

Antenatal Complications and their Impact on Maternal and Perinatal Outcome of Twin Gestations

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ABSTRACT

Objectives: To evaluate the prevalence of various antenatal complications in twin gestation and to critically analyze the maternal and perinatal outcome in terms of morbidity and mortality associated with twin pregnancy.

Study design: Cross-sectional observational study

Place and Duration of Study: Department of Obstetrics and Gynecology, Sheikh Zayed Hospital, Lahore from January 2001 to December 2003.

Methodology: The analysis included data on all women with twin pregnancy ≥ 24 weeks of gestation during the study period. Data was obtained from the hospital based maternal health medical records and included demographic details, antenatal complications and maternal and perinatal outcomes.

Results: Total of 78 patients fulfilled the inclusion criteria during the study period. 70 cases had one or more antenatal complications. The most common complication observed was preterm labour (38.5%) followed by anemia, pregnancy-induced hypertension, mal-presentation of 1st twin and intrauterine growth retardation. 58.5% of patients underwent operative delivery. The overall perinatal mortality rate was found to be 134.6/1000 while perinatal morbidity was 41.43%. Postnatal maternal morbidity including major as well as minor complications was also significantly high in complicated twin pregnancies.

Conclusion: Twin pregnancy is definitely a high risk group associated with increased prevalence of antenatal complications. This leads to disproportionately high maternal morbidity and perinatal morbidity and mortality.

Key words: Twin, pregnancy complications, perinatal outcome.

INTRODUCTION

Twin pregnancy is one of the most interesting events occurring in human reproductive biology. It provides the obstetrician with the challenge of increased risks to the mother and of both increased fetal morbidity and mortality^{1,6}.

Throughout the world the prevalence of twin births varies considerably i.e. 2-20 per 1000 births. Reflecting the wide availability of assisted reproductive technologies, the incidence of twins and higher order multiple gestations is increasing. According to the US Department of Health and Human Services, the twin birth rate has increased over 50% since 1980. Maternal deaths related to twin gestation is on the decline; however maternal morbidity in terms of anemia, hypertension, PROM/PPROM, ante-partum hemorrhage, operative delivery etc is still very high^{1,6,8}. The perinatal mortality rate is four times that of singleton pregnancy and prematurity is the most common cause of neonatal deaths^{1,6,8}. Focus of this study was to highlight the maternal risks associated with twin

gestation and their impact on maternal and fetal outcome.

METHODOLOGY

All the patients having twin pregnancy delivered at ≥ 24 weeks of pregnancy in the department of Obstetrics and Gynecology, Sheikh Zayed Hospital, Lahore from January 2001 to December 2003 were included in the study. They were received either from emergency department, regular outpatient department or private clinics. Two patients who were admitted through emergency in the antenatal period for some complications but did not turn up later on for delivery, were excluded from the study. The diagnosis of twin gestation was established by trans-abdominal ultra-sonographic imaging performed by trained radiologist. A detailed analysis of the medical records of these cases, both of mother and neonates and the direct interview of the women subject to their availability was entered on the record proforma. All the patients included in the study were first evaluated regarding demographic details and various antenatal complications. Medical disorders not particularly related to twin pregnancy but complicating some of the cases were also considered. Maternal outcome in

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terms of gestational age at the time of delivery, mode of delivery and postpartum complications was tabulated. Regarding perinatal outcome, birth weights of twin babies, 5-minute Apgar scores, admission to neonatology unit, neonatal complications and perinatal deaths were recorded.

RESULTS

There were a total of 4354 deliveries conducted from January 2001 to December 2003, with 78 twin deliveries during the study period. This made an overall incidence of twin pregnancies as 17.9 per 1000 births (1.79%). Majority (89.7%) were booked patients. The highest frequency of twin deliveries was found in mothers aged between 26 and 35 years (67%). 47.15% were primiparous and 53.84% of patients were $>P_1$. 70 patients (89.7%) had one or more antenatal complications as against only 8 (10.3%) having uncomplicated twin pregnancies (Table 1).

