STUDY OF MATERNAL AND FETAL OUTCOME IN TWIN GESTATION AT TERTIARY CARE TEACHING HOSPITAL

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Abstract
Twin gestation is considered as high risk pregnancy due to associated high maternal morbidity and perinatal mortality in comparison with singleton pregnancies. Overall, the rate of twin 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 100 cases of twin gestation delivered at tertiary care referral hospital over a period of fifteen months. It was observed that the incidence of twins was 1.49%. Seventy six percent cases were booked and attended antenatal clinic on regular basis. Preterm labour (84%) was the commonest obstetric complication, whereas nutritional anemia (66%) and pregnancy induced hypertension (18%) were the commonest medical complications. The rate of caesarean section was 33%. There was no serious maternal morbidity or mortality. There were 35 perinatal deaths, of which 20 were early neonatal deaths. Extreme prematurity (37%) and very low birth weight (33%) predisposed majority of perinatal deaths. Causes of neonatal deaths were respiratory distress, fulminant septicemia, pulmonary hemorrhage and DIC. Judicious use of ovulation induction drugs can reduce the incidence of twin gestation. Early diagnosis of twin gestation with its chorionicity, careful monitoring for fetal wellbeing throughout the pregnancy, regular antenatal checkups, adequate rest, good diet, cervical encirclement in selective cases, maternal gluco-corticoids therapy in preterm labour, short term tocolysis and institutional delivery having level III neonatal back up facilities can improve the maternal and perinatal outcome in twin gestation.

Keywords: Twin gestation, Perinatal outcome, Preterm labour, Low birth weight

1. Introduction
Twin pregnancy is considered as a high risk pregnancy. Globally, the highest burden of multiple births has been found in sub-Saharan Africa, with an average twining rate of 20 per 1,000 deliveries compared to 10 per 1,000 deliveries in Europe or around 5-6 per 1,000 deliveries in Asia. Nigeria has the highest prevalence of multiple births worldwide. Twining is a multi factorial phenomenon principally attributable to genetic and environmental factors, such as advanced maternal age and increased parity. In India, twinning occurs in approximately 1% of pregnancies and has been reported to be responsible for 10% of perinatal mortality. The incidence of twins is on rise due to various reasons like increased use of assisted reproductive techniques and increasing number of women having pregnancy at advanced age. Twin pregnancies are associated with variety of maternal and fetal complications. Common maternal complications reported in various studies are nutritional anemia, pregnancy induced hypertension, antepartum hemorrhage, preterm labour and polyhydramnios. Fetal complications are reported to be more in monozygotic pregnancies as compared to dizygotic twins. Monochorionic twin gestations are at higher risk of preterm labour, discordant fetal growth, abnormal vascular communications, fetal malformations, cord complications and stillbirths. Prenatal diagnosis of twin gestation in early gestation by ultrasonography can alert the obstetrician regarding need for more vigilance during antenatal period. It can also help in counseling the patient regarding possibility of adverse perinatal outcome. Present study was undertaken to analyze the maternal and fetal outcome in twin gestations and to find out various factors that contribute to adverse perinatal outcome.

2. Material and Methods
This observational study was carried out at Pravara Rural hospital, 750 bedded tertiary care hospital attached to Rural Medical College,
situated in rural area of Ahmednagar district of Maharashtra, India over 15 months period from March 2011 to May 2012. All women with twin gestation admitted during antenatal period or during labour were enrolled in the study. They were followed throughout the pregnancy till delivery. Mother and baby were followed up till discharge from the hospital. All premature babies were kept in NICU under supervision and were given nasogastric feeds or parenteral fluids till they were capable of taking breast feeds. Data related to maternal age, duration of pregnancy (gestational age), parity, nature of conception-spontaneous or assisted reproductive techniques, use of ovulation induction drugs, sonographic parameters like chorionicity, maternal medical or obstetrical complications, expected fetal weight, fetal discordancy, fetal viability, malformations, evidence of abnormal vascular communications, presentations of both fetuses was collected in a structured proforma. The important information related to mode of delivery and neonatal outcome was gathered from hospital records. Multiple deliveries were regarded as a single parous event. Thus, a woman whose first delivery or viable pregnancy was multiples was considered primiparous. Infant outcomes consisted of preterm birth (<37 completed weeks of gestation), extreme-to-moderate preterm birth (<34 completed weeks of gestation), low birth weight (<2,500 g), very low birth weight (<1,500 g), 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), and hyper bilirubinaemia (requiring phototherapy). Gestational age was based on the number of days between the first day of the last menstrual period (LMP) and the date of delivery expressed in completed weeks after the LMP while IUGR was determined by birth weight below 2 standard deviation (SD) of the mean birth weight for each gestational age based on a previously-validated fetal growth curve for this study population (20). Data related to the maternal and fetal outcome was analyzed by finding percentages and proportions.

