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Acardiac Twin: A Case Report

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Abstract

Twin pregnancy generally represents a high-risk pregnancy, but monozygous twin pregnancy is a particular challenge for the obstetrician due to the serious complications that may occur during its evolution. A very rare, severe complication of monozygous twin pregnancy, which we recently dealt with in the Obstetrics and Gynecology Department of the Omdurman maternity Hospital Sudan, was a monochorionic monoamniotic twin pregnancy with acardiac twin (TRAP). One of the fetuses (acardiac twin) presented as amorphous mass without any recognizable structure, being transfused by the other fetus with a normal heart (pumping twin). The understanding of these cases is mandatory in order to offer maximum survival and heath chances to the viable fetus.

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Introduction:

Multiple pregnancies accounts for 1.5% of all pregnancies, with approximate perinatal morbidity and mortality of 10%. ultaiple pregnancy is complicated by congenital malformations. TRAPS sequence has historically been reported to occur in about 1 percent of mono-chorionic twin pregnancies and 1 in 35000 pregnancies. In contemporary obstetrics, the incidence appears to be much higher, when factors such as the use of first trimester obstetrics ultrasound examination, which detects twin demises early in gestation, and assisted reproductive techniques, which have increased the incidence of twin pregnancy including mono-chorionic twin, are accounted for. A 2015 study estimated the incidence of acardiac twin to be 2.6 % of mono-chorionic twin pregnancies and 1 in 9500 to 11000 pregnancies. TRAP sequence chiefly results from abnormal placental vascular anastomoses with consequent increase in arterial pressure in 1 twin leading to reversal of blood flow in the other. As a result, the “pump” twin perfuses deoxygenated blood into the recipient (acardiac) twin. A spectrum of anomalies due to reduced formation of body tissue, as a consequence of severe hypoxia, results. Diagnosis of this syndrome was made with ultrasonography that is usually helpful from 11 weeks of gestation. Here we are presenting a case of TRAP sequence, which created a considerable management difficulty with respect to salvation of the pump twin.

Case report:

We are reporting a case of a 35 years old lady G10 P8+1 whose first delivery was by CS due

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to transverse lie, and the other 6 remaining deliveries were by successful VBAC, who reported to us for routine antenatal care. She has family history of multiple pregnancy from both maternal and paternal sides. Her first visit was at 34weeks of gestation. US done revealed normal fetus FHS +ve with no growth abnormalities, and a solid mass about 10*9.5cm separated from the fetus and placenta (suspicious of acardiac twin). (Fig1, 2, 3&4).

The patient was managed conservatively by regular US checkup and planned for CS at 37 weeks.

