

**Comparative Study of Feto-Maternal Outcome in Multiple versus Singleton Pregnancies Delivered in a Tertiary Care Hospital**Prabha Verma<sup>1</sup>, Nutan Narayan<sup>2</sup>, Sangeeta Sinha<sup>3</sup><sup>1</sup>Junior Resident, Department of Obstetrics and Gynaecology, Patna Medical College and Hospital, Patna, Bihar.<sup>2</sup>Assistant Professor, Department of Obstetrics and Gynaecology, Nalanda Medical College and Hospital, Patna, Bihar.<sup>3</sup>Professor, Department of Obstetrics and Gynaecology, Patna Medical College and Hospital, Patna, Bihar.

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**Abstract****Background:** A high-risk pregnancy that has become more common in recent years is multiple pregnancy. Compared to singleton pregnancies, they are linked to significantly higher rates of maternal and perinatal morbidity and mortality.**Methods:** From August 2013 to July 2014, a prospective case control study was carried out in the Department of Obstetrics and Gynecology, PMCH, Patna. The study included 50 singleton pregnancies (controls) and 50 cases of multiple pregnancies (cases) that were delivered at our hospital. Following the collection of a patient's history, the protocol called for an examination and pertinent investigations. Numerous feto-maternal parameters were noted, and statistical analysis was performed on the data.**Results:** The majority of patients were between the ages of 21 and 25, and the incidence of multiple pregnancies was 1.75%. In our study, multigravida made up the majority of the patients. Eight percent of twin pregnancies had iatrogenic conception. In multiple pregnancies, the mean gestational age of presentation was 33.3 weeks, whereas in singleton pregnancies, it was 36.4 weeks. In 64% of twin pregnancies, DCDA was the most prevalent type of placentation. The three main problems in multiple pregnancies—preterm labor (62%), anemia (59%), and malpresentation (35%)—were far more common than in singletons. Twin pregnancies also had higher rates of other problems, such as PROM (23%), hypertensive disorders (17%), PPH (11%), and hyperemesis (5%). Multiple pregnancies had significantly higher rates of LSCS (62%) than singleton pregnancies (42%). Compared to 21% of singleton births, 89% of twin pregnancies resulted in low birth weight baby. Neonatal morbidities and death in multiple pregnancies were primarily caused by complications related to low birth weight and preterm. In our study, the perinatal mortality rate was 19% for the first twin and 26% for the second twin, both of which were considerably higher than the 12% for singletons.**Conclusion:** Significant feto-maternal morbidity and mortality are linked to multiple pregnancies. To enhance the maternal and newborn outcomes associated with multiple pregnancies, early discovery of high-risk cases, prompt referral, early hospitalization with a neonatal care setup, and frequent prenatal checkups are essential.**Keyword:** Multiple Pregnancy, preterm, LBW, DCDA, PROM, PPH, LSCS.**DOI:** 10.25258/ijcpr.18.5.109

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**Introduction**

According to study done between 2013 and 2014, major public health reports from that time period, which concentrated more on maternal mortality (167 in 2011–13) and overall fertility rates (2.3 in 2013), do not specifically highlight state-wide prevalence rates for multiple pregnancies (twins, triplets, etc.) in Bihar. On the other hand, related data shows that high-risk pregnancies and poor maternal outcomes are more common in the area.[1] Compared to earlier times, multiple births

are far more common now. The frequency of multiple births varies greatly over the world, ranging from 1.5 to 20 per 1000 births. The use of ovulation-inducing drugs, assisted reproductive technologies, and a trend toward having children at older maternal ages, when multiple gestations are more likely to occur naturally, have all been linked to this sharp increase in the prevalence of multiple.[2] Due to their intrinsic differences from singletons, twins are more likely to have problems

for both the mother and the fetus.[3] In order to enhance the fetomaternal outcome, it is crucial to evaluate the maternal risk factors and problems in multiple pregnancies.

### Material and Methods

From August 2013 to July 2014, the Department of Obstetrics and Gynecology at Patna Medical College and Hospital in Patna, Bihar, carried out this comparative and prospective case control study. Fifty patients with multiple pregnancies and fifty patients with single pregnancies were included in this study. This study excluded patients with any kind of pre-existing medical condition. We compared and statistically analyzed their fetomaternal outcome and related problems.

