

# A clinical study of maternal and fetal outcome in multiple gestations

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## ABSTRACT

**Background:** Twin gestation has always fascinated mankind throughout history; and its management is potential challenging for an obstetrician. Increasing maternal age at childbirth, use of ovulation induction drugs and assisted reproductive technologies has increased significantly the incidence of multiple fetal gestations. In India, the estimated incidence of twin pregnancy is 9–16 per 1000 births. With multiple gestation, than singleton ones, pregnancy induced maternal complications occur three to seven times more often. Prematurity, growth restriction, congenital anomalies, twin to twin transfusion, birth asphyxia, birth trauma, still birth are the problems faced by the multiples. The knowledge of maternal complications in multiple gestations will help in better maternal surveillance and prevent and treat the complications to improve the maternal and perinatal outcome. **Objectives:** To study the incidence of multiple gestation, obstetrical complications, maternal and foetal outcome in multiple pregnancies at a tertiary care centre. **Methods:** It was a retrospective observational study conducted in the department of Obstetrics and Gynaecology, at Govt medical college and hospital, Aurangabad, tertiary care Hospital, from October 2015 to October 2017. The data retrieved from the medical records on the multiple pregnancies included demographic data, complications of pregnancy, and maternal and neonatal outcomes. Appropriate Statistical analysis was performed. **Results:** Of 533 multiple gestations, after considering the inclusion and exclusion criteria, 500 cases were found eligible for study giving percentage of 1.4% birth. Median gestational age at delivery was 37 weeks. Most common maternal complication was anaemia (32%). Other maternal complications were preterm labour (19.6%), premature rupture of membranes (8.8%), pregnancy induced hypertension (8%), ante partum haemorrhage (0.4%), and postpartum haemorrhage (7.2%). 50.8% cases were delivered by caesarean section. 44.5% neonates had preterm delivery and prematurity was the most common cause of neonatal death. Neonatal death rate was 11%. **Conclusion:** Twin pregnancy has high maternal and neonatal complications, especially preterm delivery that increases risk of significant neonatal morbidity and mortality.

**Keywords:** Twin pregnancy, pregnancy outcome, complication, preterm delivery, neonatal outcome.

Twin gestation has always fascinated mankind throughout history; and it's management is potential challenging for an obstetrician. Development of two foetuses (twins) is commonest in multiple gestation. Rarely triplets, quadruplets, quintuplets or sextuplets can also develop. The incidence of multiple fetal gestations is 3% of live births, which has increased significantly during the last ten years<sup>1</sup>. In India, the estimated incidence of twin pregnancy is 9-16

per 1000 births.<sup>2</sup> Increasing maternal age at childbirth, use of ovulation induction drugs and assisted reproductive technologies has increased significantly the incidence of multiple fetal gestations.

There is increased maternal morbidity, perinatal morbidity and mortality in multiple pregnancies. 3-7 times more maternal complications are seen in multiple pregnancies. Commonly reported maternal complications in

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various studies are nutritional anaemia, pregnancy induced hypertension, antepartum haemorrhage, preterm labor polyhydramnios, postpartum haemorrhage, increased operative delivery, uterine rupture<sup>3</sup>. The overall risk of ICU admission of the mother is 0.3% with singleton pregnancy which increases to 3.1% after a twin delivery<sup>4</sup>.

The problems faced in the multiple pregnancy are prematurity, growth restriction, congenital anomalies, twin to twin transfusion, birth asphyxia, birth trauma, still birth. Monochorionic twins have more fetal complications as compared to dichorionic twins. One fourth of triplets and almost all quadruplets require Neonatal intensive care unit (NICU) admission. Increased risk of long term mental and physical handicaps is seen among the survivors<sup>4</sup>.

The knowledge of maternal complications in multiple gestations helps in better maternal surveillance, and in prevention and treatment of the complications. This will improve the maternal and perinatal outcome. Hence this study was undertaken to assess the maternal and fetal complications in this institution.

#### **Materials and methods**

This study included retrospective analysis of pregnancies with multiple gestation delivered at a gestational age of more than 28 weeks, at the obstetric department of a tertiary care centre over a study period of 24 months. All women admitted to the tertiary care centre with multiple gestation (clinical or ultrasound diagnosis) above 28 weeks of multiple gestations without any pre-existing medical disorders like chronic hypertension, pre gestational diabetes, cardiac disease, renal disease or collagen vascular disorder were included.

