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Original Research Article

Obstetric and perinatal outcome of multiple pregnancy: a retrospective study

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ABSTRACT

Background: Obstetricians and paediatricians are concerned about multiple pregnancy because of its high association with maternal and perinatal morbidity and mortality. This study aims to determine the obstetric and perinatal outcome of multiple pregnancy at a teaching hospital in Southern India.

Methods: This retrospective study was conducted in the department of obstetrics and gynecology, Basaweshwar teaching and general hospital, and Sangmeshwar teaching and general hospital, attached to Mahadevappa Rampure medical college, Kalaburagi from August 2020 to August 2022. The analysis included data on 36 women between 20 and 35 years of age, with ≥ 24 completed weeks gestation, having multiple pregnancy during the study period after applying the exclusion criteria. The data was retrieved from the hospital medical records that included demographic details, complications of pregnancy, and maternal and neonatal outcomes. The data was expressed as frequencies, percentages, mean and standard deviation. Statistical data was analyzed using SPSS 20.0 software. Qualitative data of the maternal problems during intrapartum and postpartum period was done using the test of proportion and chi-square test was applied for significance. Quantitative data was analyzed by t test considering a p value less than 0.05 as statistically significant.

Results: There were a total of 36 women with multiple pregnancy with the overall incidence of 12.5 per 1,000 births (1.25%) during the study period. Preterm labour complicated 27.7% of multiple pregnancies, 13.8% of the multiple pregnancies were complicated by severe preeclampsia, 11.1% were complicated by imminent preeclampsia, 8.3% had intrauterine death in 1 of the twins, and 2.7% had oligohydramnios. 33.3% had iron deficiency anaemia, 22.2% had gestational hypertension, and 13.8% had hypothyroidism. There was no maternal morbidity. Majority (55%) were delivered by LSCS, whereas 44.4% were delivered vaginally. Postpartum haemorrhage complicated 5.5% of twin deliveries. The total fetal loss was 2.4%. There was no maternal mortality in our study.

Conclusions: There is higher incidence of adverse maternal and perinatal outcomes among multiple pregnancies than singleton pregnancies. This mandates adequate counselling about risks and required monitoring to avoid adverse outcomes.

Keywords: Multiple gestation, Twin pregnancy, Multiple pregnancy, Obstetric outcomes, Neonatal outcomes

INTRODUCTION

There is increasing incidence of multiple pregnancies than before due to various reasons including increasing maternal age and infertility treatments.¹ The global prevalence of twin pregnancies is around 2-20/1000 live births.¹ It is around 5-6 per 1000 deliveries in Asia.²

Multiple pregnancy has also increased in India especially in the last 20 years.

It is well established that multiple pregnancies are associated with higher adverse maternal and fetal outcomes in comparison to singleton pregnancies.³ These include anaemia, gestational hypertension, higher risk for

operative delivery, miscarriage, postpartum haemorrhage, and fetal deaths. Also, maternal mortality is around 2.5 times higher for multiple pregnancies than for singleton pregnancies. Considering the maternal, perinatal morbidity and mortality, multiple pregnancies require higher monitoring and care to improve the outcomes.⁴

Despite the increasing trend of multiple pregnancies, there is inadequate literature on outcomes of multiple pregnancy in Indian context. This study aims to provide clinical information that may help obstetricians on prognostication and management of multiple pregnancies. This study is being done to bring out the incidences of both maternal and fetal complications among women carrying multiple pregnancies in a tertiary care centre in Kalaburagi, Karnataka so as to provide better care for those women at risk.

METHODS

This retrospective study was conducted in the department of obstetrics and gynecology, Basaweshwar teaching and general hospital, and Sangmeshwar teaching and general hospital, attached to Mahadevappa Rampure medical college, Kalaburagi from August 2020 to August 2022. The data was retrieved from the hospital medical records that included demographic details, complications of pregnancy, and maternal and neonatal outcomes. The analysis included data on 36 women between 20 and 35 years of age with ≥ 24 completed weeks gestation having multiple pregnancy and admitted to labour room during the study period.

