
2025

# KARNATAKA RADIOLOGY EDUCATION PROGRAM

DEPT. OF RADIODIAGNOSIS, JJMMC, DAVANGERE
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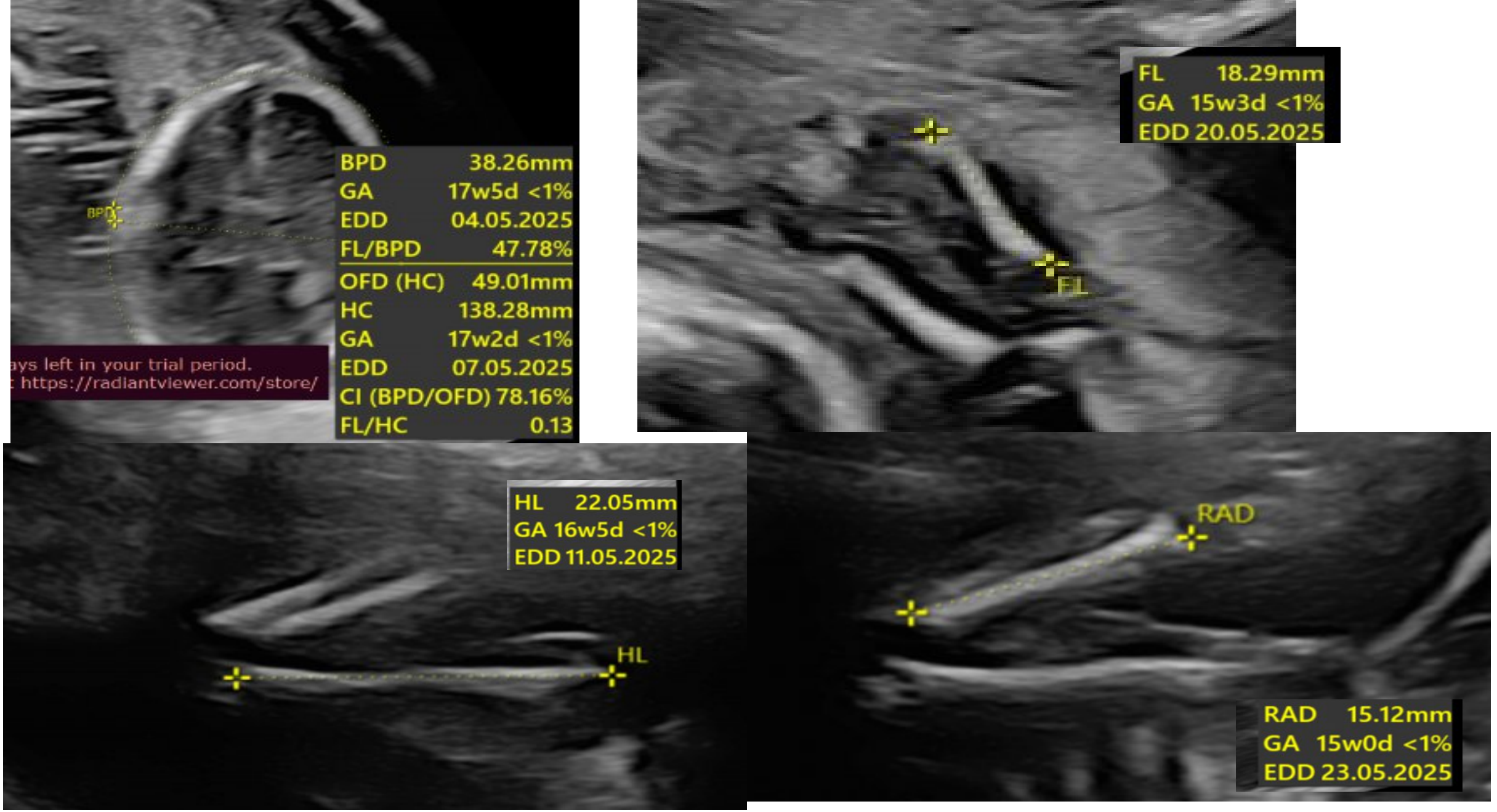
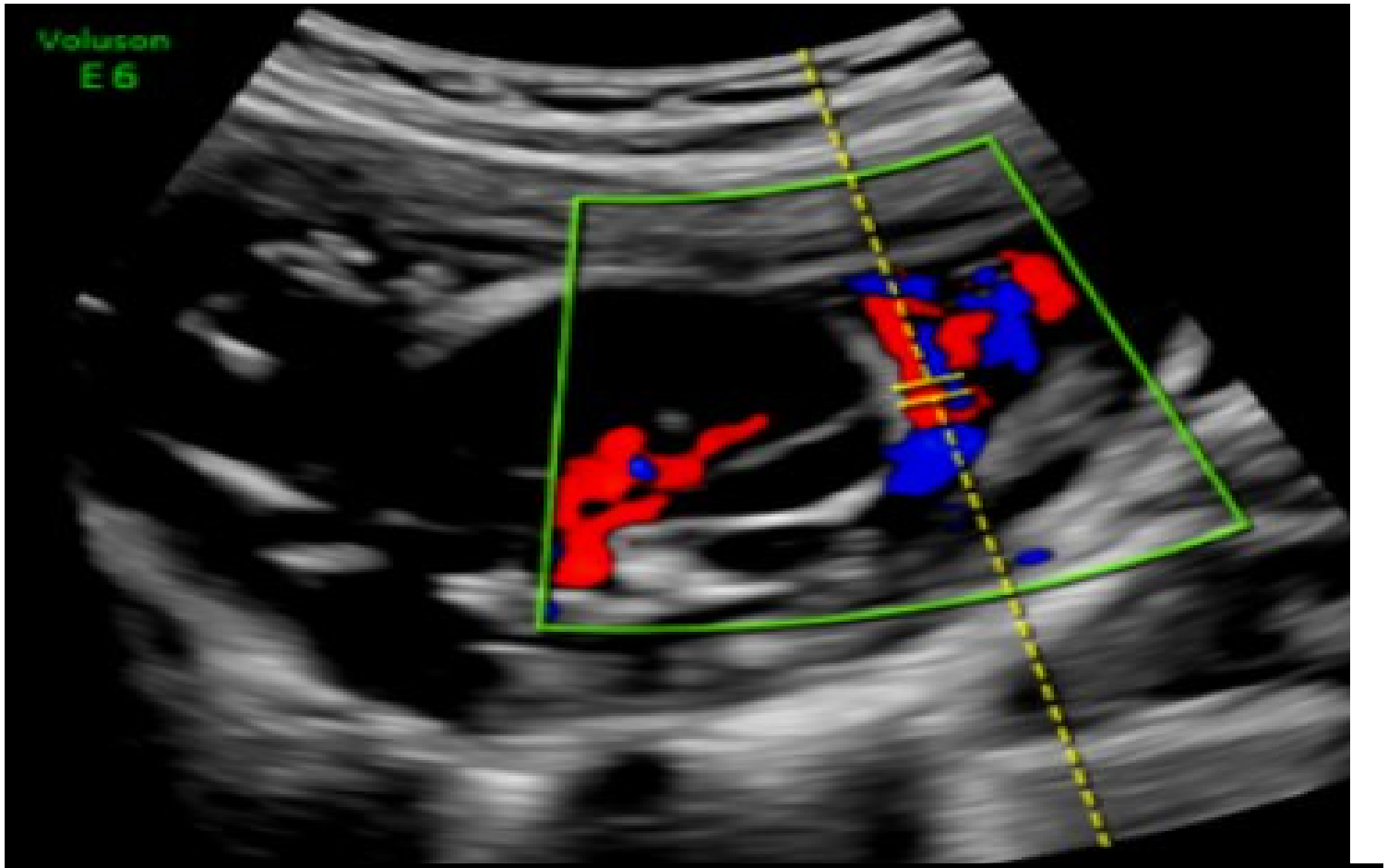
PG Resident: Dr. Shivanagouda Patil

