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TWIN TO TWIN TRANSFUSION SYNDROME– A CASE REPORT

Obstetrics and Gynaecology

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ABSTRACT

Twin to twin transfusion syndrome is an uncommon complication of monozygotic twins having mono-chorionic placenta.The prevalence of twin to twin transfusion syndrome (TTTS) is approximately 1-3 per 10,000 births.Twin gestation with death of one of the foetuses pose anxiety in the mind of obstetrician, patient and the relatives. We report a case of third gravida with 30 weeks pregnancy with history of previous two caesarean sections with fetal death of a co twin due to twin to twin transfusion. Patient underwent caesarean section.The second baby died on second postoperative day due to complications of extreme prematurity and very low birth weight. Placental morphology and colour doppler finding confirmed the diagnosis of twin to twin transfusion syndrome.

KEYWORDS

Twin to twin transfusion syndrome, Mono-chorionic pregnancy, Intrauterine demise of co-twin

INTRODUCTION

Intrauterine twin gestation with death of one of the foetuses pose anxiety in the mind of obstetrician, patient and the relatives. It is an uncommon complication of monozygotic twins having monochorionic placenta. Transplacental vascular placentation was first described as early as in year 1687. However their significance was not apparent until 1882, when schatz demonstrated systematically all the possible types of anastomoses as described in review by blickstein.[1] Arteriovenous anastomoses that proceed through a placental cotyledon capillary bed appeared to have the most dramatic effect on the circulation of twins.[2] Schztz reported that this "third circulation" was usually accompanied by a large arterio-venous anastomoses in the opposite direction to compensate for the inequalities contributed by "third circulation". In cases in which there is no corresponding large vessel anastomosis in the opposite direction, it was hypothesized that the third circulation predominates and results in twin to twin transfusion syndrome (TTTS).When the cotyledon is supplied by an artery from one twin and drained by a vein from the other twin, there is potential for transfusion from the donor twin (on the arterial side) to the recipient twin (on the venous side). Consequently, the donor twin becomes anemic , hypovolemic , hypotensive, and hypoproteinaemic, undergoes intrauterine growth retardation,, and occasionally develops oligohydramnios. In contrast, the recipient twin is heavier, polycythemic, hypervolemic, and faces complications of hyperviscosity of blood such as cardiac failure, hyperbilirubinemia, intravascular thrombosis: polyuria may result in polyhydramnios.[3]

Case Report

A 28 year old fourth gravida, unbooked case reported with 30 weeks of gestation with previous two LSCS with fetal demise of a co-twin. On general examination she was afebrile with pulse rate of 98 beats per minute, blood pressure of 112/78 mm of Hg with mild pallor and no icterus, no edema over feet. Per abdomen revealed over distended uterus of 34 weeks size with multiple fetal parts. Fetal heart sound of one twin was absent. Doppler findings were suggestive of intrauterine fetal death. Fetal heart rate of second twin was 140 beats per minute. Obstetric ultra-sonography revealed diamniotic mono-chorionic twin gestation with fetal death of co-twin and second live twin. There was an evidence of twin to twin transfusion syndrome stage 5.The amniotic sac of dead fetus (recipient) showed presence of severe poly-hydramnios. Expected fetal weight was 688 grams and gestational age was 24 weeks. There was pericardial effusion with pleural effusion. The amniotic sac of live fetus revealed severe oligohydramnios. Expected fetal weight was 1038 grams and gestational age was 28 weeks. Twin 2 showed pericardial effusion with echogenic kidneys. On colour Doppler of twin two revealed reversal of ductus Venosus and fetoplacental insufficiency. Placental location was posterior with grade 2 maturity. In view of previous two caesarean sections and twin gestation, patient was posted for caesarean section. Intra operative findings revealed that the lower uterine segment was thinned out.The liquor of dead twin was foul smelling. The dead twin was showing evidence of maceration. The surviving twin was hyperaemic with low birth weight**. (Fig.1)**There was a single placenta weighing 566 grams with single chorionic membrane and two amniotic sacs. The cord of the dead fetus was thin and shrunk due to maceration**.(Fig.2)** Second of the twins cried immediately after birth. Baby was shifted to neonatal care unit after initial resuscitation. The baby died on second postoperative day due to extreme prematurity and low birth weight. Placental morphology and colour Doppler finding confirmed the diagnosis of twin to twin transfusion syndrome.