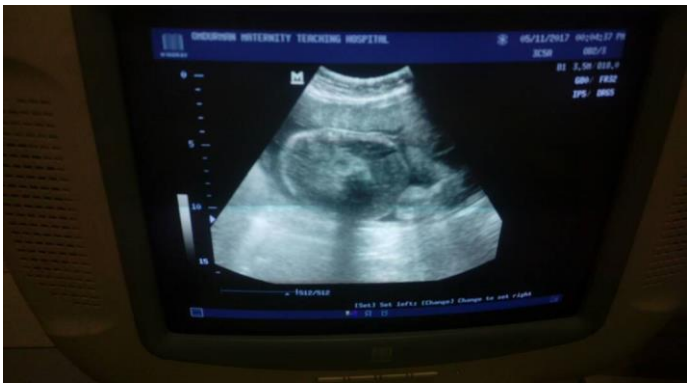

Fig-1

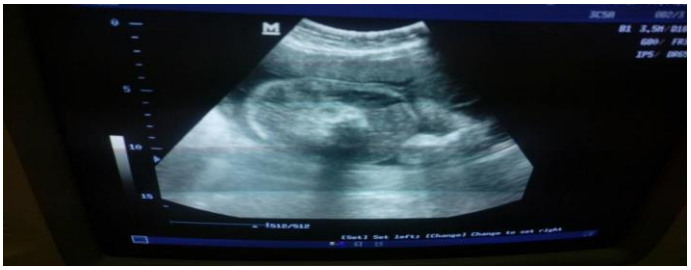

Fig-2

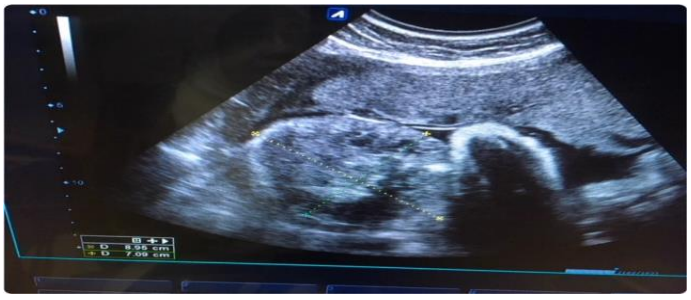

Fig-3

CS was done, the outcome was a healthy female who cried immediately with abgar score of10 and weight of 2.9 Kg (figure 5), followed with amorphous mass without any recognizable structure weight about 600g (figures 6 and7) sent to histopathology. No intra or post-operative complications were encountered and the mother was discharged with her baby in good condition.

Histological examination confirmed the diagnosis of a cardiac twin. (Macroscopic figure-8andMicroscopic figures-9-10 and 11).

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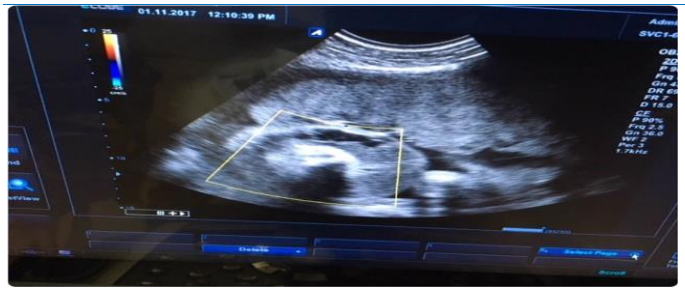

Fig-4

Ultrasound report: Upper anterior placenta. Reduced liquor volume. An amorphous mass of soft tissue and bone measuring seen. No cystic changes seen. No fetal parts seen. The donor twin not shown.

Impression: Acardius amorphous twin.