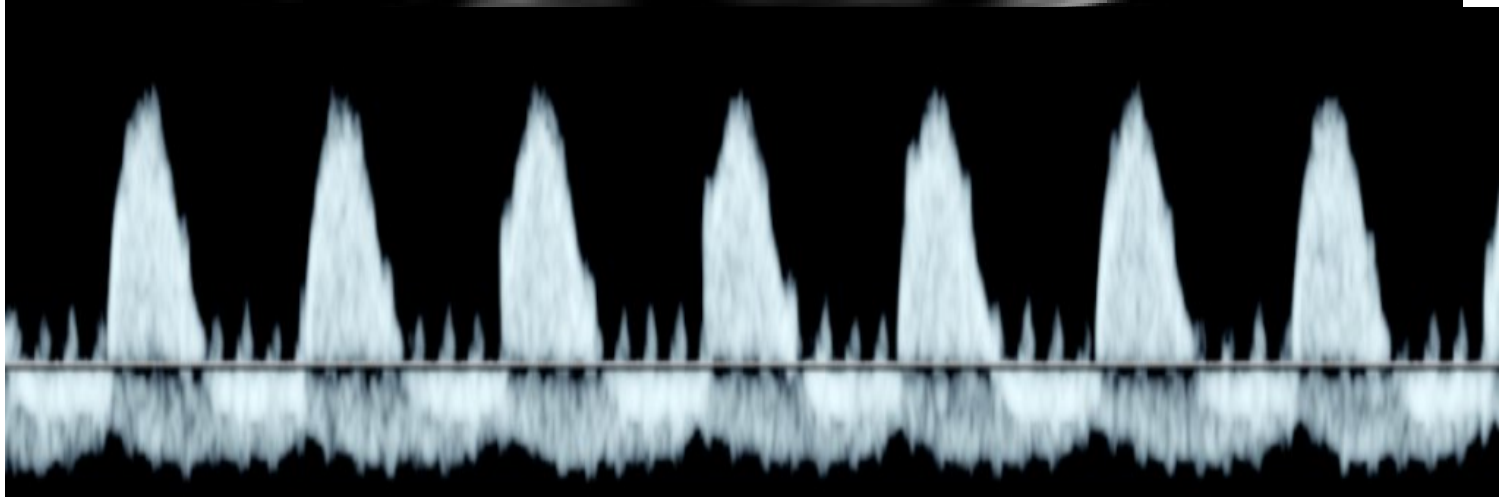
# History

- A 28year old pregnant woman G2P0L0A1 came to anomaly scan at 21weeks 0day of gestation.
- Non consanguineous marriage and spontaneous conception.
- Dating scan was done at 10weeks–normal, gestational age assigned as per LMP.
- First pregnancy : Conceived after 1 year of marriage(Previous pregnancy: Spontaneous abortion at 12 weeks no obvious cause detected). No scans were done in 1$^{st}$ trimester
- No history of HTN/DM/thyroid disorders.




Fetal parameters: All fetal parameters BPD , HC AC FL AND other long bones were <1$^{st}$ percentile with EFW <1$^{st}$ percentile according to Hadlock 4 software. The mineralization of the bones appeared normal. No bowing or fractures to indicate skeletal dysplasia. Calvarial shape was normal.



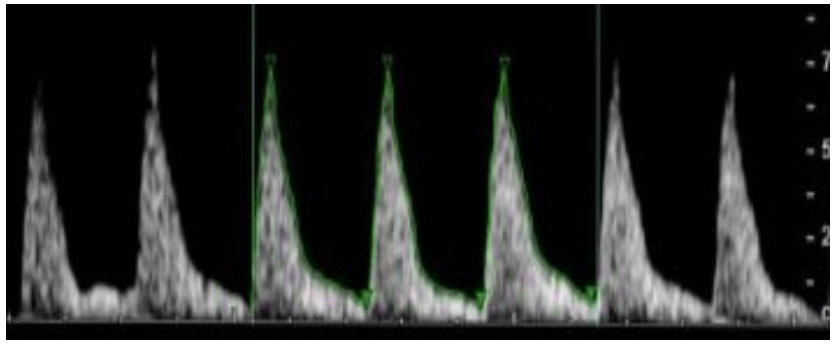
# UA

Umbilical artery doppler shows reversal of end diastolic flow which indicates high resistance

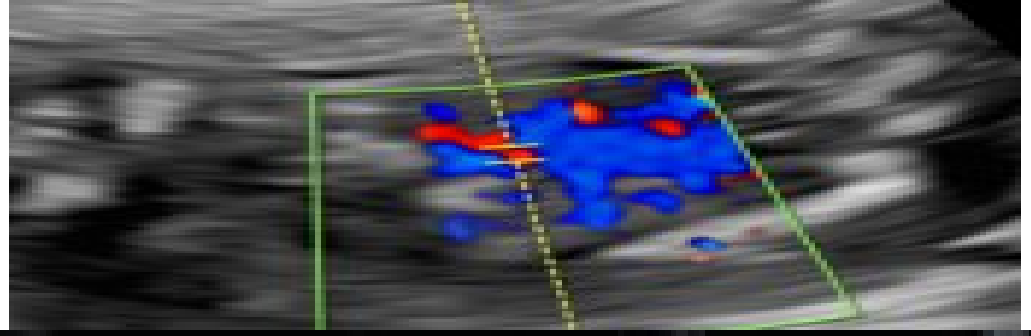
The PI of 1umbilocal artery was 1.9 corresponding to pathological >99$^{th}$ percentile. CPR usually more than 1 (< 1 < 3$^{RD}$ PERCENTILE).

(Normal UA waveform which shows normal forward flow with end diastolic flow above the baseline)