Patients with primary symptoms had their complete medical histories documented. The following maternal characteristics were recorded: age, parity, history of infertility therapy or ovulation induction, family history of multiple pregnancies, antenatal registration and referral cases, and antenatal high risk factor.

Obstetric and menstrual histories were documented in detail. A systemic and general examination was performed. PIH, anemia, preterm labor, IUGR, and PROM were among the obstetric problems seen. Labor difficulties for mothers were seen. The number of patients who gave birth naturally or with the use of instruments, as well as those who needed a cesarean section, were recorded as the outcome.

Analysis was done on the fetal outcome in relation to gestational age at birth, weight at birth, APGAR score at 1 and 5 minutes, and need for NICU hospitalization. Twin A and Twin B were the names given to the twins' first and second coming fetuses, respectively.

Data was collected on a predesigned semi structured proforma on which patient's demographics data, risk factor for twin pregnancy, gestation, haemoglobin, mode of delivery, antepartum, intrapartum and postpartum complications comprising severe anaemia, pregnancy hypertension, pre-eclampsia, eclampsia, antepartum haemorrhage, maternal death, birth weight, APGAR score, neonatal intensive care admission (NICU), and perinatal outcome were recorded.

Data was analyzed using SPSS version 20. Student's t-test was used to ascertain the significance of differences between mean values of two continuous variables. Chi-square and Fisher exact tests were performed to test for differences in proportions of categorical variables between two or more groups. The level  $P < 0.05$  was considered as the cutoff value for significance.

### Results

Demographic profile: Mean age of patients with multiple pregnancies was 25.7 years and that of singleton pregnancy was 25.3 years as seen in table 1.

**Table 1: Shows comparison between age of patients, gestational age at presentation and mean birth weight between multiple and singletons**

	Groups	
	Group A (Multiple)	Group B (Singleton)
Mean Age of patients $\pm$ S.D.(in years)	25.75 $\pm$ 4.01	25.33 $\pm$ 3.92
Mean Gestational age (weeks)	33.4	36.7
	Multiple	Singleton
Mean Birth weight $\pm$ S.D. (in kg)	1.84 $\pm$ 0.56	2.67 $\pm$ 0.58

Family history of twin pregnancy was noted in 10% of the cases. Mean period of gestation in multiple pregnancies was 33.4 weeks and in singleton pregnancies was 36.7 weeks.

Most of the multiple pregnancies had dichorionic-diamniotic type of placentation in 64% cases. 26% cases had monochorionic diamniotic type of placenta and rest of the cases (9%) had

monochorionic monoamniotic type of placentation. Majority of the cases of twin pregnancies (46%) had a vertex presentation of both the babies, followed by both breech presentation in 16% of cases. 50% cases had at least one baby in either breech or transverse presentation.

2 cases underwent abortion. Different presentation of fetuses is shown in table 2.

**Table 2: Shows mode of presentation in multiple and singletons**

Presentation	Number of cases	Percentage
<b>Multiple</b>		
Vertex-Vertex	23	46%
Vertex-Breech	7	14%
Vertex-Transverse	2	4%
Breech-Vertex	6	12%
Breech-Breech	8	16%
Breech-Transverse	1	2%
Transverse-Vertex	0	0
Transverse-Breech	1	2%
Both Transverse	0	0
Not Applicable	2	4%
<b>Singletons</b>		
Vertex	46	92%
Breech	4	8%
Transverse	0	0

Various obstetrical complications associated with twin pregnancies as compared to singletons. Preterm labour (62%), anaemia (60%) and malpresentation (34%) were the most commonly

encountered obstetric complications in twin pregnancies. Other complications like PROM, hypertensive disorders and PPH were also more common in twin pregnancies.

