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## Original Research Article

# Maternal complications in twin pregnancy; recent trends: a study at a tertiary care referral institute in Northern India

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### ABSTRACT

**Background:** This study aims to determine the maternal complications in twin pregnancy in North Indian population at tertiary institute.

**Methods:** This was a retrospective cohort review of multiple pregnancies after 20 weeks gestation at a tertiary teaching hospital (2011-2015). Maternal data was collected from the labor room delivery data entry register and patient's admission file. Patients with diabetes mellitus and chronic hypertension were excluded from the study.

**Results:** Out of 19539 births during this period, 432 were twin pregnancies with an incidence of 22/1000 birth. Most of them 282 (65.4%) were referred patients. Eighty seven percent patients were in the age group of 21-30 years and primigravida contributed to 45.7% of total patients. Maternal complications noticed were as preterm deliveries in 304 (70%), anaemia in 259(60%) patients, preterm rupture of membranes in 120 (39.4%) patients, hypertensive disorders of pregnancy in 122(28.3%) patients, cholestasis of pregnancy in 24(5.5%) of patients, hypothyroidism in 22(5.1%) of patients, antepartum hemorrhage (APH) in 20(4.6%) and gestational diabetes mellitus (GDM) in 08(1.8%) of patients. Among postpartum complications, atonic postpartum haemorrhage (PPH) was observed in 44 (10.2%) and maternal mortality happened in 02(0.46%) cases.

**Conclusions:** This study reveals higher percentage of preterm labor, anaemia and gestational hypertension than other studies. More number of intensive care unit should be established in high prevalence areas to prevent perinatal mortality due to prematurity. Treatment of anaemia requires more aggressive approach by considering intravenous iron whenever compliance is in doubt. Frequent antenatal care is required for early diagnosis of these complications to prevent maternal and fetal morbidity.

**Keywords:** Multiple pregnancies, Preterm labour, Preterm rupture of membranes, Preeclampsia, Twin pregnancy

### INTRODUCTION

Although, incidence of multiple pregnancies is variable according to race, age and parity of patients, rising incidence of multiple pregnancy is commonly attributed to fertility enhancing treatments.<sup>1-4</sup>

Maternal and fetal complications are increased from antenatal period to postpartum period except postdatism and macrosomia in multiple pregnancies. Most grave and common complication of multiple pregnancies is preterm

delivery that increases the short and long-term perinatal morbidity and mortality.<sup>5</sup> Others fetal complications are specific to and more in monochorionic pregnancies like discordant twin, twin-twin transfusion syndrome, twin reversed arterial perfusion sequence, twin anemia polycythemia sequence, single fetal demise and congenital anomalies, thus diagnosis of chorionicity is must in early trimester.<sup>6</sup> Undiagnosed cases of chorionicity ought to be treated like monochorionic pregnancies to avoid fetal morbidity and mortality. A significant maternal hemodynamic change due to increase

in cardiac output and plasma volume predisposes to physiological anemia in multiple pregnancies.<sup>7</sup> High incidence of hypertensive disorders of pregnancy have been observed in multiple pregnancies.<sup>8</sup> Hence, increase in plasma volume, anemia and hypertensive disorders in combination increases the risk of pulmonary edema in multiple pregnancies which further increases the risk of maternal morbidity and mortality.<sup>9</sup>

Association of gestational diabetes with multiple pregnancies is still not clear. No significant association of gestational diabetes mellitus with multiple pregnancies was found in one of the study by Buhling KJ et al.<sup>10</sup> Higher incidence of antepartum haemorrhage has been associated with placenta previa along with toxemic abruptio in twin pregnancy.<sup>11</sup>

Atonic postpartum haemorrhage occurs due to overdistended uterus therefore patients with multiple pregnancy have more risk of blood transfusion and its complications.<sup>12</sup> Henceforth, specialized antenatal care is advocated in cases of multiple pregnancies to improve the maternal and fetal outcome by identifying these complications at early instance. World Health Organization has established favourable maternal and fetal outcome by early detection of complications through increasing number of antenatal contacts with health care provider.<sup>13</sup> This study was planned to determine incidence of maternal complication in twin pregnancy in north Indian population at tertiary care hospital.

**METHODS**

This was a retrospective cohort review of twin pregnancies who delivered after 20 weeks gestation from December 2011 to November 2015 in the Obstetrics Department of Government medical college and Hospital (GMCH), Chandigarh, tertiary centre and teaching institute. This study was conducted after approval from research and ethical committee of GMCH, Chandigarh.