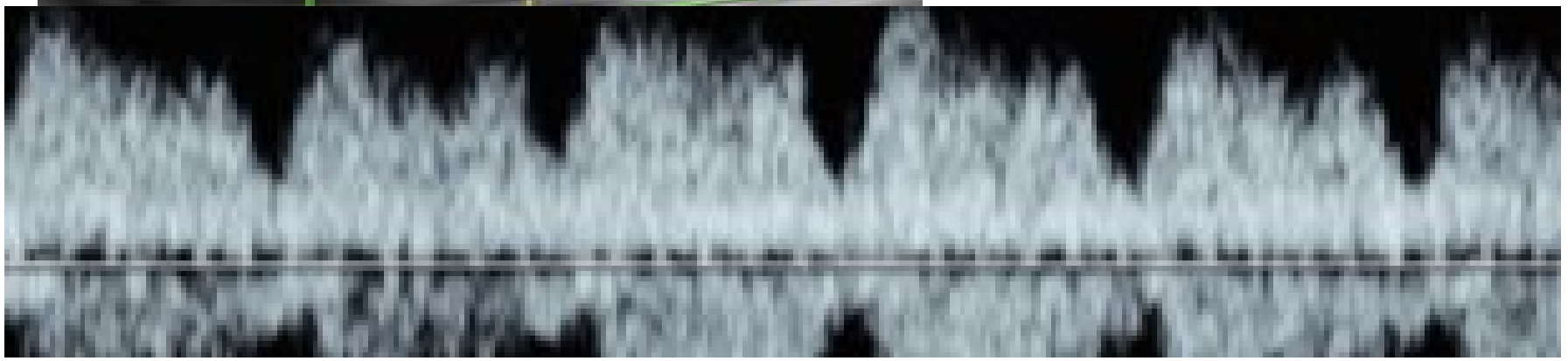
# MCA

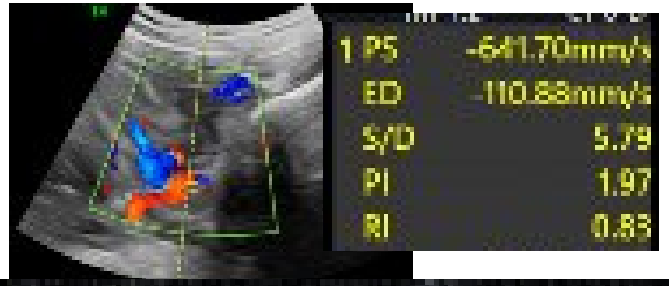


with reduced rapid upstroke in MCA indicating low resistance.- fetoplacental insuffiency and PI of MCA is < 3rd percentile
(Normal – high resistance flow with minimal antegrade flow in fetal diastole)

