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Original Research Article

A PROSPECTIVE STUDY OF MATERNAL AND FETAL OUTCOME IN MULTIFETAL GESTATION IN TERTIARY CARE CENTRE

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Abstract

Background: Multiple pregnancies with increased placental and foetal masses are likely to have increased physiologic responses compared with singleton pregnancies. This study aimed to analyse maternal and foetal outcomes during multifetal gestation. **Materials and Methods:** A prospective study was conducted on 70 pregnant women with multifoetal gestation at the Government Maternity Hospital, Hanmakonda, from July 2019 to September 2020. Detailed information regarding the patient's history, symptoms, ultrasonographic findings, complete general physical examination, systemic examination, and complete obstetrical examination was obtained. **Result:** Approximately 49 cases (70%) had preterm deliveries and 16 (22.9%) had full-term deliveries. Caesarean sections were performed in 64.3% of the cases. Most patients (32.9%) who underwent a caesarean section had a non-vertex presentation. Among the delivered babies, 70% were preterm and 22.9% were term. 22 cases (31.4%) had male-male pairs, 25 cases (35.8%) had female-female pairs, 21 cases (30%) had male-female pairs, 1 case (1.4%) had female-female-female pairs, and 1 case (1.4%) had a male-male-female combination. **Conclusion:** Multiple pregnancies were considered high-risk pregnancies. It has more complications for both the mother and baby than singleton pregnancies. Preterm labour is the most common complication among all other complications in multifetal gestation. It is the leading cause of increased perinatal mortality in multifetal gestation owing to prematurity. Therefore, efforts must be made to prolong pregnancy.

INTRODUCTION

Natural higher-order concepts are uncommon. The reported incidence ranges from 0.01% to 0.07% for all pregnancies.[1] The incidence of twinning and higher-order multiples has increased dramatically over the last two decades. The greatest contributor to this explosion in multiple gestations has been delayed fertility and the use of assisted reproductive technologies.[2] The astounding increase in multiple gestation rates can be explained by the social shift in women's attitudes regarding childbearing which has resulted in an increasing number of women choosing to postpone childbearing in favour of work and career commitments. This delayed childbearing has resulted in an increased maternal age at conception, which in turn has led to infertility treatment such as ovulation induction, invitro fertilization and intra cytoplasmic sperm injection as one of the predisposing factors of twin gestation since fertility decreases with age.[3]

Multiple pregnancies warrant special attention because they make a considerable contribution to maternal/perinatal morbidity/mortality well over that due to the multiplication of singleton risk by foetal number.[4] Multiple gestation with increased placental and foetal mass is likely to have increased physiologic responses compared with singleton pregnancies. These exaggerated physiological changes and mechanical stress in multiple pregnancies could be associated with an increase in adverse maternal outcomes, such as pulmonary oedema due to decreased cardiac reserve, venous thromboembolic disease, and even death. Complications of pregnancy like pregnancy-induced hypertension, gestational diabetes, anaemia, abortions, malpresentation, antepartum haemorrhage, UTI, varicosities, and haemorrhoids could be more frequent and more severe in multifetal gestation compared to singleton pregnancy.[2]

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Multiple pregnancies due to over-distension of the uterus could result in a higher rate of premature delivery than singleton pregnancies, and substantially higher perinatal morbidity and mortality. The main causes of adverse neonatal outcomes in multiple pregnancies are related to prematurity, foetal growth restriction and low birth weight.[5] Multiple births are much more common today than they were in the past. Throughout the world, the prevalence of twin births varies from approximately 2-20 /1000 births.[1] Overall complications occur in approximately 83% of twin pregnancies compared to 25% in singleton pregnancies. Hence, twin pregnancies should be considered as high-risk pregnancies. Vigilant obstetric care not only decreases maternal morbidity and mortality but also improves the foetal outcome.[6] The highest burden of multiple pregnancies is seen in Sub-Saharan Africa, with an average twinning rate of 20 per 1,000 deliveries as compared to 10 per 1,000 deliveries in Europe and around 5-6 per 1,000 deliveries in Asia.[7] Since 1980, there has been a 65% increase in the frequency of twins and a 500% increase in triplet and higher-order births.[8]

Aim

This study aimed to analyse maternal and foetal outcomes during multifetal gestation.

