

Maternal and foetal outcome in twin pregnancy - A study at tertiary care teaching hospital

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Abstract

Introduction: The prevalence of multiple births has been increasing due to widespread use of assisted reproductive techniques and advancing maternal age at conception. Twin pregnancy is considered a high risk pregnancy due to associated high maternal morbidity and perinatal mortality.

Objective: To study the maternal and the fetal outcome in twin pregnancy at a tertiary care teaching hospital, Jaipur.

Methods: This descriptive observational study was conducted in the Obstetrics and Gynaecology Department, S.M.S. Medical College, Jaipur from January to June 2014. All women with twin pregnancy of more than 28 weeks admitted in the labour room were recruited in the study after obtaining written informed consent. Various demographic features, complications of pregnancy, maternal and neonatal outcome were recorded and analyzed.

Results: Occurrence of twin pregnancy was 2.82%. Mean age of the women was 28.4 ± 5.7 years and mean gestational age at the time of delivery was 34.36 ± 2.24 weeks. Commonest foetal presentation was both twins in cephalic presentation. Premature labour was the commonest problem observed in 60.7% cases followed by anemia (48%), pregnancy induced hypertension (29%). Prematurity, septicemia, respiratory distress syndrome, pulmonary haemorrhagewere the common cause of perinatal death. Mean Perinatl Mortality Rate was 264.5 per 1000 birth.

Conclusion: Multiple pregnancies present numerous challenges for the obstetrician from conception onwards, until the timing and mode of delivery. All of these high-risk pregnancies require careful consideration with regard to the management of their specific complications at a higher center.

Keywords: Twin pregnancy, perinatal mortality, maternal morbidity, premature

Introduction

Twin gestation is considered as high risk pregnancy due to associated high maternal morbidity and perinatal mortality in comparison with singleton pregnancies. It is also high risk delivery, especially so for the second of the twin (Hanumajah et al., 2013).

As per Nylander (1981), the incidence of multiple gestations varies by country due to regional variations in dizygotic twin rates; monozygotic twinning rates are fairly constant across nations. Globally, the highest burden of multiple births has been found in sub-Saharan Africa, with an

average twinning 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 (49/1000 births) worldwide (Bortolus et al., 1999 and Hoekstra et al., 2008). In contrast, in Japan, the rate of twinning is 1.3 per 1000 births (Soma et al., 1975). According to Kim (1973) the incidence of spontaneous twins is thought to be approximately 1 in 80 pregnancies and for spontaneous triplets, the incidence is estimated at 1 in 8,000. In the United States, the twin birth rate was 32.1 per 1,000 births in 2006 (Martin et al., 2009). This rate had risen 70% from 1980-2004. From 1980-2006, twin birth rates rose 27% for mothers younger than 20 years compared with 80% for women in their thirties. In 2006, 20% of births to women aged 45-54 were twins, compared with approximately 2% of births to women aged 20-24 years. According to Kaminski (2002) this increase can also be attributed to inadvertent use of ovulation induction drugs in assisted reproductive techniques and advancing maternal age at conception. In India, twinning occurs in approximately 1% of pregnancies. Conde-Agudelo et al., (2000) and Wright et al., (2004) reported twins to be responsible for 10% of perinatal mortality.

Gulrukh Qazi (2011) said that multiple pregnancy warrants special attention, because they make a disproportionate contribution to maternal/perinatal morbidity/mortality well in excess of that due to multiplication of singleton risks by fetal number. According to Bangal et al., (2012) common maternal complications observed in twin pregnancy are hypertensive diseases, anemia, preterm labor, premature rupture of membranes, hyperemesis gravidarum, placenta previa, polyhydramnios, and delivery complications (eg, Cesarean delivery, placental abruption, operative delivery, malpresentation, cord accidents,

Postpartum haemorrhage and postpartum endometriosis).

According to Glinianaia et al., 1998, the main causes of adverse neonatal outcomes in multiple pregnancies are related to prematurity, fetal growth restriction and low birth weight. In addition, these pregnancies are prone to complications inherent to twinning, such as acardiac fetus, conjoined twins and twin-twin transfusion syndrome. The risk of congenital anomalies is about 1.7 times higher than among singleton pregnancies and is more significant in monozygotic pregnancies (Glinianaia et al., 1998 and Brizot et al., 2000).

