

Second & Third Trimester USG Scan

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WHAT TO LOOK FOR ?

- No. of Foetus/Foetuses

- Lie

- Presentation

- Position

- Live /Dead

- Placenta

- Liquor



WHAT TO LOOK FOR ?

📌 Head

📌 Neck

📌 Chest

📌 Abdomen

📌 Spine

📌 Limbs

📌 B.P.D., O.F.D., H.C.

📌 A.C.

📌 F.L.

📌 H.C. /A.C.

📌 F.L. /A.C.

📌 C.I.

B.P.D.

- From 11 wks onwards

- Identify 14 – 20 wks

- Plane :

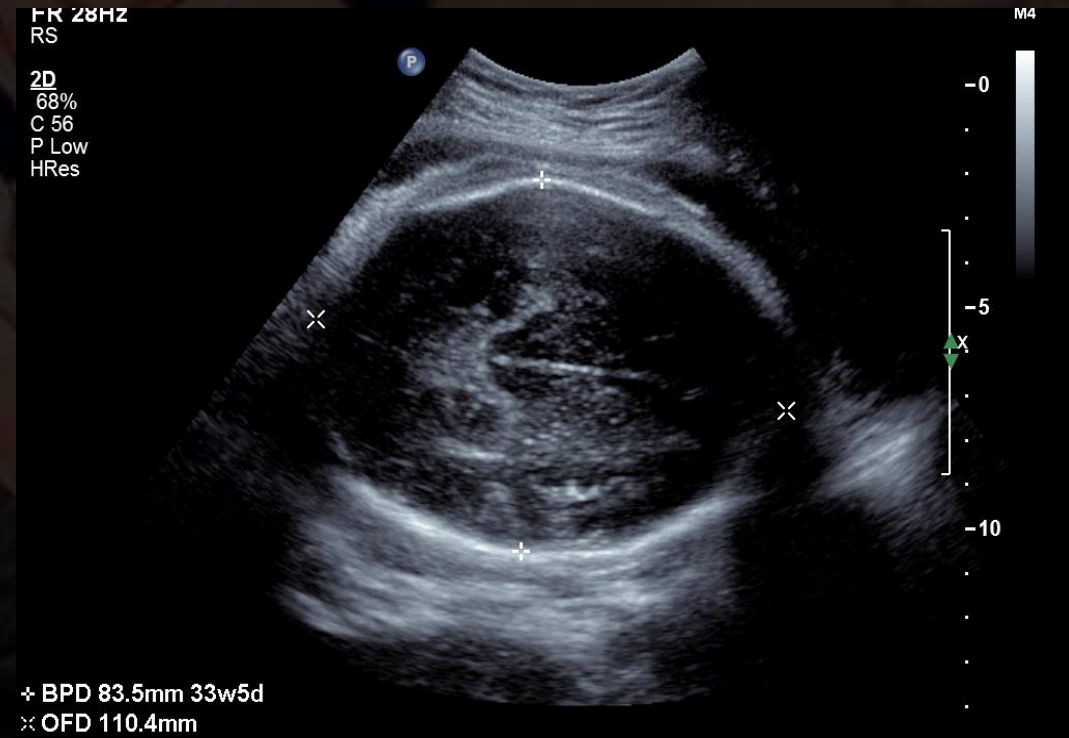
 - Transaxial

 - Thalamic Nuclei

 - Third Ventricle

 - Cavum septum pellucidum

 - Outer skull table of anterior parietal bone to inner skull table of posterior parietal bone at right angles to midline



Uses of B. P. D.

ERRORS IN B.P.D. MEASUREMENT

- Gestational age
- Foetal growth evaluation
- Estimate foetal weight
- Anomalies
- Incorrect plane
- Interobserver error
- Foetal head position
 - Engaged
 - Deflexed
- Machine settings improper

B.P.D.

ADVANTAGES

- Measurement obtained in 95% cases
- Well defined end pts. of measure
- BPD & Gest. age relationship extensively documented

DISADVANTAGES

- Accuracy of predicting Gest. Age decreases as preg. Advances
- Change in shape of head – Incorrect estimation
- Breech, Eng. Head, multiple preg. not accurate
- Under /over estimation in cases of deviation from normal growth

H. C.

- Accuracy upto $\pm 2-3$ wks
- Dolicocephalic / Brachycephalic head
- Same plane as BPD
- < 2 S. D. Microcephaly

A. C.

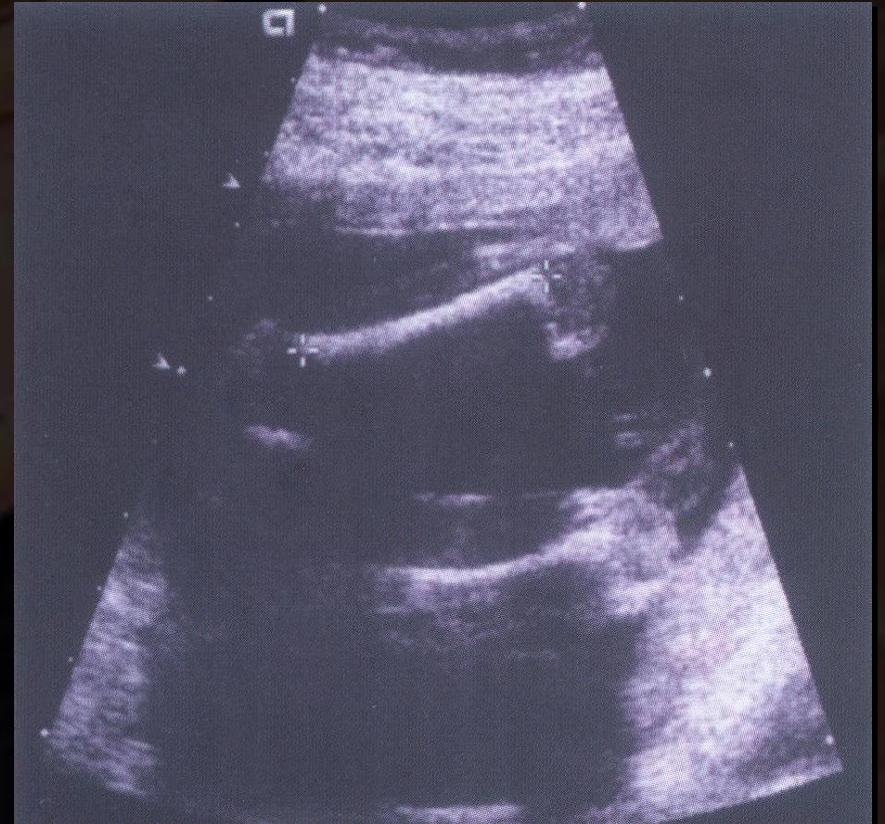
- Transaxial plane
- Circular
- Spine, Stomach, Portal vein & Liver
- For foetal growth & wt. estim.
- < 5th percentile : I.U.G.R.
- > 95th percentile : Macrosomia





F. L.

- **Gest. Age estimation**
- **Greater trochanter to lat. Condyle**
- **Exclude D.F.F.**
- **Exclude Neck & Head**
- **Accuracy 2 wks.**



RATIOS

📊 BPD / OFD

📊 HC/AC

📊 FL / AC

O.F.D. : CEPHALIC INDEX

- Same plane as BPD
- Distance between frontal & occipital Bones
- C.I.: $\frac{\text{BPD}}{\text{OFD}} \times 100$
- Normal : 75 – 85 %
- < 75 – Dolicocephaly
- > 85 – Brachycephaly

USG DERIVED FOETAL WT.

■ B.P.D.

■ A.C.

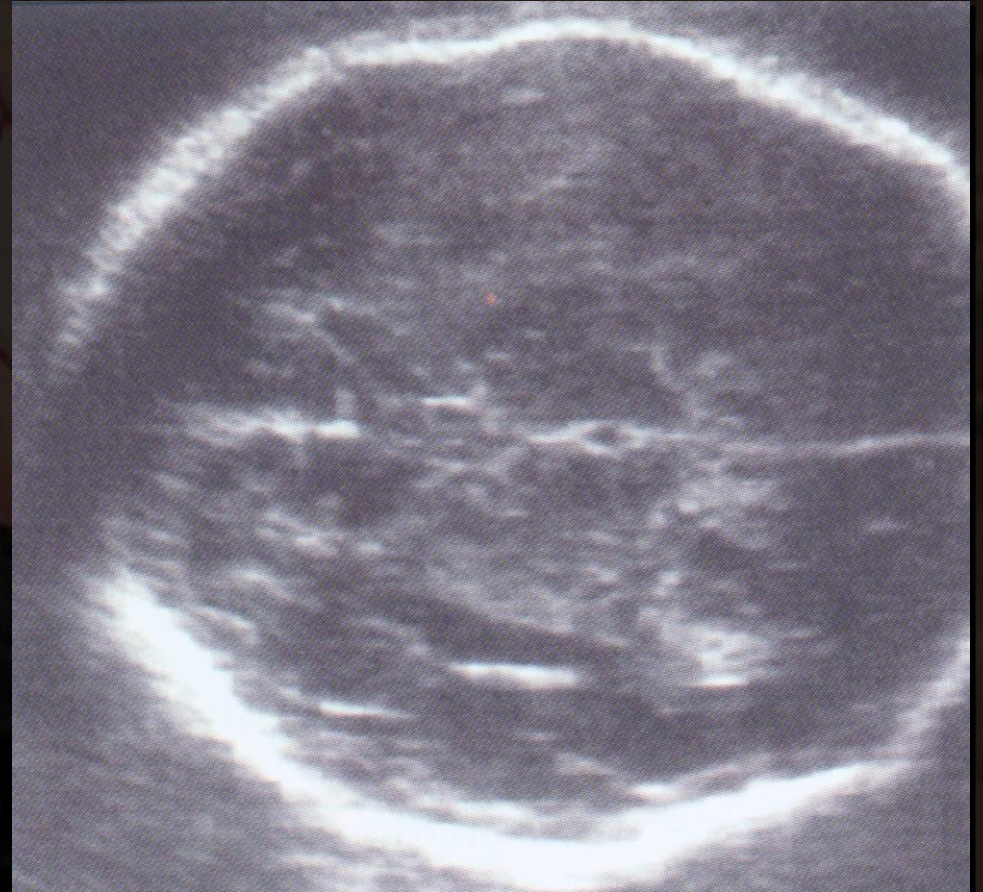
■ Accuracy within 300 gms. in 90 %

HIGH RISK CATEGORIES FOR CONG. ANOMALIES

- Previous congenital anomaly
- Advanced maternal age
- B.O.H.
- Exposure to teratogens
- Abnormal liquor
- Suspected fetal anomaly
- Diabetes, congenital heart disease, I.U.G.R. consanguinity, single umbilical artery

