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Analysis of twin pregnancy based on obstetrics and perinatal outcome in a tertiary care hospital in North-East India

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Abstract
Background and Objective: Over the last decade, the incidence of twin pregnancies has been enormously increased. Preterm births and neonatal deaths are associated with twin pregnancies which might be due to prematurity, fetal growth restriction and low birth weight. In the present study, the consequences of twin pregnancy have been analyzed.
Methods: This descriptive observational study has been conducted in Silchar Medical College and Hospital in between June 1st 2020 to May 31st\ 2021.A total of 120 twin pregnant women admitted in maternity ward in labour during the study period. Maternal and perinatal outcome has been analyzed.
Result: The result showed that pregnancy complications were remarkably higher. Preterm labour 65.4%, hypertensive disorder of pregnancy 35.2%, premature rupture of membrane 30.2%, anaemia 44.1%, antepartum haemorrhage 7.5%, liquor abnormalities 11.6%, cesarean section 46.7%, postpartum haemorrhage 18.3%, gestational diabetes mellitus 5.8% are the complications encountered. About 10.1% of first twins and 17% of second twins were asphyxiated (APGAR score <7) at 5 minutes of birth. The perinatal mortality rate was 10.2% for first twin and 16.2% for second twin. Very low birth weight (<1500 g) were 18.3% of 1st twins and 24.2% of 2nd twins. Low birth weight (1500 to 2000g) 41.7% of 1st twins and 38.3% of 2nd twins. Presentations during delivery of twin babies were vertex-vertex 50.8%, vertex-non vertex in 29.1%, non-vertex 1st twins 19.8%.
Conclusion: Institutional deliveries are essential in twin pregnancies because twin pregnancies are considered as high-risk pregnancies. Early diagnosis, adequate ante-natal, intra-natal and postnatal care are important to boost the outcome.

Keywords: Twin pregnancy, maternal outcome, perinatal outcome

Introduction
According to Human mythology, Twin brothers “Ramus and Romulus” is said to have founded ancient Rome. Also in Hindu mythology, Lord Rama had twin sons “Luv and Kush”. “Gamellery pregnancy” is a term often used as synonyms of twin pregnancy. Two or more fertilization events, splitting of zygotes from a single fertilization or combination of both may lead to twin pregnancies [1]. Twin pregnancy requires special attention as it may lead to maternal and perinatal morbidity/mortality well in excess in comparison with a singleton pregnancy. Thus twin pregnancy comes under high risk category of pregnancy. Due to increased placental and fetal mass, the physiological responses are higher in twin pregnancies [2, 3].
The maternal complications comprise of gestational hypertension, preeclampsia, gestational diabetes mellitus, premature rupture of membrane, severe postpartum haemorrhage. These complications lead to higher maternal morbidity and mortality. Twin pregnancy has also affected perinatal outcome significantly. Prematurity, low birth weight, intrauterine growth restrictions, birth asphyxia are the important consequences encountered in twin pregnancy. Risk of dying is fivefold higher before one year in twin pregnancy compared to singleton pregnancy. There is increased requirement of NICU admissions.
As the incidence of twin pregnancy are at peak. Antenatal care and clinical outcome assessment have been considered as an important aspect among national and international scholars. Hence the main aim of the study which is conducted for duration of one year is to assess the maternal and perinatal outcome in twin pregnancies.

Materials and Methods

For a period of one year between 1st June 2020 to 31st May 2021, this prospective observational study was carried out in the department of obstetrics and gynaecology of the hospital. In our study, pregnant women with gestational age 28weeks or more having twin gestation who are being admitted and delivered in the maternity ward of our hospital during the study period. Follow up has been conducted for the twins who required admissions in neonatal units until discharge. Histories and chief complaints of the patients were noted. PIH, anaemia, preterm labour, premature rupture of membrane and other obstetric complications were studied. Modes of delivery of patients were analyzed. Fetal outcome, gestational age at birth, weight at birth, APGAR scores were noted. Numbers of NICU admissions were recorded. Analysis of statistical data is done usingSPSS16.0 version. For continuous variables and percentages for categorical variables data has been presented as mean and standard variables. P values of <0.05 has been considered significant statistically. In accordance with Declaration of Helsinki, the study has been conducted ethically.

Results

Among 10,000 antenatal patients delivered during the study period, 120 patients presented with twin pregnancy.