The cases were identified and detail information was obtained by analysis of hospital case sheets and NICU records. Following data was recorded for each case: personal and demographic details, chief complaints, menstrual history, obstetric history, family history of multiple gestation, data related to gestational age at birth, parity, nature of conception - spontaneous or assisted reproductive techniques, use of ovulation induction drug. Maternal medical complications were recorded like anaemia, oligohydramnios, pre-eclampsia, eclampsia, GDM, PROM/PPROM, cord prolapse.

Following investigations were included haemoglobin, blood group and Rh typing, VDRL, HIV, RBSL, urine sugar and albumin. Ultrasound examination was done for gestational age, chorionicity, type of placentation, to rule out congenital anomalies, to confirm lie and presentation.

Sonographic parameters like chorionicity, expected foetal weight, foetal discordancy, foetal viability, malformations, evidence of abnormal vascular communications, presentation of both foetuses collected in structured pre-validated proforma. Along with these routine investigations, screening for antenatal risk factors like anaemia, pregnancy induced hypertension, gestational diabetes mellitus was recorded.

Outcome of pregnancy was noted as preterm or full term delivery, mode of delivery, instrumental delivery, indication for caesarean section, time interval between delivery of 1<sup>st</sup> and 2<sup>nd</sup> baby and type of placenta.

Postnatal complication like incidence of postpartum haemorrhage, number of women requiring blood/blood product in postnatal period noted, number of mother requiring ICU admission was noted. Following neonatal data was recorded - Apgar score, sex of baby, maturity, resuscitation required or not, birth weight, complications, birth injury, time interval between delivery of first baby and 2<sup>nd</sup> baby, NICU admission, cause of death of baby, condition on discharge. Number of women requiring caesarean section for 2<sup>nd</sup> baby following delivery of 1<sup>st</sup> baby by vaginal route was noted.

#### **Results**

During the study period there were 36609 total deliveries at our hospital. Of these, 533 were multiple gestation giving percentage of 1.4% birth. After considering inclusion and exclusion criteria, 500 cases were eligible for study. Out of 500 cases, 338 (67.6%) belonged to 18-25 years of age group followed by 140 (28%) in 26 to 30 years of age group. 31-35 years' age had 10 (2 %) and more than 36 years were 12 (2.4%). 422 (84.4%) conceived spontaneously and 78 (15.6%) by treatment of infertility. 142 (28.4%) had family history of twinning. 492 (98.4%) were twins and 6 (0.8%) were triplets while quadruplets and conjoint twins were 1(0.2%) each. Out of 500 cases, 46 (9.2%) were between 28-31 weeks of gestational age, 170 (34%) between 32 to 35 weeks, 211 (42.2%) presented between 36 to 38 weeks followed by 73 (14.6%) more than 39 weeks. 460 (92%) were diamniotic dichorionic twins, 33 (6.6%) were diamniotic monochorionic and 7 (1.4%) were monoamniotic monochorionic. 276 (55.2%) were vertex-vertex presentation, 128 (25.6%) were vertex-breech, 92 (18.4%) were breech-vertex and 4 (0.8%) were both by transverse lie. 49.2% delivered by vaginal route followed by 244 (48.8%) by LSCS and 10 (2%) were by vaginal (1<sup>st</sup> baby) followed by LSCS (2<sup>nd</sup> baby).

Out of 254 cases, 26.6% cases underwent LSCS due to malpresentation and 8.6% cases due to previous scar (table 1). Foetal distress was seen in 6.2% while 4.4% did not progress. Monoamniotic monochorionic twins, triplets (4 of 6), conjoined twin and quadruplets were all delivered by caesarean section (table 1).

**Table 1: Distribution according to indication for LSCS**

Indications	Number	%
Fetal malpresentation	133	26.6%
Previous LSCS	43	8.6%
Fetal distress	31	6.2%
Failure to progress	22	4.4%
Failed induction	8	1.6%
MAMC	7	1.4%
Triplet	4	0.8%
APH	2	0.4%
Cord prolapse	2	0.4%
Conjoint twins	1	0.002%
Quadruplet	1	0.002%
Total	500	100%

Out of 500 mothers, time interval between delivery of 1<sup>st</sup> and 2<sup>nd</sup> twin was <30 min in 91% of mothers. Out of the remaining 41 cases, in 10 cases delivery of 1<sup>st</sup> baby was at some other hospital and was referred with 2<sup>nd</sup> baby by non-vertex presentation and in 08 cases (2<sup>nd</sup> baby by transverse lie) were delivered in our institute. In rest 23 cases of 41 cases, delivery interval was more than 30 min due to breech presentation, requiring more time to progress.

