

Maternal and Perinatal Outcome of Multiple Pregnancy in a Tertiary Care Hospital of Bangladesh

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Abstract

Background: Multiple pregnancies are prone to be associated with adverse maternal and perinatal outcome. The incidence of multiple pregnancies has shown a significant increase over the last decades. This study aimed to determine the maternal and perinatal outcome in a tertiary teaching hospital.

Materials and methods: This prospective observational study was conducted in Chattogram-Maa-O-Shishu-Hospital Medical College, from July 2014 to June 2016. A total of 173 multiple pregnant women having 28 weeks completed gestation admitted for delivery were consecutively included in the study. Maternal and perinatal outcome were investigated.

Results: The results show that the number of multiple pregnancies delivered during study periods was 173 with the incidence of 1.7% among total deliveries. There were 5 triplets pregnancies among these cases. The women with multiple pregnancy were relatively older. There were no maternal mortality. Pregnancy complications were remarkably higher. The main maternal adverse outcome were preterm delivery (84.97%), anaemia (39.88%), pregnancy induced hypertension (28.97%), premature rupture of membrane (28.32%), postpartum haemorrhage (16.76%), antepartum haemorrhage (11.9%). The mean gestational age at delivery was 35.39 weeks for twins and 33.3 weeks for triplets. The commonest mode of delivery was by caesarean section. The most common neonatal complications was low birth weight and most common cause of neonatal death was prematurity and neonatal sepsis.

Conclusion: Majority of the multiple pregnancy is high risk one. So, all multiple pregnancies need early diagnosis, adequate antenatal, intra-natal and post-partum care to improve the outcome and should have mandatory hospital delivery.

Key words: Multiple pregnancy; Maternal outcome; Perinatal outcome.

INTRODUCTION

Multiple pregnancy has a global impact on both maternal and perinatal risk in any pregnancy and impacts on society in terms of both social and economic effects¹. The incidence of multiple gestations has risen significantly over several decades, primarily due to increased use of fertility drugs for ovulation induction, superovulation and Assisted Reproductive Technologies (ART) such as in vitro fertilization. In USA, the incidence of multiple gestations now 3% of all pregnancies and twins comprise 25-30% of deliveries resulting from assisted reproductive technologies². Although twins occur in approximately one of 80 pregnancies, corresponding to 2.6% of all newborns, they account for 12.2% of preterm births and 15.4% of neonatal deaths^{3,4}. Recent data indicate that, overall 52.2% of multiple births deliver before 37 weeks and 10.7% prior to 32 weeks⁵. This is the major cause

of neonatal death in multiple pregnancies, mortality rates are up to seven times higher in twins than singleton pregnancies, in triplets and higher-order pregnancies, rates of nearly 40 per 1000 live births have been recorded⁶. In addition, these pregnancies are prone to complications inherent to twinning, such as acardiac fetus, conjoined twins and twin-twin transfusion syndrome. In addition the risk of congenital anomalies is about 1.7 times higher than among singleton pregnancies and more significant in monozygotic pregnancies^{7,8}.

Preterm birth is observed in approximately 54% of all twin pregnancies, half of these births have an iatrogenic origin and are related to maternal or fetal complications while the other half consist of cases of spontaneous premature labour or premature membrane rupture⁴.

All of these factors explain the high perinatal mortality observed in multiple pregnancies which is five to six times higher when compared to single on pregnancies⁹. When analyzed according to chronicity, monochorionic pregnancies present two to three times higher risk than dichorionic pregnancies^{10,11}.

The objective of this study was to describe the maternal and perinatal outcome in multiple pregnancies delivered in a tertiary care hospital.

MATERIALS AND METHODS

This prospective observational study was conducted in the Department of Obstetric and Gynaecology, Chattragram Maa-O-Shishu Hospital Medical College (CMOSHMC), Chattogram, Bangladesh from July 2014 to June 2016. The total number of cases were 173.

Inclusion criteria:

All the women with multiple pregnancy completing 28 weeks of gestation with or without medical and obstetrical complications and had delivered in our hospital, were included in this study.

Exclusion criteria:

Those multiple pregnancies who were admitted for observation and discharged and did not come for follow up.

The patients fulfilling the eligibility criteria were followed from admission to discharge, detailed analysis of the medical report of these cases, both mother and neonates. The data included demographic details, present and past history, family history, antepartum, intrapartum, postpartum complications, neonatal outcomes and complications and perinatal mortality. Multifetus delivered in the hospital, if admitted in the neonatal unit were also followed up to their discharge or for 7 days which was shorter. Patients requiring transfer to other Department of the hospital were also followed in the same way. Necessary information was collected in a pre-designed data sheet and finally the finding were compiled and analysed.

