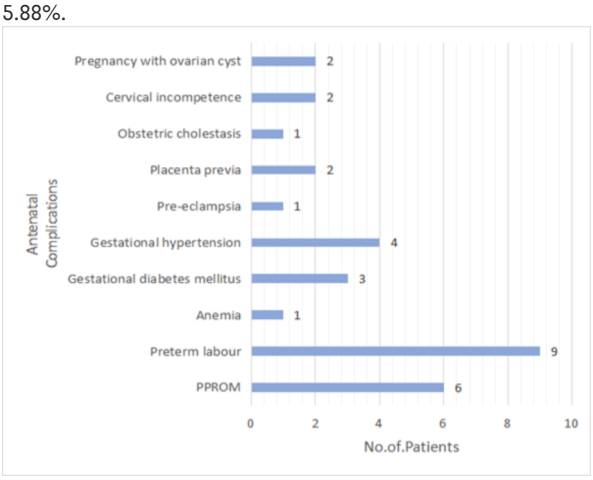

Figure 1: Distribution Of Patients According To Antenatal Complications

Figure 1 shows the most common antenatal complication was preterm labour seen in 9 patients contributing to 29.03%, PPROM in 19.35%, gestational hypertension in 12.90% and gestational diabetes in 9.685.

Table 2: Perinatal Outcome Measures Of First And Second Twin

VARIABLES	TWIN I (n=34)	TWIN II (n=34)	P VALUE
Birthweight			
<1.5kg	4(11.76%)	2(5.88%)	0.166
1.5 to 2.5 kg	21(61.77%)	28(82.35%)	
>2.5kg	9(26.47%)	4(11.76%)	
TTN	8(23.53%)	12(35.2%)	0.287
Neonatal resuscitation	3(8.82%)	7(20.59%)	0.171
Umbilical arterial <7.25	7(20.59%)	16(47%)	0.021
NICU admission	13(38.24%)	15(44.1%)	0.622
APGAR score at 1 minute <7	3(8.82%)	6(17.65%)	
APGAR score at 5 minutes <7	0	2(5.88%)	
Hyper bilirubinemia	11 (32.35%)	15 (44.12%)	
Anemia	6 (17.65%)	7 (20.59%)	
Sepsis	1(2.94%)	1(2.94%)	

Table 2 shows the birthweight <1.5kg is seen in 4(11.76%) of twin I and 2 (5.88%) of twin II and was not statistically significant (p value =0.166). TTN was noted I 8 (23.52%) of twin I and 12 (35.2%) of twin II, (p value= 0.287). Neonatal resuscitation was noted in 3 (8.82%) of twin I and 7 (20.59%) of twin II, (p value= 0.171). Umbilical arterial pH of <7.25 is noted in 7 (20.59%) of twin I and 16 (47%) of twin II, which is statistically significant with **p value= 0.021**.

Table 3: Comparison Of Perinatal Outcome Of Twin II With Its Corresponding Twin I

	Single Affected	Both Affected	Twin 1 only	Twin 2 only	p value
Acidosis	10	8	1	9	<0.001
LBW<2.5	10	22	3	7	NS
TTN	6	7	1	5	<0.001
Hyperbilurubinemia	6	10	1	5	<0.001
Anemia	9	2	4	5	<0.001
Neonatal Resuscitation	4	3	0	4	<0.001
APGAR at 1min<7	3	3	0	3	NS
Apgarat5 min <7	2	0	0	2	NS
NICU Admission	2	12	0	2	<0.001
RDS	3	4	1	2	<0.001
Sepsis	0	1	0	0	

Table 3 shows that when comparing the perinatal outcome of twin II with its corresponding twin I, there was statistically significant outcome for acidosis, TTN, RDS, NICU admission, need for resuscitation, hyperbilirubinemia and anemia with **p value<0.001**. The twin pairs in terms of LBW <2.5kg, Apgar at 1 minute and Apgar at 5 minutes were not statistically significant.