HEAD

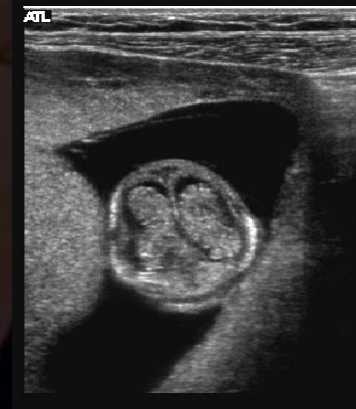
- Mid line structures
- Ventricles, choroids plexus
- Nose, Lips
- Orbit
- Cerebellum
- Cisterna magna
- Post. Fossa



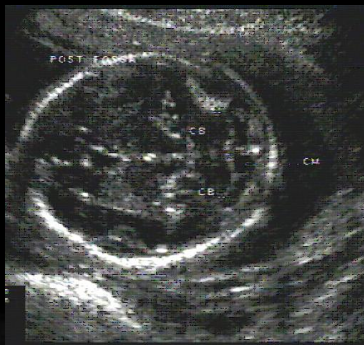
Lateral ventricle



Choroid plexus



Posterior fossa



Lens



Nose & mouth



2D Echo



NECK

- Soft tissue swelling
 - Anterior : Thyroid
 - Posterior : Meningocele
 - Cystic Hygroma
- Cord round the neck
- Nuchal skin thickness