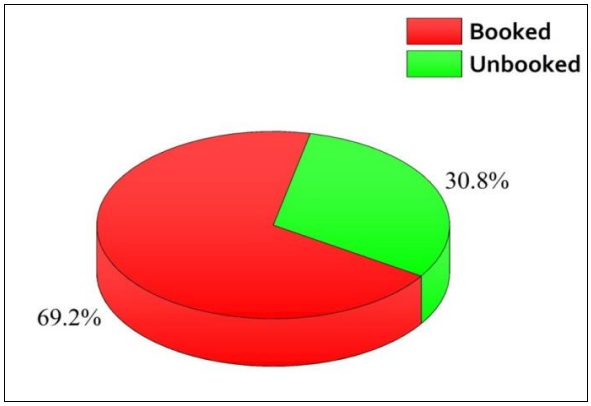

Fig 1: Pie diagram showing allocation of study subjects as per booked status. 69.2% were booked cases and rest 30.8% were unbooked

Table 1: Allocation of study subject as per the maternal age

Age group (in Years)	No. of patients	Percentage
< 20	12	10
20-24	58	48.3
25-29	34	28.3
30-34	14	11.6
> 35	02	1.6
Total	120	99.8

Most common maternal age group with twin pregnancy was between 20-29 years out of which 48.3% belongs to 20-24 years and 28, 3% belongs to 25-29years.

Table 2: Allocation of study subjects as per the parity

Gravida	No. of patients	Percentage
1	35	29.1
2	52	43.3
3	23	19.1
≥ 4	10	8.3
Total	120	99.8

The incidence of twin pregnancy is more in multipara i.e. 70.7% and 29.1% in primipara.

Table 3: Allocation of study subjects as per the gestational age at delivery

Gestational age	No. of patients	Percentage
28-32	17	14.16
33-36	61	50.84
37-40	42	35
Total	120	100

Most of twin deliveries happened between 33-36 weeks of gestational age i.e. 50.84%.

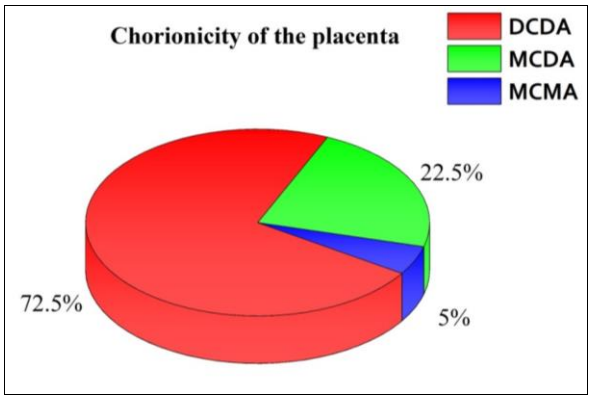

Fig 2: Pie diagram showing allocation of study subjects as per chorionicity of placenta

Majority of twin pregnancies had Dichorionic – diamniotic placentation i.e. 72.5%; rests 22.5% were monochorionic-diamniotic and 5% were monochorionic-monoamniotic.