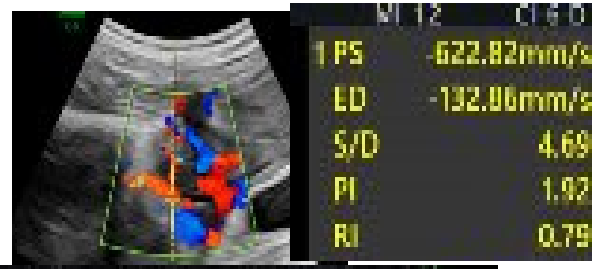


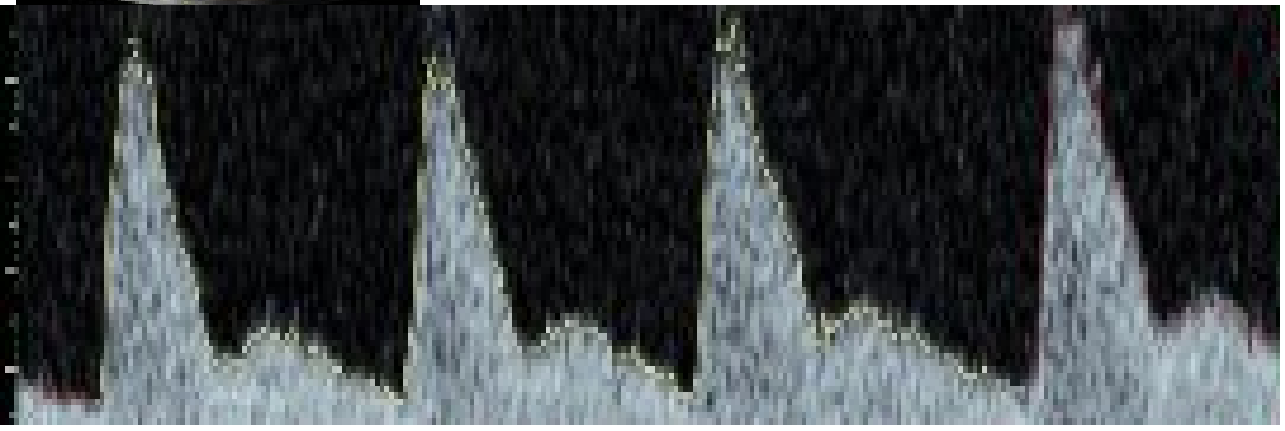
DUCTUS
VENOSUS

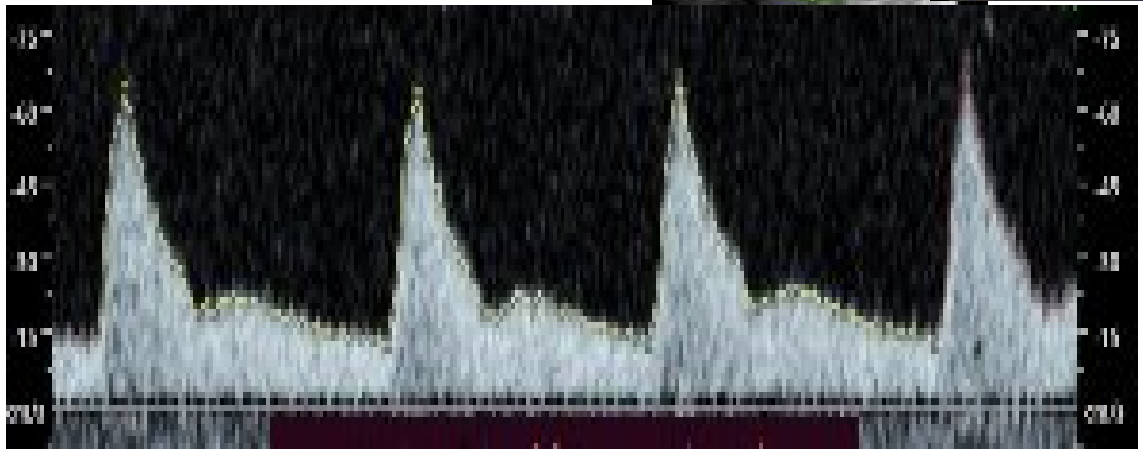





UTERINE
ARTERIES





## Umbilical artery

GA (weeks):

21

GA (days):

0

Pulsatility index:

2.1

Calculate

Percentile:

98

Result:

Pathological

## Middle cerebral artery

GA (weeks):

21

GA (days):

0

Pulsatility index:

1.1

Calculate

Percentile:

1

Result:

Pathological

## Cerebroplacental ratio

GA (weeks):

21

GA (days):

0

Pulsatility index cerebral media artery:

1.17

Pulsatility index umbilical artery:

2.1

Calculate

Cerebroplacental ratio:

0.5571428571428571

Percentile:

<1

Result:

Pathological

## Uterine arteries

GA (weeks):

21

GA (days):

0

Pulsatility index right uterine artery:

1.97

Pulsatility index left uterine artery::

1.92

Calculate

Average pulsatility index:

1.9449999999999998

Percentile:

>99

Result:

Pathological

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| LMP | 05.07.2024 | GA(LMP) | 21w0d | EDD(LMP) | 11.04.2025 | G | Ab |
| DOC | | GA(AUA) | 16w4d | EDD(AUA) | 12.05.2025 | P | Ec |

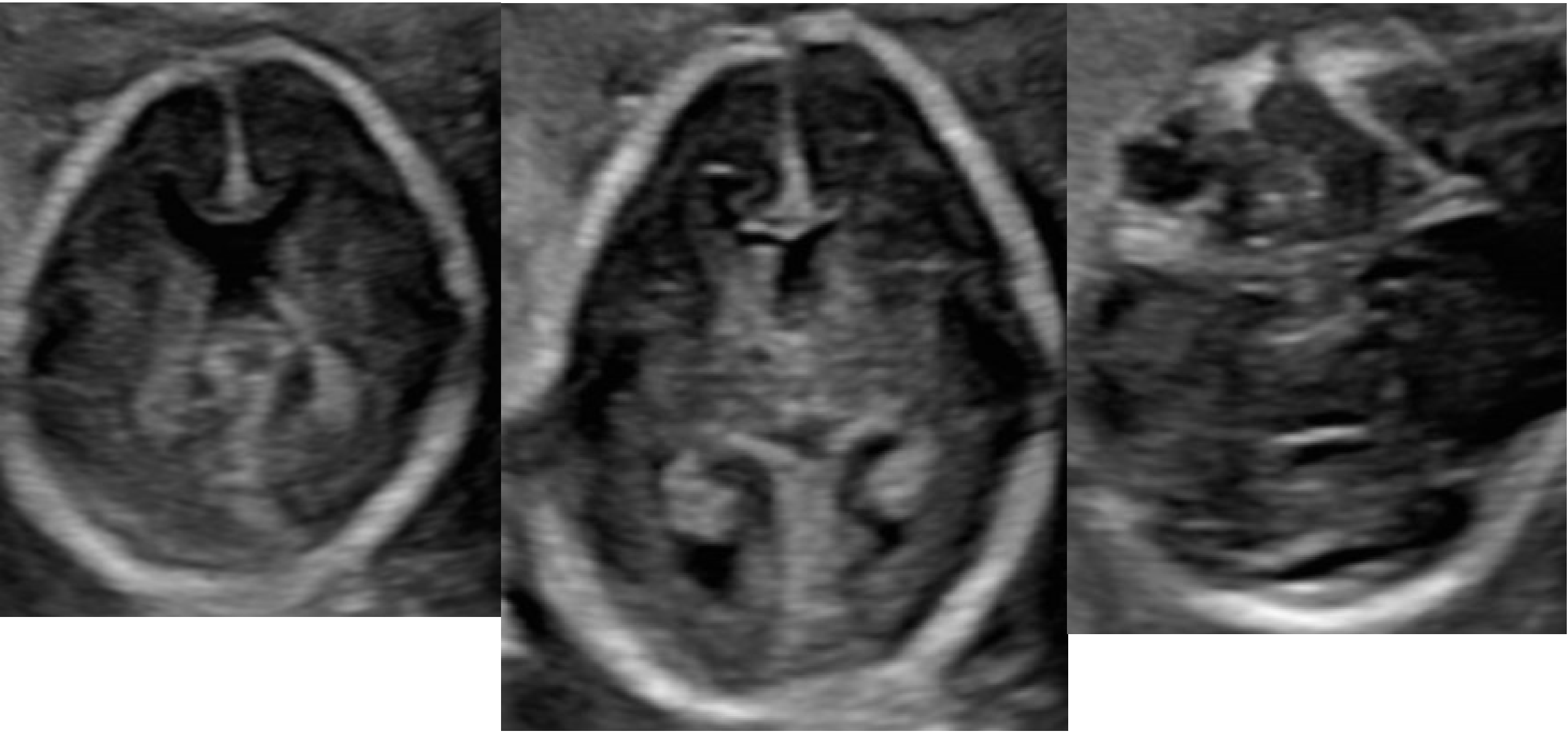
| EFW (Hadlock) | Value | Range | Age | Range | GP | Williams |
|---|---|---|---|---|---|---|
| AC/BPD/FL/HC | 143g (5oz) | ± 21g | 15w6d | | | N/A |