PT: MRS VANDANA AGARWAL

14-MAY-90

12:18:43PM

I5196 # 59

DEPTH= 100

DB

PWR = LOW

0/1/V4

1/2

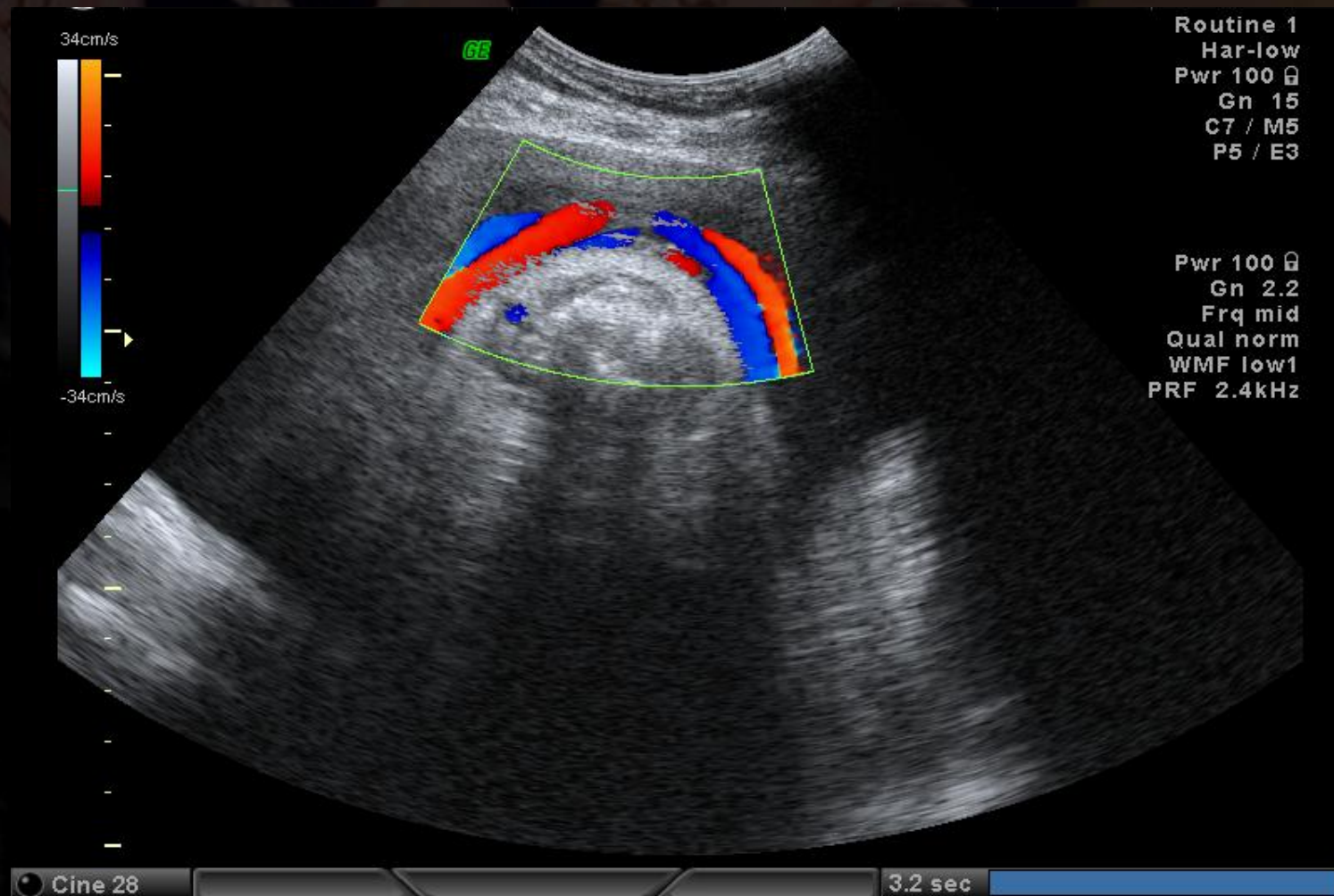


SPEED ↑

SPEED ↓

NORMAL

REVIEW/STOP



CHEST

- 4 chamber view of heart

- Lungs

- Any cystic / solid mass

- Left ventri. Outflow

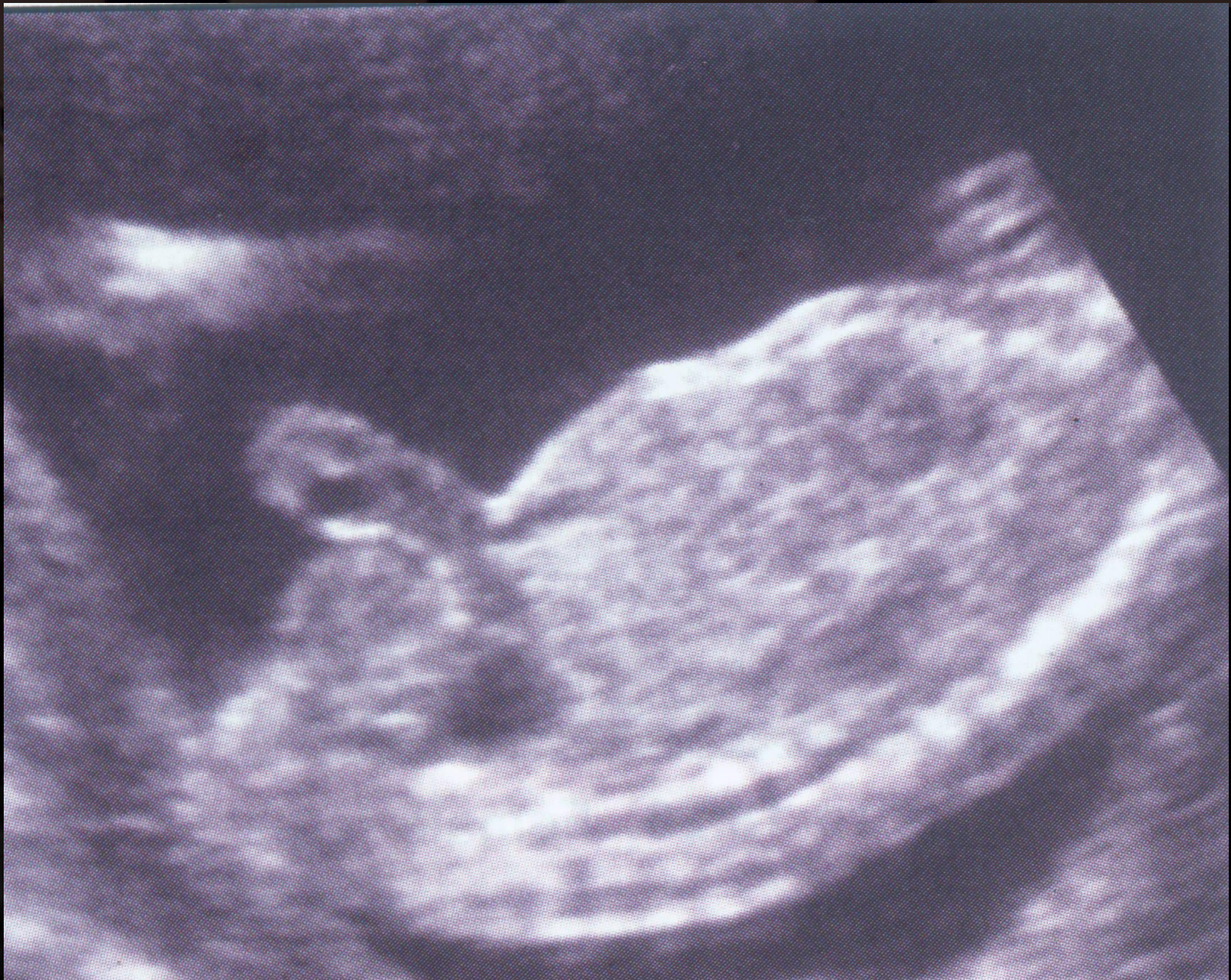
- Right Ventri. Outflow



ABDOMEN

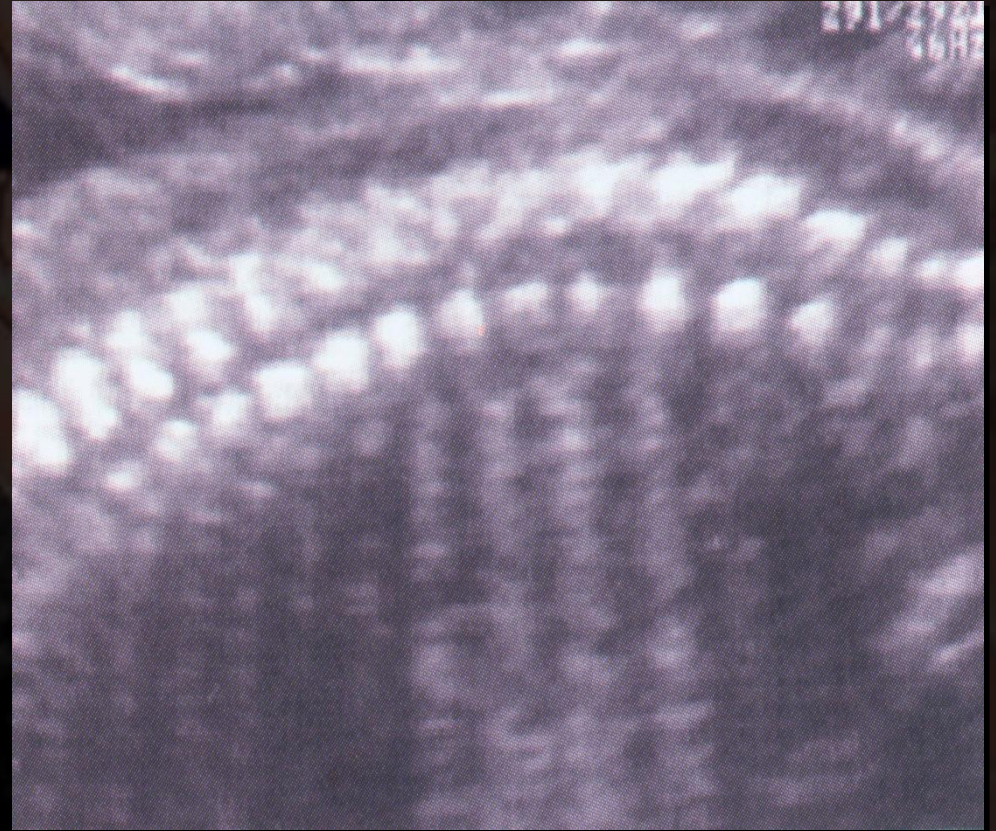
- 🍷 Liver
- 🍷 Stomach
- 🍷 Kidneys
- 🍷 Spine
- 🍷 Urinary bladder
- 🍷 Intestines





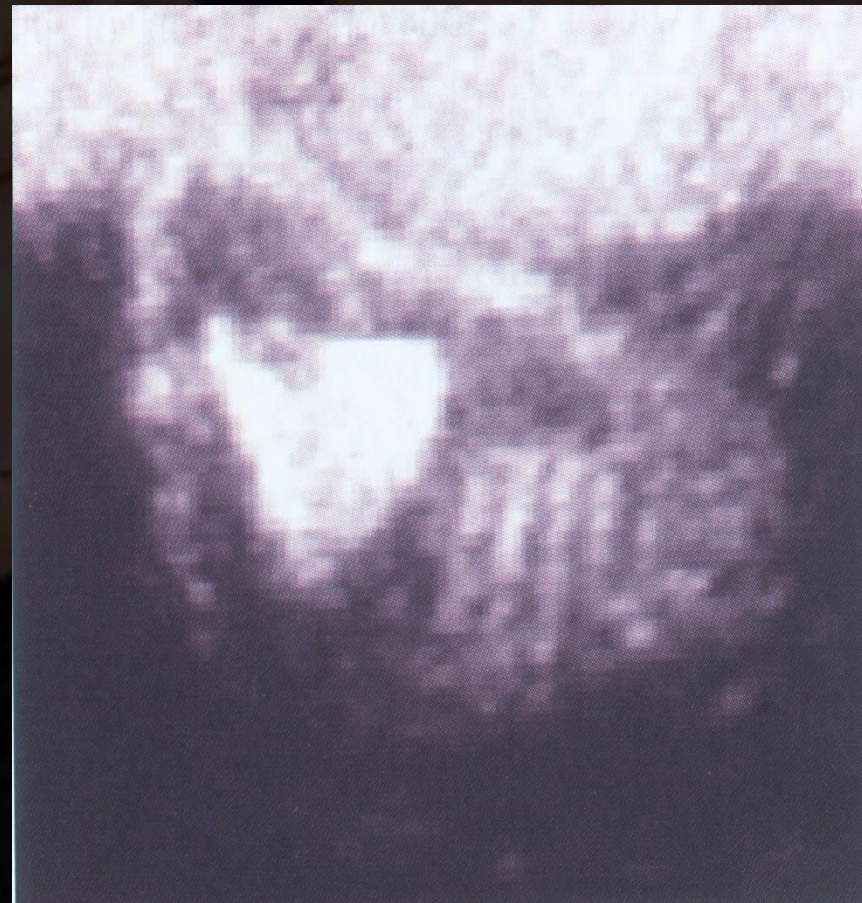
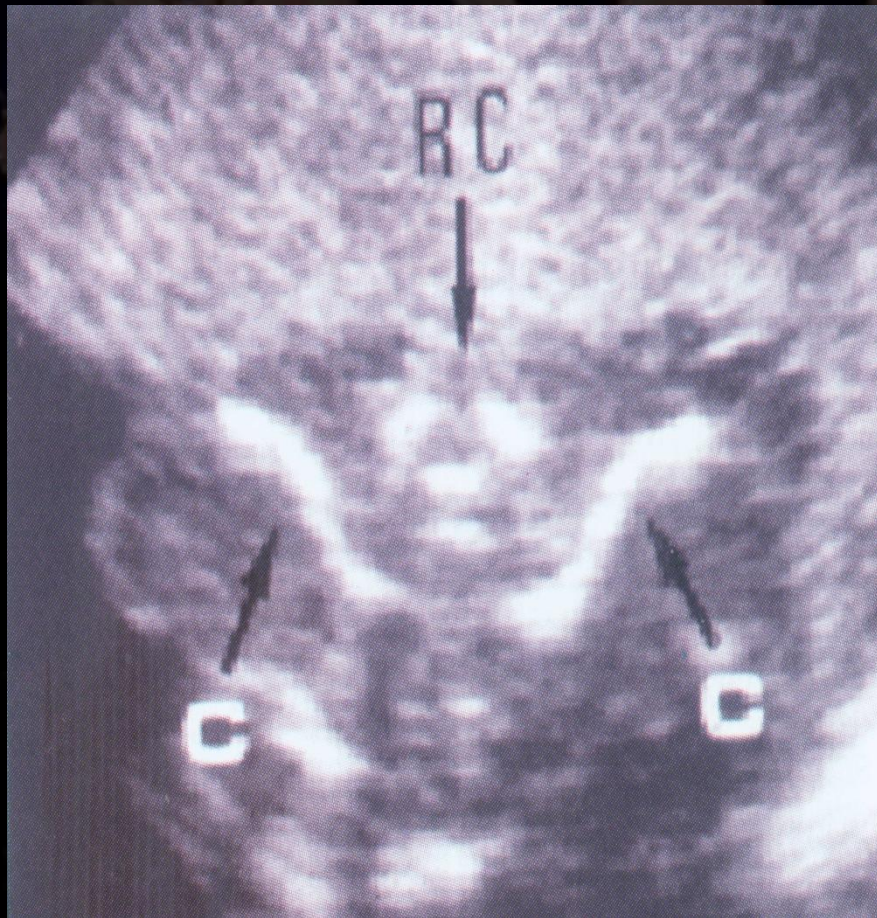
SPINE

- Coronal
- Sagittal
- Transverse
- 3 components
- Overlying skin



Coronal View of Spine





URINARY SYSTEM

■ Left kidney

■ Right kidney

■ Urinary bladder

Fetal Kidneys



Urinary bladder



CORD

■ 3 vessels

■ 2 Arteries, 1 vein

■ Placental insertion

■ Fetal insertion

Cord insertion





UNIVERSITA' STUDI BARI : 000
I CLINICA OST./GIN.