Maternal data was collected from the institution labor room delivery data entry register and detailed information was obtained by analysis of individual patient records. Patients with chronic disease like chronic hypertension and diabetes mellitus were excluded.

The following data were recorded for each case: maternal age, parity, gestational age at birth and route of delivery. Following Maternal complications were analyzed: Prevalence of preterm delivery, preterm rupture of membranes, anemia, gestational hypertension, and cholestasis of pregnancy, antepartum haemorrhage, gestational diabetes mellitus and postnatal complications including postpartum hemorrhage and maternal mortality.

Anaemia was classified by WHO criteria: mild anaemia 9-10.9gm/dl, moderate anaemia 7-8.9 gm/dl and severe anaemia <7gm/dl.

Postpartum haemorrhage was defined when more than 500 ml blood loss in normal delivery and 1liter in cesarean section or any amount of blood loss that leads to unstable vitals in postpartum period.

**Statistical analysis**

Data was analysed using SPSS version 22. Results were expressed as frequency and percentage.

**RESULTS**

During this study period, a total of 432 twin pregnancies were found with a gestational age of more than 20 weeks. Out of 432 twin pregnancies, only one patient with diabetes mellitus was excluded from the study.

**Table 1: Maternal complications in twin pregnancy.**

Maternal complications	Frequency/Percentage
<b>Antenatal complications</b>	
Total Preterm delivery	304 (70%)
Spontaneous preterm delivery	272 (89.4)
Induced preterm delivery	32 (10.5%)
PTROM	120 (39.4%)
<b>Route of delivery</b>	
Vaginal delivery	212 (49.1%)
LSCS	224 (51.9%)
<b>Anaemia</b>	
Mild	103 (39.7%)
Moderate	139 (53.6%)
Severe	17 (6.5%)
Hypertensive disorders of pregnancy	122(28.3%)
Cholestasis of pregnancy	24 (5.5%)
Hypothyroidism	22 (5.1%)
Antepartum hemorrhage (APH)	20 (4.6%)
Toxaemic abruptio	09 (2.06%)
Nontoxemic abruptio	07 (1.5%)
Placenta previa	04 (0.93%)
Gestational diabetes mellitus (GDM)	08 (1.8%)
<b>Postpartum complications</b>	
Atonic postpartum haemorrhage	44 (10.2%)
Maternal mortality	02 (0.46%)

Total number of births during this period were 19539, with incidence of 22/1000 birth of twin pregnancies. Assisted reproductive techniques contributed to 13.4% of twin pregnancies. Eighty six percent (86.9%) of patients were in the age group of 21-30 years and primigravida contributed to 45.7% of total patients. The rate of cesarean section was 224/431 (51.9%) and cesarean section for delivery of second twin was happened in 5 patients. Most common indication of cesarean section was abnormal presentation 114/224 (50.9%) followed by

previous cesarean section 37/224 (16.5%), fetal distress 33/224 (14.7%) and 40/224 (18%) were for miscellaneous indications. Results of maternal medical complications are given in Table 1.

## DISCUSSION

The prevalence of (22/1000 birth) of twin pregnancies in this study was on higher side which is related to the fact that we are at a tertiary level teaching hospital that received referrals for complicated cases and multiple gestations from nearby health care centre. The prevalence of twin gestation in an Indian population was reported from 5/1000 to 29/1000 birth by Deepthi et al and Tomer SP et al respectively.<sup>14,15</sup>

Although it was thought that prevalence of multiple births is more in advanced age group due to more use of fertility treatment and rise in follicle stimulating hormone concentration with age. However, in this study, 86.9% of multiple gestations were found in the age group of 21-30 years. A study by Tomar SP et al also revealed 81% of multiple births in the age group of 20-29 years.<sup>15</sup> The high prevalence of multiple pregnancies in young age may be due to early age of marriage and childbirth in the study population.

Primigravida were 45.7% and multigravida contributed to 54.3% of twin gestations. Chowdhury S et al reported more number of preterm deliveries in multigravida as compared to primigravida patients. While N Rezavand observed no difference in parity among multiple pregnancies.<sup>16</sup>

Only 13.4% of twin conceptions were contributed by assisted reproductive techniques and explained by the profile of patients at our institute where services are mostly availed by the patients belonging to low socio-economic stratum.