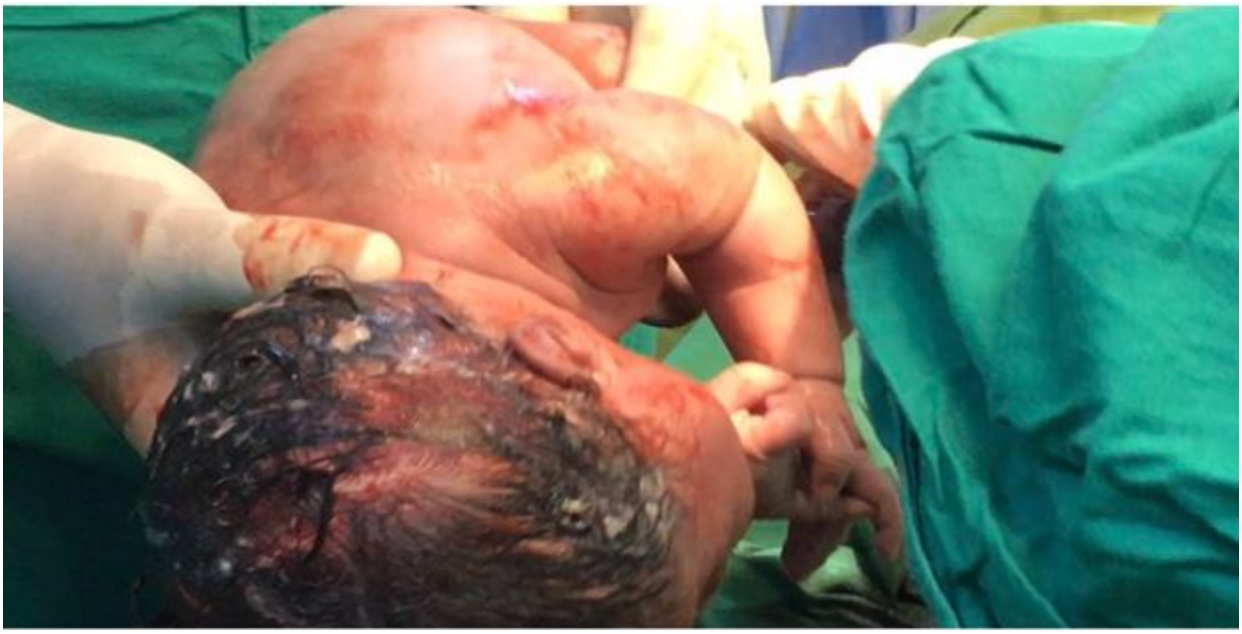

Fig-5 Normal fetus

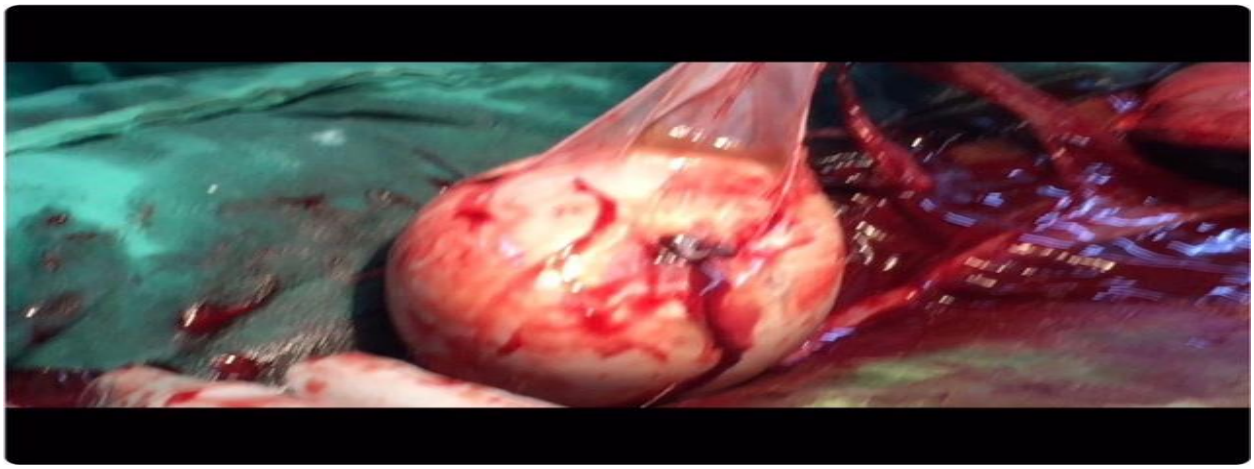

Fig-6 Gross appearance of the acardiac twin

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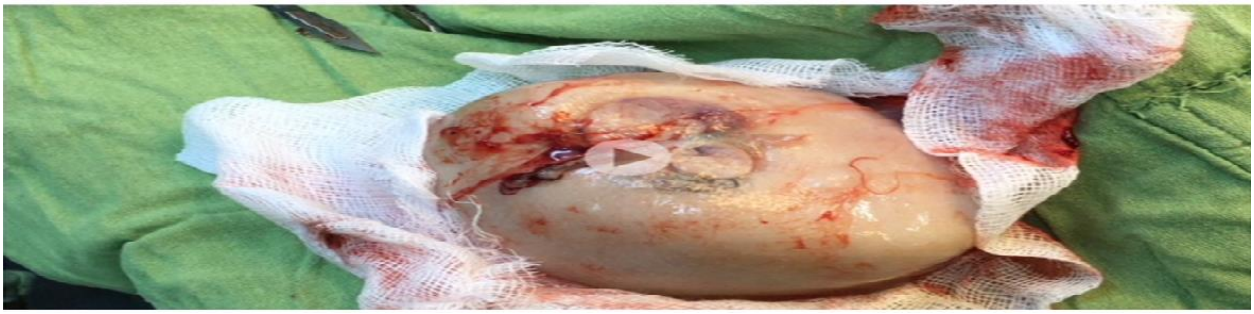

