# "TRAPped in the Womb : Pathological Exploration of two acardiac Twins"

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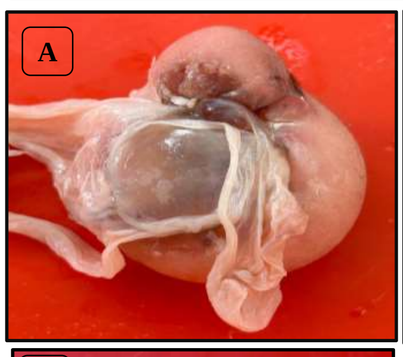
## BACKGROUND

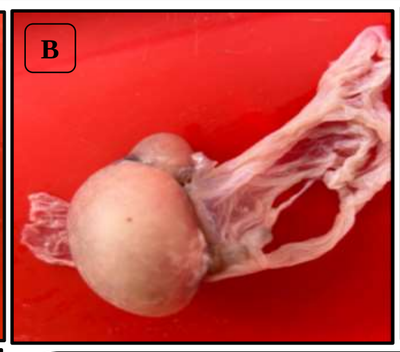
"Twin reversed arterial perfusion (TRAP) sequence is a rare complication seen in monochorionic twin pregnancies, representing a severe form of twin-to-twin transfusion syndrome in which the donor twin perfuses a malformed acardiac twin. We present two cases of TRAP sequence with acardiac twin, emphasising the key role of pathology in accurate diagnosis

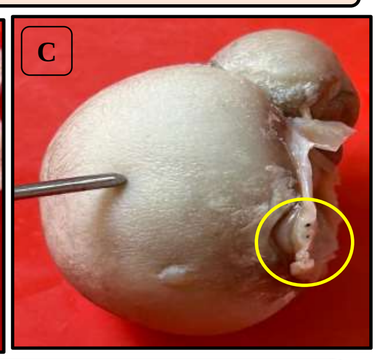
## CASE 1

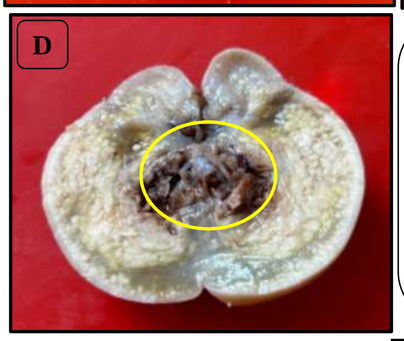
- A 35 year old G2P1L1 delivered a Monochorionic Diamniotic twin at 36 weeks of gestation age .
- USG : Monochorionic Diamniotic twin and a left lateral wall intramural fibroid measuring 3.5 x 3.4 cm
- Intraoperatively alongside the delivery of two healthy female twins, an unexpected third foetus—suspected to be an acardiac twin—was also delivered

### AUTOPSY FINDINGS



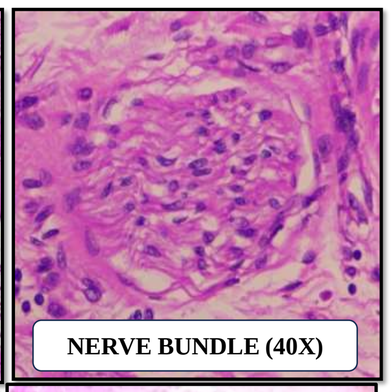

A,B,C : Pale brown soft fluctuant globular mass covered by skin and transparent membrane with attached cord like structure.

D. Soft gelatinous adipose tissue with irregular non classifiable malformed bones.

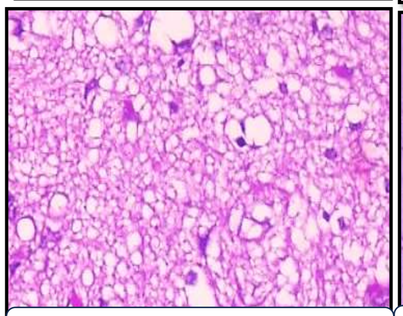


STRATIFIED SQUAMOUS EPITHELIUM

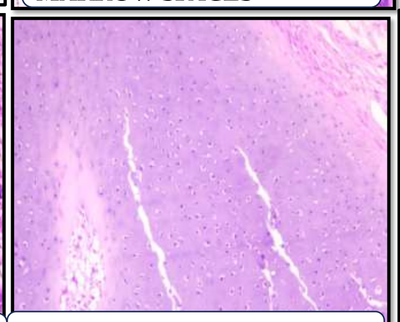
BONY TRABECULAE WITH MARROW SPACES



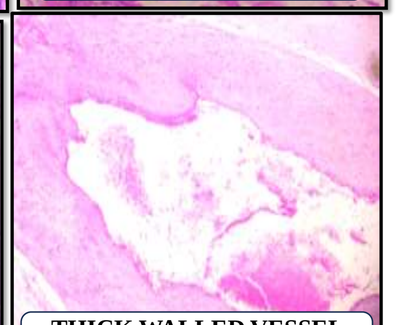
NERVE BUNDLE (40X)