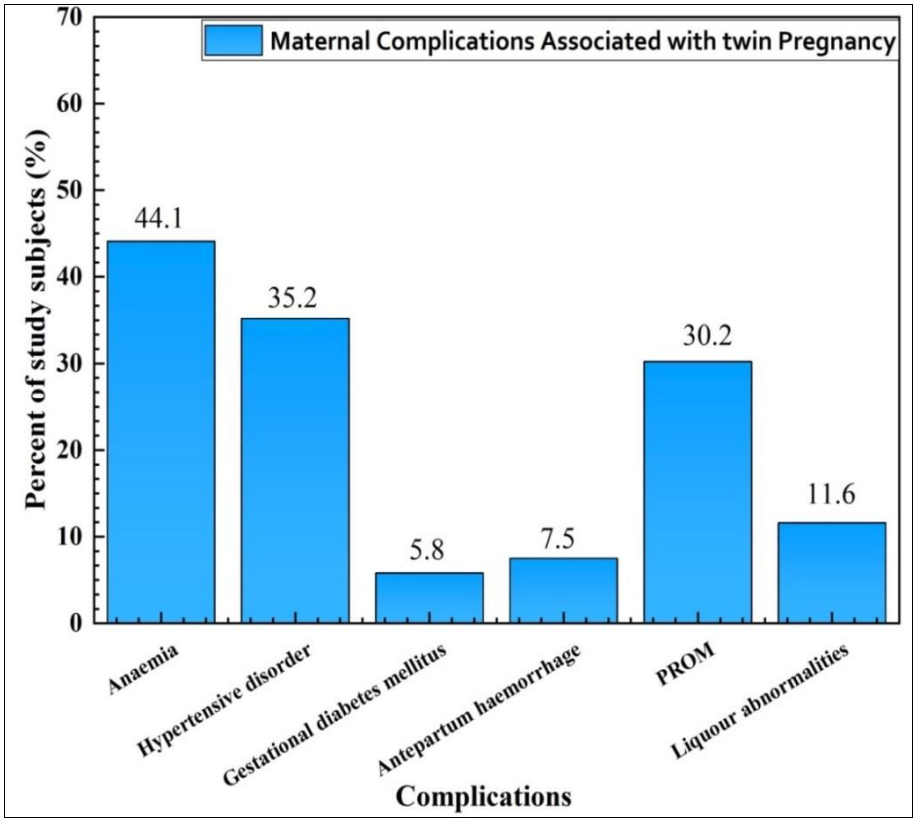

Fig 3: Bar diagram showing allocation of study subjects as per antenatal maternal complications associated with twin pregnancy.

Table 4: Allocation of study subjects as per the other maternal complications associated with twin pregnancy

Other Complications	No. of patients	Percentage
Preterm labour	78	65.4
Postpartum haemorrhage	22	18.3
Pospartum eclampsia	04	3.3

Most common maternal complications encountered was preterm labour i.e. 65.4% followed by anaemia which was 44.1%. 35.2% patients were hypertensive. 4 patients suffered from postpartum eclampsia. 30.2% has premature rupture of membrane and 11.6% had liquor abnormalities. Antepartum hemorrhage was observed in 7.5% of patients and 18.3% had postpartum hemorrhage. 5.8% patients had gestational diabetes mellitus.

Table 5: Allocation of study subjects as per the presentation of fetus

Presentation	No. of patients	Percentage
Cephalic - Cephalic	61	50.8
Cephalic - Breech	32	26.6
Cephalic - Transverse	3	2.5
Breech - Cephalic	13	10.8
Breech - Breech	7	5.8
Breech - Transverse	2	1.6
Transverse - Cephalic	1	0.8
Transverse - Breech	1	0.8
Total	120	99.7

Most common presentation is cephalic- cephalic presentation in the study i.e. 50.8% followed by cephalic-breech i.e. 26.6% and rests as described in the above table.

Table 6: Allocation of 1st and 2nd twin babies as per their mode of delivery

Mode of delivery	1st baby	Percentage	2nd baby	Percentage
Vaginal delivery	65	54.2	64	53.3
Cesarean section	55	45.8	56	46.7
Total	120	100	120	100

In our study 54.2% of 1st twins and 53.3% of 2nd twins had vaginal mode of delivery and 45.8% of 1st twins and 46.7% of 2nd twins had ceasarean section.

Table 7: Allocation of study subject as per the Birth Weight of babies

Birth weight	1st baby	Percentage	2nd baby	Percentage
≤ 1	7	5.8	8	6.7
1⁻1.5	15	12.5	21	17.5
1.5 ⁻ 2	50	41.7	46	38.3
2 ⁻2.5	31	25.8	29	24.2
>2.5	17	14.2	16	13.3
Total	120	100	120	100

Lower birth weights were observed in 2nd twins than 1st twins.41.7% of 1st twins and 38.3% were found between 1.5-2 kgs followed by 25.8% of 1st twins and 24.2% of 2nd twins were found between 2-2.5kgs and so on.

