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Case Series

Monoamniotic twins with complications and their outcome: case series

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ABSTRACT

Monoamniotic twins are identical twins sharing the same amniotic sac and placenta, with two separate umbilical cords. Although uncommon, monoamniotic twins are associated with high antenatal and perinatal morbidity and mortality. We present here a series of three cases of monoamniotic twin gestations with fetal complications who delivered in our hospital over a period of one month. Our first case Mrs. ABC with 33 weeks of gestation with Monoamniotic twins presented with twin anemia polycythemia sequence, second case, Mrs XYZ presented as primigravida with 35 weeks of gestational age with monoamniotic twins with severe preeclampsia presented with Cord entanglement who went into postpartum hemorrhage and was conservatively managed for the same. Our third case, Mrs. DEF G2P1L1 with previous scar 1.5 years back with 23 weeks of gestation with monoamniotic twins presented with Twin reversal arterial perfusion sequence and underwent medical termination of pregnancy.

Keywords: Monoamniotic twins, TRAP, TAPS, PIH, PPH, Preterm births, Acardiac acephalus

INTRODUCTION

Incidence of twin pregnancy has been on a rising trend, attributable to intervention by assisted reproductive techniques, and with it there has been a rise in fetal and maternal complications. However, rate of monozygotic twins has been relatively constant (3.5-4 per 1000).[1] MCMA twins are very uncommon with an estimated incidence reported in 8 per 100,000 pregnancies, constituting around 1% of all twin pregnancies and 5% of all monochorionic pregnancies.[2,3]

Monoamniotic twins develop when embryo splits at 9-13 days after fertilization and shares placenta with 2 separate umbilical cords.[5] it is associated with high perinatal morbidity and mortality due to various complications such as cord entanglement, malformations, twin to twin transfusion syndrome, twin reversed arterial perfusion sequence, twin anemia polycythemia sequence. There is increase in maternal morbidity due to risk of development of pregnancy induced hypertension, abruption, anemia, preterm delivery, post-partum hemorrhage.

Knowledge pertaining to management of monoamniotic twins is limited. We present here a series of three cases of monoamniotic twin gestation in our institute over a period of 1 month and review of fetal and maternal complications seen in monochorionic monoamniotic twins.

CASE SERIES

Case 1

Our first patient Mrs. ABC, 26 years old primigravida, 33 weeks pregnant, who underwent ovulation induction treatment for primary infertility of 1.5 years, hospital, was diagnosed as Monoamniotic twins with evidence of twin anemia polycythemia sequence on ultrasonography. Obstetric sonography was suggestive of twin A as live viable fetus with fetal heart rate 130/min and Twin B with gross cardiomegaly with dilated bilateral lateral, 3rd and 4th ventricles associated with communicating hydrocephalus with gross ascites with fetal heart rate of 86/min. On color doppler twin B showed uteroplacental insufficiency with increased peak systolic flow in fetal middle cerebral artery

with brain sparing effect. Incidental finding of posterior wall fibroid in early antenatal scans was observed with evidence of growth seen during pregnancy, from size of 4×4.5×5 cm in 2nd month of gestation to the size of 9×7×8 cm in 8th month of gestation. Patient received steroid cover on admission and was diagnosed as a case of gestational hypertension for which she was started on oral nifedipine. She was taken for emergency caesarean section, both babies were delivered by vertex, with twin A of birth weight 1.6 kg, who cried immediately and was admitted in neonatal ICU and discharged after 15 days while Twin B had hydrops and was declared still born of weight 600 gm. Patient had an uneventful postnatal period and was discharged after the discharge of the baby from the NICU.

