

SIRENOMELIA IN THE PUMP TWIN IN A PREGNANCY COMPLICATED BY TWIN REVERSED ARTERIAL PERFUSION (TRAP) SEQUENCE: A CASE REPORT

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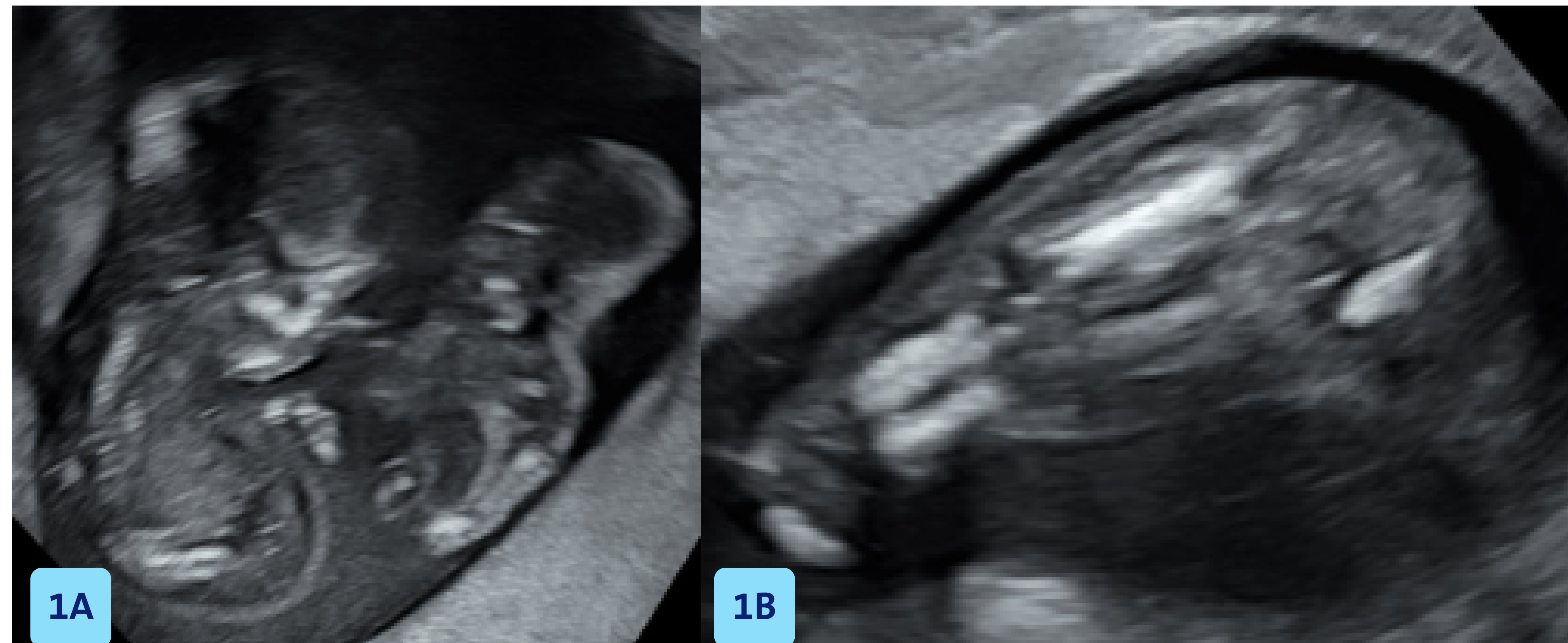


Figure 1. 1A: 2D ultrasound of TRAP sequence. 1B: 2D ultrasound of sirenomelia.

Case

A pregnant woman was referred to a tertiary center at 11+1 days of gestation. Both a two-dimensional (2D) (Figure 1A and 1B) and a three-dimensional (3D) ultrasound (US) were performed including the acquisition of 3D volumes for evaluation in virtual reality (VR) (Figure 1C and 1D). By a gestational age of 13+6 weeks fetal cardiac activity was no longer observed. The imaging findings remained unchanged, confirming the diagnosis of a TRAP sequence with a pump twin with sirenomelia.

After the patient gave birth, the clinical geneticist performed the postmortem evaluation and confirmed the prenatal 2D and VR US findings (Figure 2).