Table 8: Allocation of study subjects as per the APGAR score at 1 min

APGAR score at 1 min	1st baby	Percentage	2nd baby	Percentage
0	0	0	2	1.7
2	4	3.3	6	5
3	3	2.5	4	3.3
4	9	7.5	11	9.2
5	12	10	10	8.3
6	37	30.8	42	35
7	23	19.2	25	20.8
8	12	10	9	7.5
9	20	16.7	11	9.2
Total	120	100	120	100

Table 9: Allocation of study subjects as per the APGAR score at 5 min

APGAR score at 5 min	1st baby	Percentage	2nd baby	Percentage
0	0	0	0	0
2	0	0	2	1.6
3	2	1.7	0	0
4	2	1.7	9	7.2
5	3	2.5	0	0
6	5	4.2	6	5.2
7	7	5.8	19	16.1
8	67	55.8	51	43.2
9	34	28.3	31	26.7
Total	120	100	118	100

APGAR score of <7 at 1 min were higher in 2nd twins i.e. 62.5% and 54.1% in 1st twins. The APGAR score improved after 5min. The score was <7 at 5min in 10.1% of 1st twins and 14% in 2nd twins which is still lower in 2nd twins.

Table 10: Allocation of study subjects as per the immediate perinatal outcome

Perinatal outcome	1st baby	Percentage	2nd baby	Percentage
Still birth	0	0	2	1.6
Birth asphyxia	10	8.3	26	21.6
Low birth weight	103	85.8	104	86.6
Respiratory distress	27	22.5	49	40.8

P value for the above-mentioned table is 0.0347379

Table 11: Allocation of study subjects as per the postnatal complications (N=240)

Postnatal complications	No. of babies (1st + 2nd)	Percentage
Prematurity	156	65
Jaundice	32	13.2
Sepsis	20	8.3
Anaemia	44	18.3

The perinatal outcome was adverse in second coming twin than first. Birth asphyxia and respiratory distress was 62.4% in 2nd twins and 30.8% in 1st twins. 2 number of 2nd twins were still born. Low birth weight was found significantly higher. 86.6% in 2nd twins and 85.8% in 1st twins. The difference between the immediate perinatal outcome in first and second twins were statistically significant i.e. P-value 0. 0347379. Prematurity was the major postnatal complications encountered i.e. 65% followed by anaemia (18.3), sepsis (8.3%) and jaundice (13.2%).

Table 12: Allocation of study subjects as per the NICU Admission

NICU admission	1st baby	Percentage	2nd baby	Percentage
Yes	54	45	58	48.3
No	66	55	62	51.7
Total	120	100	120	100

NICU admission were higher for second coming twins i.e. 48.3% and 45% in first coming twins.

Table 13: Allocation of babies as per the number of neonatal deaths

Death	1st baby	Percentage	2nd baby	Percentage
Yes	12	10.2	19	16.2
No	108	89.8	101	83.8
Total	120	100	120	100

Neonatal deaths were found higher in 2nd twins i.e. 16.2% and 10.2% in 1st twins.

Discussion

In recent years, there is a peak in the incidence of twin pregnancy. As Twin gestation has been associated with maternal as well as perinatal complications, twin gestation has been a matter of concern for the obstetricians across the globe. 120 out of 10,000 patients had twin gestation who are being admitted during the study period. The incidence in the present study is 1.2%. In India, 9-16/1000 births are on an average is the maternal twinning rates according to various study conducted since 1970s. A study conducted by Amiben V. Gajera *et al*. [5] in 2015 found the incidence to be 17.6/1000 births. In our study 69.2% of patients were in booked status i.e. 83 out of 120 patients. The most common age group of antenatal patient presented with twin gestation was found between 20-29 years. Spellacy *et al*, [6] had found 55% belongs to the same age group in a similar study conducted by them. In our study, we have found that out of 120 patients, 35 (29.1%) were primigravida and the rest were multigravida 70.7% i.e.85. In a similar study by Amiben V. Gajera *et al*, [5] have found that 34% were primigravida and 66% were multigravida. In our study, we have found that majority of the patients delivered at the gestational age between 33-36 weeks (50. 83%).Erdemoglu *et al*, [7] and Irene *et al*, [8] had found similar results in their studies. Antenatal ultrasonography and examination of placenta and membranes after delivery helped in the determination of placentation. Lee, 2006 shown that in approximately 95 percent of cases before 24 weeks, sonography can determine chorionicity appropriately [9]. Dichorionic placentation was seen in majority i.e. 72.5% in our study. Erdemoglu *et al*, [7] had found similar result i.e. 69.3% and so as Panwala *et al*, [10] i.e. 63.8%. In our study, it has been observed that 44.1% of patients presented with anaemia which is much higher in present decade. Majority of the patient in our study belongs to poor socio-economic background with illiteracy rate much higher; also due to lack of awareness and malnutrition leading to higher percentage of anaemia. Chowdhury *et al*, [11] have found 35.8% of patients as anaemia in their study. As multiple fetuses need extra iron for their growth and the red cell mass increases more, there is increase in the incidence of anemia in twin pregnancies [12]. It is a matter of concern for the

