

A Study on the Maternal and Foetal Outcome of Twin Pregnancy**Anamika Gaurav¹, Preeti Singh², Sumit Kumar Suman³, Puja Mahaseth⁴**¹Senior Resident, Department of Obstetrics and Gynaecology, Darbhanga Medical College & Hospital, Laheriasarai, Bihar²Senior Resident, Department of Obstetrics and Gynaecology, Darbhanga Medical College & Hospital, Laheriasarai, Bihar³M.D. (Medicine), RML, New Delhi⁴Associate Professor, Department of Obstetrics and Gynaecology, Darbhanga Medical College & Hospital, Laheriasarai, Bihar

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Conflict of interest: Nil

Abstract:**Background:** Compared to singleton pregnancies, twin pregnancies are associated to a significantly higher rate of morbidity and mortality. Clinicians should be better equipped to manage twin pregnancies if they are aware of the mother's characteristics related to twin gestations and have access to diagnostic techniques like ultrasound. Aim of this study to evaluate maternal and foetal outcomes in women with twin pregnancies.**Methods:** The present study was conducted in the department of Obstetrics and Gynaecology, Darbhanga Medical College and Hospital, Laheriasarai, Bihar from the period August 2023 to July 2024. Maternal and foetal outcome in 50 cases of twin and 50 cases of singleton pregnancies each were studied.**Results:** 50 were twin deliveries, giving an incidence of 14 per 1000 births or 1.4:100 deliveries. Six among 50 twins resulted following ovulation induction. Women with twin gestation had a mean maternal age of 24.7±3.71, same for the singleton mothers was 24.26±3.7 years; mean gestational age at delivery for twins and singletons were 35.38±2.6 and 38.63±1.19 weeks; mean birth weight for twins and singletons were 2.193kgs and 2.85±0.46kgs, mean parity were 2.04± 1.0 and 1.72±0.7 respectively. Parity, gestational age, NICU stay characteristics showed p value < 0.05. Compared with singletons, women with twin gestations had a positive risk association with odds >1 for anaemia, preeclampsia, preterm labour, malpresentation and caesarean delivery. Twin Neonates suffered prematurity, low birth weight, congenital anomaly, prolonged NICU care and increased perinatal death. Neonatal risk was more among monochorionic twins than dichorionic twins. There were 3 cases with single fetal demise, and both fetuses IUD in another case, (total IUDs-5), one twin was still born, two had early neonatal death and there were two late neonatal (>7 Days) deaths. One twin mother threw fits on the 6th postpartum day. Another mother received 20 units of blood and component replacement and subtotal hysterectomy for PPH**Conclusion:** Multiple pregnancy bears additional hazards both for the mother and the baby. Though these hazards are partly preventable, difficulty in timely recognition of multiple pregnancy at an early date is a main obstacle. Once diagnosed proper antenatal care with increased rest and nutritional supplement together with thorough intranatal and postnatal vigilance has much to its credit in lowering both maternal and foetal dangers.**Keywords:** Multiple pregnancy, gravida, Singleton pregnancy, Parity.This is an Open Access article that uses a funding model which does not charge readers or their institutions for access and distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>) and the Budapest Open Access Initiative (<http://www.budapestopenaccessinitiative.org/read>), which permit unrestricted use, distribution, and reproduction in any medium, provided original work is properly credited.**Introduction**

Multiple pregnancy occurs because of their utero development of two or more fetuses at the same time. Multiple pregnancies are associated with increased risk to both the mother and fetuses and this risk increases with the number of fetuses.[1]

Though the incidence rate appears to be variable, multiple pregnancies account for 3 to 4 % of births globally. Twin pregnancy is one of the major challenges faced by obstetricians.[2] Sub-Saharan Africa has the highest incidence of multiple pregnancy, with an average twinning rate of 20 per

1,000 deliveries whereas it is 10 per 1,000 deliveries in Europe and about 5-6 per 1,000 deliveries in Asia.[1,3]

