

Review of Twin Pregnancies with Single Fetal Death: Management, Maternal and Fetal Outcome

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Abstract

Aim To study management and maternal and fetal outcome in single fetal death in twin pregnancies.

Materials and Methods We studied 64 (1.37 %) twin deliveries out of a total of 4,655 deliveries in GMC, Haldwani (Uttarakhand). Out of them, 5 (7.81 %) were complicated with single fetal death in the second or third trimester. These cases were managed conservatively with regular monitoring of maternal coagulation profile along with intensive fetal surveillance for the surviving twin. The cases were studied for antenatal complications and placental chorionicity with placental histopathology and postmortem of the dead fetus. Neonatal and maternal outcome in the postpartum period was also studied.

Results No antenatal complications were present in four out of five cases with one having PIH. Three out of five pregnancies could be extended to term and had no maternal complications. The other fetus could be salvaged in three and all of them had a normal neonatal period. One pregnancy ended in preterm labor with delivery of a preterm

baby which could not be saved. One resulted in death of the other fetus also where pregnancy was remote from term.

Conclusions Although our study was small, it indicates that in case of twin pregnancy with single fetal death with good surveillance, the live fetus can be salvaged.

Keywords Twin pregnancy (TP) · Single fetal death · Monoamniotic · Monozygotic

Introduction

Fetal loss of a twin during the first trimester is not an uncommon event [1]. Loss of one twin in the first trimester does not appear to impair the development of the surviving twin. However, fetal death occurring after mid gestation (17 weeks' gestation) may increase the risk of IUGR, preterm labor, preeclampsia, and perinatal mortality [2–4]. The causes of fetal death vary and include twin–twin transfusion, placental insufficiency, intrauterine growth retardation related to preeclampsia, velamentous insertion of the cord, cord stricture, cord around the neck, and congenital abnormalities [5]. Consequently, serial assessments of fetal growth and well-being should be considered.

Maternal coagulopathy, the most feared complication following twin demise, appears to be uncommon [6]. However, coagulopathy has been reported to occur in about 3–5 weeks following fetal demise. Therefore, when fetal demise occurs in multiple gestation after the first trimester, an initial maternal clotting profile with reassessment in

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2–3 weeks is not unreasonable. Monitoring of maternal coagulation factors is not necessary when fetal loss occurs prior to 13 weeks of gestation [7].

In general, chorionicity rather than zygosity determines the risk of mortality and the morbidity. Hence, determining the type of placentation by ultrasonography can help in predicting the outcome. The perinatal mortality of monochorionic twin pregnancies is double that of dichorionic twin pregnancies [8]. The prevalence of monochorionicity in single intrauterine death in twins is 50–70 % [9, 10]. When fetal demise occurs after mid gestation, there is a 17 % chance that the “surviving twin” in a monochorionic gestation will either die or suffer major morbidity. Major morbidity is unlikely to occur in the surviving twin of a dichorionic gestation [8].

Materials and Methods

Over a period of about 2 years (Oct 2010–Sept 2012), 4,655 deliveries were conducted in GMC Haldwani (Uttarakhand) out of which there were about 64 twin deliveries. Most of these women with twin pregnancy were attending the antenatal clinic of GMC Haldwani regularly. Of these 64 women, five had a complication of single fetal demise in the second/third trimester. These five women were followed till delivery with maternal investigations and extensive fetal monitoring.

Maternal Monitoring

1. All routine antenatal investigations were done (ABO Rh, Hb, GCT, Urine routine and microscopy, viral markers, and HIV).
2. Weekly coagulation profile (platelet count, PT aPTT, BT, and CT).
3. FDP and D-dimer.

Fetal Monitoring

1. Daily fetal movement count.
2. Biweekly NST in pregnancies more than 32 weeks.
3. Biweekly USG with biophysical profile and color Doppler were done.

All the pregnancies with gestational age less than 34 week were given steroids for fetal lung maturity. All five cases were followed till onset of spontaneous labor; the mode of delivery was decided according to other obstetrical indications. Following delivery, the placenta was sent for histopathology, the dead fetus was sent for postmortem, and the newborn was followed through its neonatal period.

Results

In our study, out of 5 patients, three were urban and two were rural. In our study, three out of five cases presented with single fetal demise in the late third trimester, one presented in the late second, and one in the early third trimester. None of the patients had any antepartum complications, except one who had signs of PET and developed DIC suggested by abnormal values of APTT, FDP, and low platelets observed 24 h prior to delivery although the mother had no bleeding; induction was done to terminate the pregnancy due to the dead fetus. All the pregnancies could be extended for more than 34 weeks except for the one with fetal demise at 20 weeks. The maximum duration of prolonging a pregnancy was 7 weeks, but this patient developed PET and later DIC and resulted in a stillborn baby. In the remaining three patients, successful prolongation could be done up to 5 weeks after second fetal demise, resulting in a healthy baby. In all the cases, the mode of delivery was vaginal except in one where LSCS had to be done due to obstruction by the dead baby (Table 1).