DISCUSSION:

Multiple gestation is becoming a problem of increasing dimensions with the marked increase in numbers due to a trend towards delayed childbearing and the widespread use of assisted reproduction. The increasing incidence of twin gestation also increases the incidence of maternal complications, perinatal morbidity and mortality. Hence, regular antenatal care, early detection of complications and effective intervention in both mother and fetuses helps in improving the outcome.

This study was conducted in Vijaya hospital, Vadapalani,

Chennai. A total of 34 twins pregnancies who came under the inclusion criteria were included in the study and outcome was monitored.

The incidence of twin delivery in my hospital in the study period of 1 year was 3.24%. In our study 70.58% of pregnancies conceived spontaneously and 29.41% conceived by ART. In our study 41.8% of women were in the age group 25-29 years (41.8%). Frequency of twin pregnancy were 70.59% in Primigravida and 29.41% in multigravida. In our study 70.58% conceived spontaneously and 29.42% needed assisted reproductive techniques. In our study Family history was present in 20.58%. Family history and chorionicity had no statistical significance (p=0.169). In our study 82.35% of twins were DCDA, 14.71% were MCDA and 2.94% were MCMA.

The common antenatal complication observed in my study was preterm labour in 29.03%, PPROM in 19.35% and gestational hypertension in 12.90%. A study conducted by **Sultana et al., (2013)**[11] in which 38% had preterm labour, 28% had PROM, 28% had hypertension (gestational hypertension and pre-eclampsia), 26% had anemia,16% had postpartum hemorrhage, 12% had antepartum hemorrhage and 6% had gestational diabetes.

In my study 64.7% of patients delivered before 37 weeks of gestation. Gestational age at delivery and chorionicity had no statistical significance (p=0.775). In my study, 17.65 % of patients delivered vaginally and 82.35% of patients delivered by LSCS. The most common indication for LSCS observed in my study was malpresentation (46.42%). Mode of delivery and chorionicity showed no statistical significance (p=0.700). In my study 94.12% of twin II had an intertwin delivery interval of <30 minutes and 5.88% of twin II delivered after 30 minutes. In my study 73.53% of twin I group and 88.23% of twin II group had a birthweight of <2.5 kg. Birthweight of twin I group and twin II group were not statistically significant (p= 0.166).Umbilical arterial pH between first twin and second twin showed a statistical significance **(p= 0.021).** A study conducted by **Usta et al.,**[12] concluded that the difference is inherent in the physiologic alterations following the birth of the second twin and hypothesised that the reduced uterine size following the birth of the first twin might decrease intervillous blood flow resulting in less respiratory exchange between the second fetus, still in utero and the placenta. In my study the mean umbilical arterial pH for twin I was 7.26 and twin II was 7.23. The perinatal morbidity of twin I group and twin II group in terms of APGAR score at 1 minute, APGAR score at 5 minutes, TTN, RDS, NICU admission, anemia, hyperbilirubinemia were not statistically significant.

However, in my study when comparing the perinatal outcome of twin II with corresponding twin I, the differences in the outcome becomes significant for acidosis, need for resuscitation, TTN, RDS, NICU admission, hyperbilirubinemia and anemia with **p value<0.001**. The twin pairs in terms of LBW <2.5kg, Apgar at 1 minute and Apgar at 5 minutes were not statistically significant. A study conducted by **Usta et al., (2002)**[12] where the probability of twin II for having low Apgar scores at 1 and 5 minutes, for requiring intubation and mechanical ventilation, hyperbilirubinemia, for developing RDS and for neonatal death was statistically significant with **p value= 0.005, 0.029, 0.005, 0.031, 0.002 and 0.003** respectively.

CONCLUSION

From my study when comparing the outcome of twin II with its corresponding twin I, twin II was at increased risk for adverse perinatal outcome like acidosis, need for resuscitation, TTN, RDS, NICU admission, hyperbilirubinemia and anemia.

Hence to improve the perinatal outcome in twin pregnancies delivery should be planned in a tertiary care centre with the availability of expert obstetrician to conduct delivery along with good neonatal intensive facilities.

LIMITATIONS

- Sample size is small.
- There was no long term follow up, hence varied outcomes of the babies were not known.

Patients with pre-existing medical conditions were not included in the study.

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