Multiple births are much more common today than in the past. According to the US Department of Health and Human Services, the twin birth rate has increased by over 75% since 1980, and triplet, quadruplet, and high- order multiple births have increased at an even higher rate. This is in part because more women are receiving fertility treatment as well as having pregnancy at an

advanced age.[4] The incidence of multiple pregnancies varies significantly among different races, regions, countries and populations. Smith et al reported that India has twinning rates below 9 per 1000 births and the incidence of twinning has increased marginally in the last fourteen years (Not more than 0.84 per 1000 births).[5,6] In 2015, the overall multifetal birth rate was 34.5 per 1000, with twins representing nearly 97 percent of these births as stated by J. Whitridge Williams.[7] Twin pregnancy has been attributed to increasing maternal, fetal and neonatal complications especially in terms of maternal anemia, hypertensive disorders, preterm birth, polyhydramnios, antepartum and postpartum hemorrhage; as well as prematurity, low birth weight, congenital anomaly and perinatal death. Hence, this study was undertaken to know the incidence of twin gestation and to study the maternal and fetal complications when compared to singleton pregnancies.

Materials and Methods

The present study was conducted in the department of Obstetrics and Gynaecology, Darbhanga Medical College and Hospital, Laheriasarai, Bihar from the period August 2023 to July 2024.

Maternal and foetal outcome in 50 cases of twin and 50 cases of singleton pregnancies each were studied.

Records of all twin deliveries were collected, details of type of delivery, indications for such delivery, birth weight of two fetuses, APGAR scores and the still birth rates were analysed and presented here.

For each case of twin pregnancy, next case of singleton pregnancy was taken as control.

Most of the cases were diagnosed as twins either during antenatal period (by clinical examination, ultrasonography) or at the time of admission.

Out of emergency admission of twin pregnancy in five cases diagnosis of the second twin was made after delivery of the first baby.

All Mothers were interrogated and detailed history taken regarding last menstrual period, period of amenorrhoea, history of hypertension anemia, APH, twin pregnancy and other factors.

All primigravida were enquired about the duration of their marriage and whether she had taken any medicine for infertility.

Previous obstetric history was rewarded Socio economic status was determined. Besides general examination, recording of blood pressure,

haemoglobin percentage, blood sugar, urine examination, X-ray of lower abdomen and pelvis and ultrasonography of lower half of abdomen were done. These patients were enquired about the mode of previous deliveries, if it was lower segment Caesarian section or forceps delivery, then what were the indications Examination of the placenta was done with special reference to the number of arteries and veins in the umbilical cord, number, membranes covering the placenta, shape of and size.

Postnatal examination of the baby was done with special reference to APGAR scores weight of the baby, maturity, soft tissue wasting, measurement of head circumference, chest circumference, crown rump length, femur length and any congenital anomalies.

Gestational age of the baby was assessed by clinical examination with the help of Dubowitz's Chart. Birth weight was expressed in grams.

Infants weighing less than 1 S.D for the period of gestation were grouped as intrauterine growth retarded. Head circumference below the 10th percentile was termed a microcephaly (e.g. symmetrical IUGR). In asymmetrical IUGR head circumference was relatively large than the body. Crown rump length was affected in symmetrical IUGR. IUGR, preterm babies, congenitally malformed babies were handed over to neonatologists for expert care. Any complication during neonatal period was noted. Total number of still births and infants dying in the first week of neonatal life were taken into account to calculate the perinatal mortality.

Result

In this study period 50 were twin births; which were compared with 50 singleton births. The incidence of twins was 14 per 1000 births or 1.4:100. Six among 50 twins resulted following ovulation induction. 14 of them were monochorionic and 36 were dichorionic twin pregnancies. We observed 3 cases with single fetal demise, both fetus IUD in another twin gestation (total- 5 IUDS) and one fresh stillbirth. There were 94 live births and two early neonatal deaths among twins. Among eight perinatal deaths, five were from monochorionic twins. There was a near miss event among mothers of twin deliveries who survived PPH, she underwent laparotomy and subtotal hysterectomy following caesarean delivery, another mother suffered postpartum eclampsia.