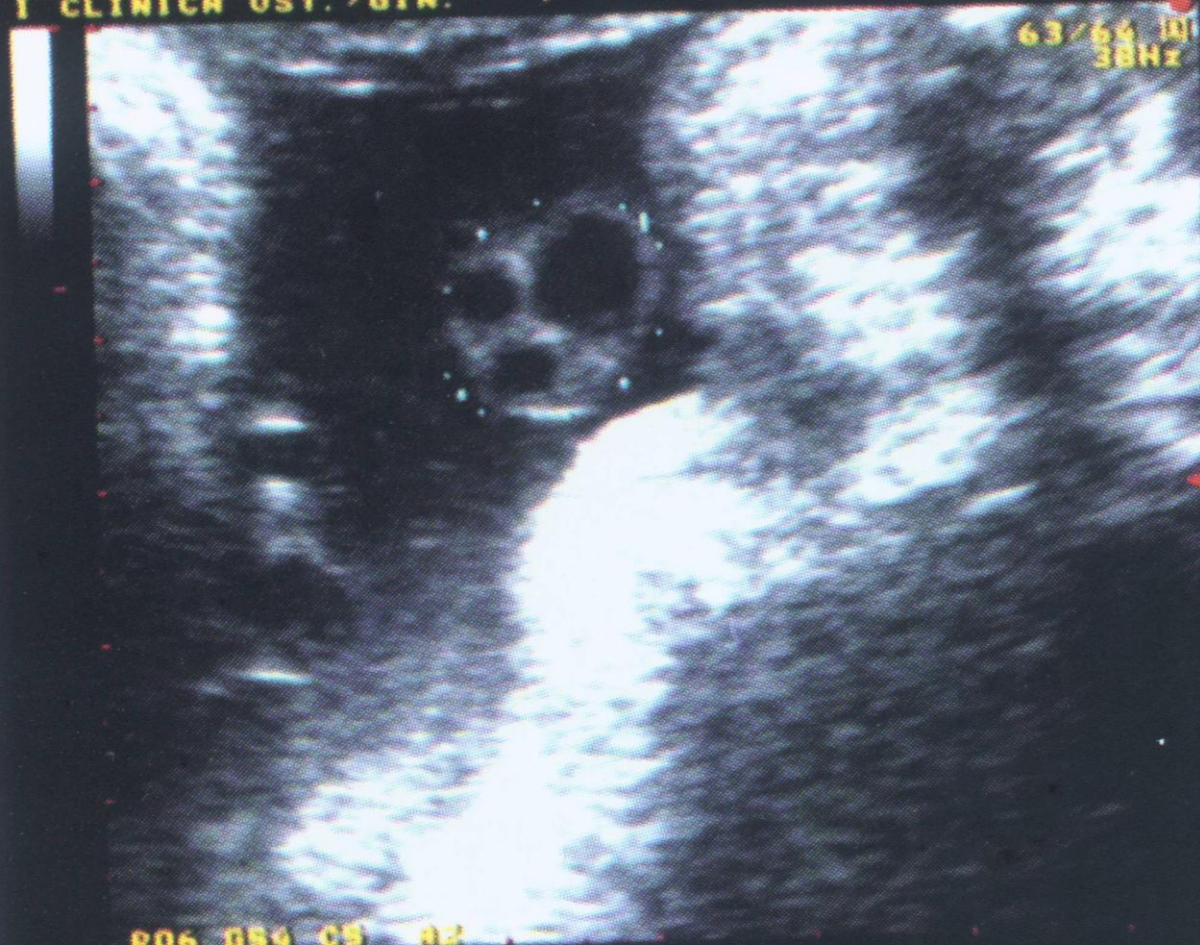
.F 1 01-02-'99

11:22:44

5.0

DUA: 89%

63/64 IN
38Hz



R06 054 05 02

3: 0857

+Area-E
1.69cm
c: 46.4mm
l: 16.2mm
s: 13.3mm

LIMBS

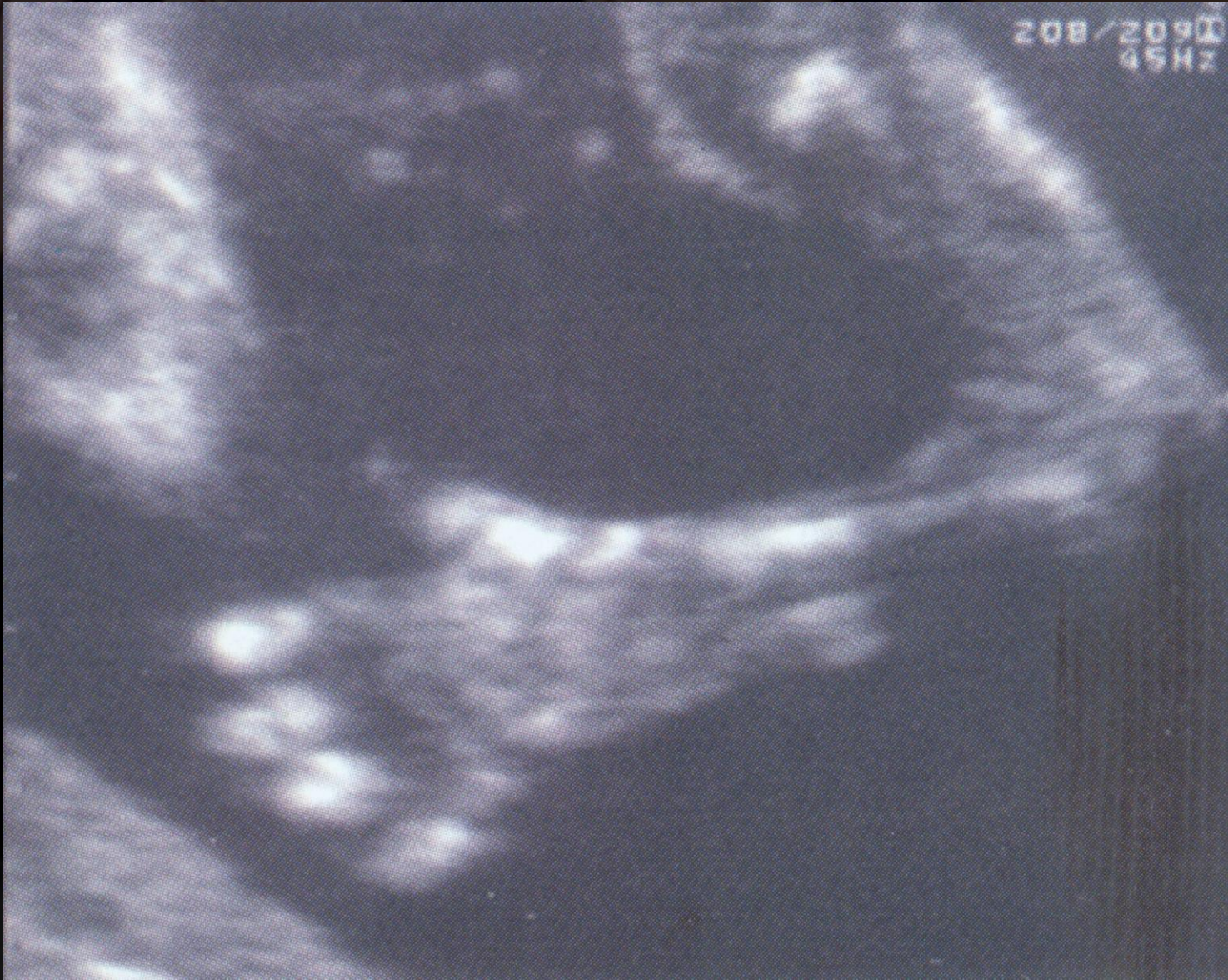
- Four limbs

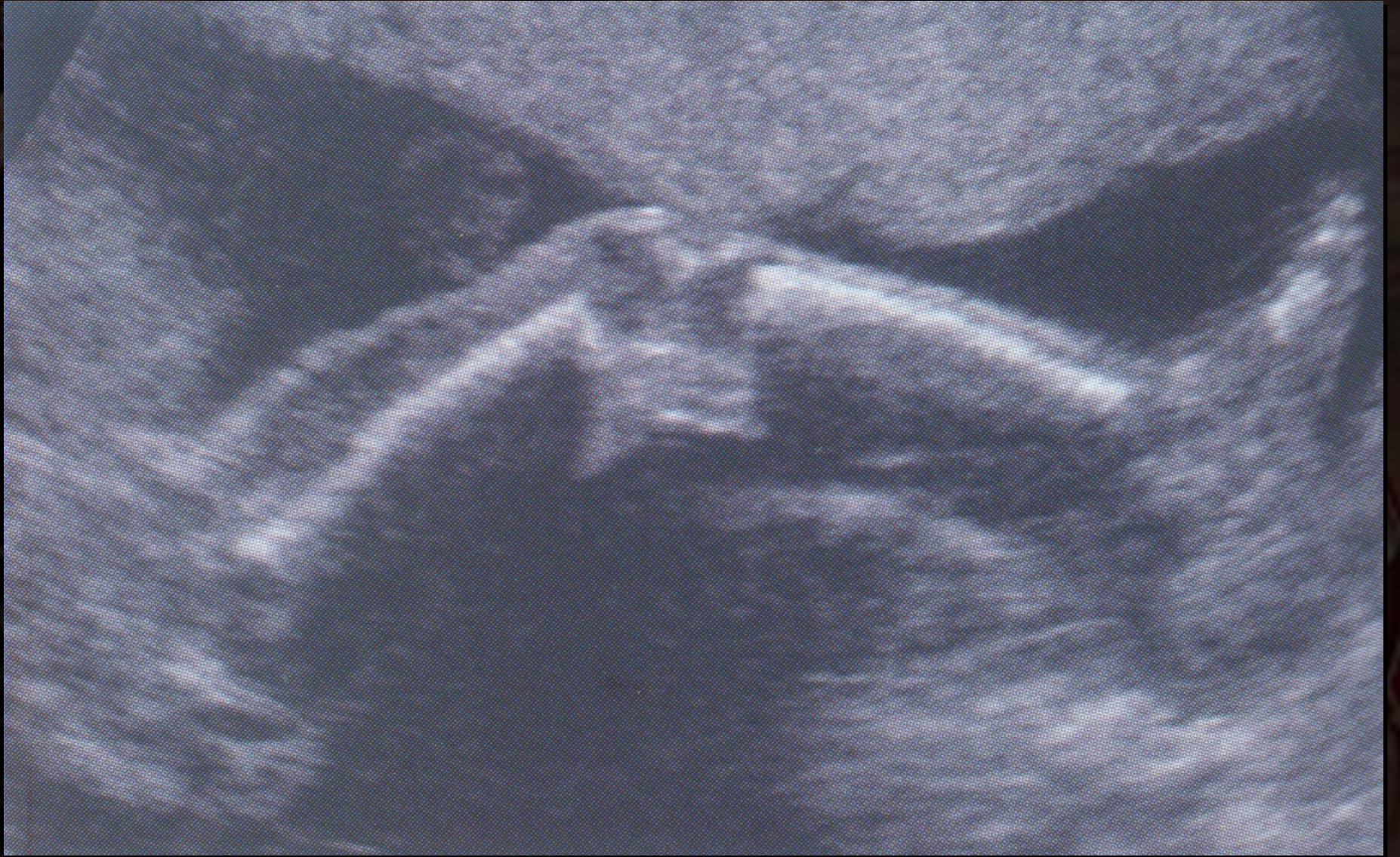
- 2 Upper, 2 Lower

- 12 bones

- 4 Finger & thumb each side

- 5 Toes each side





PLACENTA

■ Size

■ Site

■ Grade : Grannum's classification

Gr.-0, Gr. I, Gr.II, Gr. III

■ Abnormalities



PLACENTA (2)

- Derived from chorionic villi & decidua basalis
- Chorion frondosum
- 12th wk onwards distinct 3 layers
 - Chorionic plate
 - Placental substance
 - Basal plate



PLACENTA (3)

- Hyperechoic compared to myometrium
- Grannum's classification
- Placental thickness in mm = gestational age in wks
- Placental migration

PLACENTA (4)