The most common antenatal complication was preterm labour occurring in 30 patients (38.5%). The next leading maternal adverse outcomes were anemia (30.8%), pregnancy induced hypertension (25.6%) and preterm premature rupture of membranes (12.8%). Malpresentation of 1st twin was seen in 25.6% of patients and it was breech in all cases. 24.4% patients had intrauterine growth retardation of one or both twins. Previous ≥ 1 caesarean section complicated 26.9% of twin gestations. 52.56% of twin babies delivered preterm. 40 Patients (58.8%) underwent emergency / elective caesarean section. Postnatal morbidity was seen in 38 cases (48.7%); post partum hemorrhage in 10, anemia and puerperal pyrexia in 13, breast engorgement in 17, wound infection in 2 and retained placenta in 1 patient. There was no maternal death in the study period. The mean birth weight of twin I was 2.27kg and that of twin II 2.18 kg. Birth weight discordancy was seen in 10 cases with 7 perinatal deaths (Perinatal mortality rate = 350 / 1000). More twin II babies had 5-minute Apgar score < 7 as compared to twin I babies (21.8% versus 11%) (Tables 2-3)

Among 156-twin babies, there were 21 perinatal deaths making a perinatal mortality Rate (PMR) of 134.6/1000. There were 8 intrauterine deaths and 13 neonatal deaths. PMR of twin I was 115.4/1000 and that of twin II-153.85/1000 Prematurity was the cause of neonatal deaths in 84.6% of cases. The highest

PMR was seen in babies delivered at <34 weeks of gestation (538.5/1000) and weighing < 1500 gms (692.3/1000), especially < 1000 gms (833.3/1000). Regarding mode of delivery neonatal mortality was significantly higher in the vaginal delivery group as compared to caesarean section (144.7/1000 versus 25/1000) (Table 4).

Out of 148 live born babies, 58 (41.43%) got admitted in the neonatology unit with various neonatal complications like prematurity, low birth weight, neonatal sepsis, jaundice neonatorum, birth asphyxia, respiratory distress syndrome, congenital anomalies meconium aspiration etc. Prolonged hospital stay (>10 days) was seen mainly in premature babies (Table 5).

Table 1: Antenatal Complications in patients with twin gestation (n=78)

Complications	Proportion in all twin Pregnancies	
	Frequency	%age
Preterm Labour	30	38.5
PROM/PPROM	10	12.8
Anemia	24	30.8
Malpresentation of 1 st twin (all breech)	20	25.6
Previous caesarean section	21	26.9
Pregnancy induced hypertension	20	25.6
Essential hypertension	2	2.5
Intrauterine growth retardation (one or both twins)	19	24.4
Congenital anomalies (diagnosed on USG)	3	3.8
Intrauterine death (one /both twins)	7	8.9
Twin to twin transfusion syndrome	4	5.1

- Prophylactic oral tocolysis given to 41.4% of patients
- PROM= premature rupture of membranes
- PRROM= Preterm premature rupture of membranes

Table 2: Proportion of perinatal deaths according to gestational age and antenatal booking

Variable	No. of Babies	Perinatal Deaths	PMR
Gestational age in weeks			
28- < 34	26	14	538.5/1000
34 - <37	56	3	53.6/1000
≥ 37	74	4	69/1000
Antenatal Booking			
Booked	140	17	121.43/1000
Unbooked	16	4	250/1000

Table 3: Neonatal mortality in relation to weight of fetus and to mode of delivery

Birth weights in grams	Vaginal Delivery			Caesarean Section		
	Neonates	No. of NNDs	NMR	Neonates	No. of NNDs	NMR
< 1000	3	2	666.66	3	1	333.3
1000 – 1499	6	4	560	-	-	-
1500 – 1999	7	4	571.4	15	-	-
2000 – 2499	29	1	34.5	36	1	27.8
> 2500	29	-	-	26	-	-

*NNDs = Neonatal deaths.

**NMR= Neonatal mortality rate.

Table 4: Neonatal mortality in relation to gestational age and to mode of delivery

Gestational age (weeks)	Vaginal Delivery			Caesarean Section		
	No. of Neonates	No. of NNDs	NMR	No. of Neonates	No. of NNDs	NMR
28 - <34	18	10	555.55	8	1	125
34 - <37	32	1	31.25	24	-	-
≥ 37	26	-	-	48	1	20.8

Table 5: Neonatal complications

Neonatal Complication	Twin I	Twin II
Neonatal sepsis/clinical sepsis	15 (21.4%)	14(20%)
IUGR/SGA*	12 (17.14%)	21 (30%)
Jaundice neonatorum	14 (20%)	14 (20%)
Birth asphyxia	5 (7.14%)	4 (5.7%)
RDS**	9 (12.9%)	8 (11.4%)
Meconium aspiration	2 (2.86%)	1 (1.4%)
Liquor aspiration	3 (4.3%)	1 (1.4%)
NEC***/DIC****	4 (5.7%)	2 (2.86%)
Intracranial bleed	2 (2.86%)	1 (1.4%)
Congenital anomalies	4 (5.7%)	5 (7.1%)
Generalized rash	1 (1.4%)	-
Ischaemic carditis + Fits	1 (1.4%)	-
Pneumothorax	-	1 (1.4%)

*SGA = Small for gestational age.

