Twin Reversed Arterial Perfusion (TRAP) – A rare complication of Monochorionic Twin Pregnancy

Miss Surabhi Bisht, Dr. Charikleia I Giannopoulou, Mr. Demetrios L Economides, Miss Rezan Abdul Kadir
Royal free hospital, London, UK.

Background
Twin Reversed Arterial Perfusion (TRAP) is a rare complication of Monochorionic twin pregnancies, involving an acardiac twin whose structural defects are incompatible with life, and an otherwise normal “pump” twin. It occurs in 1% of Monochorionic twin pregnancies and in 1 in 35,000 pregnancies overall. It can result in TRAP syndrome, causing mortality and deformities in both twins. The Acardiac twin is a parasitic twin that fails to develop. This parasitic twin receives its blood supply from the host twin through the placental arterial-arterial anastomoses. A portion of the cardiac output of the pump twin travels through this anastomoses thus creating ‘reversed’ circulation in the recipient twin. The Acardiac twin grows along with the pump twin, but is unable to develop the structures necessary for life, and presents with deformities.

Case Report
A 34 year old Primigravida presented to Fetal Medicine Unit in our hospital for a dating scan and for combined screening at 13 weeks of gestation. A diagnosis of Mono Chorionic DiAmniotic Twin Pregnancy with TRAP syndrome was confirmed on scan. Twin 1 was normal with low risk of Down’s (less than 1 in 2700). Twin 2 was Acardiac with lower extremities well developed and hence Acardiac acephalus.

Laser Coagulation of feeding vessel for Acardiac twin was performed at 13 weeks and 4 days gestation. Serial scans were performed for the pump twin which confirmed normal fetal anatomy, normal Fetal ECHO and growth. The Acardiac twin was confirmed an Intra-Uterine Death after the laser coagulation and got resorbed by the second trimester. The patient had an Elective Caesarean Section for breech presentation at 38 weeks of gestation. The baby weighed 3.2 kgs and was normal.

Discussion
TRAP Twins are grouped into 4 classes: Acardius aniceps (head is poorly formed), Acardius acephalus (fetal head is absent), Acardius acormus (presence of fetal head only) and Acardius amorphous (unrecognisable amorphous mass).

As the acardiac twin is nonviable, treatment for TRAP sequence is focused on improving the outcome for the pump twin. Intra fetal laser treatment is used for gestational ages less than 16 weeks. Yag Laser (20-40 watts of energy) and bipolar coagulation occlude a portion of the umbilical cord near its placental insertion site. This coagulates the intercommunicating vessels. For gestation above 16 weeks, radiofrequency ablation is used.

Studies have reported 80-90 percentage survival of pump twins in pregnancies that underwent in utero coagulation/ablation procedures.