3. Results

During fifteen months study period, there were total 6613 deliveries including 100 twin deliveries, giving twin delivery rate of 1.49%. The distribution of cases in relation to maternal socio-demographic profile is shown in Table no.1. Maximum numbers of women (84%) were in their peak fertile age i.e. in between 20 and 30 years age. The twins were seen equally among primi and multigravidas. Majority of women (76%) had registered themselves for antenatal care and were attending antenatal clinic regularly. Eighty four percent of women delivered before 37 completed weeks of pregnancy. Anemia was the commonest medical disorder (84%). Pregnancy induced hypertension was seen in 18% of women. (Table 1)

Onset of labour was spontaneous in all cases of twins. Sixty seven percent women delivered by vaginal route, of which 4 percent required assistance of outlet forceps. The caesarean section rate was 33 percent. Fifty percent of the caesarean sections were performed electively for fetal malpresentations and for pregnancy induced hypertension. Emergency sections were performed for antepartum hemorrhage, cord complications, failure of progress of labor and for second of the twins. Fetal prematurity was seen in more than 75% babies where as 33% babies had very low birth weight. There were 15 stillbirths and 20 early neonatal deaths. Overall perinatal deaths were 17.5%. Prematurity and low birth weight predisposed majority of early neonatal deaths. These small babies suffered from respiratory distress (9cases), pulmonary hemorrhage (4cases), septicemia (12cases) and disseminated intravascular coagulation (9cases). (Table .2) Stillbirths were more common in monozygotic twins (10 cases) as compared to dizygotic twins (5cases).

4. Discussion

Since the early 1970s, several overview studies have been published in which figures from a large number of smaller studies were brought together. The overall conclusion drawn from these figures was that natural twinning rates were low in East Asia and Oceania (less than 8 twin births per 1000 births), intermediate in Europe, USA and India (9–16 per 1000 births) and high in some African countries (17 and more per 1000 births).12-16 Incidence of twins in the present study (1.5%) was much higher than reported in other studies. It could mainly be because of the referral of twin pregnancies to this hospital by private practitioners of the area for better neonatal care of low birth weight and premature babies. Cases diagnosed with problems of twin to twin transfusion, congenital malformations and intrauterine deaths are also referred to this hospital. Twins with complications like anemia, hypertension are...
referred for better management. We observed that the women with twin gestation were very regular in their antenatal visits. This was irrespective of the distance of their residence from the hospital or their parity. The incidence of anemia and pregnancy induced hypertension in twins was one and half times more than singleton pregnancies. Ovulation induction drugs like clomiphene citrate were used in judiciously by many doctors, especially non allopathic doctors doing general medical practice. Similar trend was also seen among gynecologists. Practice of putting prophylactic cervical stitch, irrespective of cervical (clinical or sonography) findings was observed among gynecologists doing private practice. Many women had received prophylactic long term tocolytic drugs for prevention of preterm labour. As against the findings of other workers, we found that majority of women with twins were young women in their third decade of life. Equal number of primi and multigravidas had twin gestation. We observed that ultrasonographic examination was done in almost all cases of twins before third trimester. In many cases, it was done very often than required. Pregnant women and relatives insist on repeated ultrasonographic examination for assessment of fetal wellbeing. They are anxious and have fear of congenital anomalies. Many women had symptom of respiratory discomfort due to polyhydramnios during third trimester of pregnancy. Women with this or any associated complications were admitted in the ward for safe confinement. Irrespective of various treatment modalities like adequate rest, good diet, tocolytics and prophylactic circlage, many women had premature onset of labour with resultant birth of premature babies. The incidence of low birth weight and extreme low birth weight was very high. This resulted into high perinatal morbidity and mortality. Overall, perinatal mortality was seventeen percent. There were twenty neonatal deaths. Almost all babies were premature and had low birth weight. Causes of neonatal deaths were respiratory distress syndrome, pulmonary hemorrhage, fulminant sepsis or disseminated intravascular coagulation. All twin babies with VLBW and Extreme prematurity were kept in NICU for supervised feeding or ventilatory support. Findings of the present study were compared to a cross-sectional observational study carried out among all women with twin pregnancy, both booked (patients who had at least three visits to antenatal care were considered as booked) and unbooked, admitted in Institute of Post Graduate Medicine and Research, Dhaka now Bangabandhu Sheikh Mujib Medical University. The incidence of twins in the present study (1.49%) was comparable with the observations of this study (1.4%). The incidence of twins in the present study was equal in primis multigravidas, whereas the Chaudhary S reported that twins were more common in multis (64.2%) as compared to primis (35.8%). Majority of women with twins were in the age group of 20-30 years, since most of the pregnancies occur during this period. Preterm labour and birth are much more common in twin pregnancies. The incidence of preterm delivery was much higher (88%) in the present study as compared to what is reported (44%) by Chaudhary et al. In Australia in 2009 (Australia’s Mothers and Babies, AIHW, 2011) the overall rate of preterm birth (birth before 37 weeks) amongst women with twins was 52.2%. The majority of twins, however, appear to be born around thirty-seven weeks. The incidence of having a baby with a low birth weight (less than 2500 gms) was 82% in the present study, which was much higher than reported (51.3%) by Australia’s Mothers and Babies, AIHW, 2011 for twin pregnancies. In the present study, the maternal anaemia was found in 66% cases, hypertension in 18% cases, Hydramnios in 12% cases, APH in 8% cases and premature rupture of membranes in 16% cases. The corresponding figures reported by Chaudhary were 35.8% for anaemia cases, 22.6% for hypertension cases, 5.7% for polyhydramnios cases, 5.7% for ante-partum haemorrhage (APH) cases, 3.8% for premature rupture of membranes (PROM) cases. There was no maternal death in our study. Similar finding was reported by Chaudhary et al. A study on perinatal outcomes of multiple births in Southwest Nigeria by Olusanya, Bolajoko O showed that after adjusting for significant maternal factors, such as maternal age, ethnicity, occupation, parity, antenatal care, hypertensive disorders, prolonged/obstructed labour, and mode of delivery, multiple births were also more likely to be associated with moderate/extreme prematurity (<34 weeks), low birth weight (<2,500 g), IUGR, low five-minute Apgar scores (<7), neonatal sepsis, and admission to the SCBU. The risk of adverse perinatal outcomes was the highest for multiples with low birth weight (OR: 6.45, 95% CI 4.80-8.66) and IUGR (OR: 9.04, 95% CI 6.62-12.34).
5. Conclusion
In the present study, the overall perinatal mortality was 17.50 percent. Majority of deaths were seen in extremely premature and very low birth weight babies. Most of these babies had respiratory distress or had developed neonatal sepsis and its sequel. These deaths can be prevented by averting preterm births by combined measures like good rest, cervical encirclement, when incompetence is suspected, short-term tocolysis, prevention of anemia and pre-eclampsia, administration of glucocorticoids in preterm labour, by institutional delivery and provision of level 3 neonatal care.