Table1 : Maternal and fetal characteristics between twin and singleton groups

| Characteristics | Twin gestation | Singleton gestation | t-value | p-value |
|-----------------|----------------|---------------------|---------|---------------|
| Maternal age | 24.7±3.71 | 24.26±3.7 | 0.695 | 0.2442, >0.05 |
| Mean parity | 2.04±1.0 | 1.72±0.7 | 1.756 | 0.0416, <0.05 |
| Gestational age | 35.38±2.6 | 38.63±1.19 | 7.825 | 0, <0.05 |
| Birth weight | 2.193±0.590 | 2.85±0.46 | -7.342 | 1, >0.05 |
| NICU Stay | 6.142±8.8 | 2.12±1.54 | 3.173 | 0.0013, <0.05 |

Table 1 Shows mean maternal age for twins and singleton deliveries were 24.7 ± 3.7 years and 24.26 ± 3.7 years respectively.

Mean parity for twin and singleton deliveries were 2.04 ± 1.0 and 1.72 ± 0.7 , mean gestational age were 35.38 ± 2.6 weeks and 38.63 ± 1.19 weeks respectively. The mean birth weight for twins was 2.193 ± 0.590 kgs and that for singletons was

2.85 ± 0.46 kg. There was statistical significance ($P < 0.05$) between two groups in three parameters measured.

NICU stay was prolonged, surfactant therapy and complex interventional procedures were often needed for management of twin neonates; average stay was 6.142 ± 8.8 days vs 2.12 ± 1.54 days for singleton babies.

Table 2: Maternal complications and foetal outcome

| Variables | | Twin N(%) | Singleton N(%) | Odds Ratio | CI95% |
|--------------------|-----------|-----------|----------------|------------|----------------|
| Anemia | Yes | 8(16%) | 2(4%) | 4.571 | 0.9194-22.7309 |
| | No | 42(84%) | 48(96%) | | |
| HDP | Yes | 10(20%) | 4(8%) | 2.875 | 0.8365-9.8809 |
| | No | 40(80%) | 46(92%) | | |
| Malpresentation | Yes | 7(14%) | 1(2%) | 7.97 | 0.9432-67.45 |
| | No | 43(86%) | 49(98%) | | |
| PROM | Yes | 6(12%) | 3(6%) | 2.13 | 0.5033-9.0678 |
| | No | 44(88%) | 47(94%) | | |
| Mode of delivery | C-section | 34(68%) | 26(52%) | 1.9615 | 0.8700-4.4224 |
| | Vaginal | 16(32%) | 24(48%) | | |
| PPH | Yes | 4(8%) | 1(2%) | 4.26 | 0.4591-39.45 |
| | No | 46(92%) | 49(98%) | | |
| Preterm Birth | Yes | 36(72%) | 3(6%) | 40.28 | 10.7577-150.86 |
| | No | 14(28%) | 47(94%) | | |
| Low Birth weight | Yes | 37(74%) | 5(10%) | 21.333 | 7.6343-59.6138 |
| | No | 13(26%) | 45(90%) | | |
| Gender | Male | 24(48%) | 28(56%) | 0.7253 | 0.3665-1.4351 |
| | Female | 26(52%) | 22(44%) | | |
| Perinatal death | Yes | 4(8%) | 0 | NA | |
| | No | 46(92%) | 50(100%) | | |
| Congenital anomaly | Yes | 2(4%) | 0 | NA | |
| | No | 48(96%) | 50(100%) | | |

