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A Study of Maternal and Perinatal Outcomes on Multiple Pregnancy

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ABSTRACT

Multiple pregnancy is considered as high risk pregnancy due to associated high maternal morbidity and perinatal mortality. The incidence of multiple gestation is on rise due to inadvertent use of ovulation induction drugs in assisted reproductive techniques. This observational study was carried out to find the maternal and perinatal outcome in all cases of multiple pregnancy delivered at our institute over a period of one year. It was observed that the incidence of twins was 4.38% with most common risk factor being use of ovulation induction drugs (24.34%). The commonest maternal complications were anaemia (76.95%), preterm labour(61.73%), early rupture of memebranes (39.99%) and hypertensive disorders(19.56%).The rate of caesarean section was 32.66% and only 32.61% women delivered after 37 weeks. Placenta was dichorionic-diamniotic in 60.43% cases. The incidence of prematurity and low birth weight among neonates was 65.53% and 75.05% respectively. Overall perinatal mortality was 27.21%.

Key Words: Multiple pregnancy, assisted reproductive techniques.

INTRODUCTION

The global incidence of multiple pregnancies is approximately 3% with highest prevalence in Sub-Saharan Africa where it is 20 per thousand deliveries.[1,2] In India, twinning accounts for nearly 1% of all pregnancies and is responsible for 10% of perinatal mortality.[3,4,5]

Increased use of ovulation induction agents, assisted reproductive techniques (ART), increased maternal age at conception are important factors contributing to increasing incidence of multiple pregnancies.[6] Other risk factors include multiparity, family history, ethnicity of mother, smoking BMI>30, folic acid and oral contraceptive intake.[7,8,9,10]

Multiple pregnancies with their preponderance to cause various maternal and perinatal complications are grouped under high-risk category. There is increased risk of maternal complications like anemia, hypertension, ante ad post-partum hemorrhage, preterm or prelabour rupture of membranes (PROM and PPROM), urinary tract infections and operative deliveries.[11] Other complications specific to multiple pregnancies are demise of one fetus, conjoined twins, acardiac twin, fetus-in-fetu etc.[10]

Vascular anastomosis in monochorionic pregnancies may lead to development of twin to twin transfusion syndrome (TTTS), discordance, poly and oligohydroamnios, preterm labour and preterm delivery.[12]

Multiple pregnancies are associated with much higher chances of perinatal complications than singleton pregnancies. Such neonates are much more likely to result in premature birth. 51% of twins and triplets are born very preterm compared to 9.4% singletons. About half of twins are born with a birth weight of less than 2,500 gm (5.5lb). The incidence of growth restriction is about 3% higher than singleton pregnancies. The chances of having congenital anomalies are 1.7% times singleton pregnancies. Cerebral palsy is more common among multiple births being 2.3 per 1,000 survivors in singletons, 13 in twins and 45 in triplets.[13]

Because of the higher incidence of potentially life threatening consequences for mother and neonates, this study was conducted to study the incidence of these complications as well as various risk factors attributing to multiple pregnancies.

MATERIALS AND METHODS

The present study was a prospective observational study carried out over a period of one year, i.e. October 2015 to September 2016. It included all the women with multiple pregnancy coming to ante natal clinic of obstetrics and gynaecology, Pt. B.D. Sharma PGIMS, Rohtak as well as women who were admitted to labour room in emergency irrespective of their period of gestation and order of multiple pregnancy.

Women with pre- existing medical disorders like chronic hypertension, pre gestational diabetes, cardiac diseases , renal disease or collagen vascular disorder were excluded from the study.

Informed and written consent was taken from all the women participating in the study. At first visit to the ante-natal clinic, detailed history, presence of any risk factor for multiple pregnancy, general physical examination and diagnosis were recorded. Ante-natal investigations were done. These women were followed up on periodic basis in outdoor. Women coming with diagnosis of multiple pregnancy were subjected to ultrasound at first visit for number of foetuses and chorionicity. For monochorionic multiple pregnancy, serial ultrasounds were done three weekly from 16 weeks till 36 weeks and for dichorionic twins, ultrasound was done at 18-20 weeks and then four weekly from 24 weeks till 36 weeks. These women were followed till delivery and discharge from the hospital. The women with multiple pregnancies who did not deliver till one year of study were excluded from the study.

Similarly, unbooked women with multiple pregnancy coming to labour room directly were subjected to detailed history, thorough physical and obstetrical examination. Any previous ultrasound records were used to determine number of foetuses, their presentation and other parameters.