Fig-7(Amorphus Acardiac twin)

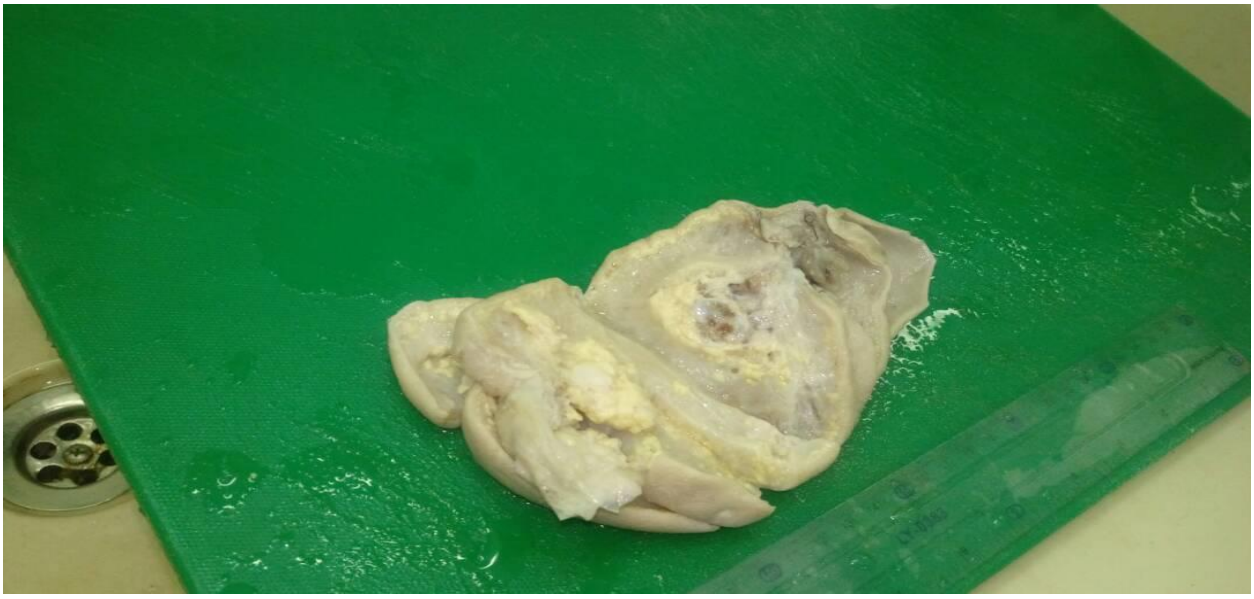

Fig-8 (Macroscopic view of histopathology)