Maternal complications like anaemia (32%), preterm labour (19.6%), PROM (8.8%), preeclampsia (8%), oligohydramnios (2%), eclampsia (1.2%), GDM (1.2%), cord prolapse (0.4%), APH (0.4%) were seen. 26.4% remained uncomplicated. Maternal morbidity included 172 (34.4%) blood transfusion, 7.2% had PPH, 1.8% had sepsis and 1.2% required ICU admissions. Out of 172 cases 65 mothers required blood in antepartum period, 71 in intrapartum period and 36 in postpartum period. Maternal mortality was seen in one case each of PPH, sepsis and pulmonary embolism i.e. 0.2%.

747 (74.1%) babies were of 1.6 to 2.5 kg, 146 (14.4%) between 1.1-1.5 kg, 85 (8.4%) between 0.5-1 kg. Only 29 (2.8%) were of more than 2.6kg weight. Out of 947 alive babies, 305 (32%) required NICU admission. Out of 305 babies who required NICU admission, 45.5% required due to prematurity, 13.7% for birth asphyxia, 12.4% for RDS, 6.5% for meconium aspiration, 10.4% for hyperbilirubinemia, and 11.1% had IUGR. Among 60 still born babies 42 (24.70%) were having single foetal demise, of which, 20 new-borns were fresh still birth and 22 were macerated still birth. In 18(10.16%) both foetuses were IUFD. Of these 18(10.16%) intrauterine both foetal demises, 3 cases were of monoamniotic monochorionic twin pregnancy and 1 case

was of conjoint twin. Out of 110 neonatal deaths, 44.5% died of prematurity, 20% because of respiratory distress syndrome, 15 (13.6%) due to sepsis, 12 (10%) by meconium aspiration syndrome, 10 (9.09%) by birth asphyxia and 02(1.81%) had cord prolapse.

## Discussion

Prevalence of twin births varies considerably i.e. 2 to 20 births throughout the world, due to rampant use of ovulation inducing drugs, assisted reproductive technologies and increase maternal age. In our hospital prevalence is 14.5 per 1000 birth. The prevalence of spontaneous multiple gestation pregnancies ranges from approximately 0.6 % of pregnancies in Asia and 1 to 2 % in Australia, Europe and the USA to about 4 % in Africa <sup>5</sup>.

In our study 67.6% cases belonged to 18 to 25 years age group which was comparable with Salvi et al (34.33%) <sup>6</sup>, Deepthi et al (57.3%) <sup>7</sup>, Bangal et al (54.5%) <sup>8</sup>, Bhavna et al (73.3%) <sup>9</sup>, Sheela et al (75.7%) <sup>3</sup>, Susithra et al (63%) <sup>10</sup>. In our study most common age group was 18 years to 25 years because in India women get married between 18 to 25 years of age group so maximum cases detected in this age group. Present study is comparable with other studies, except for Preetha George <sup>11</sup>. In Preetha George <sup>11</sup> study the age group of marriage was between 26 to 30 years and with increasing age group there are increased chances of multiple gestation.

Incidence of ovulation induction was 15.6% in present study which was much lower than Mathew R et al (32.1%)<sup>12</sup>, Ambiven V Gajera et al (25%)<sup>13</sup>, Bhavna et al (23.4%) <sup>9</sup>. In our institute there were more cases of spontaneous conception (84.4%) with multiple gestation.

In present study 28.4% cases had family history of multiple gestation as compared to Masuda Sultana et al (36%) <sup>14</sup>, Mathew R et al (40.36%)<sup>12</sup>, Abdelmoneim (50.9%) <sup>15</sup>.

Our study had 98.4% twin pregnancies and 1.2% triplets which is comparable with Susithra et al (98.6% & 1.4%) <sup>10</sup>, Preetha George et al (96.4% & 3.6%) <sup>11</sup>, Gulrukh Qazi et al (94.4% & 5.6%) <sup>16</sup>, Yeul Veronica et al (89% & 11%) <sup>1</sup> and Mohammad Kazem et al (88% & 12%) <sup>17</sup> respectively. Twins was major group in all studies.

