

Twin reversed arterial perfusion (TRAP) sequence: an acardiac fetus

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DESCRIPTION

A 32-year-old primigravida referred at 22 weeks with contractions. Ultrasound examination showed a 20 mm cervix and a monochorionic diamniotic pregnancy with one structurally normal fetus with hydramnios and a second twin anencephalic and acardiac (figure 1 and video 1). The patient was admitted with the diagnosis of twin reversed arterial perfusion (TRAP) and submitted to amnioreduction. A normal 46 XX karyotype was obtained.

Owing to worsening of hydramnios and after counselling, the patient was sent to Hospital Clinic in Barcelona where a successful cord occlusion and laser ablation of the vascular anastomoses was performed at 25 weeks. Two weeks later, she was readmitted with premature rupture of membranes and delivered by C-section at 28 weeks due to severe oligohydramnios. A normal live fetus weighing 1005 g (figure 2) and a 135 g acardiac acephalus twin were born (figure 3). The autopsy



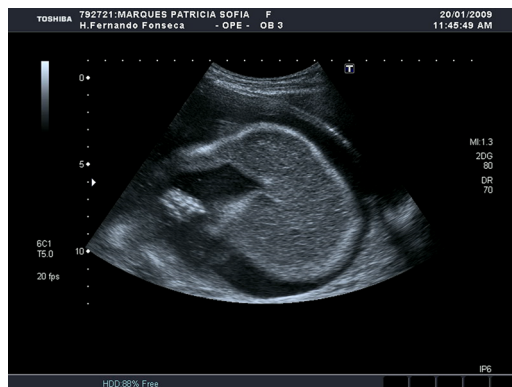
Figure 2 Normal female fetus in intensive care unit.

confirmed an acardiac twin with no fetal thoracic organs and absent head, a rudimentary bowel and deformed lower extremities (figures 4 and 5). The survival twin remained in the neonatal care unit due to prematurity-related complications and was discharged at 53 days of life.

TRAP is a unique complication of monochorionic twin pregnancy, in which a twin with an absent heart ('acardiac twin') is perfused by its co-twin ('pump twin') via placental arterial anastomoses.¹



Figure 1 Acardiac fetus diagnosed during ultrasound examination.



Video 1 Acardiac fetus diagnosed during ultrasound exam.

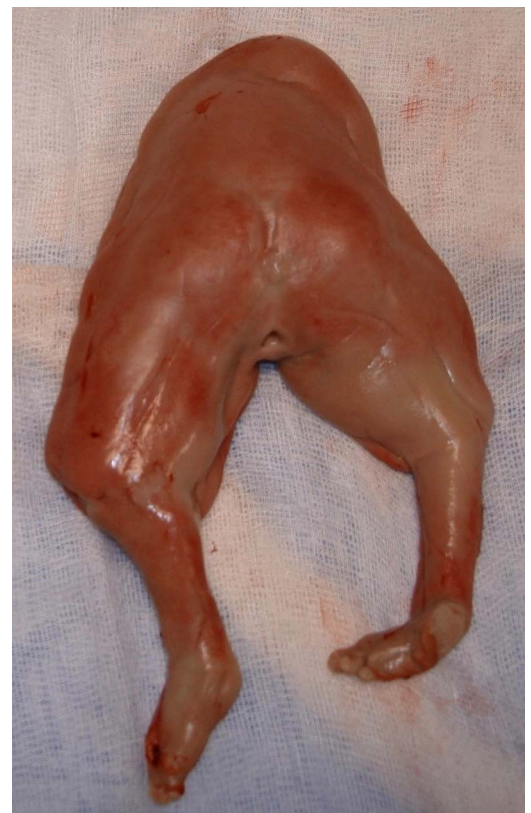


Figure 3 Abnormal fetus—delivered acardiac mass.



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Figure 4 X-ray of acardiac mass.



Figure 5 Anatomopathological examination of the acardiac fetus.

Prenatal diagnosis is suspected on first trimester ultrasound, when one fetus appears anatomically normal and the other lacks apparent cardiac structures. Definitive diagnosis is made when pulsatile flow is seen in the umbilical artery going towards the acardius.² Fetuses with signs of high-output cardiac failure have poor prognosis and are candidates for intervention such as target occlusion of the umbilical cord of the acardiac twin, including laser ablation, bipolar cord coagulation or radiofrequency ablation.³

Learning points

- ▶ A twin reversed arterial perfusion (TRAP) sequence is rare and occurs in about 1% of monochorionic twin pregnancies and 1 in 35 000 deliveries.
- ▶ TRAP should be suspected in monochorionic twin pregnancies when one fetus appears anatomically normal and the other lacks apparent cardiac structures.
- ▶ The pump twin is at risk of heart failure and problems related to preterm birth, with a perinatal mortality rate of about 55% without treatment.
- ▶ Surveillance includes weekly ultrasound surveillance to look for the development of fetal hydrops. Fetuses between 18 and 27 weeks of gestation with signs indicative of a poor prognosis are candidates for intervention.
- ▶ Continuing pregnancies should be delivered at 34–36 weeks of gestation.

Competing interests None.

Patient consent None.

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