RESULTS

During the study period, the total number of deliveries were 9,894. The number of multiple pregnancies delivered during the

same period were 173. Among them twins and triplets were 168 and 5 respectively. The overall incidence of multiple pregnancies were 1.7% of deliveries.

Majority of the women 125 (72.5%) were in 20-30 years old and mean maternal age at presentation was 24.19 years. Most of them were multipara 151 (87.2%) and unbooked cases 153 (88.43%). More than three-fourth of the patients 147 (84.97%) had preterm delivery (Table I). Maximum patients 125 (74.40%) had no known aetiological factors. Only 22 (13.09%) patients had family history of twin pregnancy, history of ovulation inducing drugs was present in 21 (12.13%) cases. Five (2.89%) patients conceived after stoppage of oral contraceptive pills (Table II). Spontaneous preterm labour was the common maternal complication 89 (51.44%) followed by anaemia 69 (39.88%), premature rupture of membrane 49 (28.32%) hypertension 50 (28.97%), PPH 29 (16.76%), APH 20 (11.9%) UTI 14 (8.09%), GDM 10 (6%), chorioamnionitis 3 (1.3%). Puerperal pyrexia due to UTI and wound infection were in 2 cases and vulval haematoma was in 1 cases (Table III).

Thirty two (19.1%) patients of twin pregnancy had vaginal delivery and 136 (80.9%) were delivered by caesarean section (Table IV). In one patient first twin was delivered by vaginal route at home and 2nd twin delivered by LSCS as membrane was ruptured, all liquor drainout and presentation was transverse. Higher caesarean section rate due to non-vertex presentation of first twin 59 (34.1%) and 2nd twin 26 (15.02%), premature rupture of membrane with oligohydramnios 22 (16.17%) foetal distress 5 (3.67%) single fetal demise 3 (2.2%) previous caesarean section 18 (10.04%) non progress of labour 4 (2.94%). In case of triplets caesarean section were 4(80%) and vaginal delivery was 1 (20%).

Table I : Demographic and obstetric characteristics of the patients

Demographic & obstetric features	Twin Number (%)	Triplets Number (%)
Age		
<20	31 (18.45%)	-
20-30	121 (72%)	4 (80%)
30-40	16 (9.52%)	1 (20%)
Parity		
Parity : 0	20 (11.9%)	2 (40%)
Parity: 1-2	140 (83.33%)	3 (60%)
Parity : ≥3	8 (4.76%)	-
Period of Gestation (weeks)		
28-32weeks	15 (8.92%)	1 (20%)
33-36 weeks	127 (75.59%)	4 (80%)
≥37	26 (15.47%)	-
	Mean gestations: 35.39 weeks	Mean gestation: 33.5 weeks
Antenatal Visits		
Booked (3 visits)	19 (11.30)	1 (20%)
Unbooked (<3visits)	149 (88.69%)	4 (80%)

Table II : Distribution of patients by probable aetiological factors

Parameters	Twin Number (%)	Triplet Number (%)
Family history of multiple pregnancy	22 (13.09%)	-
Pregnancy after taking ovulation inducing drugs :	17 (10.11%)	4 (80%)
Pregnancy within 3 months of stoppage OCP	4 (2.38%)	1 (20%)
None	125 (74.4%)	-

Table III : Complications encountered by the mothers

Complications	Twin number (%)	Triplet number (%)
Anaemia	64 (38%)	5 (100%)
Hyperemesis gravidarum	10 (5.9%)	5 (100)
Hypertention (PIH & preeclamsia)	47 (27.97%)	3 (60%)
Polyhydramnios	17 (10.1%)	1 (20%)
Postpartum haemorrhage (PPH)	27 (16%)	2 (40%)
Antepartum haemorrhage (APH)	20 (11.9%)	-
Pre term labour	85 (50.6%)	4 (80%)
PROM	47 (28%)	2 (40)
Pre-term elective LSCS	14 (8.33%)	4 (80%)
Gestational diabetes	10 (6%)	-
UTI	13 (8%)	1 (20%)
Chorioamnionitis	3 (1.3%)	-
Complications of operative delivery:	3 (1.7%)	-
No complications	27 (16%)	-

Table IV : Distribution of patients by their mode of delivery

Mode of delivery	Twin number (%)	Triplet number (%)
Vaginal delivery	32 (19.1%)	1 (20%)
LSCS	136 (80.9%)	4 (80%)