***NEC= Necrotizing enterocolitis.

**RDS= Respiratory distress syndrome.

****DIC= Disseminated intravascular coagulation.

DISCUSSION

Statistics regarding the incidence of twin pregnancy are difficult to come since majority of patients from general population do not attend the hospitals or clinics for antenatal care and delivery illustrating the potential for error in hospital-based statistics. However during the period from 1st January, 2001 to 31st December, 2003 there were 4354 deliveries at Sheikh Zayed Hospital out of which 78 were twin births(1.79%) with ratio of 1:56. This correlates well with frequency found by A.H. Talha² (1.86%) and Kouam et al³ (1.8%) but is lower than that quoted in latest studies (Gulrukh Qazi¹ 3.2% Renata Almeida et al⁶ 3.4%). The dramatic rising incidence of twin pregnancy world wide, especially in higher order multiples, has been attributed mainly to the increasing use of ovulation inducing agents and trend towards child bearing at older maternal age. In our study, most of the women were aged between 26 and 35 years, similar to observation by others^{1,7}.

The antenatal complication rate of 89% in our study corresponds to the rate seen in other studies

(Shamsa and Shaheena 80.4%, Abdul Aziz Al Mulhun⁷ -91%). The most frequent complication was preterm labour as reported by others^{1,6,7,8}. Prophylactic oral tocolysis, routine hospitalization for bed rest and cervical circlage have not proved to be of any help in preventing preterm labour.

Anemia, the second common antenatal complication, was seen in 30.8% of patients. This incidence is higher than the internationally quoted figures of 10.3% (S. Ziadeh)¹³, 9.4% (E.O. Jessa)¹², 15.8% (Abdul Aziz Al Mulhim)⁷ and comparable to local incidence by Shamsa and Shaheena¹⁴ and Gulrukh Qazi¹. Poor dietary intake and poor compliance with haematinic supplements in the face of increased demand are the main causes of anemia in our society. Other leading antenatal complications were hypertensive disorders of pregnancy, intrauterine growth retardation of one or both twins, PROM/PPROM, malpresentation of the first twin and previous operative delivery.

The most common finding of vertex-vertex presentation and caesarean section as the preferred mode of delivery (52.56%) was similar to other

studies^{1,4,8,16,17}. The higher caesarean section rate in this study was mainly due to mal-presentation of 1st twin and previous caesarean section. Alan M. Peaceman et al have reported on even higher rate of caesarean section (71%) in their study⁴.

Low birth weight was the most common neonatal complication resulting mainly from prematurity and intrauterine growth retardation. Perinatal mortality is four times higher in twins as compared to singletons and is largely attributable to these two complications^{1,6,8}.

The perinatal mortality rate in this study was 134.6/1000, lower than PMR seen in some local studies 172/1000, 195/1000 & 337.5/1000^{1,2,14}. Figures are significantly lower in international studies varying from 54/1000 to 102.4/1000^{3,12,13}. The lower perinatal mortality in developed countries has been achieved largely through advances in neonatal intensive care facilities. Second twins present a higher risk of poor neonatal outcomes compared with first twins as was seen in our study^{1,5,11}.

Neonatal morbidity in terms of prematurity low birth weight, birth asphyxia, neonatal sepsis, jaundice, respiratory distress syndrome congenital anomalies was seen in those patients with some antenatal complication^{9,15}. Very preterm babies (<32 weeks) are more likely to suffer serious, lifelong health problems, such as cerebral palsy and disability. The risk per pregnancy of producing a child with cerebral palsy is eight times greater in twin pregnancy than in singleton pregnancy. Thus twin pregnancies have a higher likelihood of maternal and neonatal adverse outcome.

CONCLUSION

In view of the increasing incidence of twin pregnancies observed over the past few years, obstetricians must be aware of the risks related to this type of pregnancy. The reduction in maternal / perinatal morbidity and mortality may be achieved by early diagnosis, better antenatal care, early detection of complications, steroid administration, better neonatal care and last but not the least mother's education. There is a need for effective implementation of strategies to ascertain the achievement of these goals.

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