Maternal outcome was assessed on the basis of antepartum, intrapartum or post partum complications like preterm labour, premature rupture of membranes, antepartum haemorrhage, pregnancy induced hypertension, gestational diabetes mellitus, polyhydroamnios, death of one or more foetuses, discordant twins, mode of termination of pregnancy (vaginal delivery or caesarean section), post or intra partum haemorrhage, total number of hospital stay days.

Perinatal outcome comprised of preterm birth, extreme-to- moderate preterm birth, low birth weight, very low birth weight , intrauterine/foetal growth restriction (IUGR), and 'perinatal' comprising birth asphyxia (indexed by Apgar scores of <7 at one minute and five minutes), suspected neonatal sepsis (used collectively for septicaemia, meningitis, and pneumonia), congenital malformation, hyper bilirubinaemia (requiring phototherapy), need for mechanical ventilation, admission of baby to Neonatal Intensive Care Unit, number of admission days or perinatal mortality.

At the end of study, the data collected was categorised and coded as appropriate. The data was then compiled, tabulated and analyzed using SPSS 21 software. Appropriate statistical tests were applied for analysis wherever applicable.

RESULTS

During this study, total 7,384 deliveries were conducted out of which 324 cases were of multiple pregnancy, making the incidence of multiple pregnancy in our institute 4.38%. out of these, 4.29% were twins and 0.09% were triplets. Excluding 98 women who either were lost to follow up or who did not meet the inclusion criteria, total 230 cases (223 twins and 7 triplets) were included in the study.

Most of the women were 21-25 years of age (58.26%) followed by 26-30 years of age (21.30%) and 53.91% were primigravida.(Table 1)

Table 1: (Maternal Characteristics)

MATERNAL CHARACTERISTICS	FREQUENCY (n=230)	PERCENTAGE(%)
AGE GROUP		
≤20 years	31	13.47
21-25 years	134	58.26
26-30 years	49	21.30
31-35 years	13	5.65
>35 years	3	1.32
PARITY		
0	124	53.91
1	61	26.52
2	32	13.91
3	10	4.34
≥4	3	1.32

Various risk factors could be identified in 40.01% women most common being use of ovulation induction agents (24.34%) and family history of multiple pregnancy (7.82%).(Table 2)

Table 2: (Risk Factors)

RISK FACTORS	NUMBER (n=230)	PERCENTAGE (%)
Family history	18	7.82
Ovulation induction	56	24.34
Ass. Reproductive techniques	9	3.91
Age ≥35 years	6	2.61
≥P4	3	1.31
Total	92	40.01

Various maternal complications were encountered in women with multiple pregnancies, most common being anaemia (76.95%), preterm labour (61.73%), PPROM (24.34%), PROM (15.65%) and pre-eclampsia (17.39%). The incidence of post partum complications like haemorrhage, eclampsia and sepsis was found to be 17.97%, 4.14% and 2.76 % respectively.(Table-3) The mean hospital stay days were found to be 7.31±5.10 days. The incidence of pre-eclampsia was found to be statistically higher in monochorionic twins as compared to dichorionic (p=0.000). There was no maternal mortality.

Table 3: (Maternal Complications)

MATERNAL COMPLICATIONS	NUMBER (n=230)	PERCENTAGE (%)
ANTENATAL		
Abortion	13	5.65
Anaemia	177	76.95
Preterm labour	142	61.73
PPROM	56	24.34
PROM	36	15.65
Pre-eclampsia	40	17.39
Polyhydroamnios	19	8.26
Oligohydroamnios	5	2.17
Abruption	7	3.04
Placenta praevia	6	2.60
GDM	5	2.17
eclampsia	5	2.17
placenta accreta	1	0.43
POSTPARTUM		
PPH	39	17.97
Post partum eclampsia	9	4.14
Puerperal sepsis	6	2.76
Total	54	24.88

In our study, only 32.61% women delivered at term (≥37 weeks) and 44.78% women delivered between 32-36+6 weeks gestation. Among fetal complications 38.54% had malpresentations, 16.52% had IUGR and 14.34 % were discordant. The incidence of discordance was found statistically higher in monochorionic twins as compared to dichorionic (p=0.000) (Table 4)

Table 4: (Fetal Characteristics)

FETAL CHARACTERISTICS	NUMBER (n=230)	PERCENTAGE (%)
GESTATIONAL AGE AT DELIVERY		
<20 weeks	13	5.65
20-28 weeks	12	5.23
28-32 weeks	27	11.73
32-36+6 weeks	103	44.78
≥37 weeks	75	32.61
FETAL COMPLICATIONS		
Malpresentation	170/441	38.54

IUGR	38	16.52
Discordance	33	14.34
Demise of one twin	10	4.34
Demise of both twins	9	3.91
Cord prolapsed	3	1.30
Fetus papyraceous	2	0.86