obstetrician as it significantly affects the health of mother. As the prevalence of anaemia is different in different region, there is variation in the incidence of anaemia. Hypertensive disorder is also very common in twin pregnancy. In our study 35.2% of patients suffered from hypertensive disorder. Amiben V. Gajera *et al*. [5] have found 25% of patients as hypertensive in their study. Antepartum haemorrhage was found to be 7.5% in our study. In a similar study, Purnima Upreti [13] have found the incidence of APH to be 5.9%. In our study, 30.2% of patients had premature rupture of membrane. Sultana *et al*, [14] reported lower rate of PROM in similar study i.e 10%. In the present study, we have found that the incidence of preterm labour to be 65.4%. High percentage of preterm labour always remains a concern for decades. Amiben V. Gajera *et al*. [5] performed a similar study, where they have found the incidence to be 69%. Associated obstetrics and/or medical comorbidities in our patients, requiring the need for early delivery thus the incidence of preterm delivery is higher. Postpartum haemorrhage occurred in18.3% patients in our study which bears consistency with study performed by Chowdhury *et al*, [11] found the incidence of PPH was 18.9%. There was no maternal mortality in our study. By 11–14 week ultrasound assessment, the orientation of each fetus in twin pregnancy can be determined, thus the fetus is considered as twin one which is contained in the gestational sac closest to the maternal cervix [15]. In our study, we came across Cephalic-Cephalic presentation as the most common i.e. 50.8%. In a similar study by Amiben V. Gajera *et al*. [5] have found Cephalic - Cephalic presentation as most common i.e. 60%. In the present study, we have found that 54.2% of 1st twins and 53.3% of second twins delivered vaginally. Caesarean section was 45.8% for 1st twins and 46.7% for second twins. Purnima Upreti [13] in a similar study found the rate of vaginal delivery was 51.2% in 1st twins and 50.5% in 2nd twin. The rate of caesarean section in their study was 48.6% for 1st twin and 49.5% for the 2nd twin. In our study, we have found non-vertex presentation of 1st twin as the most common indication for caesarean section i.e. 33.9% followed by previous caesarean section (26.8%). Erdemoglu *et al*, [7] has also found non-vertex presentation of 1st twins as the most common cause of caesarean section i.e. 46.3% in their study. Especially in cases where the delivery interval of the twins was >15 min, the neonatal morbidity was found higher in second twin in our study, thus postnatal complication can be prevented by minimizing the delay in delivery of second twin. In our study, we have found the incidence of birth asphyxia along with respiratory distress syndrome was 30.8% among 1st twins and 62.4% among the second twins. Low birth weight is one of the major parameter of perinatal morbidity and mortality. The incidence of low birth weight was much higher in our study. The incidence of still birth in our study was 1.6%. P-value of the above mentioned perinatal outcome among 1st and 2nd twin was .03 which was statistically significant. In our study, we have found the APGAR score of <7 at 1 min among 1st twins was 54.1% and 62.5% among 2nd twins. The APGAR score was improved in our study when determined at 5 min. The APGAR score of < 7 at 5 min among 1st twins were 10.1% and that among 2nd twins was 14%. In the present study, we have found the prematurity is the major factor of perinatal morbidity. The incidence of prematurity in our study was 65%. Amiben V. Gajera *et al*. [5] have found the incidence of prematurity to be 69%. In the present study, we have found that incidence of jaundice was 13.2%. Also, in our study, the incidence of anaemia and septicaemia among the new-borns were 18.3% and 8.3% respectively. In the present study, we have found that NICU admission was required for 45.3% of first twin and 48.3% of second twin. In the present study, we have found the neonatal deaths among first coming twins were 10.2% and among second coming twins was 16.2%. We have observed that the perinatal mortality was less among booked cases.

Conclusion

Over the recent years there is rise in the incidence of twin pregnancy. The complications for both mothers and the babies are higher in twin pregnancy. The complications associated with twin pregnancy can be minimized by adequate antenatal care, planned delivery and good pediatric care. Team effort of skilled obstetricians and pediatricians are required for better outcome.

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Conflict of Interest

Not available

Financial Support

Not available

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