In our study most common placentation was DCDA (dichorionic diamniotic) i.e 92% followed by MCDA (monochorionic diamniotic) 6.6% and least common was MCMA (monochorionic monoamniotic) 1.4% as compared with Sheela et al (66.12 & 32.27 & 1.61%), Apichart Chittacharoen et al (66.04 & 32.2 & 1.76%)<sup>18</sup>, Mathew R et

al (66 & 29 & 5%)<sup>12</sup>, Deepthi et al (53.3 & 35 & 3.33%)<sup>7</sup> respectively.

42.2% patients delivered at 36-38 weeks of gestational age in present study which was comparable with Susithra et al (44.6%)<sup>10</sup>, Bhavna et al (53%)<sup>9</sup>, Deepthi et al (41%)<sup>7</sup>. 34% patients delivered at 32-35 weeks of gestation which was comparable with Susithra et al (32%)<sup>10</sup>, Ambiven V Gajera et al (44%)<sup>13</sup>, Deepthi et al (30%)<sup>7</sup>, Bangal et al (51%)<sup>8</sup>. Twin pregnancies do not go till full term.

Most common presentation was both foetuses in vertex presentation in present study (55.2%), Ambiven V Gajera et al (60%)<sup>13</sup>, Salvi et al (56.2%)<sup>6</sup>, Masuda Sultana et al (48%)<sup>14</sup>, Deepthi et al (46.6%)<sup>7</sup>. The 2nd most common presentation was vertex breech in our study (25.6%) which was similar in Amiben et al (23%)<sup>13</sup> and Deepthi et al (21.66%)<sup>7</sup>.

LSCS was the route of delivery in 50.8% cases in our study whereas it was 100% in Mohammad Kazem et al<sup>17</sup>, 79.8% in Mathew R et al<sup>12</sup>, 70% in Masuda Sultana et al<sup>14</sup>, 63.8% in Preetha George et al<sup>11</sup> and 53.3% in Bhavna et al. The rate was lowest in our study compared to rest studies.

Anaemia was seen in 32% women, this was higher than reported by Deepthi et al (16.66%)<sup>7</sup>, Masuda Sultana et al (26%)<sup>14</sup>, Yeol Veronica et al (28%)<sup>1</sup> and was much lower than what is reported by Salvi et al (60.7%)<sup>6</sup>, Bhavna et al (50%)<sup>9</sup>, Preetha George et al (43%)<sup>11</sup>. Our tertiary centre has anaemia referrals from peripheral rural health centres.

Preterm labor occurred in about 19.6% cases of twins in our study which was comparable with Bhavna et al (20%)<sup>9</sup>, and was much lower than what is reported by Yeol Veronica et al (57.5%)<sup>1</sup>, Salvi et al (48%)<sup>6</sup>, Preetha George et al (47.7%)<sup>11</sup>.

In our study pregnancy induced hypertension occurred in 9.2% cases. A higher incidence of hypertension 33.3%, 29% and 28% was reported by Bhavna et al<sup>9</sup>, Salvi et al<sup>6</sup>, and Masuda Sultana et al<sup>14</sup> respectively.

Postpartum haemorrhage occurred in 7.2% of cases. Our observation was comparable with study done by Masuda Sultana et al (8%)<sup>14</sup>, Yeol Veronica et al (8%)<sup>1</sup>, and Susithra et al (6.7%)<sup>6</sup>.

Maternal mortality was 1.8% in present study whereas it was 1.6% in study of Yeol Veronica et al<sup>1</sup>. Babies required NICU admission in 32% cases in present study which was comparable with Sheela et al (29.8%)<sup>3</sup>, Masuda Sultana et al (28%)<sup>14</sup> and was much lower than Mohammad Kazem et al (60%)<sup>17</sup>, Bangal et al (51%), Bhavna et al (50%)<sup>9</sup>.

When neonatal outcome was analysed, prematurity (44.5%) was the most common cause for neonatal mortality followed by RDS (20%) and septicaemia (13.6%).

### Conclusion

Though multiple gestation pregnancies constituted 1.4% cases, they must be treated as high risk pregnancies, managed with multidisciplinary specialist to anticipate and provide good antepartum, intrapartum and postpartum care in a well-equipped tertiary care centre having emergency obstetric care and good NICU facilities for safe confinement. Multiple gestation is a significant risk factor for both maternal and perinatal morbidity and mortality. Prematurity is the most common fetal complication detected.

**Conflict of interest:** None. **Disclaimer:** Nil.

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