Inclusion criteria

All women admitted to the antenatal ward and labour room after confirmed clinical or ultrasound diagnosis of multiple gestation were included in the study. Women with multiple gestation above 28 weeks of gestation. Pregnant women with multi fetal gestation with or without any pre-existing medical disorder (i.e. hypertension, diabetes, asthma, thyroid disorders, epilepsy, cardio-vascular diseases, renal disorders) were included in study.

Exclusion criteria

Singleton pregnancies, one or more twin delivered outside our hospital in this pregnancy were excluded.

Methodology

All cases of multifetal gestation admitted to labour room were considered for this study. Medical records of the subjects during intrapartum and postpartum period until discharge were retrieved. The details included complete history including presenting complaints, history of present pregnancy, history of multiple pregnancy in the previous pregnancy, history of previous pregnancy, family history of multiple gestation, history of taking ovulation inducing drugs or assisted reproductive therapy or any other

infertility treatment along with past history and other medical history (chronic illness or previous surgeries).

Clinical examination details included the general physical examination to note the height and weight of the patient, pallor, icterus, clubbing, cyanosis, and pedal edema. Details of vitals was obtained. Other examination details included systemic examination of cardiovascular system and respiratory system. Per abdomen examination details of uterine height, symphysis-fundal height, fetal lie, presentation, and fetal heart sound for all the fetuses. Details of uterine contractions along with any scar tenderness for patients with previous LSCS, Abdominal wall edema for patients with preeclampsia were also noted. Per-speculum examination details on any local pathology, per-vaginal leak, and per-vaginal bleeding. Per-vaginal examination details during labor included dilatation of the cervix, effacement, presence of membranes, examination of liquor, presenting part of the fetus, position of the fetus, and adequacy of the pelvis.

Details of complications in the mother during antenatal period including hypertension, polyhydramnios, malpresentation, preterm labour, anemia, antepartum haemorrhage were noted. Intrapartum fetal monitoring was done by intermittent auscultation of the fetal heart sounds and cardiotocography.

Investigations

Routine investigations including complete blood count, urine for sugar, albumin, microscopy, blood group and Rh, blood sugar, HIV and HBSAG along with USG for chorionicity (classified as dichorionic, monochorionic diamniotic, monochorionic monoamniotic), placental site, weight of babies, presentation, amniotic fluid index.

Other investigations include blood urea, serum creatinine, serum uric acid, liver function tests, bleeding time, clotting time, prothrombin time, international normalized ratio (INR) and urine culture, wherever available.

Perinatal outcome

The perinatal outcome was recorded in terms of gestational age at delivery (>37 wks, 34-37 wks, <34 wks), mode of delivery (caesarian section/ vaginal delivery / combined), interval between delivery of first and second twin, Apgar scores at 0 and 5 minutes, birth weight (>2500 gm, 2500-1500 gm, <1500 gm), gender, dead\ still\ live, and admission to neonatal intensive care unit (NICU). Maternal condition during antenatal period that affects perinatal outcome like pregnancy induced hypertension, gestational diabetes mellitus, antepartum hemorrhage and preterm delivery were also studied. Newborns weighing less than 2.5 kg were classified as low birth weight and those weighing less than 1.5 kg as very low birth weight. A 5-minute Apgar score less than 7 is defined as a criterion of immediate neonatal morbidity. Congenital malformations were diagnosed by ultrasound examination

during the antenatal period or by clinical examination of the neonate.

Statistical analysis

The data was expressed as frequencies, percentages, mean and standard deviation. Statistical data was analyzed by using SPSS 20.0 software. Qualitative data of the maternal problems during intrapartum and postpartum period was done using the test of proportion and chi-square test was applied for significance. Quantitative data was analyzed by t-test considering a p-value less than 0.05 as statistically significant.

RESULTS

In the present study, we considered twin and triplet pregnancies. A total of 36 women presented with multiple pregnancy from August 2020 to August 2022. The incidence of multifetal pregnancy was 12.5 per 1,000 births (1.25%) i.e., 1:80 during the study period.

The incidence of multiple pregnancy did not increase with maternal age and parity. The incidence of multiple pregnancy for same for age groups- 21 years to 25 years (41.6%) and 26 years to 30 years (41.6%). The incidence declined to 16.6% after 30 years. The incidence multiple pregnancy was also same between primi and multigravida (50%).