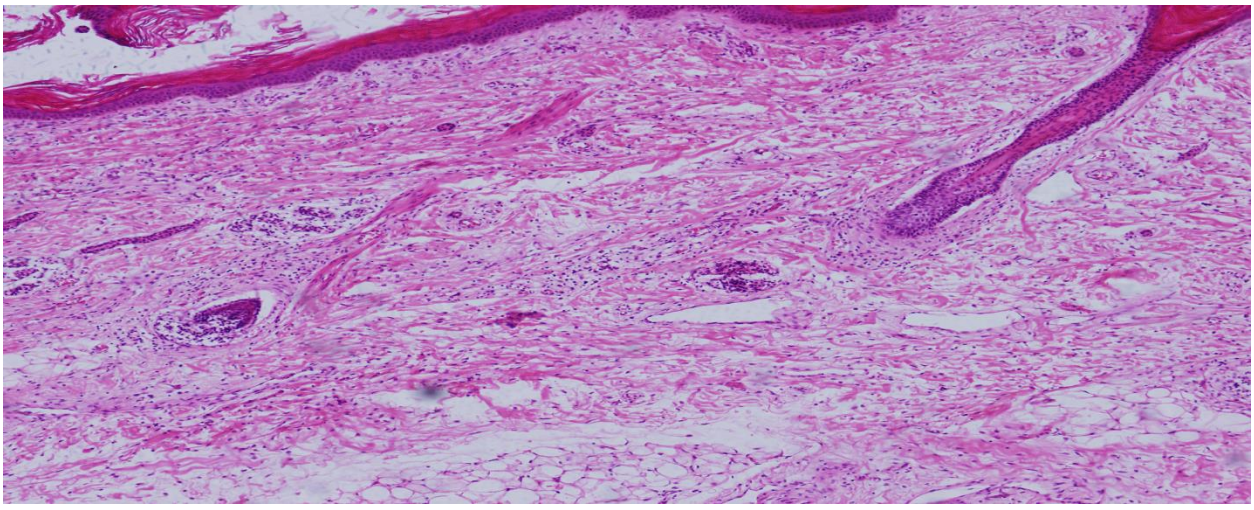

Fig-9(microscopic appearance showing normal skin with adnexae)

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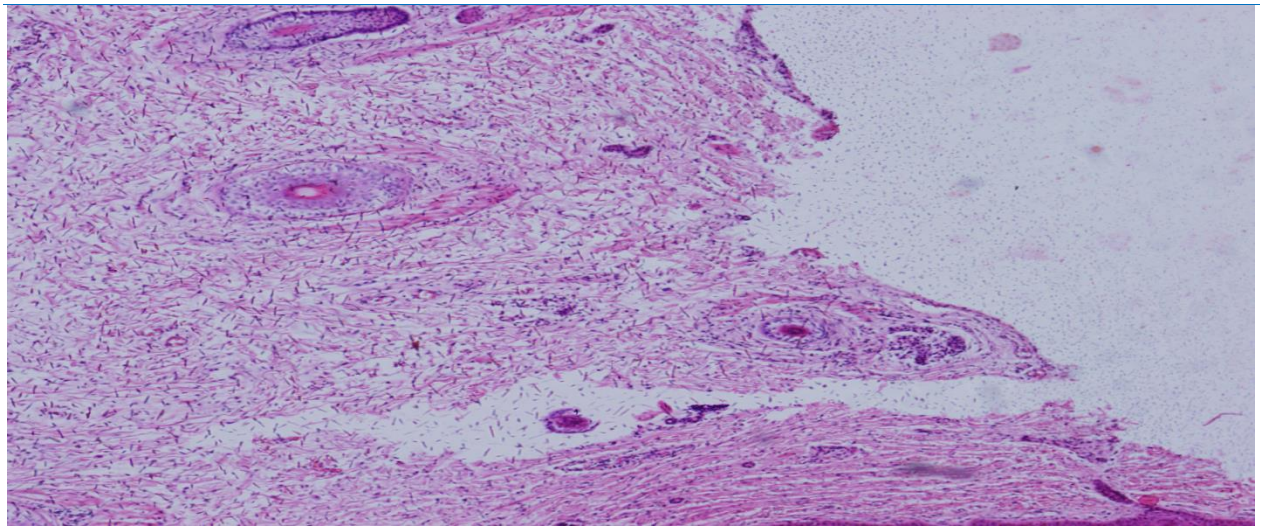

Fig-10(microscopic appearance normal soft tissue and hair follicles)

