Single Fetal Demise in Twin Pregnancy-A Case Report

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Twin gestations are associated with greater risk of complications and adverse outcome for both mothers and fetuses than singleton pregnancy. It is a complex clinical situation and management may face a dilemma. The death of one twin is also a shock to the parents and the attending obstetrician. We report a case of single fetal demise in twin pregnancy, diagnosed the case, follow-up the patient and finally LUCS was done successfully. A married female patient primi gravida of 26 years old came to us with 32 weeks of twin pregnancy with single fetal demise with slight lower abdominal pain. She was on regular antenatal checkup. Her pregnancy was confirmed by ultrasonography at 15 weeks of pregnancy. Growth of both twins was similar till 27 weeks of pregnancy, but she was diagnosed a case of twin pregnancy with one fetal demise about 19+ weeks size and alive one is about 32 weeks with cephalic presentation on subsequent visit. She gives family history of twining. She gives no history of rise of temperature. For the above complaints she got admitted for further management. After admission we provide conservative treatment by prophylactic injectable antibiotic and injectable dexamethasone for lung maturation to the mother and finally LUCS was done successfully on 13th day of her hospital stay after proper counseling and reassurance. Her post-operative period was benign and both the mother and baby were healthy and discharged on 8th post-operative day. Baby is on regular checkup under a neonatologist and her growth and development is optimum according to her age group and has no neurological deficit in subsequent follow up.

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Introduction

Antepartum death of a single fetus complicates 2.5–5% of twin pregnancies and may be associated with a significant morbidity and mortality in the surviving co-twin.[1,2,3] In monochorionic (MC) pregnancies the perinatal loss rates and risk of death or neurological handicap in the surviving co-twin is 3–4 fold greater than for dichorionic (DC) pregnancies.[4,5] Types of structural abnormalities observed in the surviving twin have included neural tube defects, optic nerve hypoplasia, hypoxic ischaemic lesions of the white matter (eg multi cystic encephalomalacia), microcephaly (cerebral atrophy), haemorrhagic lesions of white matter, post hemorrhagic hydrocephalus, bilateral renal cortical necrosis, unilateral absence of a kidney, gastro-intestinal tract atresia, gastroschisis. However, regardless of the chorionic status, none of these complications occurs in pregnancy with the vanishing twin.[6] The precise cause of poor perinatal outcome of the surviving co-twin in MC pregnancies is unknown. Acute hemodynamic imbalance resulting from anastomotic flow is considered to be the likely mechanism.[7] Many clinical studies have considered the presence of superficial vascular anastomoses to be a risk factor for the surviving twin[8,9,10] but have failed to provide comparative data on anastomoses and favorable outcome. Anecdotal data suggest that the risk of occurrence of co-twin sequelae is 3-fold greater in MC pregnancies complicated by twin–twin transfusion syndrome (TTTS).[11] Recently studies have shown that TTTS is caused by the presence of a unidirectional deep arteriovenous (AV) shunt with paucity of superficial anastomoses.[12,13,14]

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Furthermore, it has been suggested that it is the superficial anastomoses which are responsible for acute transfusion complications following intrauterine foetal death (IUFD) of one of the twins.[15]

With the more frequent use of ultrasonography and cardiotocography for surveillance, the death of one twin is more likely to be detected antenatally. To prevent the surviving fetus from exsanguinating into the terminated fetus, feticide should involve an occlusive technique. Fetoscopic and ultrasound-guided cord ligation techniques have recently been described.[16, 17]

Case Report

A married woman of 26 years old, primi gravida admitted in this hospital on 20th November, 2013 with the complaints of 32 weeks twin pregnancy with single fetus demise and slight lower abdominal pain. According to the statement of the patient her pregnancy was uneventful till 31 weeks + pregnancy but 3 days back on 17th November, 2013 she was diagnosed as a case of twin pregnancy with single fetal demise. She gives family history of twining. She gives no history of rise of temperature. She consulted with her obstetrician and she was advised her to got admitted in this hospital for further management. She has no significant past medical, surgical or gynecological history. Her father and mother had hypertension and sister had twin pregnancy. She was nonalcoholic and nonsmoker. She had history of taking iron, vitamin, calcium and folic acid supplement during pregnancy period and completed her TT vaccine schedule. She comes from middle class family, married for one year. Her age of menarche- 11 years, menstrual cycle-regular, menstrual period-28 days, LMP-5th April, 2013, EDD-12th January, 2014.