Deepthi et al and Nandmer G et al reported preterm delivery in 60% and 67% of twin pregnancies respectively.<sup>14,17</sup> Whereas, Shetty MB et al and Chowdhury et al reported much lower incidence of preterm delivery in 38% and 44% of patients respectively.<sup>18,19</sup>

The inherited risk of preterm delivery in multiple pregnancies is supported by higher incidence of preterm delivery in this study, out of 304 (70%) preterm delivery 272 (89.4% had spontaneous preterm labor and 32 (10.5%) were induced preterm delivery. Preterm rupture of membranes was observed in 120 (39.4%) of patient in this study. Whereas Shetty MB et al and Chaudhary et al reported much lower incidence of preterm rupture of membranes in 6.09% and 3.8% of patients respectively.<sup>18,19</sup>

Multiple pregnancies are amongst the main causes of rising incidence of primi cesarean section due to

abnormal presentation of first twin. The rate of cesarean section in present study was 224/431 (51.9%) and supported by Shetty MB et al, Chowdhury et al and Deepthi et al who have reported cesarean section in 68%, 49% and 45% of twin pregnancies respectively.<sup>14,18,19</sup> A study by Assuncao et al has reported cesarean section in 84.8% of patients that is explained by higher incidence of (42.8%) iatrogenic preterm delivery in that study.<sup>20</sup>

In spite of many efforts to prevent anemia under various programmes, it is still prevalent in adolescent and pregnant women. This study also revealed anaemia as most common medical complications (60%) in contrast to other studies where it was reported in 16.6% - 35.8% of multiple pregnancies.<sup>14,19</sup> This high prevalence of anaemia in this study may be due to more number of referred patients who had taken inadequate treatment in antenatal period. Second commonest maternal complication in this study was hypertensive disorders of pregnancy with an incidence of 122/431 (28%), Deepthi et al, Sheela SR et al and Chowdhury S et al reported hypertensive disorders of pregnancy in 11.66%, 14.5%, 22.6% of multiple pregnancies respectively.<sup>14,19,20</sup> Ante-partum haemorrhage was noticed in 20 (4.6%) of patients similar to that reported by Chowdhury S et al in 3 (5.7%) of patients whereas Shetty MB et al reported much higher incidence of ante-partum haemorrhage in twin gestations (32.2%).<sup>19,18</sup>

Cholestasis of pregnancy was observed in 24 (5.5%) patient in this study and its rate was lower than reported by Gonzalez MC et al (20.9%).<sup>22</sup> GDM was occurred in 1.8% of patients in this study whereas Chowdhury S et al have reported GDM in 5.7% of patients.<sup>19</sup> Buhling KJ et al reported GDM in 3.4% of patients and did not find any association with twin pregnancy.<sup>10</sup> Atonic postpartum haemorrhage (PPH) was occurred in 44 (10.2%) of patients that was lesser than reported (18.9%) by Chowdhury et al that may be due to prophylactic use of misoprostol in addition to oxytocin after delivery in our institute in all multiple births.<sup>19</sup>

Maternal mortality happened in 2 (0.46%) cases in referred patients, one was due to atonic postpartum hemorrhage who presented with eclampsia and with pulmonary edema and other had severe anemia (3.8gm/dl) with pulmonary edema in shock. The prevalence of maternal death was higher in twin mothers compared to singleton mothers (0.3% vs 0.1%, p, 0.009), in a study by Vogel JP et al.<sup>23</sup>

From the result of this study, it can be emphasized that twin pregnancies are at higher risk of preterm delivery that needs referral to higher centre for better neonatal care. There is a need to establish multiple pregnancies clinic in high prevalence areas to detect multiple pregnancy related complications so that early intervention may prevent morbidity and mortality both for the mother and fetus. The positive point of this study is largest study population size as compared to other studies. The major

negative aspect of this study is being a retrospective observational study.

## CONCLUSION

This study revealed higher percentage preterm labour, anemia, gestational hypertension in twin pregnancy as compared to other studies. Anaemia, hypertensive disorder of pregnancy along with postpartum haemorrhage are the well-known causes of maternal mortality, thus frequent antenatal visits should be aimed to detect maternal complications earlier. Aggressive treatment of anemia with intravenous iron should be considered whenever there are adverse effects or noncompliance to oral iron. Atonic postpartum haemorrhage should be anticipated in all multiple pregnancies, therefore prophylactic treatment should be prearranged for its prevention.

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