Twin pregnancy, because of its high risk nature, is associated with increased incidence of adverse obstetrics and perinatal outcome. Thus the knowledge of maternal complications in twin gestation helps in prevention and treatment of the complications. Hence, the Present study was undertaken to analyze the maternal and fetal outcome in twin pregnancy at a tertiary care center.

Materials and methods

This descriptive observational study was conducted in the Obstetrics and Gynaecology Department, S.M.S. Medical College, Jaipur from January 2014 to June 2014. All women with twin pregnancy of more than 28 weeks, irrespective of age, parity and medical disorders, admitted in the labour room were recruited in the study after obtaining written informed consent. Specially designed proforma was used to record relevant data of each patient, like age, parity, gestational age, personal and family history of twins, and use of ovulation induction drugs. A general physical examination was done to note the associated complications like anemia, hypertension, and jaundice. Per abdominal examination was done to note the presenting part, lie, position, size and its relation to birth canal and FHS were noted. Pelvic examination was done to note stage of labour,

presentation, status of the membranes and the adequacy of pelvis. Baseline investigations including blood grouping and Rh factor, urine complete examination, CBC, RBS. Specific tests like RBC indices, LFT, RFT, PT, APTT, Platelet count were done according to individual cases. Ultrasound was done for gestational age, number of fetuses, placental site, number, amount of liquor and congenital anomaly. Antepartum and intrapartum complications, neonatal outcomes and perinatal mortality were taken. Placental examination done to confirm the chorionicity. Details of mode of delivery, gestational age at the time of delivery, baby's sex, birth weight and apgar score were noted. Data were analyzed by descriptive statistics.

Results

Out of 10649 deliveries in this teaching hospital during the study period, 300 twin delivery of more than 28 weeks of gestation occurred with an occurrence of 28.2 per 1000 births (2.82%). In the present study 196 (65.3%) of cases were booked whereas 104 (34.7%) cases were unbooked who came in labour or with some intrapartum complications.

Sixty eight percent of the women with twin pregnancy were 20-30 years. Mean age of the women with twin pregnancy was 28.4 ± 5.7 years. 40.67% were para 2. Mean parity was 1.99 ± 0.88 . Majority of the women (58.67%) had gestational age between 28 to 36 weeks. Mean gestational age was 34.36 ± 2.24 (Table 1).

Table 2 shows the fetal presentation and mode of delivery. 56.2% twin pairs presented as cephalic-cephalic, 13.7% presented as cephalic – breech, 1.7% as cephalic – transverse. Breech –cephalic, Breech – Breech and Breech – Transverse presentation was seen in 15.7%, 8.7% and 4% respectively. Out of 169 women having cephalic- cephalic presentation 82.2% had

vaginal delivery and 17.8% had cesarean section. Out of 41 women with cephalic – breech presentation 70.3% had vaginal delivery along with assisted breech delivery of second twin. In 5 (17%) cephalic-transverse presentation, 2 (40%) women had vaginal delivery, in which twin I was delivered vaginally and internal podalic version and total breech extraction was done for twin II. In noncephalic presentation (Breech –cephalic, Breech – Breech and Breech – Transverse) majority of them (84.7%) had LSCS. Various indications of LSCS were fetal distress, Intra Uterine Growth Restriction (IUGR) with Pregnancy Induced Hypertension (PIH), prematurity and noncephalic first twin.

Various complications observed in the mothers are shown in table 3. Premature labour was the commonest problem observed in 60.7% cases followed by anemia (48%), pregnancy induced hypertension (29%) and postpartum hemorrhage (15%). Other complications reported were hyperemesis, antepartum haemorrhage, polyhydramnios, urinary tract infection, perineal tears and wound infection.

Table 4 shows foetal outcome and causes of perinatal death. 66% of first twin and 62.7% of second twin had birth weight < 2500 gms. Occurrence of Still birth in first and second twin was 10.3% and 8.7% respectively. Out of 269 first twins 136 were admitted in NICU. Out of them 54 (39.7%) had neonatal mortality while in second twin 152 out of 274 got admitted in NICU and 48 (31.6%) had neonatal mortality. Septicemia, Respiratory distress syndrome, pulmonary haemorrhage, DIC and congenital anomalies were the common cause of perinatal death.

Table 5 shows perinatal outcome in relation to birth weight of neonates. Perinatal Mortality Rate (PNMR) has an inverse relation with neonatal birth weight. Mean PNMR was 264.5 per 1000 birth.