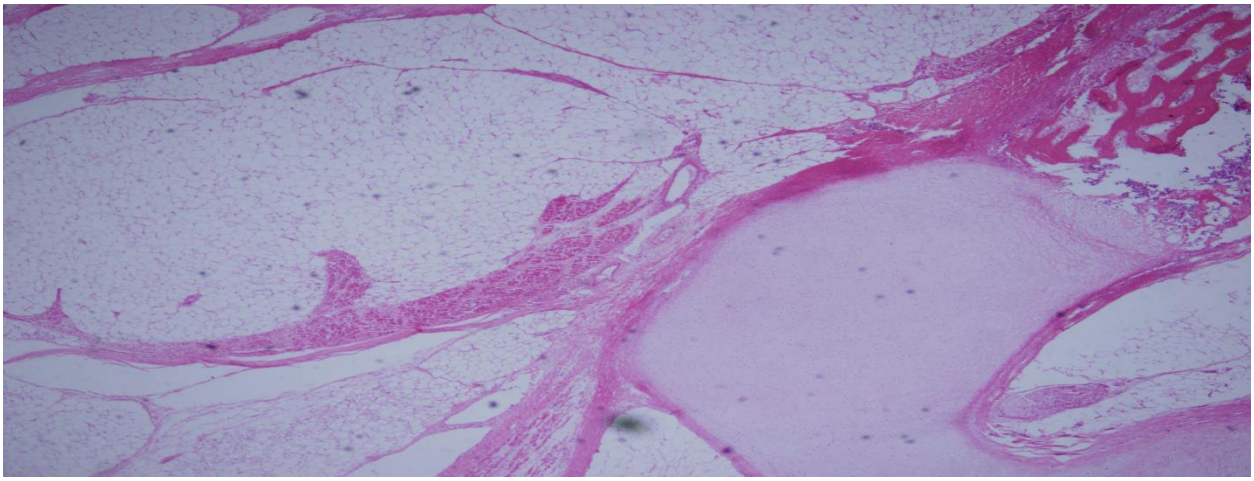

Fig-11 (Histopathological appearance showing normal placental tissue)

Discussion:

Acardiac twin is a rare and serious complication of monochorionic twins, occurs in 1% of monozygotic twin and in 1 out 35000 deliveries. Although the cause for the syndrome is not completely understood, it has been hypothesized that large vessels on the surface of the common placenta are responsible. Blood is perfused from one twin ("pump" twin) to the other twin ("acardiac" twin) by retrograde flow. Thus, the acardiac twin receives deoxygenated arterial blood from the pump twin in the wrong direction.

The abnormal blood flow to the acardiac twin is responsible for a spectrum of lethal anomalies that are not compatible with life, including acardia (absent heart) and severe maldevelopment of the body structure. Although the pump twin is structurally normal, there is an increased risk of death (up to 50-75%) for that twin. This is due to two important factors.

First, the pump twin's heart has to work to support the passage of fluid for both the pump twin and the acardiac twin. Eventually, the

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strain to the pump twin's heart may be too great, resulting in high-output heart failure.
Second, premature delivery or miscarriage may occur due to the polyhydramnios and/or rapid growth of the acardiac twin.

The diagnosis is suggested by the presence of a monochorionic twin in which (the pump twin) appears structurally normal, while the other twin (the acardiac/TRAP twin) has multiple profound birth defects which are not compatible with life.

The diagnosis is confirmed with the use of combined pulsed and color Doppler ultrasound studies. This method allows for the documentation of the arterial blood flow perfusing the acardiac/TRAP twin in a retrograde fashion, thus securing the diagnosis.

A cardiac twins range from a small, teratoma-like mass to large fetuses with a great variety of anomalies.

A cardiac anceps, when the head is poorly formed.

A cardiac acephalous, if the head is absent.

A cardiac acormus, when the head is only present.

A cardiac amorphous, failure of any recognizable structure to form just like amass

Management options:

Expectant management: means pregnancy watched closely by frequent US with delivery time to prevent the death of pump twin.
Laser umbilical cord occlusion.
Umbilical cord ligation

Conclusion:

Expectant management with close antepartum surveillance deserves consideration in case of TRAPS.

Invasive treatment should be considered only in cases with poor prognostic factors and should be managed by fetal medicine specialist familiar with invasive procedure.
Early diagnosis of acardiac twin is important to avoid the complications and to refer every twin pregnancy to specialized center and monochorionic pregnancies should be scanned every 2weeks between 12—23 week of gestation to detect TTTS.

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