| 2D Measurements | AUA | Value | m1 | m2 | m3 | Meth. | GP | Age |
|---|---|---|---|---|---|---|---|---|
| BPD (Hadlock) | ☑ | 38.26 mm | 38.26 | | | last | <1% | 17w5d |
| OFD (HC) | | 49.01 mm | 49.01 | | | avg. | | |
| HC (Hadlock) | ☑ | 138.28 mm | 138.28 | | | avg. | <1% | 17w2d |
| HC* (Hadlock) | ☐ | 13.79 cm | 13.79 | | | | <1% | 17w1d |
| AC (Hadlock) | ☑ | 102.89 mm | 102.89 | | | avg. | <1% | 16w2d |
| FL (Hadlock) | ☑ | 18.29 mm | 18.29 | | | last | <1% | 15w3d |
| TIB (Jeanty) | ☐ | 15.20 mm | 15.20 | | | avg. | <1% | 15w2d |
| HL (Jeanty) | ☐ | 20.45 mm | 18.84 | 22.05 | | avg. | <1% | 16w0d |
| RAD (Jeanty) | ☐ | 15.12 mm | 15.12 | | | avg. | <1% | 15w0d |

- AC, EFW and all the biometry parameters < 3rd percentile with abnormal doppler.

(Reverse end diastolic flow of umbilical artery with high PI values of bilateral uterine arteries and increased, continuous diastolic flow in MCA)

S/O Stage III Early onset fetal growth restriction(Barcelona) with severe oligohydramnios & severe uteroplacental and fetoplacental insufficiency

