



## **Title: AN UNUSUAL CASE OF MONOCHORIONIC DIAMNIOTIC TWIN PREGNANCY WITH TRAP SEQUENCE MANAGED WITH MINIMALLY INVASIVE SURGERY.**



### **INTRODUCTION**

TRAP (Twin Reversed Arterial Perfusion) sequence, also known as Acardiac twinning, is a rare anomaly that occurs in monozygotic monochorionic twins.

• **INCIDENCE:** 1% of monochorionic twin pregnancies, 1 in 35,000 pregnancies overall.

• **HISTORICAL BACKGROUND:** First described by Benedetti (1533) and Benedictus (1539). The term Acardida was first used by Geoffroy de Saint-Hilaire in 1838. The modern term Twin Reversed Arterial Perfusion (TRAP) was introduced by Van Allen et al. in 1983.

**PATHOPHYSIOLOGY:**

• TRAP sequence involves: An acardiac twin with no functional heart and multiple anomalies. A normal twin (referred to as the pump or donor twin) that supplies blood to the acardiac twin through vascular anastomosis in the placenta.

• The blood flow is in a retrograde direction, leading to abnormal development of the recipient twin. Exact etiology is not known. Benirschke (2009) mentioned that unequal splitting process in monozygotic twins might be the embryological reason for acardiac twinning.

### **OBJECTIVE**

To achieve optimum outcome multidisciplinary approach is mandated of which **INTRA FETAL LASER ABLATION** is studied in our index case.

### **CASE REPORT**

**M.D., 24-year-old female**, married for 3 years, residing in Shahpur-Thane, consulted for primary infertility. Conceived via ovulation induction with letrozole on **5th April 2024**.

**NT scan (5th June 2024):** MCDA twins with **MGA 13 weeks**.

**Fetus A:** NT - 1.22 mm, FHS - 169 bpm.

**Fetus B:** Amorphic hydroptic fetus, no cardiac activity. Perfusion of acardiac twin by donor twin (Fetus A) noted.

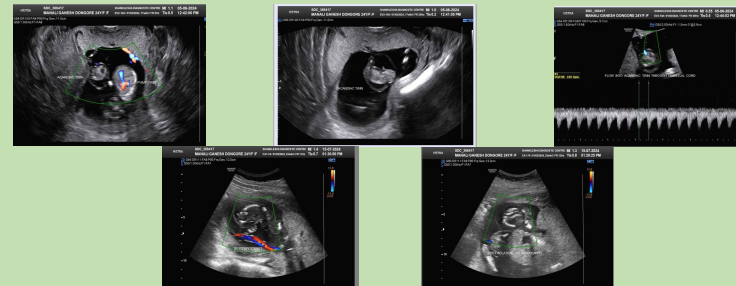
**Counselling:** Patient informed of morbidity/mortality risks for both fetuses. Advised close monitoring and possible SOS intervention. Serial usg monitoring showed increase in volume of acardiac fetus to 25 cc from 2.8cc. Decision of **LASER ABLATION** with risk of miscarriage explained. Option of MTP given.

**Intervention:** With informed high-risk consent, intrafetal **laser ablation** performed at 17 weeks under LA. The Trap fetus vessels were targetted with a 18G spinal needle and US guidance. A 600 microns laser fibre was advanced within it and with short bursts of laser energy of 30 watts, the vessels were ablated over 30 seconds. No flow was seen in the TRAP fetus cord and in its substance. The Pump fetus showed normal cardiac activity and doppler flow pattern. The patient had been counselled about the possibility of spontaneous demise of the pump twin and had accepted the risks.

**Post-procedure care:** Patient observed, given antibiotics, uterine relaxant, and advised bed rest. Regular ANC and USG monitoring showed normal maternal and fetal parameters.

**Outcome:** Delivered a full-term male baby (3 kg) via LSCS on **3rd December 2024**. Both mother and baby are well to date.

### **IMAGE**



### **DISCUSSION**

TRAP is a rare and severe complication of monochorionic twin pregnancy. Sonographic documentation of reverse flow in the umbilical artery is a pathognomonic feature of TRAP sequence. There is a 90% mortality in the pump twin secondary to polyhydramnios and high-output cardiac failure. Platt et al. (1983) were the first to suggest an intrauterine approach to occlude the umbilical vessel of the acardiac twin. Currently, there does not exist any consensus on regarding timing for interventions. Early interventions gives better perinatal outcome overall. Treatment options for TRAP include alcohol embolization, RF ablation, microwave ablation, thermocoagulation, laser coagulation with high-intensity focused ultrasound. **RF ablation** and **Laser ablation** gives better outcome. The commonest is **Laser ablation** which is being used in our case.

### **CONCLUSION**

With multidisciplinary **TEAM** (interventional radiologist, Sonologist, obstetrician, paediatrician) approach and vigilant monitoring, such complicated case can be managed conservatively with good outcome even at periphery.

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