Table V : Distribution of patient by fetal presentation

Presentation	Number (%)
Twin	
Vertex-Vertex	81 (48.21%)
Vertex-breech	24 (14.28)
Vertex-transverse	4 (2.38%)
Breech-vertex	30 (17.85%)
Breech-Breech	19 (11.30)
Breech-transverse	8 (4.76%)
Transverse-vertex	1 (0.59%)
Transverse –transverse	1 (0.59%)
Triplet	
Vertex-Breech-vertex	2 (40%)
Vertex-vertex-vertex	1 (20%)
Vertex-Breech-Breech	2 (40%)

Table VI : Distribution of patient by chorionicity of the placenta

Chorionicity	Twin Number (%)	Triplets Number (%)
Monochorionic	55 (32.73%)	-
Dichorionic	113 (67.26%)	-
Trichorionic	-	5 (80%)

Table VII : Distribution of multiple pregnancies by Birth weight of baby

Birth weight (gm)	Twin (n=336)		Triplet (n=15)		
	1 st (n=168)	2 nd (n=168)	Ist(n=5)	2 nd (n=5)	3 rd (n=5)
<1000	5 (2.97%)	12 (7.14%)	-	1 (20%)	2 (40%)
1000-1500	19 (11.30%)	72 (42.85%)	1 (20%)	2 (40%)	3 (60%)
1500-2500	124 (73.80%)	78 (46.42%)	3 (60%)	2 (40%)	-
2500-2800	20 (11.90%)	6 (3.5%)	1 (20%)	-	-

Table VIII : Distribution of multiple pregnancies by perinatal complications

Complications	Twins (n=336)		Triplets (n=15)		
	1 st (n=168)	2 nd (168)	Ist(n=5)	2 nd (n=5)	3rd(n=5)
Macerated stillbirth	11 (13.6%)	12 (7.1%)	-	-	1 (20%)
Fresh stillbirth	-	2 (1.19%)	4 (2.97%)	-	-
Early neonatal death	2 (1.19%)	5 (3.57%)	-	-	2 (40%)
Admission in intensive care unit	30 (17.85%)	64 (38.09%)	1 (20%)	2(40%)	4 (80%)
IUGR	10 (5.95%)	17 (10%)	-	2(40%)	5 (100%)
Birth asphyxia	18 (10.7%)	39 (23.21%)	-	1(20%)	3 (60%)
Septicaemia	7 (4.16%)	10 (5.95%)	1 (20%)	1(20%)	2 (40%)
Congenital anomaly	4 (2.38%)	2 (1.19%)	-	-	-

The commonest intrapartum fetal presentation was vertex-vertex 81 (48.21%) cases followed by breech-vertex 30 (17.28%), vertex-breech 24 (14.28%), breech-breech 19 (11.30%), breech-transverse 8 (4.76%), vertex-transverse 4 (2.38%) and transverse-transverse respectively in twins. There were 113 (67.26%) dichorionic twins and 55 (32.7%) monochorionic twins (Table V).

In case of triplets intrapartum fetal presentation vertex-Breech-vertex 2 (40%), Vertex-Breech-Breech 2 (40%) and vertex-vertex-vertex 1 (20%). All the triplets were trichorionic (Table VI).

The average interval between delivery of the first and second twin was 14.3 minutes and longest being 196 minutes. The average interval between delivery of the first and second triplets was 2.6 minutes, the longest being 10 minutes, the interval between delivery of the 2nd and 3rd triplet was average 2.5 minutes and longest 5 minutes.

Maximum twin's birth weight was between 1500-2500 gm. 5 triplets birth weight was <1000 gm & 5 triplets birth weight

There were 23 macerated stillbirth, 11 being leading fetus and 12 second twin. Total 6 were fresh still birth among them 2 leading twin and 4 second twin. There were total early neonatal death 7, leading twin 2 and second twin 5. Total number of twins admitted in intensive care unit 94, first twin 30 and 2nd twin 64. Total number of congenital anomaly among twin 6. Among triplet macerated stillbirth 1 and early neonatal death only 2 and admission in intensive care unit 8 (Table VIII). Causes of perinatal morbidity, very LBW due to prematurity 108 twins & 9 Triplet, IUGR 27 Twins & 7 Triplets, Birth asphyxia 57 Twins & 4 Triplets, septicaemia 17 twins & 4 Triplets.

DISCUSSION

Multifetal pregnancy is associated with poor maternal and perinatal outcomes. The higher incidence of multiple deliveries observed in our study is related to the fact that we are a tertiary care hospital focusing on care of high-risk patient. In our study incidence of multiple deliveries was 1.7% of total deliveries. The incidence of multiple deliveries was 1.9 per 1000 live birth in the study of Mahendra et al.¹². The rising incidence of multiple gestations worldwide has been attributed to the increasing use of ovulation inducing agents and invitro fertilization technique¹².