Thick

Mat. Diabetes

Severe anaemia

Triplody

T.T.S. Pl. Insufficiency

Rh Isoimmun

Cong. Neoplasm

I.U. Infections

Thin

Severe mat. Diabetes

Severe pre – eclampsia

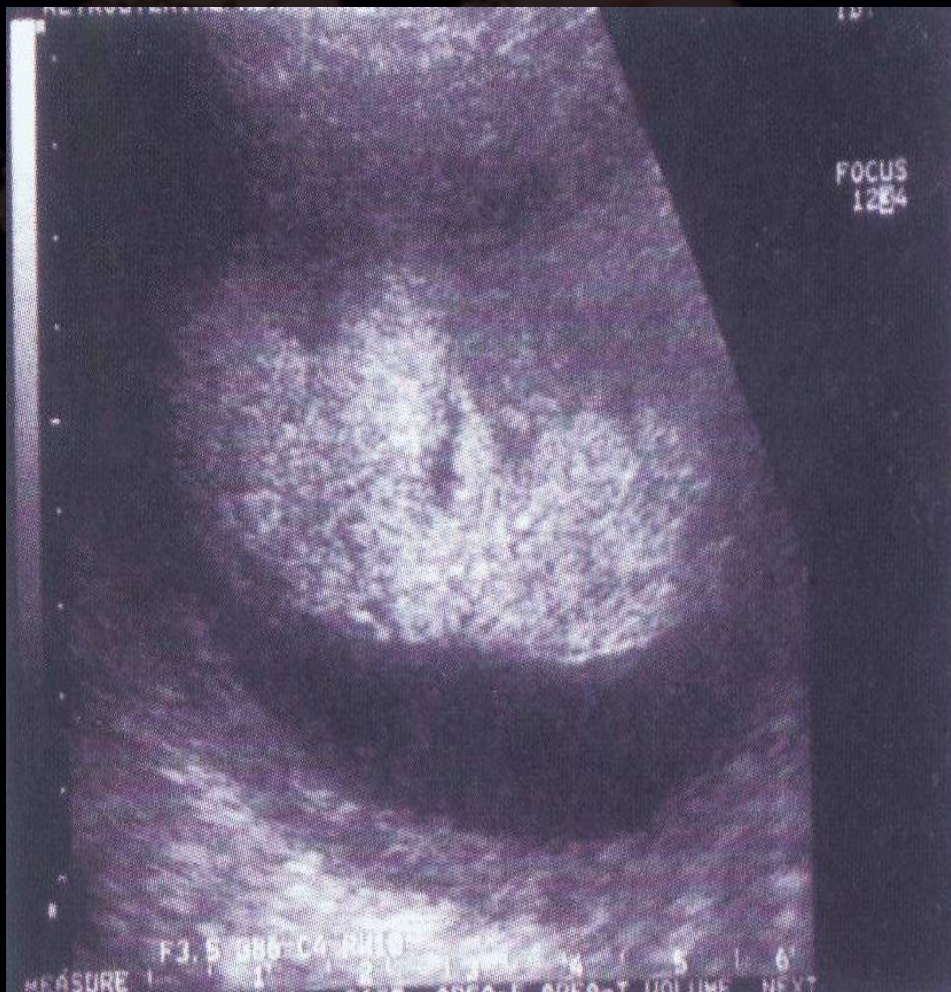
Hypertension

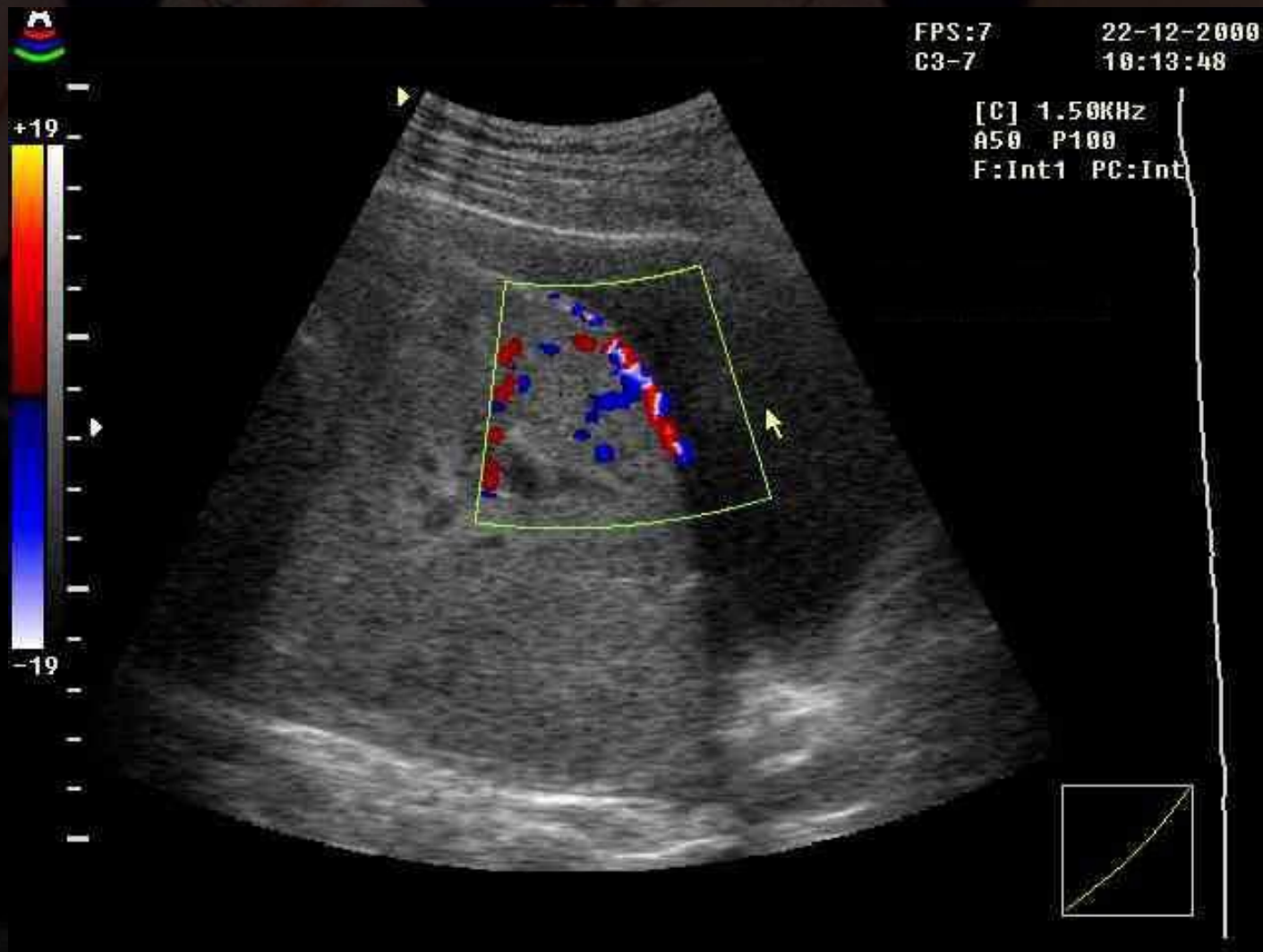
Major foetal malformation

PLACENTA (5)

- Placenta praevia
- Placental abruption
- Placenta accrete
- Vasa praevia
- T.V.S. / T.L.S. / T.P.S.