The mean age calculated was 25 years. This may be due to the reason that majority of patients attending our outpatient department were of younger age group. With regard to gestational age, there were 8 (22.2%) women between 28 weeks-32 weeks of gestation, 8 (22.2%) women between 32 weeks-36 weeks of gestation and 20 (55.5%) with greater than 37 weeks of gestational age. The demographic profile in relation to age is shown in Table 1.

Table 1: Demographic profile of the patients.

Parameters	Number of twins	Percentage (%)
Age group (Years)		
21-25	15	41.6
26-30	15	41.6
>30	6	15.6
Parity		
Primipara	18	50
Multipara	18	50

In our study 28 cases (77.7%) had conceived spontaneously and 8 cases (24%) were conceived after ovulation induction/IUI. With regard to maternal comorbidly, 5 (13.8%) were complicated by severe preeclampsia, 4 (11.1%) were complicated by imminent preeclampsia, 3 (8.3%) had intrauterine death in 1 of the twins, and 1 (2.7%) had oligohydramnios. 12 (33.3%) had iron deficiency anaemia, 8 (22.2%) had gestational hypertension, and 5 (13.8%) had hypothyroidism. There

was no maternal morbidity. Postpartum haemorrhage complicated 2 (5.5%) of twin deliveries. There was no maternal mortality in our study. Maternal complications are shown in Table 2.

Table 2: Antepartum complication in multifetal gestation and its incidences.

Complication	No. of cases	Percentage (%)
Preterm	10	27.7
Anaemia-mild	9	25
Anaemia-moderate	3	8.3
Hypothyroidism	5	13.8
Gestational hypertension	8	22.2
Imminent eclampsia	4	11.1
Severe eclampsia	5	13.8
Eclampsia	1	2.7
Abruption	2	5.5
Oligohydramnios	1	2.7
PROM	1	2.7
PPROM	1	2.7

With regard to chorionicity, as shown in table 3, 27 (75%) had dichorionic diamniotic (DCDA), 7 (19.4%) had monochorionic diamniotic (MCDA) and 2 (5.5%) had monochorionic monoamniotic (MCMA). There was 1 (2.1%) case of twin-twin transfusion.

Table 3: Chorionicity and distribution among types.

Chorionicity	N	Percentage (%)
DCDA	27	75
MCDA	7	19.4
MCMA	2	5.5

Vertex-vertex (Vx-Vx) fetal presentation was most common presentation at delivery (50% patients) followed by Breech-vertex (B-Vx) in 20% women. The combinations of multiple gestation presentation is shown in Table 4.

Table 4: Distribution among combination of presentations.

Combinations of presentation	No. of cases	Percentage (%)
Vertex-vertex	18	50
Breech-vertex	7	19
Vertex-breech	4	11
Transverse-transverse	4	11
Variable	3	8

Majority, 20 (55%) were delivered by lower segment caesarean section (LSCS), whereas 15 (44.4%) were delivered through normal vaginal delivery. Previous history of LSCS and malpresentation were the main

indications for LSCS delivery. The average delivery interval between 1st and 2nd twin was 8 minutes.

With regard to the complications seen during perinatal period, respiratory distress syndrome (RDS) or birth asphyxia were 50%, low birth weight were 40%, and prematurity were 27.7%.

The total fetal loss was 2(2.4%), with the complication related to preterm delivery and very low birth weight (<700 mg). 5 (7.1%) had discordant growth. With regard to birth weight, 28 babies (40%) were >2.5 kg, 22 (31.4%) were between 2-2.4 kg and 20 (28.5%) were <2.4 kg. 38 (54.2%) were admitted to NICU. Perinatal outcomes are shown in Table 5.

Table 5: Showing perinatal outcomes of the twin pregnancies.

Outcome		No. of babies	Percentage (%)
Birth weight (kg)	>2.5	28	40
	2-2.4	22	31.4
	<2.4	20	28.5
Admission to NICU (Twin)	1 st	10	54.2
	2 nd	28	
IUGR		18	25.7
Fetal loss		2	2.8

DISCUSSION

According to various studies conducted since the 1970s, the incidence of multifetal gestation was approximately 3%.⁵ This is higher compared to our study of 1.25%. This may be due to the geographical location and service delivery of our centre to majorly rural population.