On general examination she was mildly anemic and was normotensive and others systemic examination revealed no abnormality. On per abdominal examination, fundal height was about 34 weeks pregnancy size, longitudinal lie, cephalic presentation. On auscultation fetal heart sound was 144 beats/min and pelvic examination was not done.

On investigation hemoglobin was 58% (9.3 gm/dl), total count of WBC-11,600/cu mm of blood, Neutrophil-75%, Lymphocyte, Monocyte, Eosinophil, Basophil and platelet count was normal. Bleeding and clotting time, PT & APTT was also normal. Blood group was AB + ve, HBsAg negative and VDRL- non reactive and urine report was normal. Ultrasonography revealed 32 weeks + of twin pregnancy with one fetal demise , one fetus is missed, about 19+ weeks size and alive one is about 32 weeks with cephalic presentation. After admission broad spectrum injectable antibiotic was given and inj. steroid was given for lung maturation. Monitoring of the patient was done by checking pulse, blood pressure, FHR thrice daily. Kick chart was given to mother, temperature chart was maintained. CBC & coagulation profile was done twice weekly. USG was done weekly. LUCS was done on 2nd December 2013 at 34 wks after proper counseling. Per operative findings was dichorionic diamniotic twin, no sign of infection , growth or other abnormalities was found in the placenta. Placenta was intact, covered with membrane & no breakage. Dead fetus was on another separate sac, which was intact, cord was normal in length; there were no apparent abnormalities in the cord and no true knot, liquor was thin pus like and amount was average. Baby was female, weight: 2.2 kg, A/S: 7/10, baby was referred to neonatal ward due to low birth and prematurity. During post-operative period Injectable broad spectrum antibiotic and analgesics was given to mother. Both the mother and baby were healthy and discharged on 8th POD. Baby is on regular cheek up under a neonatologist, her growth and development is optimum according to her age group and there is no neurological deficit as per statement of her parents.

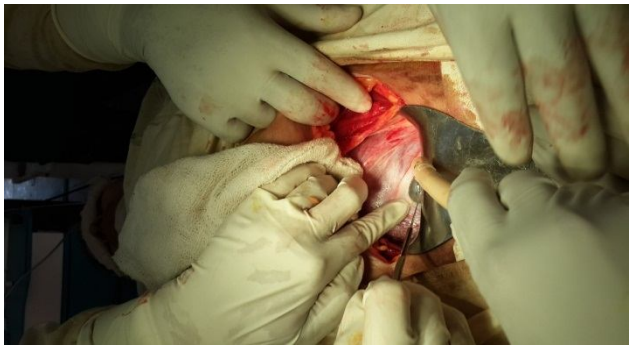
Figure 1. Gravid uterus after laparotomy.


Figure 2. Delivery of the placenta and demised fetal sac.

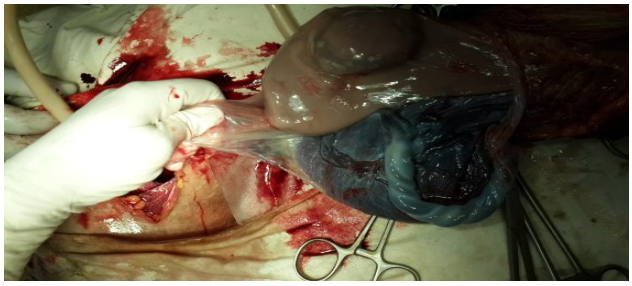
Figure 3. Separation of healthy placenta from demised fetal sac.


Figure 4. Healthy baby

Discussion

Although in the majority of cases the cause of the first intrauterine death remained indeterminate, discordant fetal growth, polyhydramnios-oligohydramnios, TTTS and abnormal cord insertion are more common in MC than DC twins. There was also association between retention of the dead fetus in utero and maternal disseminated intravascular coagulation (DIC).