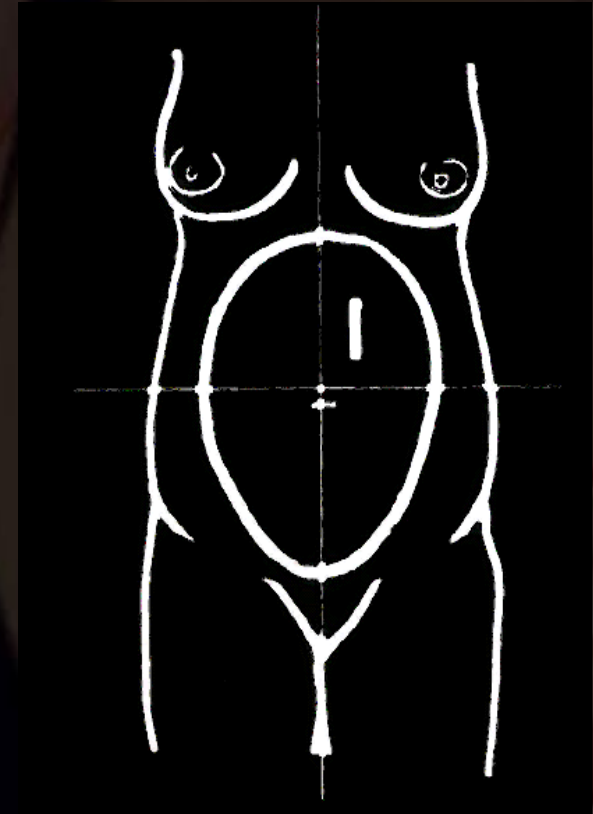


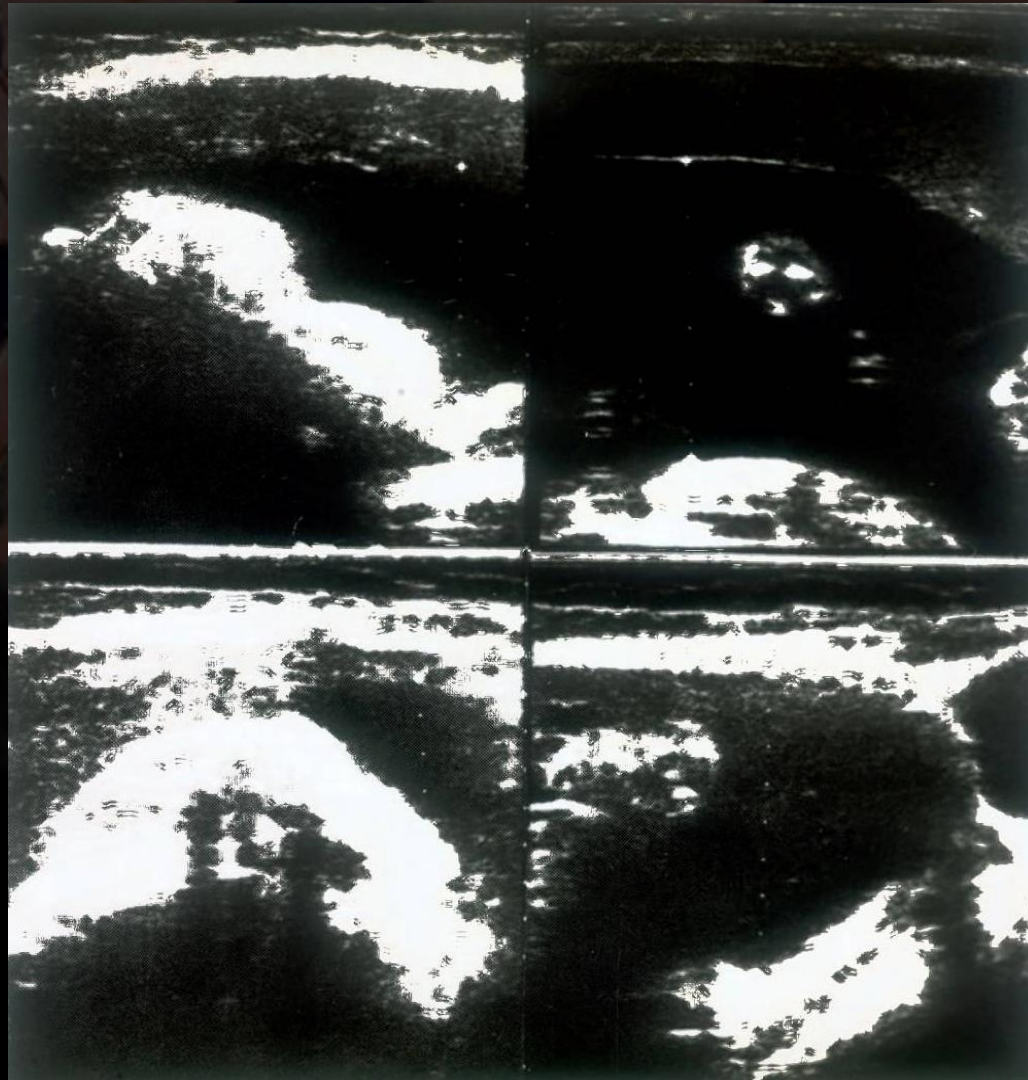




A. F. I.

- 4 quadrant
- < 5 cm =
Oligohydramnios
- > 25 = Polyhydramnios
- 5 – 8 cm. = Borderline
low
- 8 – 18 cm. = Normal
- 18 – 25 cm. = Borderline
high

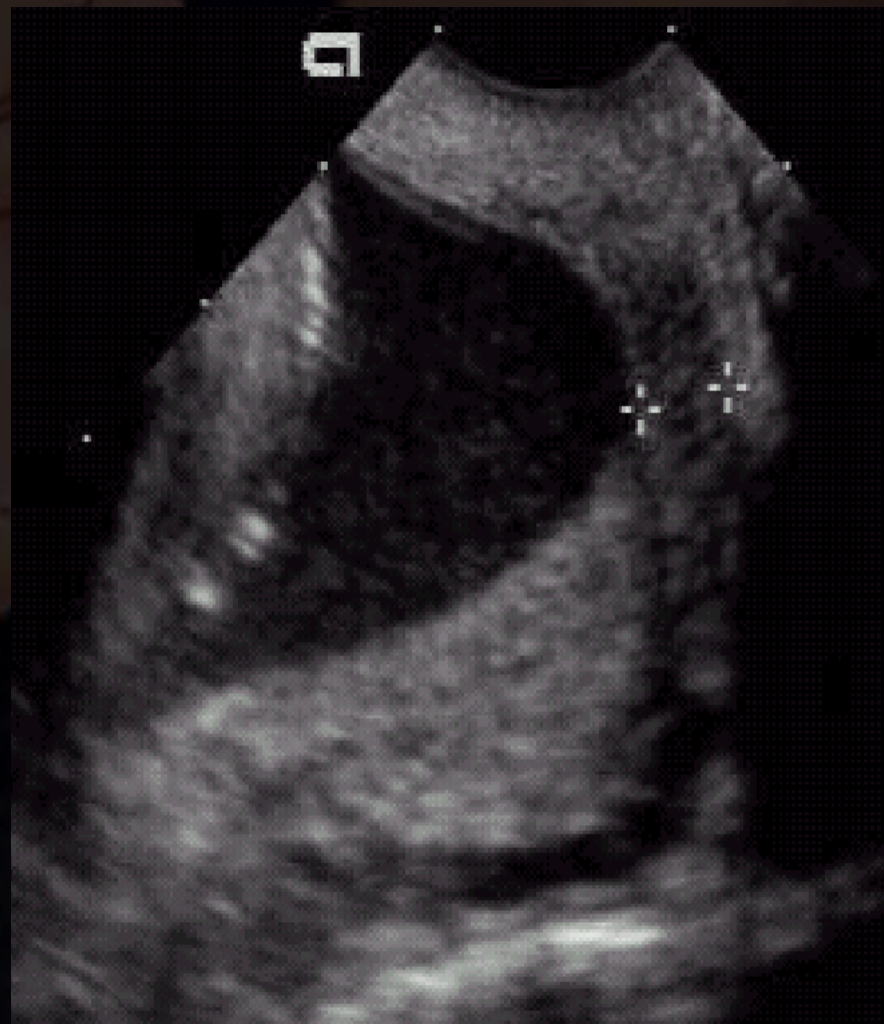




Four quadrant A.F.I. measurement

CERVIX

- 📏 Length : Int. to ext. os.
- 📏 Dilatation of int. os
- 📏 Lesions



L.S. / MYOMETRIUM / ADNEXA

- Previous LSCS
- Fibroids
- Congenital anomalies of uterus
- Ovarian Cyst / Tumours

f 3.5MHz

01 3.5
NG 23
FG 18
PWR 5
RJ 16
DR 0-4
ENH 52
FF 2
LF 2
T5.0B1



FOETAL BIOPHYSICAL PROFILE

- Foetal breathing
- Foetal movement
- Foetal tone
- N.S.T.
- A.F.I.

DOPLER STUDY : ARTERIAL

- Maternal : Ut. Artery

- Foetal :

- Umbilical

- M.C.A.

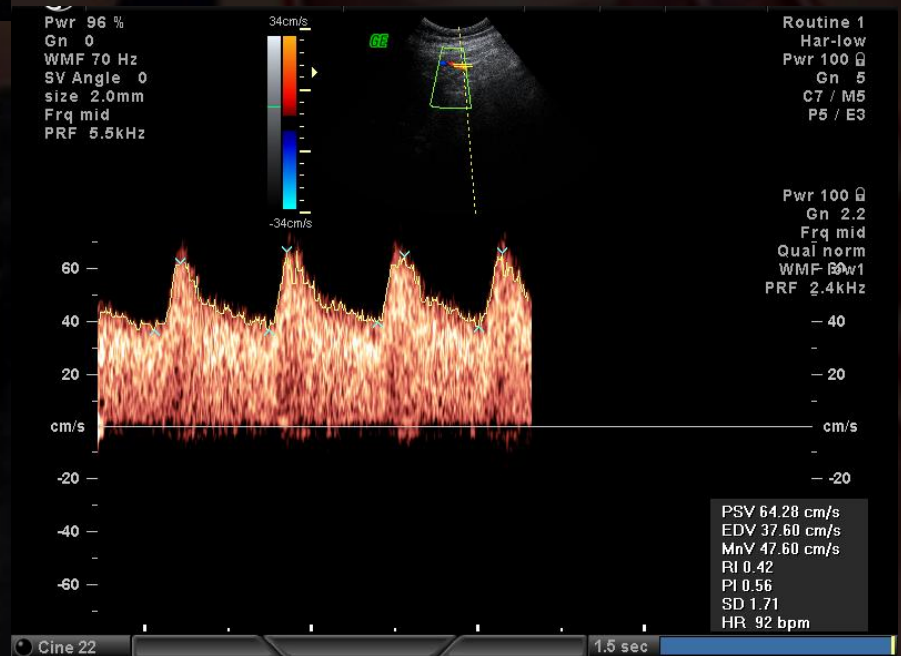
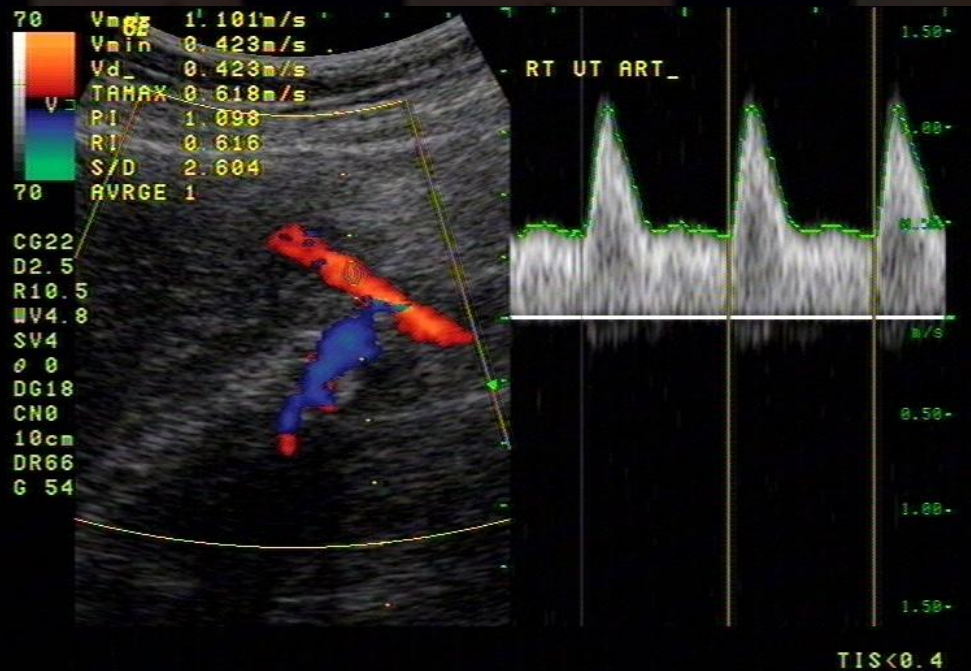
- Desc. Aorta

- VENOUS

- Umbi. Vein

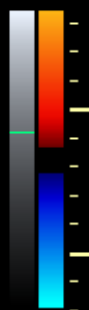
- I.V.C.

