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Case Report

Twin pregnancy complicated by fetus papyraceous: a case report

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ABSTRACT

Fetus papyraceous is a rare complication of multiple gestation resulting from intrauterine demise of one fetus during early or mid-pregnancy followed by compression by the growing co twin. We report a case of a 21-year-old primigravida with dichorionic diamniotic twin pregnancy complicated by intrauterine demise of one twin at approximately 17 weeks gestation. Serial ultrasonography revealed a macerated compressed fetus consistent with fetus papyraceous while the surviving twin continued to demonstrate normal growth parameters whereas fetus papyraceous was twin A and was the presenting fetus. A conservative approach to manage pregnancy with close antenatal surveillance was done. At 34 weeks 3 days of gestation, patient had spontaneous onset of labor with fetus papyraceous as the presenting twin, Hence A decision for lower segment caesarean section and a healthy female baby weighing 1.886 kgs with Apgar of 7 and 9 at 1 and 5 minutes respectively was delivered. A flattened parchment like fetus papyraceous was delivered along with placentae. Early diagnosis and appropriate monitoring are essential for favorable maternal and fetal outcomes.

Keywords: Twin pregnancy, Fetus papyraceous, Single fetal demise, Dichorionic diamniotic twins, High-risk pregnancy

INTRODUCTION

Twin pregnancy is associated with increased maternal and perinatal morbidity compared with singleton pregnancy.[1] It occurs approximately 1 in 12,000 pregnancies and among twin gestations it occurs approximately 1 in 200 twin pregnancies. One rare but important complication is fetus papyraceous, which occurs when one fetus dies in utero during early or mid-gestation and becomes compressed between the membranes and uterine wall by the growing co twin where as in early pregnancy it usually gets absorbed.[2] The reported incidence is approximately 1 in 12,000 pregnancies and occurs in nearly 1 in 184 to 200 twin gestations.[3] The prognosis of the surviving fetus depends largely on gestational age at fetal demise and chorionicity.[4] Dichorionic pregnancies generally have a better outcome due to absence of vascular anastomoses.[5]

CASE REPORT

A 21-year-old primigravida presented for routine antenatal care with spontaneous conception. Her last menstrual period was 9 June 2025 corresponding to an expected date of delivery of 16 March 2026. Early antenatal ultrasonography confirmed a dichorionic diamniotic twin pregnancy with both fetuses viable Figure 1. At 22 weeks gestation, follow up ultrasound revealed absence of cardiac activity in one fetus with measurements corresponding to 17 weeks of gestation, confirms intrauterine fetal demise Figure 2. The demised fetus appeared macerated and compressed, consistent with fetus papyraceous. The co twin demonstrated normal cardiac activity and growth parameters.

Growth scan at 32 weeks gestation depicted a single live fetus in cephalic presentation with fetal heart rate of 148 bpm, adequate amniotic fluid, anterior placenta and estimated fetal weight of 1900 g. A conservative approach with high-risk antenatal surveillance followed. Regular antenatal visits with clinical examination, coagulation profile, ultrasound and Doppler studies were done.

At 34 weeks 3 days of gestation, patient had spontaneous onset of labor with fetus papyraceous as the presenting

twin. Hence, an elective lower segment caesarean section was performed. A live female baby weighing 1.886 kgs with Apgar of 7 and 9 at 1 and 5 minutes respectively was delivered with good cry. Along with the placenta, a flattened macerated fetus papyraceous was delivered Figure 3. The postoperative period was uneventful and NICU stay for neonate was for 1 day on room air after which baby was shifted to mother side and both mother and neonate were discharged in stable condition on postoperative day 4.