Case 2

Our second patient, Mrs. XYZ, 28 years old, Primigravida, 35 weeks of gestational age, admitted in our hospital, presented with Monoamniotic twins with severe preeclampsia and had been recently started on oral labetalol. On admission she received steroid cover and full dose of magnesium sulfate. Latest scan was suggestive of twin A in longitudinal lie with cephalic presentation and Twin B in Transverse lie with shoulder presentation. Patient was taken for emergency caesarean section. Intraoperatively, there was one liter ascites, liquor was thin meconium stained with presence of cord entanglement, with no uterine anomalies. There was a single placenta of weight 960 gm. She delivered preterm twin A by vertex of birth weight 1.9 kg and twin B by breech of birth weight 1.5 kg, both babies cried well and were admitted under neonatal care for 20 days as preterm low birth weight babies for weight gain. Patient went into post-partum hemorrhage within an hour of postoperative care for which uterotonics were administered however uterine tone was not achieved, hence uterine balloon tamponade was kept in situ for 24 hours. Patient was stabilized and eventually her antihypertensives were tapered off. She was discharged with the discharge of her babies.

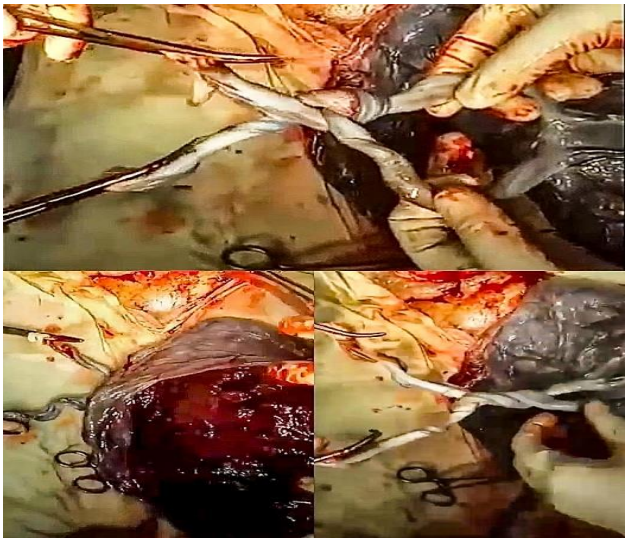

Figure 1: Monoamniotic sac with cord entanglement.

Figure 2: Twins with cord entanglement of case 2 on discharge.

Case 3

Third patient, Mrs. DEF, 23 years old, G2P1L1 with previous scar 1.5 years back with 23 weeks of gestation presented as a case of twin reversal of arterial perfusion sequence with antenatal scan suggestive of non-visualization of upper limbs, cranium and heart of Twin B with gross subcutaneous edema with multiple cystic spaces, with visualization of lower limb and single umbilical artery. Patient underwent medical termination of pregnancy and aborted two female abortus' of weight 466 gm and 492 gm.

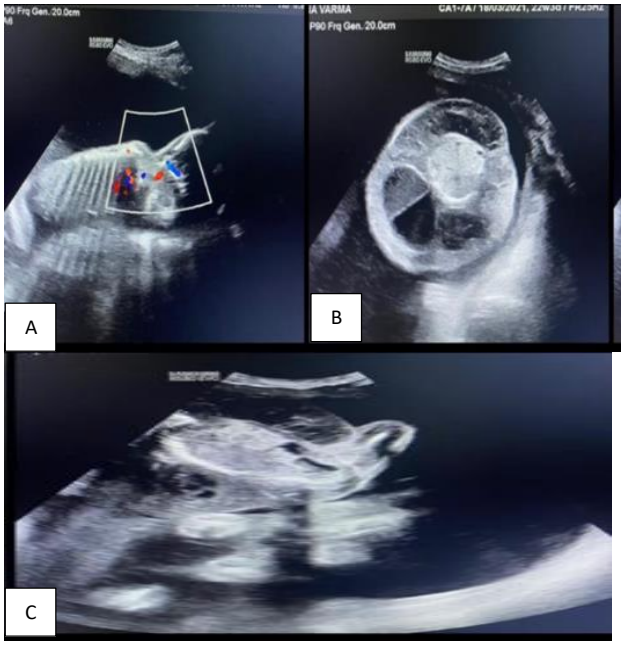

Figure 3 (A-C): Twin A: normal heart; twin B Transverse section- subcutaneous edema, absent heart at level of small thorax and twin B normal lower half of twin B and relatively small upper half.