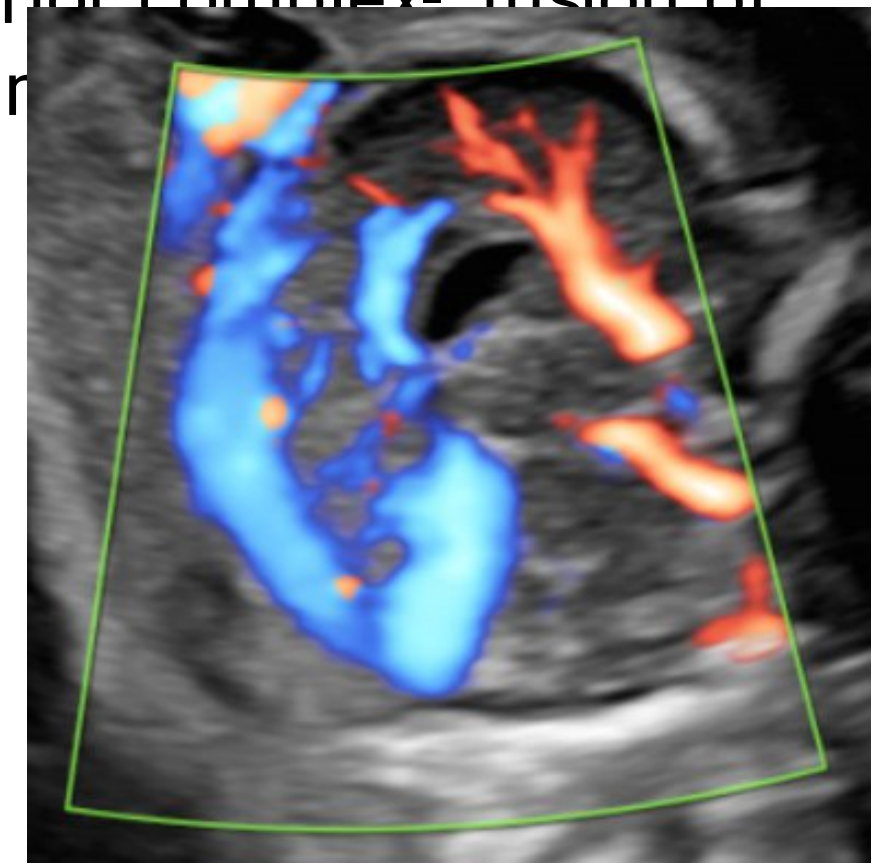


These are the three sections taken while generalized screening transventricular, trans thalamic, trans cerebellar shows fusion of  frontal horns of bilateral lateral ventricle with absence of cavum septum pellucidum.

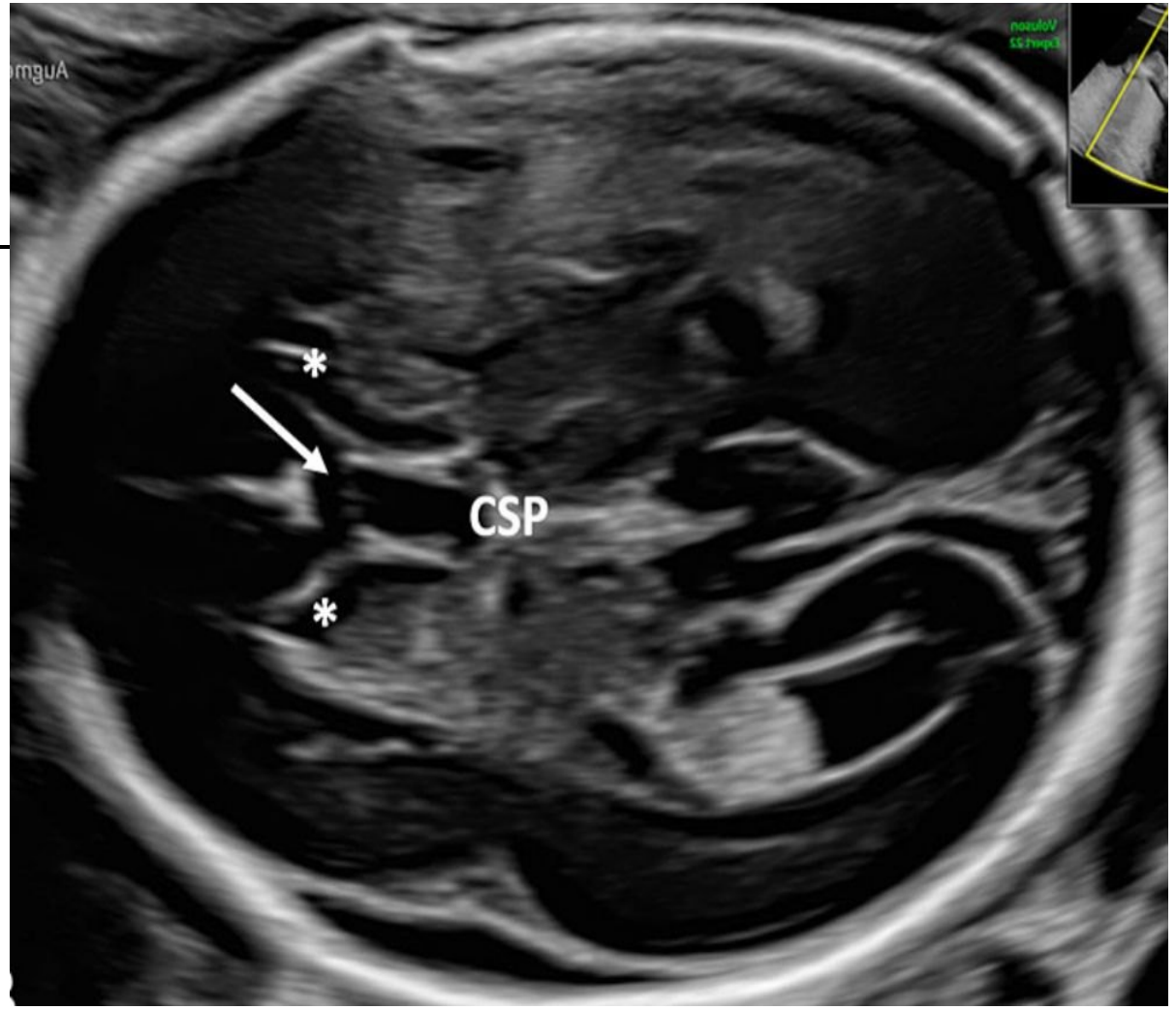
- So we did extended neurosongram of the fetus in axial sagittal and coronal sweeps.
- Axial sweep from cranial to caudal shows fusion of frontal horns of bilateral lateral ventricle with absence of cavum septum pellucidum, bilateral thalami , brainstem and posterior fossa structures appeared normal.
- Bilateral orbits appeared normal.
- Hard palate and alveolar arch appeared normal.
- We ruled out holoprosencephaly.