Table 2 shows maternal complications and fetal outcome between twin and singleton deliveries. Anemia complicated 4 and half times more often in twin pregnancies than singleton pregnancies (OR:4.57, CI: 0.9194-22.7309), similarly hypertension complicated 2.8 times more often than controls (OR:2.875, CI: 0.8365-9.8809). Risk of malpresentation was 7.9 fold higher for twins than singletons (OR:7.97, CI: 0.9432-67.45). PROM is 2.1 times more often among twin pregnancies than singleton pregnancy. The risk of delivering a twin by caesarean section was 1.9 times more than that for a singleton pregnancy (OR: 1.9, CI: 0.8700-4.4224). The preterm birth rate for twins was 40.2 times higher than that for singleton deliveries (OR: 40.28, CI:10.7577-150.86), similarly LBW was 21 fold frequent among twins than singleton neonates (OR: 21.33, CI:7.6343-59.613). The obtained data were compared with similar studies.

Congenital anomaly was seen to affect 4% of twin newborns and perinatal death rate was 8.5% (5IUFDs+ 1 stillbirth+2 neonatal deaths). There was female sex preponderance (52%) among twin's

newborns than singletons (44%). PPH was seen in one case following singleton delivery whereas following twin delivery it was seen among 4 cases, among them one case developed DIC, with intraperitoneal bleeding and managed by blood and component transfusion followed by hysterectomy.

Discussion

Present study found 6% of twins conceived after ovulation induction (6%), compared to 3.7%, 2.2%, 8% and 14% in studies by Upreti P, [8] Pandey MR et al, [9] Masuda S et al. [10] and Sultana H et al. [11] respectively.

In the present study the incidence of twin pregnancy was found to be 1.4 in 100 or 14/1000 births or 1.4%. In a study by Upriti P [8] from Uttarakhand, India it was reported as 1 in 52 pregnancies or 1.9% which is similar to 1.9% reported by Pandey MR et al [9]. in a study from Nepal as against 2.1% reported by Chiwanga ES et al. [12] In an Nigerian study population it was reported as 1:29.6 (3.37%) and from a South American city Sao Paulo it was estimated as 3.4% in conformity with race and regional influence on

twin incidence. Mean maternal age in our study was found to be 24.7 years; that reported by Upreti P [8] as 25.4 years, Pandey MR et al [9] as 26 years, and K. Smitha et al [14] observed majority cases between 24-28 years, while Obiechina Nj et al [13] reported mean maternal age as 30 years and Assuncao RA et al [15] reported it as 29.1 years. Our study noticed the mean maternal age for singleton births is at 24.26 years vs 27 years by Obiechina Nj et al. [13] All studies excluding present study reported a P value <0.05 between the two mean maternal ages, confirming twins occurrence at a higher maternal age.

We observed mean parity at 2.04 ± 1.0 , that observed by Obiechina Nj et al [13] was 2.7 ± 2.33 , whereas Assuncao RA et al [15] found it at 1.3 ± 1.5 . In our study 88% twin pregnancies were from natural conception and 12% resulted from ovulation induction. Whereas 3.7% and 2.2% of twins resulted from OI in studies by Upreti P8 and Pandey MR et al. [9] Assuncao RA et al [15] reported 3.8% of their twins were conceived by assisted reproduction.

Our twins had a mean birth weight of 2.19kg, that reported by Obiechina Nj et al. [13] as 1.96kg. Assuncao RA et al [15] reported it as 1.7kg, 1.8kg and 2.1kg respectively for MCMA, MCDA and DCDA twins. The average birth weight of the first twin was 2100 grams and of the second twin was 2040 grams as reported by Pandey Mr et al. [9] Even IVF/ICSI conceived twin VS singleton weight in a study by Gupta R et al [16] reported as 2.02 kg vs. 2.71 kg closely similar to our observation.