The mean maternal age at presentation both twin and triplets was 24.19 years and mean maternal age reported in study of Mahendro et al. was 26 years both twin and triplets¹².

The present study showed that about 87.28% of the women both twin and triplets were multigravida which was almost similar to the study report of Spellacy et al. where frequency of twinning multigravida was 84.2%¹³.

The average gestation at which twin deliveries occurs was 35.5 weeks and triplets was 33.5 weeks in our study and in the study of Mahendro et al. showed the average gestation of twin 35 weeks and for triplets it was 33 weeks¹².

About 74.4% of cases resulted from spontaneous conception. This findings is in contrast to other studies where the frequency of assisted reproduction techniques conceived pregnancies reaches 50%¹⁴. But higher incidence of spontaneous conception in the study Renata et al. was 95%¹⁵. this difference is explained by the profile of patients at our and Assunco A.R. hospital who are from as social stratum that has no access to treatment.

In the present study, 13.09% of mother showed family history of twin pregnancy compared to 19% and 30% in studies by Chowdhury and Sultana respectively^{16,17}. Twin after ovulation inducing drugs was 10.11% in our study compared to 17% and 14% in the studies by Chowdhury and Sultana respectively^{17,18}. These two studies showed no other known aetiological factors but in our study we found 4 (2.38%) and 1 (20%) triplets to conceive within three months of stoppage of OCP.

The incidence of preterm and term delivery in our study 84.97% and 15.03% respectively and no pregnancy crossed the Expected Date of Delivery (EDD). However, Paiernik et al. Chowdhury and Sultana showed lower rates of pre-term delivery in their studies (50.7%, 41.5% and 44% respectively)^{18,16,17}. The reason of higher rates of preterm delivery in the present study might be that all the patients were complicated multiple pregnancy which compelled us to terminate the pregnancy earlier. There was no maternal mortality in this study consistent with the study Mahendra et al. Chowdhury and Sultana also did not report any maternal mortality^{12,16,17}. However, one study done in Nigeria described a maternal mortality rate of 2% for Twin pregnancy¹⁹. But maternal morbidities were significantly high in all these studies.

In the present study, spontaneous preterm labour (51.44%) was the common maternal complication which consistent with the study by Chowdhury 16 (43.4%) and Hashimoto et al. 20 (59%)^{16,20}. Anaemia present in our study (39.88%) Chowdhury found anaemia in 35.8% cases, but Spellacy et al showed anaemia in 9.4% cases^{16,13}. As the study by Spellacy et al was done in a developed country, so it is quite usual that their population would have a much higher haemoglobin level than than that our population¹³.

In this study premature rupture of membrane were 28.32% cases which consistent with the study of Sultana et al. where 28% cases was PROM²¹. However, Chowdhury, Sultana and Mahendra et al. showed PROM occurred in 3.8%, 10% and 8.6% patient respectively which were unusual low for multiple pregnancy^{16,17,12}.

Hypertension (Including PIH and pre-eclamsia) was also observed to be higher (28.90%) in the present study compared to that of Sultana et al. (28%) and Spellacy et al. (12.9%) and postpartum haemorrhage occur (17.34%) cases which bears consistency with the findings of Sultana et al. (16%) and Chowdhury (18.9%)^{21,13,20,16}.

Most of the babies were delivered preterm (80.9% by cesarean section and 19.1% vaginal delivery). But in the study of Sultana et al. vaginal delivery 30% and cesarean section 70%. Higher rate of cesarean section was due to non-vertex presentation of first twin (34.1%)²¹.

This study showed 48.21% was vertex-vertex presentation, 16.7% was vertex-nonvertex, 18.5% nonvertex (first twin) and both non-vertex 16.7%. Sultana et al. and Chowdhury in their studies found majority of fetal presentation was vertex-vertex 48% & 47.5% followed by vertex-nonvertex 16% & 26% respectively and first twin non-vertex 36% and 26.1% respectively^{21,16}.

There were 67.26% dichorionic and 32.73% monochorionic twins which consistent with the study Mahendro et al. where 67% dichorionic twins and 33% monochorionic twins¹².

In case of triplets all cases were trichorionic and triamniotic which were similar to that of the study of Mhendra et al.¹².

Low birth weight was the most common indication for neonatal admission on as shown other studies^{12,21}. We observed perinatal mortality 39 (111 per 1000 birth) which was almost near to the study of Sultana et al. Chowdhury and Sultana^{21,16,17}.

CONCLUSION

Majority of the multiple pregnancy is high risk one. So, all multiple pregnancies need early diagnosis, adequate antenatal, intra-natal and post-partum care to improve the outcome and should have mandatory hospital delivery.

DISCLOSURE

All the authors declared no competing interest.

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