DISCUSSION

Among all twin gestations, approximately one-third of twins are monozygotic (MZ), and three-fourths of MZ twins are Mono Chorionic and Diamniotic (MCDA).In general, only twin gestations with MCDA type of placentation is at significant risk for TTTS, which complicates about 8-10% of MCDA pregnancies.[4,5]TTTS is very uncommon in MZ twins with dichorionic or monoamniotic placentation.[6] Although most twins conceived with in vitro fertilization(IVF) are dichorionic , it is important to remember that there is 2 to 12 fold increase in MZ twinning in embryos conceived with IVF, and TTTS therefore can occur for IVF MCDA pregnancies.[7,8] In current practice , the prevalence of TTTS is approximately 1 – 3 per 10000 births.[9] TTTS may develop at anytime in gestation, the majority of cases are diagnosed in second trimester .Stage 1 may progress to non-visualised fetal bladder in donor i.e.stage 2. Stage 2 subsequently can progress to absent or reversed diastolic flow in umbilical artery of donor or recipient twin i.e stage 3. Stage 3 followed by hydrops i.e. stage 4.

It is estimated that TTTS accounts for upto 17% of total perinatal mortality in twins and for about half of all perinatal deaths in MCDA twins.[4,10] Without treatment the loss of one fetus is common ,with demise of the remaining twin occurring in 10% of twin demise cases and neurologic handicap affecting 10-30% of co twin remaining survivors.[2,11]

Twin-Twin Transfusion Syndrome (TTTS) is diagnosed prenatally by ultrasound. The diagnosis requires 2 criteria: The presence of a monochorionic diamniotic (MCDA) pregnancy and the presence of a oligohydramnios (defined as a maximal vertical pocket. [MVP] of 2cm) in one sac and of polyhydramnios (MVP of 8cm) in the other

sac.MVP of 2 cm and 8 cm represent the 5th and 95th percentiles for amniotic fluid measurements, respectively, and the presence of both is used to define stage I TTTS.[12]

STAGING OF TTS BASED ON SONOGRAPHIC AND DOPPLER FINDINGS[12]

STAGE	POLY/OLIGO HYDRAMINOS	ABSENT BLADDER IN DONOR	DOPPLER ABNORMALITIES	HYDROPS	DEATH
1	+	-	-	-	-
2	+	+	-	-	-
3	+	+	+	-	-
4	+	+	+	+	-
5	+	+	+	+	+

The present case of monozygotic twin pregnancy with 30 weeks gestation was referred by private practitioner with the diagnosis of death of co-twin. The relatives and the patient were extremely worried about the possibility of adverse outcome. After initial evaluation of the case, the patients and relatives were explained about the plan of management .They were counselled about the possible adverse fetal outcome due to prematurity, in case the pregnancy is terminated before 34 weeks of gestation. They were explained about the risk of continuation of pregnancy till 34 weeks. Neonatologists were consulted before decision of termination of pregnancy was taken. The live premature baby with extremely low birth weight was kept in NICU. The low birth weight baby died due to complications of prematurity on second day of caesarean section.

Clinical Photographs

Fig. 1-Showing two foetuses affected by twin to twin transfusion in mono-chorionic pregnancy

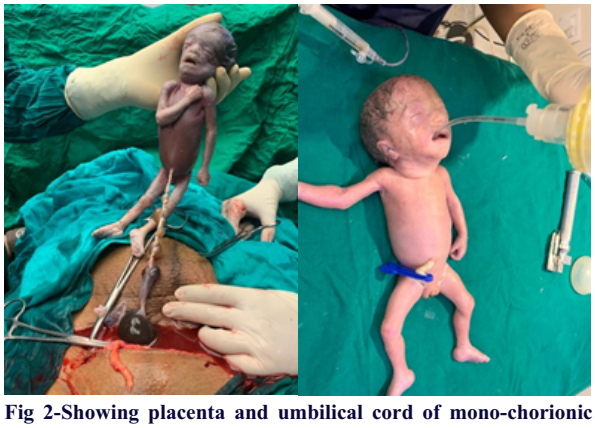
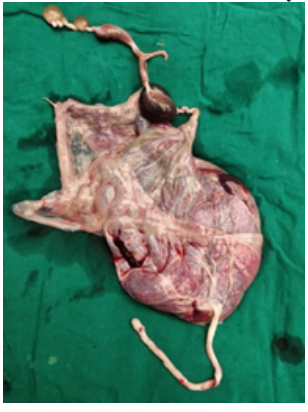


Fig 2-Showing placenta and umbilical cord of mono-chorionic diamniotic twins with twin to twin transfusion Syndrome



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