Background information

A **twin reversed arterial perfusion (TRAP) sequence** is a rare complication in monochorionic twins with an incidence of 1 out of 35000 births. It is characterized by the presence of an acardiac twin, without a functional heart, who is perfused by the “pump twin” through shared placental circulation. The acardiac twin develops abnormally, while the “pump twin” is exposed to an increased hemodynamic burden.

In this case, the “pump twin” has an anomaly, a **sirenomelia**. This is an extremely rare congenital anomaly and has an incidence of 0.98 out of 100.000 births. Sirenomelia is characterized by a fusion of the lower extremities.

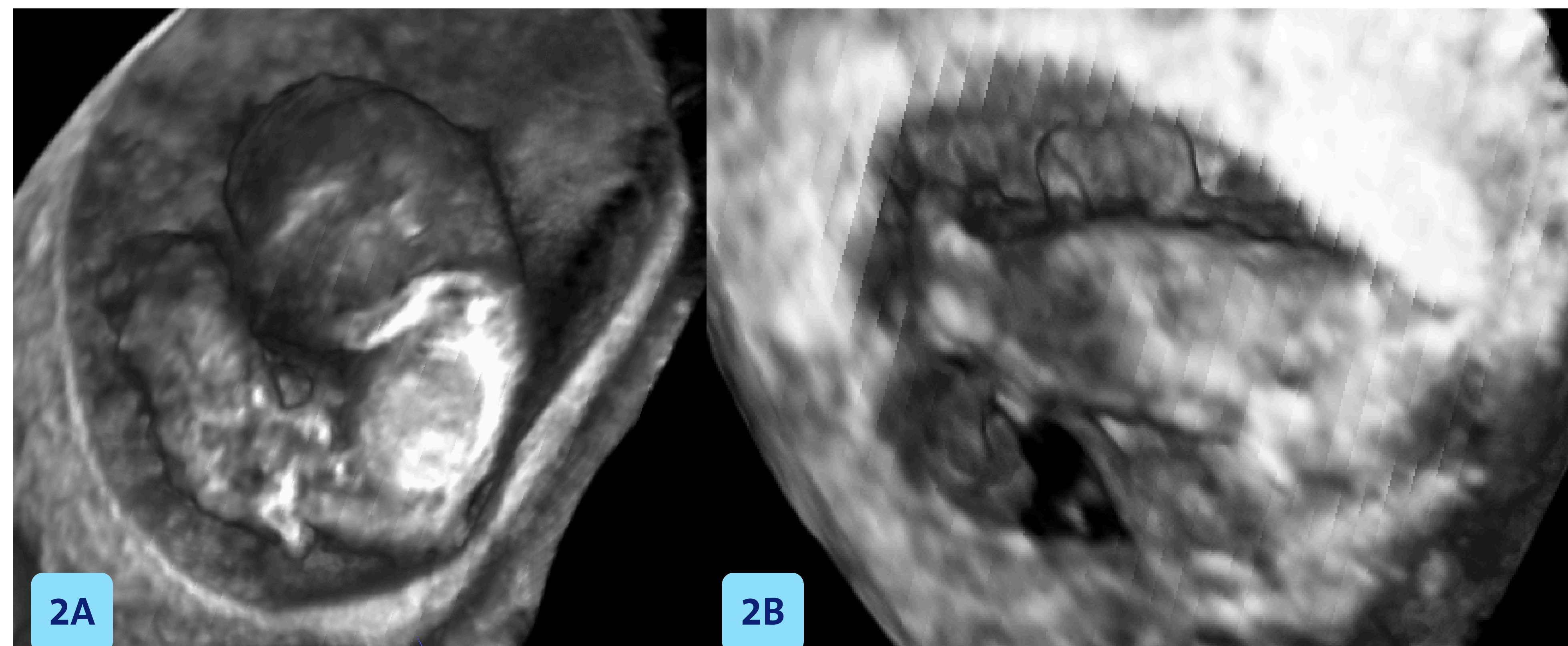


Figure 2. 2A: VR ultrasound of TRAP sequence. 2B: VR ultrasound of sirenomelia
This static image does not fully capture the three-dimensional and interactive nature of VR.



Figure 2. Postpartum photo of TRAP sequence and sirenomelia in the pump twin (on the left)

Added value of Virtual Reality

VR increased diagnostic confidence in healthcare professionals, as sirenomelia suspected on 2D ultrasound was more clearly visualized in 3D. In addition, VR facilitated parental understanding of the complex fetal abnormalities associated with TRAP sequence and sirenomelia.

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