Placenta was found to be dichorionic-diamniotic in most of the cases (60.43%). All the triplets were trichorionic-triamniotic (3.04%). (Table 5)

Table 5: (Chorionicity of Placenta)

CHORIONICITY	NUMBER (%) (n=230)
Dichorionic-diamniotic	139 (60.43)
Monochorionic-diamniotic	78 (33.91)
Monochorionic-monoamniotic	6 (2.60)
Trichorionic-triamniotic	7 (3.04)

Out of total 441 neonates born (210 twins and 7 triplets, 13 cases of abortions excluded) 67.34% delivered vaginally and 32.66% had caesarean section. The most common causes of perinatal morbidity were prematurity (65.53%), LBW (43.96%), VLBW (31.29%, birth asphyxia (2.26%) and hyperbilirubinemia (22.22%). 42.85% neonates were admitted in NICU. Mortality was seen in 27.21% neonates and it was statistically higher in twin 2 as compared to twin 1 (p=0.000). Mean neonatal NICU stay days were found to be 2.76±3.85 days. (Table 6)

Table 6: (Neonatal Characteristics)

NEONATAL CHARACTERISTICS	NUMBER (n=441)	PERCENTAGE (%)
MODE OF DELIVERY		
Vaginal	297	67.34
Caesarean	144	32.66
NEONATAL COMPLICATIONS		
Prematurity	289	65.53
LBW (1500-2500 g)	193	43.76
VLBW (<1500 g)	138	31.29
Birth asphyxia	107	24.26
Neonatal sepsis	19	4.30
Hyperbilirubinemia	98	22.22
Congenital malformations	9	2.04
NICU admissions	189	42.85
PERINATAL MORTALITY		
Intra-uterine death	34	7.71
Resuscitation failure	22	4.99
Death in NICU	64	14.51
Total	120	27.21

DISCUSSION

The incidence of multiple pregnancy in present study was found to be 4.38% which was much higher than incidence found by Chowdhury et al (1.4%), Rizwan et al (1.44%) and Bangal et al (1.49%).[14,15,16] This may be due to rampant use of ovulation induction agents in our area and also because our institute is the only tertiary care centre in our area.
In our study, 58.26% women were from the age group 20-25 years which was in concordance with results by Chowdhury et al, Sultana et al and Pandey et al.[14,17,18]

In our study, the incidence of multiple pregnancies was found to be more in primigravida as compared to multigravida which was in contrast to study by Chowdhury et al, Bangal et al and Sultana et al.[14,17,16] This may be attributable to increasing incidence of infertility and injudicious use of ovulation induction agents by even non allopathic doctors.

The most common risk factor for multiple pregnancy in our study was found to use of ovulation induction agents (in 24.34% cases). However in studies by Sultana et al, Tilahun et al and Sheela et al family history of multiple pregnancy was most commonly found risk factor.[17,19,20] This discrepancy again can be attributable to overuse of ovulation induction drugs in rural areas.

The most common maternal complication was found to be anaemia (76.96%) which was in concordance with Rizwan et al and Bangal et al.[15,16] the incidence of preterm labour (61.73%) was in agreement with Bangal et al and Singh et al.[16,21] The incidence of hypertensive disorders was 19.56% similar to Day et al.[22]

Among post partum complications, the incidence of PPH in our study was 17.97% which was in agreement with Chowdhury et al and Sultana et al.[14,17]

In the present study, 61.72% neonates delivered before 37 weeks of gestation in concordance with studies by Sultana et al, Obiechina et al, Pandey et al and Katke et al.[17,18,23,24]

The incidence of malpresentations (38.54%) in our study was much higher than preceding studies. Intra-uterine demise of one or both twins (8.25%) and discordance (14.34%) were in agreement in results by Reddy et al and Katke et al.[24,25] In our study, most of the cases were found to have DCDA placenta (60.43%) which was comparable to results by Singh et al who like our study, took into account placental characteristics according to examination.[21]

The overall incidence of caesarean sections was found to be 32.71% which was in agreement with Bangal et al and Singh et al.[16,21]

In our study, 65.53% neonates were born premature and 75.05% weighed less than 2500 grams at birth, these findings were in concordance with Sultana et al, Bangal et al and Singh et al.[16,17,21]

The overall perinatal mortality was found to be 27.2% which was comparable to Rizwan et al.[15]

CONCLUSION

Multiple pregnancies are found to associated with very high incidence of maternal and perinatal mortality and morbidity. Early and accurate diagnosis of multiple pregnancies, their management, monitoring and planning the mode of termination along with managing the consequences are crucial steps leading to a higher probability of successful outcome.