MATERIALS AND METHODS

This prospective study included 70 patients at the Government Maternity Hospital, Hanmakonda, from July 2019 to September 2020. The study was approved by the institutional ethical committee before initiation, and informed consent was obtained from all patients.

Inclusion criteria

Pregnant women with multifetal gestation who attended the Government Maternity Hospital, Hanmakonda, were included in the study.

Exclusion criteria

High-risk pregnancies, such as diabetes, antepartum haemorrhage (APH), premature rupture of membranes (PROM), and pregnancy-induced hypertension (PIH) were excluded.

Methodology:

Detailed information regarding the patient's history, symptoms, ultrasonographic findings, complete general physical examination, systemic examination, and complete obstetrical examination was obtained. Routine investigations were then performed. Pregnancy outcomes were recorded based on the mode of delivery, duration of labour, and complications noted at the time of delivery. Foetal outcomes were recorded, and data were analysed using appropriate statistical methods.

Information about the study, such as age, parity, gravida, residence, and family history of multiple pregnancies, was obtained from patients. Chorionicity was assessed using ultrasound and placental examinations, as previously described. The perinatal outcome was recorded in terms of gestational age at delivery (28–30 weeks, 31-33, 34-37, >37 weeks), mode of delivery (caesarean section/vaginal delivery/combined/outlet forceps/vacuum), Apgar score at 0 and 5 min, birth weight (>2500 g, 2500–1500 g, <1500 g), sex, dead/still/alive, babies admitted to the NICU, number of days in the ICU, and the outcome of the babies, in terms of whether the baby was discharged in good condition or expired.

Neonatal morbidity was further defined based on causes, such as septicaemia, growth restriction, respiratory distress syndrome, septicaemia, foetal growth 46 restriction (FGR), neonatal hyperbilirubinemia (NNH), patent ductus arteriosus (PDA), hypoglycaemia, anomalous baby, and neonatal seizures (NNS). Causes of death were defined as birth asphyxia, sepsis, cord prolapse, prematurity and its complications, anomalous birth, foetal growth restriction, neonatal seizures, and intrauterine death.

Perinatal loss was defined as intrauterine death or neonatal death (≤28 days of birth) with a birth weight of >1 kg. Stillbirths were also included in the perinatal mortality. Stillbirth was defined as intrauterine death of a foetus weighing >1 kg and/or ≥28 weeks of gestation. Stillbirth was divided into antepartum deaths, where the foetuses had died before the start of labour, and intrapartum foetal deaths, where the foetuses had been alive at the onset of labour. Perinatal morbidity was defined as a 5-minute Apgar score of < 7.

Preterm confinement had been described as those delivered earlier to 37 weeks gestational age and very preterm birth had been described as those delivered earlier to 32 weeks. Low birth weight was defined as a birth weight < 2.5 kg and very low birth weight (< 1.5 kg). A 5-minute Apgar score of less than 7 was a criterion for immediate neonatal morbidity. A 5-minute Apgar score of less than 5 was considered asphyxia.

Maternal conditions that affect perinatal outcomes during the antenatal period, such as PIH, GDM, APH, and anaemia, were also studied. Determination of chorionicity was performed using sonography during pregnancy and clinical assessment of the placenta during delivery and described as dichorionic, monochorionic, diamniotic, and monochorionic monoamniotic. Congenital malformation was determined by sonography during pregnancy and careful examination of the newborn baby. All the data are presented in frequencies and percentages.

RESULTS

The maximum incidence of multiple gestations was observed in the age group between 21-25 years- 42 cases, 60%). The majority of cases belonged to a lower socioeconomic class (40 cases, 57.1%). Among the participants, 34.3% were primigravida, 65.7% were multigravida, 50% were nulliparous, and 12.9% were multiparous. Spontaneous conception

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was observed in 81.4% of cases, and 18.6% of cases were conceived after ovulation induction [Table 1].