- Ductus venosus

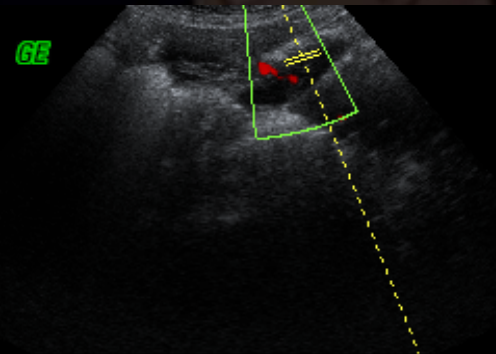


Pwr 92 %
Gn 0
WMF 70 Hz
SV Angle 0
size 2.0mm
Frq mid
PRF 4.4kHz

34cm/s

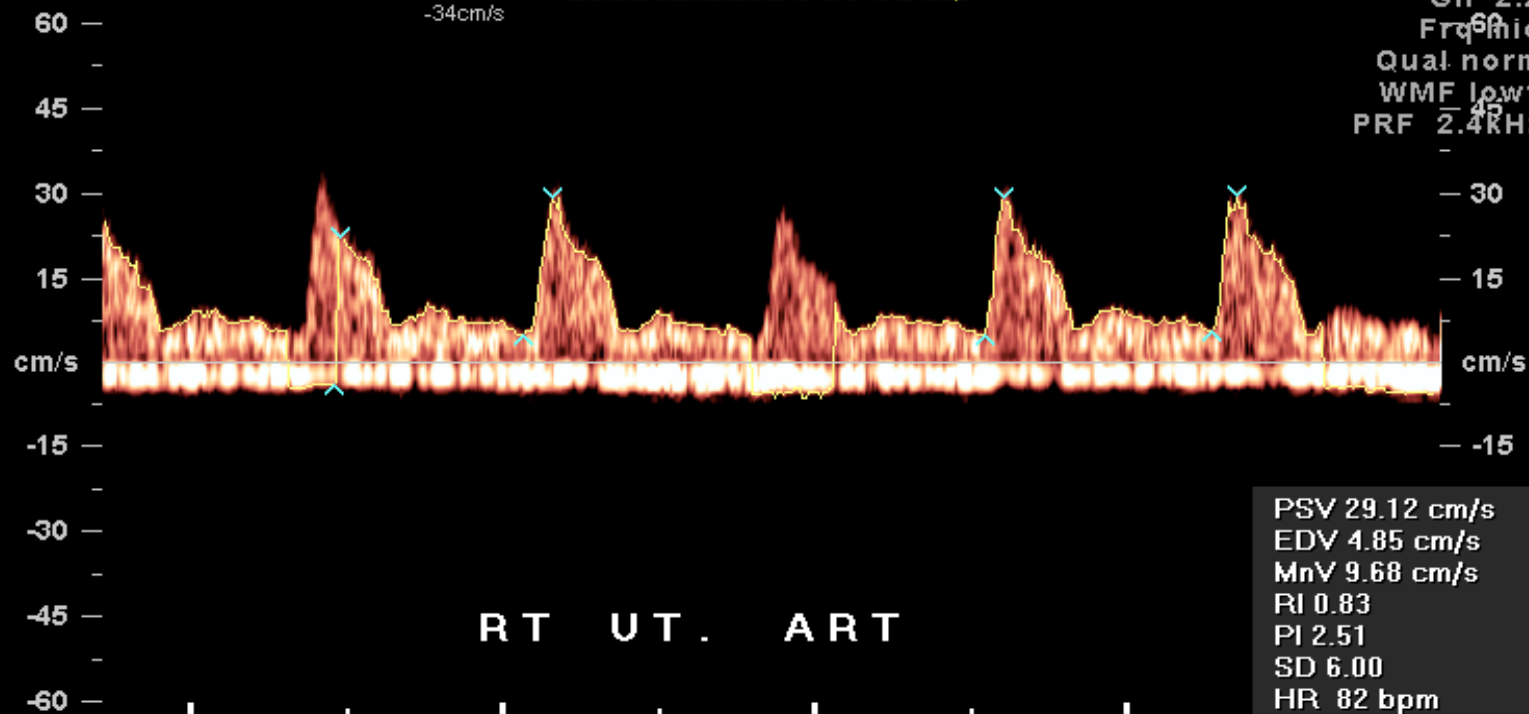


-34cm/s



Routine 1
Har-low
Pwr 100 %
Gn 1
C7 / M5
P5 / E3

Pwr 100 %
Gn 2.2
Frq mid
Qual norm
WMF low1
PRF 2.4kHz



Cine 152

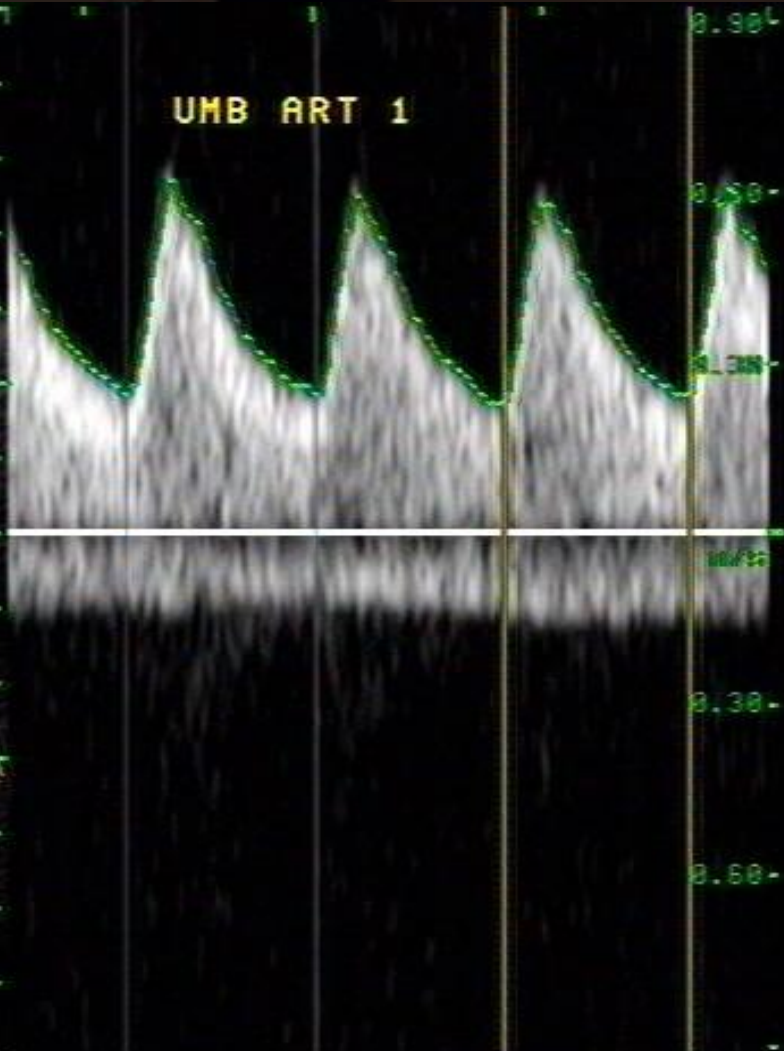
9.1 sec

70 Vmax 0.574m/s
 Vmin 0.242m/s
 Vd_ 0.242m/s
 TAMAX 0.384m/s
 PI 0.867
 RI 0.579
 S/D 2.378
 AVRGE 1

CG22
 D2.5
 R6.0
 W2.7
 SV4
 0 0
 DG18
 CN0
 14cm
 DR66
 G 54



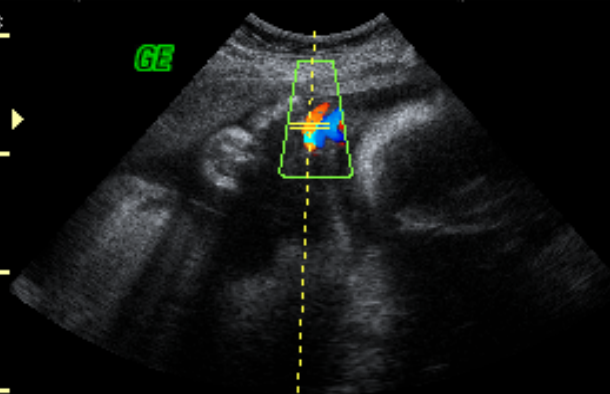
UMB ART 1



TIS=0.6

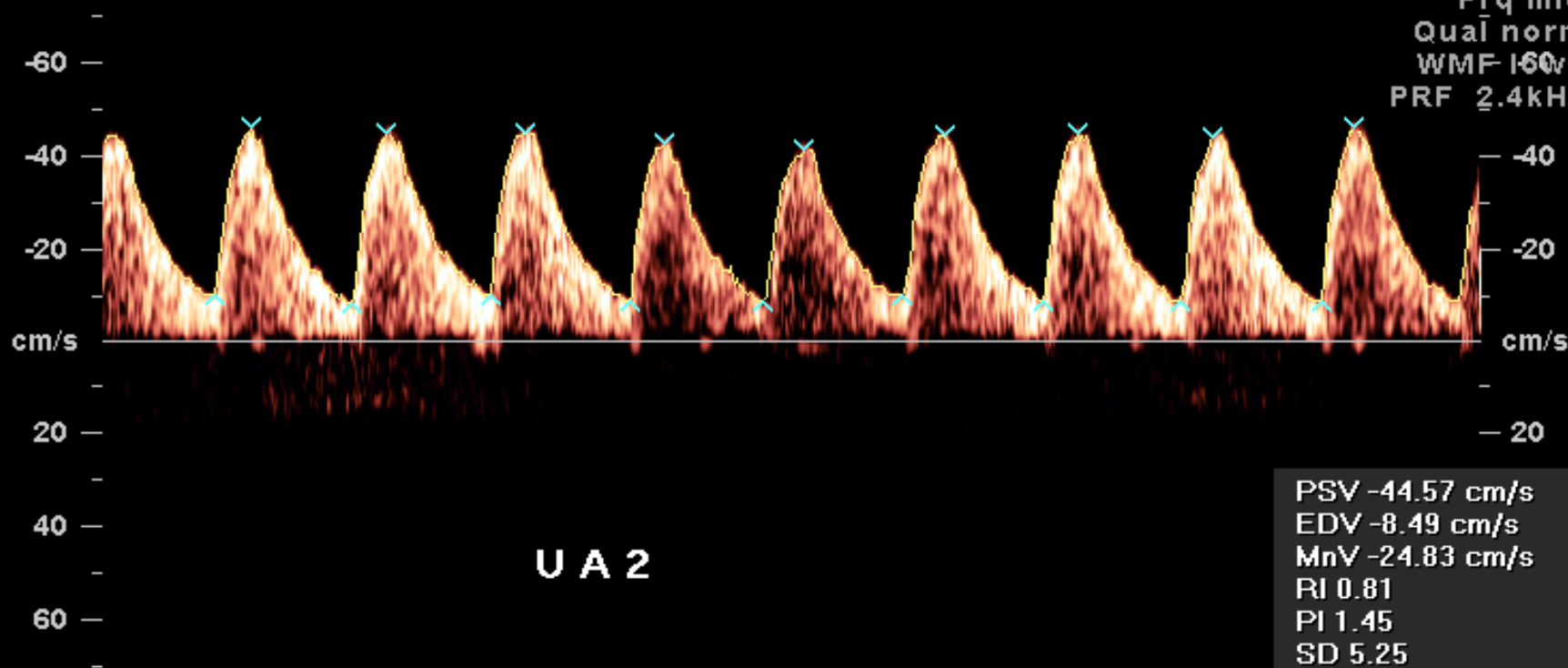
Pwr 96 %
Gn 0
WMF 70 Hz
SV Angle 0
size 2.0mm
Frq mid
PRF 5.5kHz