Table 1: Demographic and Obstetric features of the women

Demographic and Obstetric features	Number	Percentage	Mean \pm SD
Age (Years)			
20 - 25	103	34.33	28.4 \pm 5.7
25 - 30	101	33.67	
30 - 35	46	15.33	
35 - 40	39	13.00	
40 - 45	11	3.67	
Parity			
Para 1	99	33.00	1.99 \pm 0.88
Para 2	122	40.67	
Para \geq 3	79	26.33	
Gestational Age (weeks)			
28 - 32	14	4.66	34.36 \pm 2.24
32 - 36	164	54.67	
36 - 40	122	40.67	

Table 2: Distribution of women according to fetal presentation and mode of delivery

Fetal presentation	Number	Percentage	Mode of delivery			
			Vaginal delivery		LSCS	
			No.	%	No.	%
Cephalic – Cephalic	169	56.2	139	82.2	30	17.8
Cephalic – Breech	41	13.7	29	70.3	12	29.7
Cephalic – Transverse	5	1.7	2	40.0	3	60.0
Breech – Cephalic	47	15.7	8	17.0	39	83.0
Breech – Breech	26	8.7	5	19.2	21	80.8
Breech – Transverse	12	4.0	0		12	100.0

Table 3: Complications observed in the mothers

Complications in mothers	Number	Percentage
Preterm labour	182	60.7
Anemia	144	48.0
Pregnancy induced hypertension	87	29.0
Postpartum hemorrhage	45	15.0
Preterm Prelabour Rupture of Membranes	39	13.0
Hyperemesis	20	6.7
Urinary Tract Infection	19	6.3
Antepartum hemorrhage	15	5.0
Polyhydramnios	13	4.3
Perineal tears	12	4.0
Wound infection	10	3.3

Table 4: Perinatal outcome in twin gestation

Perinatal Outcome	Twin I		Twin II	
	Number	Percentage	Number	Percentage
Foetal Birth Weight				
500 – 1500 gm	75	25.0	75	25.0
1500 – 2500 gm	123	41.0	113	37.7
2500 – 3500 gm	102	34.0	112	37.3
Mean Birth Weight (gm)	2090 ± 1100		2123 ± 1150	
Sex of the baby				
Male	204	68.0	192	64.0
Female	96	32.0	108	36.0
Foetal outcome at birth				
Livebirths	269	89.7	274	91.3
stillbirths	31	10.3	26	8.7
Neonatal outcome				
NICU Admission	136/269	50.6	152/274	55.5
Neonatal Morbidity	82/136	60.3	104/152	68.4
Neonatal Mortality	54/136	39.7	48/152	31.6
Causes of perinatal Deaths				
Respiratory Distress Syndrome	13	4.3	11	3.7
Septicemia	21	7.0	18	6.0
Pulmonary Hemorrhage	5	1.7	6	2.0
DIC	11	3.7	9	3.0
Congenital Anomalies	4	3.7	4	1.3
Still births	31	10.3	26	8.7

Table 5: Perinatal outcome in relation to birth weight of neonates

Birth Weight (gm)	Twin I			Twin II			PNMR
	No	live	PD*	No	live	PD	
500 - 1500	75	29	46	75	34	41	580/1000
1500 - 2500	123	92	31	113	87	26	241/1000
2500 - 3500	102	94	8	112	105	7	70/1000
Total	300	215	85	300	226	74	
PNMR	283/1000			246/1000			

*perinatal death includes SB and neonatal death in first week. PNMR (Mean) = 264.5/1000

Discussion

Multiple pregnancy is considered to be a high risk pregnancy due to high incidence of maternal complications and poor neonatal outcome. The occurrence of twin pregnancy

in our study was 28.2 per 1000 births, which is higher than the quoted Asian incidence and that quoted by Sheela and Patila and Bangal et al. The main factor for higher incidence may be because of referral of all

high risk cases, as our center being the tertiary care hospital. Incidence of ovulation induction was 11.4% in present study which was much lower than 26% reported by Qamar-un-Nisa & Shehnaz Nadir and higher than 5.1% reported by Catalan BI et al.