**Table 3: Shows distribution of obstetric complications in multiple and singleton pregnancies**

Obstetric Complications	Groups		P-value
	Group A (Multiple)	Group B (Singleton)	
Hypertensive Disorders	9 (18.0%)	12 (24.0%)	0.220
Antepartum Haemorrhage	3(6.0%)	2(4.0%)	0.352
Premature Rupture of Membranes	12 (24.0%)	6(12.0%)	0.023
Preterm Labour	31 (62.0%)	13 (26.0%)	0.042
Gestational DM	1(2.0%)	1(1.0%)	0.561
Anaemia	30 (60.0%)	27 (54.0%)	0.668
Intra Uterine Growth Restriction	3(6.0%)	5(10.0%)	0.421
Polyhydramnios	2(4.0%)	1(2.0%)	0.445
Hyperemesis	3(6.0%)	1(2.0%)	0.097
Cord Prolapse	2(4.0%)	1(2.0%)	0.174
Malpresentation	17 (34.0%)	5 (10.0%)	0.001
Post-Partum Haemorrhage	6 (12.0%)	2(4.0%)	0.118

Various neonatal complications seen in twins as compared to singletons. NICU admission was noted in 48% cases of multiple pregnancies and 12% cases of singletons.

It was found to be statistically significant with p-value 0.048. Prematurity was seen in 62% cases of twin pregnancies and 26% cases of singletons which was statistically significant with p-value 0.042. Birth asphyxia was seen in 16% cases of multiple pregnancies compared to 2% cases of singletons with a statistically significant p-value of 0.01. Respiratory distress syndrome was noted in 26% cases of multiple pregnancies and 2% cases of singletons, with a statistically significant p-value of 0.001. Low birth weight was noted in 90% cases of multiple pregnancies and 22% cases of singletons

with a highly statistical significant p-value of 0.002. Congenital anomaly was seen in 6% cases of twin pregnancies and 8% cases of singletons, which was not found to be statistically significant with p-value more than 0.05. Discordancy between multiple was seen in 8% of multiple pregnancies. Hyperbilirubinemia was seen in 10% cases of multiple pregnancies as compared to 2% cases of singleton pregnancies, not statistically significant with p-value more than 0.05.

Sepsis was seen in 8% cases of multiple pregnancies in comparison to 6% cases of singleton pregnancies which was statistically insignificant with p-value more than 0.05. 1 case of multiple pregnancy was complicated by multiple to multiple transfusion syndrome.

**Table 4: Shows neonatal complications in Multiple pregnancies and singletons**

Neonatal Complications	Groups		P value
	Group A (Multiple)	Group B (Singleton)	
Any Associated Congenital Anomaly	3 (6.0%)	4 (8.0%)	0.120
NICU Admission	24 (48.0%)	6 (12.0%)	0.048
Preterm/Prematurity	31 (62.0%)	13 (26.0%)	0.042
Discordancy between multiple	4 (8.0%)	Not Applicable	Not Applicable
Respiratory Distress Syndrome	13 (26.0%)	1(2.0%)	0.001
Birth Asphyxia	8 (16.0%)	1(2.0%)	0.01
Hyperbilirubinemia	5 (10.0%)	1(2.0%)	0.07
Sepsis	4 (8.0%)	3(6.0%)	0.150
Low Birth Weight	45 (90%)	11 (22%)	0.002
Multiple to multiple Transfusion Syndrome	1(2.0%)	Not Applicable	Not Applicable

Most cases of multiple pregnancies had birth interval of less than 5 minutes seen in 79% cases with mean birth interval of 4.09 minutes. Mean birth weight in singleton pregnancies was  $2.67 \pm 0.58$  Kg. Mean birth weight of multiple pregnancies was  $1.84 \pm 0.56$  Kg. Various neonatal complications associated with twins are shown in table 4. Perinatal mortality was seen in 19% cases multiple pregnancies. Perinatal mortality was seen in 12% cases of singleton pregnancies, statistically significant with p-value less than 0.05.

#### Discussion

The incidence of multiple pregnancies was 1.75%, which is similar to 1.81% and 1.49% reported by Singh L et al. [4] and Bangal et al. [5], respectively. The mean age of patients with twin pregnancies in our study was 25.7 years, while the mean age of singletons was 25.3 years. Bangal et al. [5] and Gajera AV et al. [6] found similar results, with the majority of multiple pregnancies occurring in the 20–30 age range. In our analysis, 62% of multiple instances were unbooked, suggesting that prenatal care is still inadequate. 10% of multiple pregnancy cases had a family history of twin pregnancy, which is equivalent to 8% reported by Bhalla S. et al. [7].