To date, a first-trimester intrauterine death has not been found to have adverse effects on the surviving twin.[18] A loss in the second or third trimester, however, is more complex. 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.[19] Antenatal ultra sonographic evaluation of chorionicity is thus important in assessing the potential risk. The observed survival difference between dichorionic and monochorionic twins has been attributed to placental vascular anastomosis, which is rarely seen in dichorionic placentas. The reported frequency of vascular connections in monochorionic placentas ranges from 85% to 98%.[20, 21]

Labour may be precipitated;[22] approximately 90% of twin pregnancies complicated with single intrauterine death deliver within 3 weeks of the time of diagnosis.[23] The prognosis then depends on the maturity of the surviving twin.

Traditionally, it has been believed that the demise neurological lesion of the co-twin are due to the passage of thrombotic or necrotic materials from the dead to the healthy twin along placental vascular shunts.[5] The hemodynamic imbalance theory which states that placental anastomoses allow transfer of blood from the surviving twin to the dead co-twin,

giving rise to periods of hypo perfusion resulting in neurological changes.[3] Therefore, transfusion of biologically active compounds from the dead to the surviving twin is unlikely.

In our case, we found normal outcome in the surviving recipient twin following the demise of the co twin. Our recipient twin having normal APGAR score at birth and Hb level was normal at subsequent follow-up. Till now the baby is on regular supervision under a paediatrician having no neurological deficit. In our case, maternal outcome was also good having no complications.This favorable outcome can be explained on the basis of the type of the anastomotic channels present in the feto-placental unit.AV shunts allow unidirectional flow, i.e. from the artery to vein.[12,14] It is therefore conceivable that a favorable outcome for the recipient twin might be attributed to no flow between the surviving and dead twins simply because of the negative pressure gradient along the AV anastomoses (dead donor with zero and alive recipient twin with higher systemic pressure). Hence, from the clinical perspective, these data suggest that in the event of intrauterine demise of the recipient twin, the donor can only be rescued by prompt delivery after 28 weeks gestation.In our case termination of pregnancy was done after completion of 34 weeks gestation and fetomaternal outcome was satisfactory.

Effects of fetal death on the surviving twin

Two mechanisms of injury have been proposed: hemodynamic fluctuation, and transchorionic embolization and coagulopathy. The degree of twin-twin transfusion depends on the number, size, and type of placental vascular anastomoses. Such abrupt and severe hemodynamic changes at the time of one intrauterine death may result in ischaemic damage to the brain and lead to cyst formation in the surviving twin.[15,22] In view of the possibility of death or neurological damage to the remaining fetus, selective feticide has been suggested to be contra-indicated in monochorionic twins. Multiple organ infarction may lead to severe disability in survivors and may cause intrauterine or neonatal death.[24] In our case co-twin was healthy and no neurological deficit detected yet. Further follow-up is needed to detect long term sequelae.

Management of twin pregnancies with one dead fetus

Antenatal death of one fetus in the late second or third trimester of a twin pregnancy possess an important management dilemma in obstetrics. The risk of leaving the surviving twin in the hostile intrauterine environment that may have caused the death of the co-twin must be balanced against the problems associated with preterm delivery. True prevention of brain damage is possible only by inducing delivery before the vulnerable twin dies in utero. Even this strategy does not guarantee that brain damage has not occurred in the presence of placental anastomoses.[23]

Important points in the management of single fetal death in twin pregnancy

1. Counseling and support.
2. Individual management plan.
3. Management in the tertiary center with competent neonatal support.
4. Information on chorionicity.
5. Evaluation of fetal abnormalities and close fetal surveillance.
6. Steroid prophylaxis for lung maturity in case of preterm delivery.
7. Conservative management until 37 weeks. Earlier intervention in presence of other obstetric indications.
8. Vaginal delivery if possible.
9. Post-partum examination of the stillborn. Placenta for histological examination.
10. Pediatric assessment and long term follow up.

It is recommended that all twin pregnancies with one dead fetus should be managed in tertiary referral Centre with sufficient neonatal support. A management plan should be individualised. Intensive fetal Surveillance is required and the determination of chorionicity, particularly in the first trimester, is crucial.[25,26] Subsequent ultrasound scans serve to detect fetal anomalies and assess fetal growth and liquor volume.

Conclusion

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. The problems are more severe in monochorionic twin pregnancies. Antenatal evaluation of chorionicity by ultrasonography is important to assess the potential risk. Conservative management is preferred. However, the risk of keeping the surviving twin in a hostile intrauterine environment must be weighed against the risk of preterm delivery. Adequate counseling, psychological support, and long-term follow up are mandatory.

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