Our study showed various antenatal complications: 24 cases (34.3%) had only preterm labour, 1 case (1.4%) had preterm labour with anaemia, 5 cases (7.1%) had preterm labour with PPROM, 2 cases (2.9%) had preterm labour with anaemia and severe preeclampsia, 2 cases (2.9%) had preterm labour with severe preeclampsia, 1 case (1.4%) had imminent eclampsia, and 1 case (1.4%) had foetal twin-to-twin transfusion syndrome. There were no antenatal complications in three cases (4.3%) [Table 2].

Most patients had preterm deliveries; 49 cases (70%) and 16 cases (22.9%) had full-term deliveries. Caesarean sections were performed in 64.3% of the cases. The majority of cases that underwent caesarean section had indications of non-vertex presentation, constituting 32.9% of cases [Table 3].

Among the patients, 24.3% had postpartum complications, 20% had postpartum haemorrhage, 2 (2.9%) had postpartum eclampsia, and 1 (1.4%) had maternal mortality due to acute renal failure secondary to eclampsia. In addition, 44 cases (62.3%) were Dichorionic Diamniotic, 19 cases (27.1%) were Monochorionic Diamniotic, 5 cases (7.1%) were Monochorionic Monoamniotic, and 2 cases (2.9%) were trichorionic-triamniotic [Table 4].

Among the term babies, 70% were preterm and 22.9% were term. 22 cases (31.4%) were male-male pairs, 25 cases (35.8%) were female-female pairs, 21 cases (30%) were male-female pairs, one case (1.4%) was female-female-female and one case (1.4%) was a male-male-female combination [Table 5].

Table 1: Demographic details

		Frequency	Percentage
Age in years	15-20	3	4.3
	21-25	42	60
	26-30	23	32.8
	>30	2	2.9
Booked status	Booked	50	71.4
	Un booked	20	28.6
Socio-economic status	Lower class	40	57.1
	Middle class	28	40
	Upper class	2	2.9
Gravidity Index	G1	24	34.3
	G2	22	31.4
	G3	21	30
	G4	2	2.9
	G5	1	1.4
Parity Index	P0	35	50
	P1	26	37.1
	P2	9	12.9
Family history	Present	12	17.1
	Absent	58	82.9
Mode of conception	Spontaneous	57	81.4
	Ovulation induction	13	18.6
Obstetric outcome	Abortion	5	7.1
	Preterm delivery	49	70
	Term delivery	16	22.9

Table 2: Antepartum complications

Type	Frequency	Percentage
Preterm labour	24	34.3
Preterm labour, Anaemia	1	1.4
Preterm labour, Anaemia, and Severe preeclampsia	2	2.9
Preterm labour, PPROM	5	7.1
Preterm labour and Severe preeclampsia	2	2.9
Imminent eclampsia	1	1.4
Severe preeclampsia	4	5.7
Preterm labour, IUGR	3	4.3
Antepartum haemorrhage	1	1.4
IUGR	3	4.3
Anaemia	2	2.9
Abortion	2	2.9
Abortion, anaemia	1	1.4
Abortion, severe preeclampsia	2	2.9
Gestational diabetes	5	7.1
Eclampsia	2	2.9
Eclampsia, renal failure and maternal mortality	1	1.4
Oligohydramnios	3	4.3
Intrauterine death	2	2.9
Twin-to-twin transfusion syndrome	1	1.4
Uneventful	3	4.3

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Table 3: Intrapartum management

		Frequency	Percentage (%)
Blood transfusion	Antepartum	12	17.1
	Postpartum	14	20
Delivery	Preterm	49	70
	Full term	16	22.9
Mode of delivery	Vaginal delivery	20	28.6
	Caesarean section	45	64.3
Indication for caesarean section	Non-Vertex presentation 1st twin	23	32.9
	Fatal distress	4	5.7
	Previous LSCS	10	14.3
	Contracted pelvis	4	5.7
	Severe preeclampsia	2	2.9
	Oligohydramnios	2	2.9
Foetal presentation	Vertex-vertex	28	40
	Vertex-breech	11	15.7
	Breech-vertex	11	15.7
	Breech-breech	6	8.6
	Vertex-transverse	1	1.4
	Breech-transverse	1	1.4
	Transverse-vertex	1	1.4
	Transverse-breech	1	1.4
	Transverse- transverse	5	7.1