Figure 4: Acephalic acardiac abortus of TRAP sequence in case 3.

DISCUSSION

Monoamniotic twins results from splitting of the embryonic mass between day 9 to 13 of fertilization, with the twins sharing the same placenta but with two different umbilical cords.[5] These twins are at increased risk of developing fetal complications like cord entanglement, twin anemia polycythemia sequence (TAPS) which is a chronic form of unbalanced fetofetal transfusion through minuscule placental anastomoses in monochorionic twins, leading to anemia in the donor and polycythemia in the recipient, twin reversal of arterial perfusion sequence (TRAP) where a severely anomalous twin with an absent or rudimentary heart ("acardiac twin") is perfused by its co-twin ("pump twin") via aberrant arterio-arterial anastomoses, twin to twin transfusion syndrome (TTTS) seen more often in monochorionic diamniotic than monoamniotic twins.[6,7] Other complications are single fetal demise, intrauterine growth restriction, fetal growth discordancy, preterm births, leading to high perinatal morbidity and mortality as high as 28% to 47%.[8] Case 1 and 2 had preterm births with TAPS seen in case 1 while cord entanglement was seen in case 2, while case 3 had anomalous twin called acephalic acardiac twin due to TRAP sequence.

Increased maternal morbidity is also seen due to risk of pregnancy induced hypertension (PIH), abruption, anemia, preterm delivery, hydramnios, post-partum hemorrhage.[9] Case 1 had gestational hypertension while case 2 developed severe preeclampsia and had post-partum hemorrhage.

A retrospective study of 30 MCMA twin pairs reported 60% survival rate out of which 8 of 10 twin pairs died due to cord entanglement.[11] However, Ezra et al suggested cord entanglement can be a feature of all MCMA twin pregnancies as their study reported that of 32 MCMA twin pregnancies most deaths occurring prior to 20 weeks were due to other causes (TRAP or discordant fetal anomaly) while expectantly managed monoamniotic twins after 20 weeks had good prognosis despite the finding of cord entanglement.[12] According to another retrospective cohort study of 153 MCMA twin sets, Van Meighem et al observed 18.1% fetal deaths (70/386) and stated that if close fetal surveillance is instituted after 26-28 weeks of gestation and delivery takes place at approximately 33 weeks of gestation, the risk of fetal or neonatal death is low.[13]

Most monoamniotic twins are diagnosed prenatally based on ultrasound findings of a single placenta, no intertwin dividing membrane and same sex.[14] This scan is best performed before 14 weeks of gestation.[10] Confirmation of these findings on serial ultrasound examinations improves diagnostic certainty as some findings are best identified early in pregnancy and others later in pregnancy. Planned termination of monoamniotic twin pregnancy should be done between 32-34 weeks by caesarean section.[10,11,13]

An approach to conservative management for monoamniotic twins with complications is possible to improve fetal outcome and reduce the perinatal morbidity and mortality. If detected prenatally, management options need to be individualized and uncertainty discussed with the parents.

A wide spectrum of surgical interventions has been applied in the management of TRAP; however, because of the rarity of this condition and the heterogeneity of its presentation, no single technique has been shown to be unequivocally optimal. Fetoscopic laser coagulation of the placental vascular anastomoses or the umbilical cord of the acardiac twin, with the possibility of applying bipolar forceps as an additional minimally invasive surgical technique, offers an effective treatment option in the management of the TRAP sequence.[15]

Possible options for TAPS include expectant management, delivery, intrauterine blood transfusion (intravenous and/or intraperitoneal), selective feticide or fetoscopic laser surgery.[16]

CONCLUSION

Twin pregnancy is in itself a high-risk pregnancy with increased rate of perinatal mortality associated with monoamniotic twins. Extra vigilance is required in providing antenatal, intra-natal and postpartum care in managing monochorionic twins. These cases should be preferably managed in fetal medicine centers with specialist expertise and decisions on delivery should be made on an individual basis.

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