- Sagittal sweep confirmed the findings with normal corpus callosum throughout  and no evidence of corpus callosal agenesis.
- Ossified nasal bone and lips were appeared grossly normal.
- Coronal sweep showed abnormal anterior complex- fusion of fro um septu

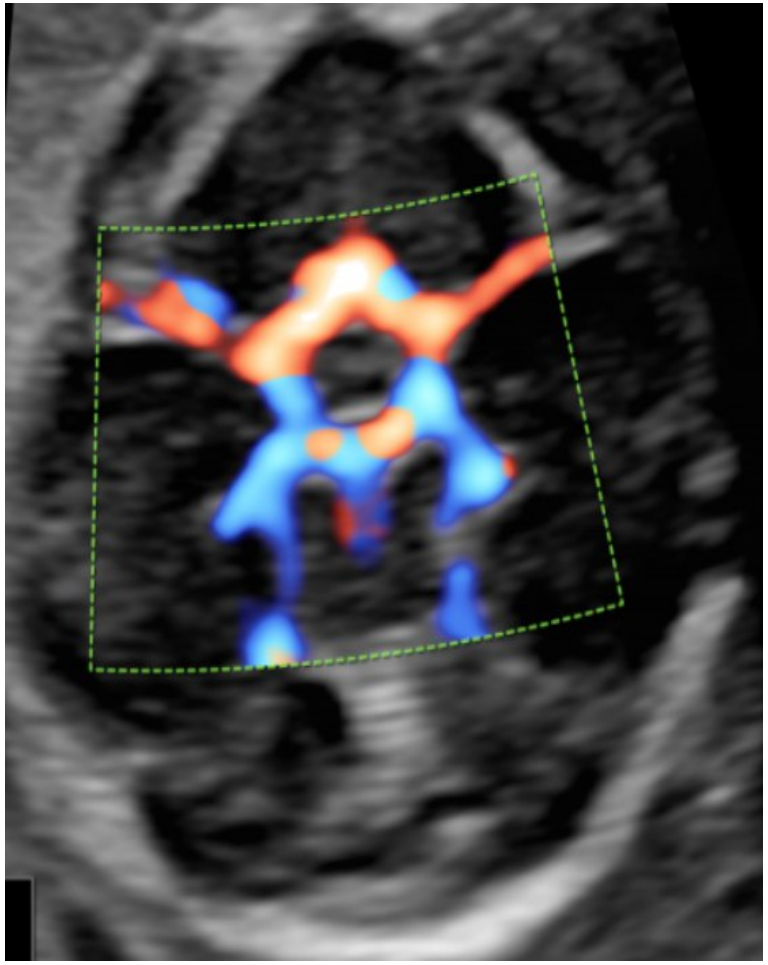
Corpus callosum appears normal in lengt
thickness with normal pericallosal arterie



# Abnormal anterior complex
# Normal



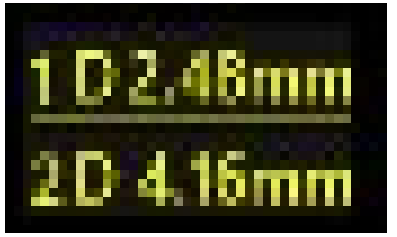

Magnified view of frontal horns with non visualization of cavum septum pellucidum with fusion of frontal horns of bilateral lateral ventricle- septal agenesis



We have screened for optic chiasm diameter because to rule out septo- optic dysplasia in which hypoplastic optic chiasma

Optic chiasm diameter appears normal for age measuring 4.2mm in D(3.9mm is 50$^{th}$ percentile).

Central structure surrounded by circle of willis is Optic chiasma .



# IMPRESSION:

- Reverse end diastolic flow of umbilical artery with increased resistance in umbilical and decreased resistance in MCA
- Gestational assigned as per LMP :21w 0days with EDD:11/04/2025
- Gestational assigned as per present USG :16w 4days with EDD:12/05/2025
- F/S/O Stage III Fetal growth restriction(Barcelona) with severe uteroplacental and fetoplacental insufficiency

Isolated septal agenesis

- Suggested Chromosomal microarray analysis & DNA storage.

# THANK YOU