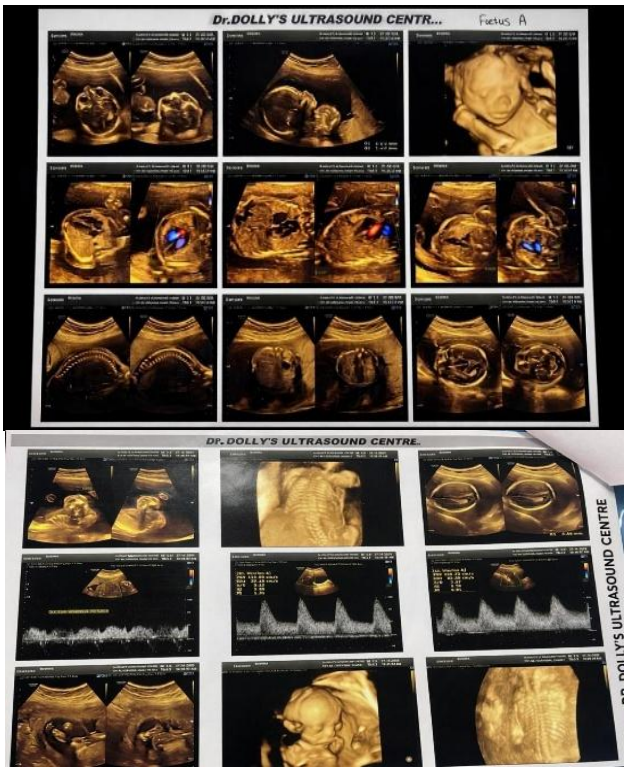

Figure 1: Ultrasound showing two viable fetus with normal cardiac activity in twin pregnancy.

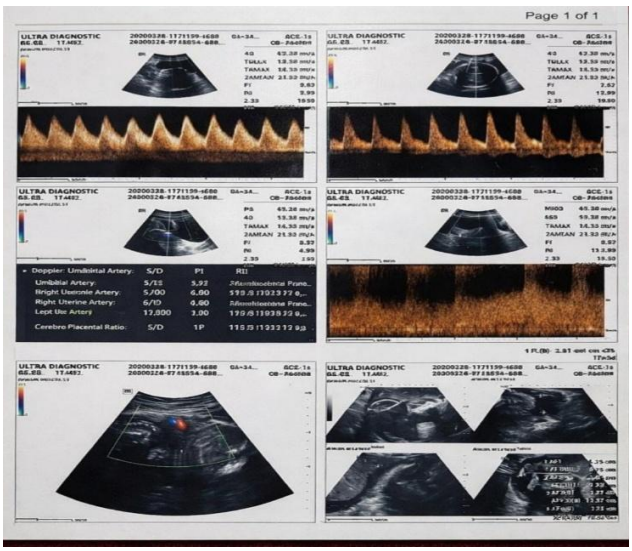

Figure 2: Ultrasound demonstrating compressed macerated fetus consistent with fetus papyraceous.

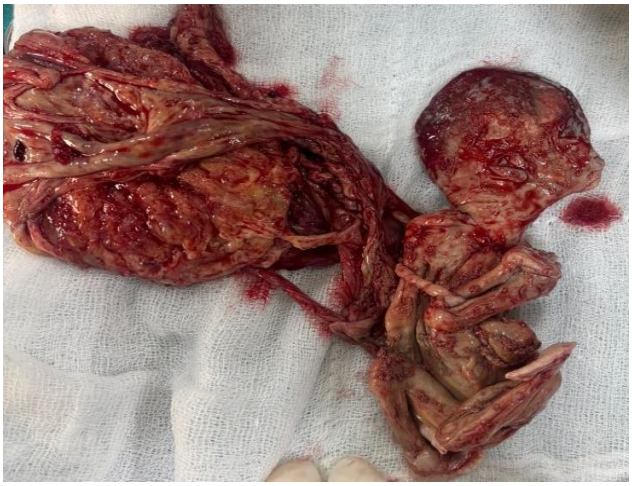

Figure 3: Delivered fetus papyraceous along with placenta following caesarean section.