In our study, 41.6% are in between age of 21-25, 41.6% are between 26-30, and >30 accounted for 16.6%. Similar findings were obtained by Bangal et al where majority of women were in age group 20-30 years, which is the peak reproductive age group.⁶ In our study, primigravida account for 50% and multigravida 50%. These findings were not comparable to any study.

In several studies the incidences of multifetal gestation were higher in Primigravida.⁵ However, in our study no such differences were noted. The higher incidence in primigravida and younger age in other studies may be influenced by infertility treatment.³ In our study, 28 cases (77.7%) had conceived spontaneously and only 8 cases (24%) were conceived after ovulation induction/IUI. This may explain the finding as our institute does not have an infertility clinic. Interestingly, the incidence of preterm labor in our study 27.7% which is lower in comparison to other studies.

The determination of placentation was done using antenatal ultrasonography and inspection of the placenta and membranes following delivery. Dichorionic

placentation was seen in majority in our study, which is comparable with studies by Erdemoglu et al (69.3%) and Panwala et al (63.8%).^{7,8} Vertex-vertex (vx-vx) presentation at delivery was most common fetal presentation in present study (52%) and was to be consistent with study conducted by Chowdhury et al (51.4%).⁷ Majority were delivered via LSCS. This finding is comparable to several studies.⁵

Most common complications during pregnancy noted are gestational hypertension and anaemia. Among the maternal complications, anaemia is the most common and is comparable to other studies as well.⁶ Some of the studies have reported higher incidence as well.⁹ This difference in prevalence of anaemia could be due to the difference in prevalence of anaemia in different geographical regions. Among the perinatal complications, birth asphyxia was the most common in our study. This pattern could be seen in other similar studies as well.⁹

There is no maternal mortality in this study. Similar findings were seen in other studies as well.⁹

In our study, number of mother presenting in preterm labor are 10 (27.7%). Preterm labour is the most common complication in comparison to all other complications in multiple pregnancy. Therefore, all efforts must be taken to prolong pregnancy for as long as possible. Adequate tocolysis should be given till lung maturity of fetus is achieved. Perinatal mortality was more for fetus weighing <700 gm. Thus, suggesting that birth weight was an important factor for the good perinatal outcome, being if it is above 1500 gm.¹⁰ Higher neonatal morbidity was noted in second coming twins in cases where the delivery interval between the two twins was >15 min. Therefore, minimum delay in the delivery of second coming twin is advised to prevent post-natal complications. Our study corresponds to the above findings with an average time delay of 9 minutes only.

In our study, LBW that is birth weight less than 2.5 kg was seen in 20 out of 70 babies (28.5%). Babies weighing 2-2.4kg were 22 out of 70 babies (31.4%), and >2.5 kg were 28 out of 70 babies (40%). This distribution is in comparison with other studies.⁵ Also, it is noteworthy that higher presence of NICU admission was in correlation with presence of birth asphyxia. This finding is comparable to a study done by Radhakrishnan et al.¹¹

We observed that there is higher morbidity among unbooked or mothers with poor antenatal check-ups. This clearly reflects the importance of antenatal care for better prognosis in multiple gestation. Multiple pregnancy is a high-risk pregnancy. There is higher incidence of adverse maternal and perinatal outcomes among multiple pregnancies than singleton pregnancies. Mothers carrying multifetal pregnancy should be properly counselled regarding all the complications. This mandates the required monitoring to avoid adverse outcomes.⁹

There are a few limitations in our study. Our study population is small because of short duration of study. Further studies with longer time frame could yield more significant results. Also, as the study was done at a tertiary care referral center, there may have been a bias with regard to the higher incidence of complications.

CONCLUSION

Most of the complications in multiple gestations are usually preventable. High risk units in the obstetric ward and a well-developed neonatal intensive care set up would help to reduce the maternal, perinatal morbidity and mortality. Antenatal counselling and education for regular checkups could be ensured. Maternal and fetal morbidity and mortality can be prevented by providing optimum antepartum, intrapartum and postpartum care.

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