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### Table 1. Maternal Socio-demographic profile and antenatal complications in relation to twin gestation

| Sr. No | Maternal profile | Number (n=100) | %  |
|--------|------------------|----------------|----|
| 1      | Age distribution |                |    |
|        | <20 years        | 11             | 11 |
|        | 20-30 years      | 87             | 87 |
|        | >30 years        | 02             | 02 |
| 2      | Parity distribution |              |    |
|        | Primi            | 51             | 51 |
|        | Multi            | 49             | 49 |
| 3      | Registration status |             |    |
|        | Booked           | 76             | 76 |
|        | Unbooked         | 24             | 24 |
| 4      | Gestational age  |                |    |
|        | <34 weeks        | 33             | 33 |
|        | 34-37 weeks      | 51             | 51 |
|        | >37 weeks        | 16             | 16 |
| 5      | Common antenatal complications | | |
|        | Preterm labour   | 84             | 84 |
|        | PIH              | 18             | 18 |
|        | Malpresentations |              |    |
|        | First baby-      | 06             | 06 |
|        | Second baby-     | 32             | 32 |
|        | Anemia           | 66             | 66 |
|        | Hydramnios       | 12             | 12 |
|        | APH              | 08             | 08 |
|        | PROM             | 16             | 16 |

### Table 2. Showing Mode of delivery and Perinatal outcome in twin gestation

| Sr. No | Perinatal Outcome | Number | %  |
|--------|-------------------|--------|----|
| 1      | Mode of delivery  |        |    |
|        | - Spont. Vaginal  | 63     | 63.00 |
|        | - Caesarean       | 33     | 33.00 |
|        | - Instrum. vaginal| 04     | 04.00 |
| 2      | Fetal Birth weight|        |    |
|        | <1500 grams       | 67     | 33.50 |
|        | 1500-2000 grams   | 71     | 35.50 |
|        | >2000 grams       | 62     | 31.00 |
| 3      | Sex of the baby   |        |    |
|        | - Male            | 124    | 62.00 |
|        | - Female          | 76     | 38.00 |
| 4      | Fetal outcome at birth | |    |
|        | - Livebirth       | 185    | 92.50 |
|        | - Stillbirth      | 15     | 07.50 |
| 5      | Neonatal outcome  |        |    |
|        | - NICU Admission  | 102    | 51 |
|        | - Neonatal morbidity | 42 | 21 |
|        | - Neonatal mortality | 20 | 10 |
| 6      | Causes of neonatal deaths | | |
|        | - RDS             | 09     | -  |
|        | - Septicemia      | 12     | -  |
|        | - Pul.Hemorrhage  | 04     | -  |
|        | - DIC             | 09     | -  |