Table 4: Postpartum complications

		Frequency	Percentage
Postpartum complication	Postpartum haemorrhage	14	20
	Postpartum eclampsia	2	2.9
	Maternal mortality	1	1.4
Chorionicity	Dichorionic diamniotic	44	62.3
	Monochorionic diamniotic	19	27.1
	Monochorionic monoamniotic	5	7.1
	Trichorionic-triamniotic	2	2.9

Table 5: Perinatal Outcomes

		Frequency	Percentage
Perinatal outcome	Preterm babies	49	70
	Term babies	16	22.9
Sex distribution	Male-male	22	31.4
	Female male	21	30
	Female-female	25	35.7
	Female-female-female	1	1.4
	Male-male female	1	1.4
NICU Admission	First baby	30	23.3
	Second baby	36	28
	Third baby	1	0.8
Perinatal mortality	First baby	10	7.6
	Second baby	9	7
Causes of perinatal mortality	Preterm	12	63.1
	IUGR	2	10.5
	Intrauterine death	2	10.5
	Birth asphyxia	2	10.5
	Meconium aspiration	1	5.4

DISCUSSION

The incidence of twinning and higher-order multiple gestations has dramatically increased over the last two decades. The greatest contributors to this explosion in multiple gestations have been delayed fertility and the use of assisted reproductive technology. Since multiple gestations have been associated with various complications, physicians should be careful when selecting patients for ovulation-inducing drugs to prevent further complications. In our study, the incidence of twinning was 1.27% which is similar to that reported in other studies by Rather et al. (1.35%) and Singh et al. (1.81%).[9,10]

In our study, the incidence of preterm labour was 70% which was similar to that reported by other authors, such as Rather et al. (68%) and Singh et al. (74.7%).[9,10] Also, the incidence of anaemia in our study was 37.1% which was comparable to the study by Singh et al. which had a 44% incidence of anaemia.[10] The incidence of hypertensive disorders in our study was lower (18.6%) when compared with previous studies by Rather et al. (28%) and Singh et al. (32%).[9,10] In our study, 2 cases (2.9%) had preterm labour with anaemia and severe preeclampsia, 2 cases (2.9%) had preterm labour with severe preeclampsia, one case (1.4%) had imminent eclampsia, 4 cases (5.7%) had only severe preeclampsia, one case (1.4%) had severe

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preeclampsia with antepartum haemorrhage, one case (1.4%) had an abortion with anaemia and the same incidence as abortion with severe preeclampsia, and 2 cases (2.9%) had eclampsia.

In our study, the incidence of abortion was 7.1% which is similar to that reported by Itzkowic (7%) and Loucopoulos et al. (8.5%).[11,12] The incidence of antepartum haemorrhage in our study was 1.4%, which was similar to the study conducted by Day et al. which was 0.5%.[13] The incidence of postpartum haemorrhage was higher in multiple pregnancies than in singleton pregnancies, as there was an increased incidence of anaemia and overdistension of the uterus. The incidence of postpartum haemorrhage in the present study was 20% which is comparable to other studies by Singh et al. which had a 13.3% incidence of postpartum haemorrhage.[10]

In our study, the incidence of maternal mortality was 1.4% due to acute renal failure secondary to antepartum eclampsia. This incidence was less when compared to a study conducted by Mcdermott et al. which was 11.5%.[14] But also, more when compared to the study conducted by Albrecht et al. which had 0% maternal mortality.[15] In our study, the incidence of perinatal mortality was 147/1000 live births which was lower when compared to studies by Singh et al. which had 180/1000 live births and Khushla Pathania et al. had 200/1000 live births.[10,16]

CONCLUSION

Multiple births are on the rise, due to factors like later childbearing and fertility treatments. These pregnancies carry a higher risk of complications for both mom and babies, with preterm labor being the biggest threat. To improve outcomes, doctors recommend extensive prenatal care, including counselling, monitoring, nutrition guidance, and timely interventions to prevent or delay preterm labor. Early detection and management of other pregnancy complications in specialized centers are also crucial for a healthy delivery.

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