REFERENCES

[1] American College of Obstetricians and Gynecologists: Special problems of multiple gestation. Education Bulletin No. 253, 1998.
[2] Bortolus R, Parazzini F, Chatenoud L, Benzi G, Bianchi M, Marini A. The epidemiology of multiple births. Hum Reprod Update 1999;5:179-87.
[3] Blondel B, Kaminski M. Trends in the occurrence, determinants, and consequences of multiple births. Semin Perinatol 2002;26:239-49.
[4] European Society of Human Reproduction and Embryology (ESHRE) Capri Workshop Group. Multiple gestation pregnancy. Hum Reprod 2000; 15:1856-64.
[5] Norwitz E, Edusa V, Park J. Maternal physiology and complications of multiple pregnancy. Semin Perinatol 2005; 29:33848.
[6] Beemsterboer S, Homburg R, Gorter N, Schats R, Hompes P, Lambalk C. The paradox of declining fertility but increasing twinning rates with advancing maternal age. Hum Reprod 2006;21(6):1531-2.
[7] Meulemans W, Lewis C, Boomsma D, Derom C, Vanden B, Orlebeke J et al. Genetic modelling of dizygotic twinning in pedigrees of spontaneous dizygotic twins. Am J Med Genet 1996;61:258-63.
[8] Hemon D, Berger C, Lazar P. Twinning following oral contraceptive discontinuation. Int J Epidemiol 1981;10:319-28.
[9] Parazzini F, Chatenoud L, Benzi G, Di Cintio E, Dal Pino D, Tozzi L et al. Coffee and alcohol intake, smoking and risk of multiple pregnancy. Hum Reprod 1996;11:2306-9.
[10] Hoekstra C, Zhao Z, Lambalk C, Willemsen G, Martin N, Boomsma D et al. Dizygotic twinning. Hum Reprod Update 2008;14:37-47.
[11] Chowdhury S, Hussain M. Maternal complications in twin pregnancies. Mymensingh Med Journal 2011;20(1):83-7.
[12] Fletcher Garth E. Multiple Births[Internet];2015 Jan 13. Available from http://emedicine.medscape.com/article/977234-overview#a7.
[13] Pharaoh P, Cooke T. Cerebral palsy and multiple births. Arch Dis Child Fetal Neonatal Ed 1996;75(3):174-7.
[14] Chowdhury S, Hussain M. Maternal complications in twin pregnancies. Mymensingh Med Journal 2011;20(1):83-7.
[15] Rizwan N, Abbasi RM, Mughal R. Maternal Morbidity and Perinatal Outcome with Twin Pregnancy. J Ayub Med Coll Abbottabad 2010;22(2):105-7.
[16] Bangal V, Patel S, Khaimar D. Study of maternal and fetal outcome in twin gestation at tertiary care hospital. IJBAR 2012;3(10):758-62.
[17] Sultana M, Khatun S, Ara R, Saha A, Akhtar P, Shah A. Maternal and Perinatal Outcome of Twin Pregnancy in a Tertiary Care Hospital. Ibrahim Card Med J 2011;1(2):35-9.
[18] Pandey M, Kshetri B, Dhakal D. Maternal and perinatal outcome in multifetal pregnancy: A study at a teaching hospital. Am J Public Health Res 2015;3(5A):135-82.
[19] Tilahun T, Araya F, Tura G. Incidence and risk factors of twin pregnancy at Jimma University Specialized Hospital, Southwest Ethiopia. Epidemiology (Sunnyvale) 2015;5(2):1000188.

[20] Sheela S, Patila A. "A Study of Maternal and Fetal Outcome in Multifetal Gestation at a Rural Based Teaching Hospital- A Retrospective Analysis". Int J Biol Med Res 2014;5(2):3994-7.
[21] Singh L, Trivedi K. Study of maternal and fetal outcome in twin pregnancy. Int J Reprod Contracept Obstet Gynecol 2017;6(6):2272-8.
[22] Day M, Barton J, O'Brien J, Istwan N, Sibai B. The effect of fetal number on the development of hypertensive conditions of pregnancy. Obstet Gynecol 2005;106:927-31.
[23] Obiechina N, Okolie V, Eleje G, Okechukwu Z, Anemeje O. Twin versus singleton pregnancies: the incidence, pregnancy complications and obstetric outcomes in a Nigerian tertiary hospital. Int J Women's Health 2011;3:227-30.
[24] Katke R, Thakre N. Multifetal pregnancy: maternal and neonatal outcome. Obstet Gynecol Int J 2015;3(1):00068.
[25] Reddy M, Madhavi K, Niharica. A study on risk of twin pregnancy. IAIM 2016;3(10):139-45.