DISCUSSION

Fetus papyraceous results from intrauterine fetal demise followed by compression and dehydration of the dead fetus.[2,6] Etiological factors include placental insufficiency, cord abnormalities, congenital anomalies, infections, and twin to twin transfusion syndrome.[7] When fetal demise occurs in the first trimester, it is termed vanishing twin syndrome; second-trimester demise leads to fetus papyraceous.[8] Complications include preterm labor, FGR, neurological injury to co twin, and maternal coagulopathy (rare).[5,9] Prognosis depends on chorionicity. Monochorionic twins have higher risk due to vascular anastomoses.[9,10] whereas dichorionic twins have better outcomes due to separate circulation.[4] Management is expectant with antenatal surveillance including coagulation profile ultrasound and Doppler studies.[10,11]

Several etiological factors have been described including placental insufficiency, umbilical cord abnormalities, congenital anomalies, infections and twin-to-twin transfusion syndrome. The gestational age at which fetal demise occurs plays a crucial role in determining the outcome. When fetal demise occurs during the first trimester, the phenomenon is often referred to as vanishing twin syndrome. However, when it occurs during the second trimester, the fetus may persist and become compressed leading to fetus papyraceous.

The major complications associated with fetus papyraceous include preterm labor, fetal growth restriction, neurological injury to the surviving twin and rarely maternal coagulopathy. The prognosis of the surviving fetus depends largely on the chorionicity of the pregnancy. In monochorionic pregnancies, vascular anastomoses may lead to acute hemodynamic shifts after demise of one twin, potentially causing neurological damage in the surviving fetus. In contrast, dichorionic twins have separate circulations which significantly reduces the risk of such complications.

Management is usually expectant with close antenatal surveillance including serial ultrasonography, Doppler studies along with coagulation profile and monitoring of fetal wellbeing. Delivery is generally planned based on obstetric indications and fetal maturity. In the present case, the surviving twin showed normal growth and the pregnancy progressed to 34 weeks gestation resulting in a favourable maternal and neonatal outcome.

Complications specific to twin pregnancies

Twin pregnancies, particularly monochorionic gestations, are associated with unique complications due to shared placental circulation and vascular anastomoses.[12]

Twin to twin transfusion syndrome (TTTS) is a serious complication seen in monochorionic twins due to unbalanced blood flow through placental vascular anastomoses. One twin develops oligohydramnios while the other develops polyhydramnios. Screening is recommended every 2 weeks from 16 weeks, and fetoscopic laser ablation is the treatment of choice.[12,13] Twin reversed arterial perfusion (TRAP) sequence occurs in 2-3% of monochorionic twins and involves an acardiac twin perfused by a pump twin, leading to risk of cardiac failure. Management includes radiofrequency ablation or cord occlusion.[14,15] Twin anemia-polycythemia sequence (TAPS) results from chronic slow transfusion leading to anemia in one twin and polycythemia in the other. Diagnosis is by MCA Doppler and management ranges from monitoring to intrauterine transfusion.[12] Relevance to present case: The dichorionic diamniotic nature of the pregnancy reduced risks of TTTS, TRAP, and TAPS, contributing to favorable outcome.[4,12]

CONCLUSION

Fetus papyraceous is a rare complication of twin pregnancy resulting from intrauterine demise of one fetus during early or mid-gestation.

It occurs approximately 1 in 12,000 pregnancies and among twin gestations it occurs approximately 1 in 200 twin pregnancies. Early diagnosis with coagulation profile ultrasound and careful antenatal monitoring is essential to achieve good maternal and fetal outcomes with minimal maternal and fetal morbidity and mortality. Dichorionic twin pregnancies generally have a favorable prognosis when managed with appropriate surveillance. In late second and third trimester with intrauterine demise of twin, conservative approach with serial fetal growth scans and doppler, coagulation profile is to be followed. Termination at 36 weeks is done in dichorionic diamniotic, however in monochorionic and monoamniotic early termination is required. Goal to be kept at least at 34 weeks.

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