We have observed that hypertension complicated 20% of twin pregnancies. There was ~ threefold increase in HDP similar to that reported by Obiechina Nj et al [13] (OR: 3.1, 95% CI: 1.8-23.6). Upreti P8 reported it at 17.9%, K. Smitha et al [14] found approximately 17.3% of twin mothers developed Preeclampsia. Upreti P8 reported 30.7% of twin pregnancies were complicated by anemia, our observation was 16%, K. Smitha et al [14] reported it as 8.69%.

Malpresentations are common with twin pregnancy. In our study it was seen in 14% cases which is ~8 times higher than singleton pregnancies (OR: 7.97, 95% CI: 0.9432-67.45), it was 16% as observed by Obiechina Nj et al, [13].

Smitha et al [14] in their study reported 27 out of 92 i.e 29% twin had malpresentation. PROM complicated twice (12%) more often in twin pregnancies than singleton pregnancies in our study, that observed by Obiechina Nj et al [13] was 4.4 times (OR: 4.4, 95%CI:1.62-13.90), K. Smitha et al [14] reported PPROM as 21.73%. Upreti P [8] reported it as low as 4.1%. High prevalence of malpresentation, Hypertension and PROM were

responsible for 78% caesarean delivery rate for twins which is ~2 times that for singleton pregnancies (OR: 1.96, 95% CI:0.87-4.42) in our study. Obiechina Nj et al [13] reported 2.9 times higher caesarean rate for twins. Chiwanga ES et al [12] reported 1.5 times (OR1.5, 95% CI: 1.4-1.7), K.Smitha et al [14] reported it as 64.6%. Upreti P [8] reported a CS rate at 49% in her study of 218 twin pregnancies, where they operated on two cases for second twin delivery. We performed CS for delivery of second twin in one case.

We observed 72% of twins delivered preterm, it was 66.2% by Assuncao RA et al, [15] 62.8% by Pandey MR et al [9] 58.3% by Upreti P [8] 37.3% (OR: 5.6, 95%CI : 4.2-7.4) by Chiwanga ES et al. [12] and 36% (OR:6.47, 95%CI: 2.7-17.05) by Obiechina Nj et al [13] with similar Odds ratio.

In the present study, among 94 twin live births 70 neonates (~74%) were born low birth weight which is 21 times higher than that for singleton births (OR: 21.33, 95%CI:7.6343-59.6138). Obiechina Nj et al [13] reported this as 56% (OR:9.33, 95%CI: 4.35-29.95), Upreti KP8, Smitha et al [14] in their study reported LBW rate as 83.8% and 90% respectively.

We observed post-partum haemorrhage in 8% of twin cases ((OR: 4.26,95% CI: 0.45-39.54) than singleton deliveries, Chiwanga ES et al [12] reported it at 1.6% among 822 twin deliveries with an (OR:2.2, 95% CI:0.8-5.8), in contrast it was 4.1% cases by Upreti P [8] and similar to Bangal et al [17] and Chowdhury et al [18] at 18.9%.

There were 48 male (48%) babies among 94 live births. Upreti P [8], Rezavand N et al, [19] Mutihir et al [20] have reported male sex ratio as 51.6%, 50% and 54.7% respectively among their twin neonates. They concluded it was not significantly different from singleton pregnancies.

However, Assuncao RA et al [15], Melamed et al [21] (49.1%) and Chittacharoen A et al [22] found boy babies less often than girls among their twins which is similar to our observation.

J. Whitridge Williams [7] stated there is a gradual fall in male sex percentage as the number of foetuses increase in any pregnancy.

Congenital anomalies were observed among 4% of twins in our study, Pandey MR et al [9] reported as 8.4% among their twin NICU admissions, and Assuncao RA et al [15] reported it as 12.8%.

Conclusion

According to this study twin pregnancies have remained high risk for both the mother and the unborn child in a matching proportion throughout the previous 20 years. We are aware that reducing the disparity between the infrastructure supply and demand in any NICU may improve the perinatal

outcome. Because more mothers are delaying childbearing and seeking fertility help, maternal outcomes have remained unchanged.

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