GLIAL TISSUE (40x)



CARTILAGE (40 X)



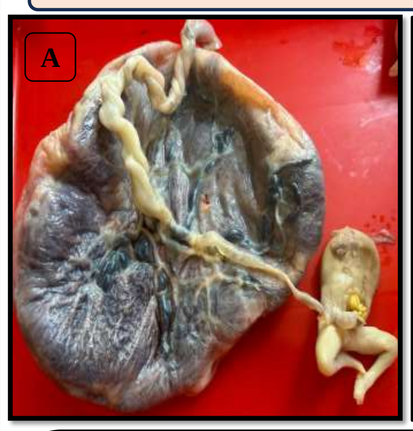
THICK WALLED VESSEL (10X)

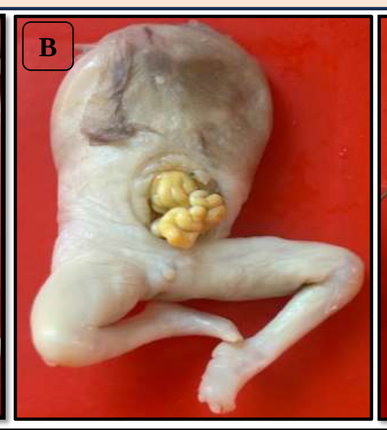
**DIAGNOSIS :ACEPHALUS ACARDIUS AMORPHOUS TWIN**

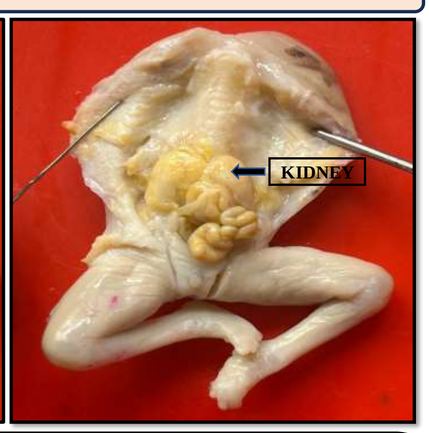
## CASE 2

- Born to a 28 year old G3P1L1 at 36 weeks of gestation.
- USG - Monochorionic monoamniotic twin with TRAP Sequence in Foetus B.
- Fetus A: Reversal of 'a' Wave in Ductus venosus Doppler
- Fetus B : Acardiac acephalic fetus receiving blood from the umbilical cord of Fetus A.
- Intra foetal laser reduction to singleton MCMA twin and ablation for twin reversed arterial perfusion was done

### AUTOPSY FINDINGS




A-Placental disc with umbilical cord insertion site showing a thin, edematous cord-like vascular structure extending to and attached to the acardiac twin.

B-An amorphous, acephalic skin covered foetal mass with lower limbs and protruding out intestinal loops.

C-Vertebrae, ribs , both kidneys were present with no identifiable genital organs

**DIAGNOSIS: ACARDIAC ACEPHALIC TWIN WITH TWIN REVERSED ARTERIAL PERFUSION(TRAP)**

## DISCUSSION

Hemodynamics is a primary contributor to fetal cardiac development in utero

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Monochorionic twinning - Unequal splitting of cells ( Chromosomal aberrations)
Formation of aberrant vascular anastomosis -Artery-to-artery and vein-to-vein anastomoses in the placenta

↓

Perfusion pressure of the donor twin overpowers the recipient twin.

↓

Reversal of flow

↓

The recipient twin is perfused with shunted hypoxic blood from the donor twin

→

Hypoxic blood enters the umbilical artery and iliac artery and perfuses lower segment relatively more than the cranial segment

Increased cardiac demand to act as the "pump" for the acardiac twin increases risk of cardiovascular disease in donor twin

TRAP sequence carries inevitable mortality for the acardiac twin and up to 50% mortality for the pump twin without timely intervention.

**Subtypes:** Acardiac Acephalic , Acardiac Anceps, Acardiac Acormus,, Acardiac Amorphus

## DIFFERENTIAL DIAGNOSIS

| Criteria | Acardiac twin | Teratoma | Foetal Demise -second twin | Anencephaly | Conjoint Twin |
|---|---|---|---|---|---|
| All 3 germ layers | + | + | + | + | + |
| Umbilical cord | + | - | + | + | + |
| Skeletal &Vertebral Column development | + | - | + | + | + |
| Cranial Caudal development | + | - | + | + | + |
| Doppler study Reversal of a wave | + | - | - | - | - |

## CONCLUSION

Our two cases with TRAP Sequence reinforce the pivotal role of foetal autopsy in confirming TRAP sequence, elucidating its pathogenesis, and bridging prenatal imaging with final diagnosis, thereby strengthening clinical decision-making, parental counselling, and management of future monochorionic pregnancies

## REFERENCES

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