In our study, mean period of gestation in multiple pregnancies was 33.4 weeks as compared to 36.7 weeks in singletons, comparable to studies conducted by Erdemoglu et al[8] (33 weeks), and Yuel et al[9] (34 weeks).

This could be attributed to the fact that twin pregnancies present to the hospital earlier due to more risk of preterm labour and other obstetrical complications. In our study, iatrogenic conception was noted in 8% of multiple compared to 1% in singletons. DCDA type of placentation was seen in 64% cases, followed by MCDA type of placenta in 26% cases and rest of the cases had MCMA type of placentation. These findings were similar to the findings of study by Bhalla S et al[7] in which DCDA type of placentation was seen in 60% cases, Panwala et al[10] (63.8%) and by Singh L et al[4]

in which DCDA placenta was noted in 66% cases followed by MCDA in 32% cases.

In the present study, maximum of the cases of multiple pregnancies (46%) had a vertex presentation of both the babies, followed by both breech in 16% of cases, similar to Singh L et al[4] results in which 48% cases had vertex presentation in both multiple and Chowdhury et al[11] results in which 47.5% twins had vertex presentation in both twins, followed by breech-vertex and vertex-breech. In singleton cases, 92% cases had vertex presentation and only 8% cases had breech presentation. Significant difference was noted in terms of malpresentation which was seen in 35% cases of twins and in only 8% cases of singletons. In our study, preterm labour ( $p=0.042$ ), followed by anaemia ( $p=0.668$ ) and malpresentation ( $p=0.001$ ) were the most commonly encountered obstetric complications in multiple pregnancies. Preterm labour was seen in 62% twin pregnancies, which is comparable to 69% by Gajera AV et al[6]. Anaemia( $p=0.668$ ) was seen in 60% of multiple pregnancies, nearer to 62% by Bhalla S et al[7], lower incidence by Chowdhury et al[11] (26%) and Spellacy et al (9.4%)[12]. The reason can be differing prevalence of anaemia in different regions of the country but in all the above-mentioned studies, incidence was more in multiple gestations as compared to singleton gestations. The main reason is higher demand in multiple gestations resulting in iron, Vitamin B12 and folic acid deficiency anaemia. Other obstetrical complications including preterm labour ( $p=0.042$ ), PROM ( $p=0.023$ ) and malpresentation ( $p=0.001$ ) were significantly higher in twin pregnancies as compared to singletons.

Low birth weight was seen in 90% of multiple vs 21% in singletons ( $p=0.002$ ). Prematurity was seen in 62% of multiple vs 26% cases of singletons ( $p=0.042$ ). Our findings are similar to the study conducted by Gajera AV et al[6] in which 86.9% cases of twin pregnancies had low birth weight and prematurity was seen in 69% of twin pregnancies.

Mean birth weight in singleton pregnancies in our study was 2.67 Kg as compared to 1.84 Kg for multiple pregnancies. Gandhi S et al gave mean birth weight for 1.9Kg multiple pregnancy.[14] Other perinatal complications like respiratory distress (26%,  $p=0.001$ ), birth asphyxia (16%,  $p=0.010$ ), sepsis (8%,  $p=0.150$ ) and hyperbilirubinemia (10%,  $p=0.07$ ) were significantly higher in cases of multiple as compared to singleton pregnancies.

Fetal discordancy was seen in 8% of multiple pregnancies, much less than 30% by Bhalla S et al[7]. In the present study, NICU admission was needed in 48% cases of multiple pregnancies and 12% cases of singletons ( $p$  value 0.048) as compared to 66% and 34.67% by Bhalla S et al[7] and Singh L et al[4] respectively. In our study, mean birth interval was 4.09 minutes. 22.9% cases of twin pregnancies had APGAR score less than 7 after 5 minutes, close to 30% by Ranawat R et al [15].

### Conclusion

Poor obstetric and neonatal outcomes are linked to multiple pregnancies. According to our research, twin pregnancies are linked to a higher incidence of caesarean sections, PROM, and premature birth.

Prematurity and low birth weight (LBW) are the most often linked neonatal morbidities in twin pregnancies. It suggests that in order to enhance the maternal and newborn outcomes related to multiple pregnancies, routine prenatal checkups, and early identification of high-risk patients, prompt referral, and early hospitalization with a solid neonatal care setup are required.

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