Average gestational age at the time of delivery in present study was 34.36 ± 2.24 weeks. A slightly higher mean gestational age was reported by Gulrukh Qazi (35weeks) and Qamar-un-Nisa & Shehnaz Nadir (36.4 weeks). The occurrence of twins in the present study was more common in multigravidas (67%). Similar findings were observed by Qamar-un-Nisa & Shehnaz Nadir (68%) and Chowdhary (64.2%) while in the study of Bangal et al, incidence of twins was equal in primis and multigravidas. In the present study the maximum cases (68%) are between 20 to 30 years. and average maternal age in present study was 28.4 ± 5.7 years. In Rani Rseries 82% of the patients were in the age group of 20 to 30 years. In Louis Keith series maximum cases were seen in between 25 to 30 years (42%). Commonest foetal presentation was both twins in cephalic presentation comparable to Jones et al, Chowdhary et al and Sheela and Patila. Cesarean section rate in the present study was 39%.

Hypertensive disorders of pregnancy are more likely to develop in multifetal pregnancy. In our study pregnancy induced hypertension occurred in 29% cases. Similar incidence of hypertension noted in the study of Rizwan N (31.2%). A lower incidence of hypertension 14.5%, 18% and 22.6% was reported by Sheela and Patila, Bangal et al., and Chowdhary respectively.

Anemia was seen in 48% women which was much higher than 20% reported by Qamar-un-Nisa & Shehnaz Nadir and 12.9% reported by Sheela and Patila and was much lower than what is reported by Rizwan (65.6%) and Bangal et al., (66%). This may be due to remarkable increase in maternal blood volume and increased iron and folate requirement imposed by the second fetus

along with nutritional deficiency as majority of women in our study belonged to low socioeconomic status. 4.3% cases in our study had polyhydramnios. Incidence of polyhydramnios was higher in the studies done by Bangal et al and Chowdhary. Hydramnios in twin gestation negatively impacts gestational age at delivery and maternal renal function may become seriously impaired, most likely as a consequence of obstructed uropathy.

Antepartum hemorrhage occurred in 5% of cases. Our observation was comparable with study done by Rizwan (6.2%) and Qamar-un-Nisa & Shehnaz Nadir (8%). Postpartum hemorrhage occurred in 15% cases. Our results were much higher than 3% reported by Markov et al. The reason for PPH could be uterine over distension and large placental bed in twin pregnancy.

Preterm delivery occurred in about 60.7% cases of twins in our study which was much higher than what is reported (44%) by Chowdhary et al., and much lower than what is reported (88%) by Bangal 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 incidence of having a baby with a low birth weight (less than 2500 gms) was 64% in the present study, which was much higher than reported (51.3%) by Australia's Mothers and Babies, AIHW, 2011 for twin pregnancies. Average birth weight among both twins was in the range of 2 – 2.5 kg similar mean birth weight was observed by Chowdhary et al.

The perinatal mortality in twins is related to comorbidity factors such as premature rupture of membranes, socioeconomic and ethnical factors, gestational age, and availability of antenatal management with corticosteroids. In present study, perinatal mortality rate (PNMR) regarding the birth weight was highest at 0.5 kg to 1.5 kg and lowest at 2.5kg to 3.5 kg which shows an inverse relationship of

PNMR and birth weight of neonates. It is evident from our study that the neonatal birth weights play an important role for survival in early neonatal period as respiratory, cardiovascular, sensory and neuronal systems are mature in higher birth weight neonates. It was seen during study that the single most important factor associated with increased perinatal mortality was preterm labour and complications of prematurity. RDS, septicemia, asphyxia neonatorum, and congenital anomalies are the other important factors leading to poor perinatal outcome in twin pregnancies. The results of this study are comparable to an international study by Andersen MB et al in 2012. This study showed higher PNMR in twin pregnancies and most important cause was prematurity.

Conclusion

Multiple pregnancies present numerous challenges for the obstetrician from conception onwards, until the timing and mode of delivery. All of these high-risk pregnancies require careful consideration with regard to the management of their specific complications at a higher center. Early diagnosis by sonography, hospitalization for bed rest, antenatal assessment for maternal and foetal complications, timely intervention like averting preterm births by combined measures like good rest, cervical encerclage, when incompetence is suspected, short term tocolysis, administration of gluco-corticoids in preterm labour, prevention of anemia and pre-eclapsia, planned delivery with good neonatal care will help to decrease the mortality and morbidity in both.

Conflict of interest: Nil

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