Table 1 Antepartum and intrapartum outcomes of study group

No.	Diagnosis of IUD (weeks)	Antepartum complication	Delivery (weeks)	Mode of delivery	Outcome
1	27	Mother had PET at 30 weeks; evidence of mild DIC 1 day prior to delivery	34	Vaginal	Still birth, preterm baby, mother alright
2	33	IUD of 2nd twin at 38 weeks; 1st baby normal	38	Vaginal	Both baby and mother normal
3	20	Death of 2nd twin at 20th week; 1st twin has congenital heart disease and fetal distress	24	LSCS	1st twin died, mother survived
4	37	Single fetal death; no cardiac activity and no complication	39	Vaginal	Both normal
5	36	Single fetal death; no cardiac activity in twin II and no complication	40	Vaginal	Both normal

Table 2 Placental characteristics and postpartum outcome of study group

No.	Chorioamnioticity and postmortem results	Survivor characteristics	Postpartum state
1	Monochorionic, monoamniotic; fresh stillbirth of twin II (twice-wrapped around neck), polydactyly of right hand, incomplete abnormal vasculature in umbilical cord (only two vessels)	Still birth of 1st twin fresh	Uneventful
2	Monochorionic, diamniotic; macerated stillbirth of twin II, evidence of twin–twin transfusion well fetus papyraceous	Birth weight 2.1 kg, normal	Uneventful
3	Monochorionic, monoamniotic; no significant pathology Nil (cord stricture of twin I); macerated stillbirths: twin I, maturity 28–29 week, no abnormality detected; twin II, grossly autolyzed and necrotic, maturity 15–16 week	Nil	Uneventful
4	Gross examination of placentas: infarction on the side of twin II	Birth weight 1.9 kg, normal	Uneventful
5	Monochorionic, diamniotic; no significant pathology detected	Birth weight 2.2 kg, normal	Uneventful

In our study, all the patients had a monochorionic placenta with 2 having monoamniotic placenta, indicating an increased risk of single fetal demise in monochorionic placentation (Table 2). All of them had an uneventful postpartum and no prior to maternal mortality was observed.

Discussion

Our study showed that single fetal death in twin pregnancy is not an uncommon problem with about 8.1 % incidence in our study, much higher than NCCP England (3.7 %) [11]. Another study by Enbom has reported that the incidence of twin pregnancy with a single fetal death ranges from 3.5 to 7.8 % [1].

The cause of morbidity is most commonly due to vascular anastomosis. Vascular anastomosis is more common in monochorionic placenta and can lead to TTS, affecting the other twin in single fetal death adversely, but this complication is rare in dichorionic placenta. In our study, all patients had monochorionic placenta; however, other studies, like of Karl, had monochorionic placenta in only 83 % [10]. In dichorionic twins, the prognosis for the surviving twin is relatively good and immaturity is the main risk factor. In the case of monochorionic twins, the prognosis is poor and associated with neurological damage in the survivor [3].

Death of one fetus can lead to ischemic brain damage of the other twin by causing sudden hypotension and hampering the blood supply to other twin. In diamniotic twins, death of one baby can cause sudden rupture of the thin membrane between them again leading to sudden hypotension and death of the other twin. Those mothers who had single fetal death at gestational age of 33 weeks and above showed better chances of survival for the other twin.

Rarely, single fetal death causes release of fibrin and tissue thromboplastins in circulation, causing DIC. Though it is a very uncommon complication, it can be fatal both for the mother and the fetus. Another adverse effect of death of one fetus is transchorionic embolization, leading to death of the other fetus also.

We had a survival rate of 60 % as compared to the studies of Landy and Fusi where mortality was 60 % [2, 3]. The one who could not be saved had single fetal death in the second trimester, with the mother having PET and the other non-surviving fetus had congenital heart disease. In most of studies, Twin to Twin Transfusion was found to be the common cause of fetal mortality, but in our study, evidence of TTT was found to be only 20 % [12, 13]. We did not encounter any case of symptomatic DIC contrary to the study by Romero et al. [7] who found the incidence of DIC to be 25 %. In a study by Aslan et al., the reported median time interval between single fetal death and delivery was 11 days [14], but we could prolong it up to 5 weeks. The postpartum course was uneventful in all of our cases and all live-born babies were normal and not having any deformity contrary to some studies.

Conclusions

The sequelae of a single fetal death in a twin pregnancy depend on the gestation and placentation. Death in the late second or third trimester is associated with significant morbidity and mortality in the surviving twin. Therefore, all twin pregnancies with one dead fetus should be managed in tertiary referral centers with sufficient neonatal support. A management plan should be individualized. Intensive fetal surveillance is required and the determination of chorionicity should be done early in the pregnancy. Proper care and management can salvage a good number of babies.

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