34cm/s
-34cm/s



Routine 1
Har-low
Pwr 100
Gn 6
C7 / M5
P5 / E3

Pwr 100
Gn 2.2
Frq mid
Qual norm
WMF 160v1
PRF 2.4kHz



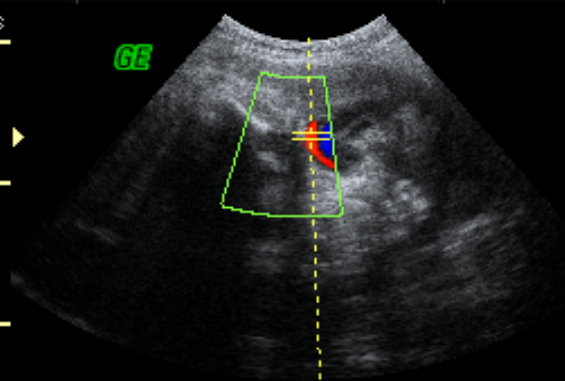
PSV -44.57 cm/s
EDV -8.49 cm/s
MnV -24.83 cm/s
RI 0.81
PI 1.45
SD 5.25
HR 139 bpm

Cine 17

1.1 sec

Pwr 96 %
Gn 0
WMF 70 Hz
SV Angle 0
size 2.0mm
Frq mid
PRF 5.5kHz

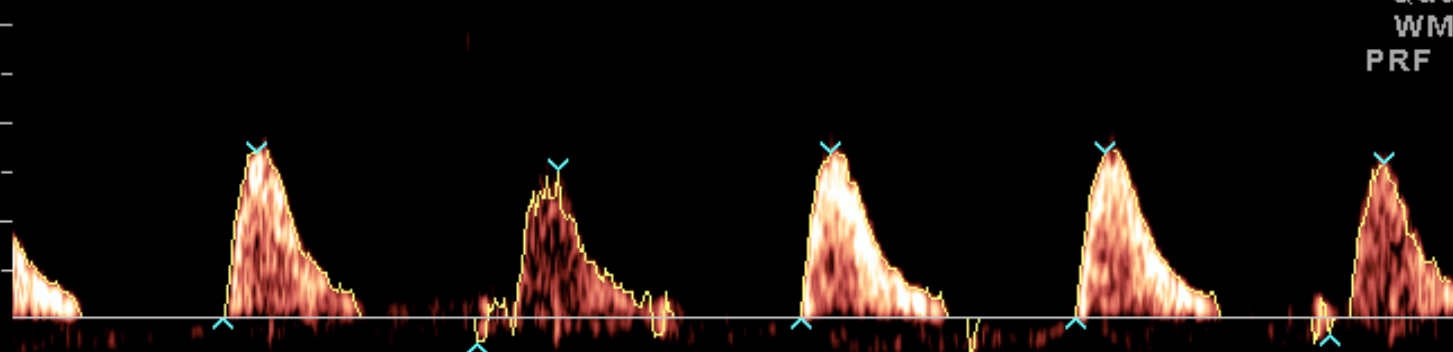
25cm/s
-25cm/s



Routine 1
Har-low
Pwr 100 dB
Gn 10
C7 / M5
P5 / E3

Pwr 100 dB
Gn 2.2
Frq mid
Qual norm
WMF 30w1
PRF 1.8kHz

60
40
20
cm/s
-20
-40
-60



40
20
cm/s
-20

U A 1

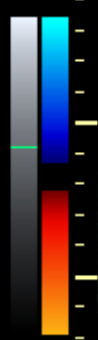
PSV 33.96 cm/s
EDV -1.82 cm/s
MnV 8.76 cm/s
RI *1.00
PI 4.08
SD -18.67
HR 77 bpm

Cine 90

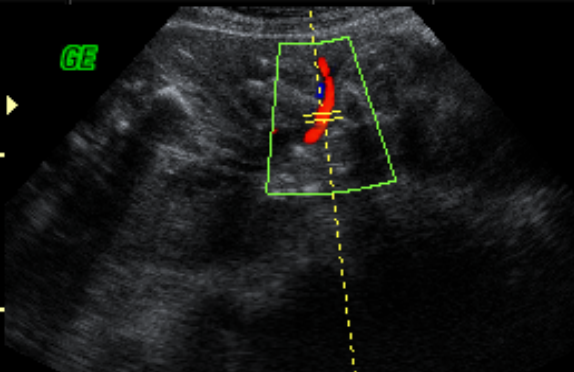
6.3 sec

Pwr 96 %
Gn 0
WMF 70 Hz
SV Angle 0
size 2.0mm
Frq mid
PRF 5.5kHz

34cm/s



-34cm/s



Routine 1
Har-low
Pwr 100
Gn 1
C7 / M5
P5 / E3

Pwr 100
Gn 2.2
Frq mid
Qual norm
WMF 160v1
PRF 2.4kHz

-60
-40
-20
cm/s
20
40
60



-40
-20
cm/s
-20

UMB ART.

PSV -26.68 cm/s
EDV 6.06 cm/s
MnV -9.35 cm/s
RI *1.00
PI 3.50
SD -4.40
HR 151 bpm

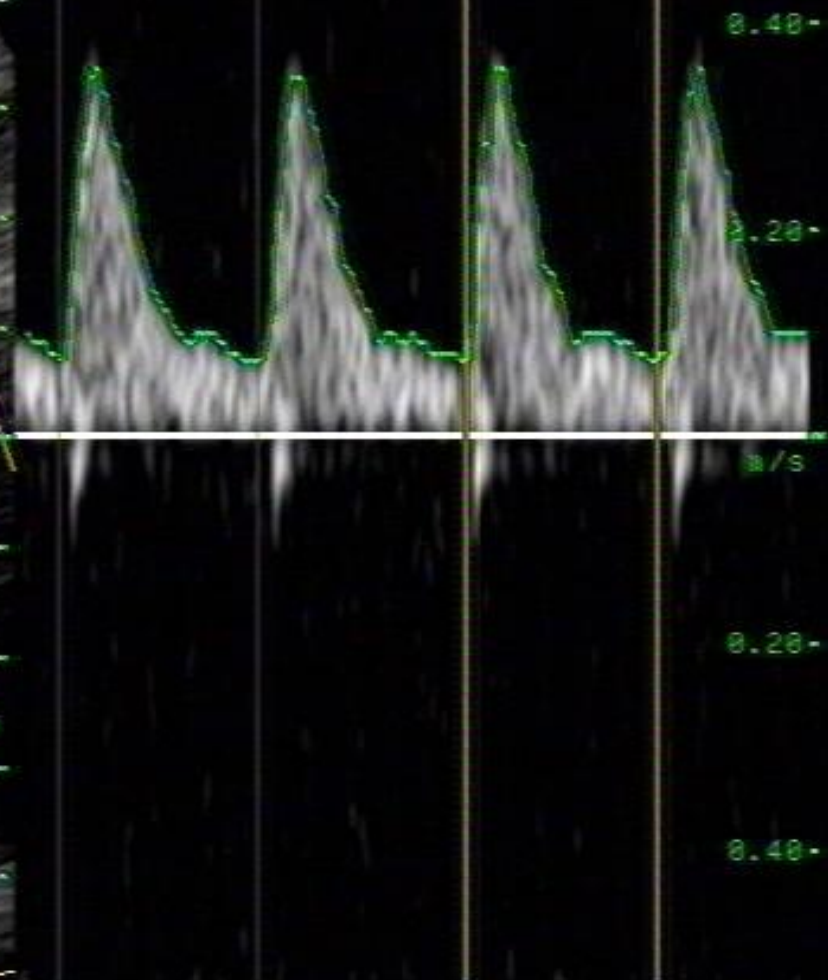
Cine 14

1.0 sec

70 Vmax 0.353m/s
Vmin 7.32cm/s
Vd_ 7.32cm/s
TAMAX 0.168m/s
PI 1.669
RI 0.793
S/D 4.821
70 AVRGE 1

CG22
D2.5
R3.44
WV2.1
SV4
0 0
DG18
CN0
10cm
DR66
G 54

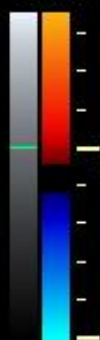
MCA_



TIS<0.4

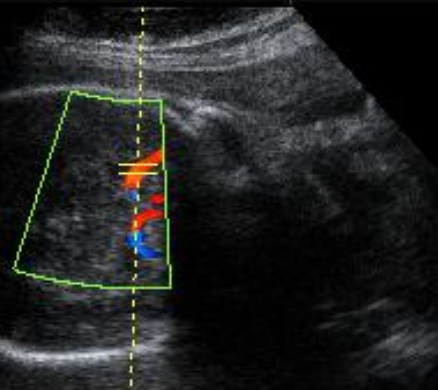
Pwr 96 %
Gn 0
WMF 70 Hz
SV Angle 0
size 2.0mm
Frq mid
PRF 5.5kHz

34cm/s



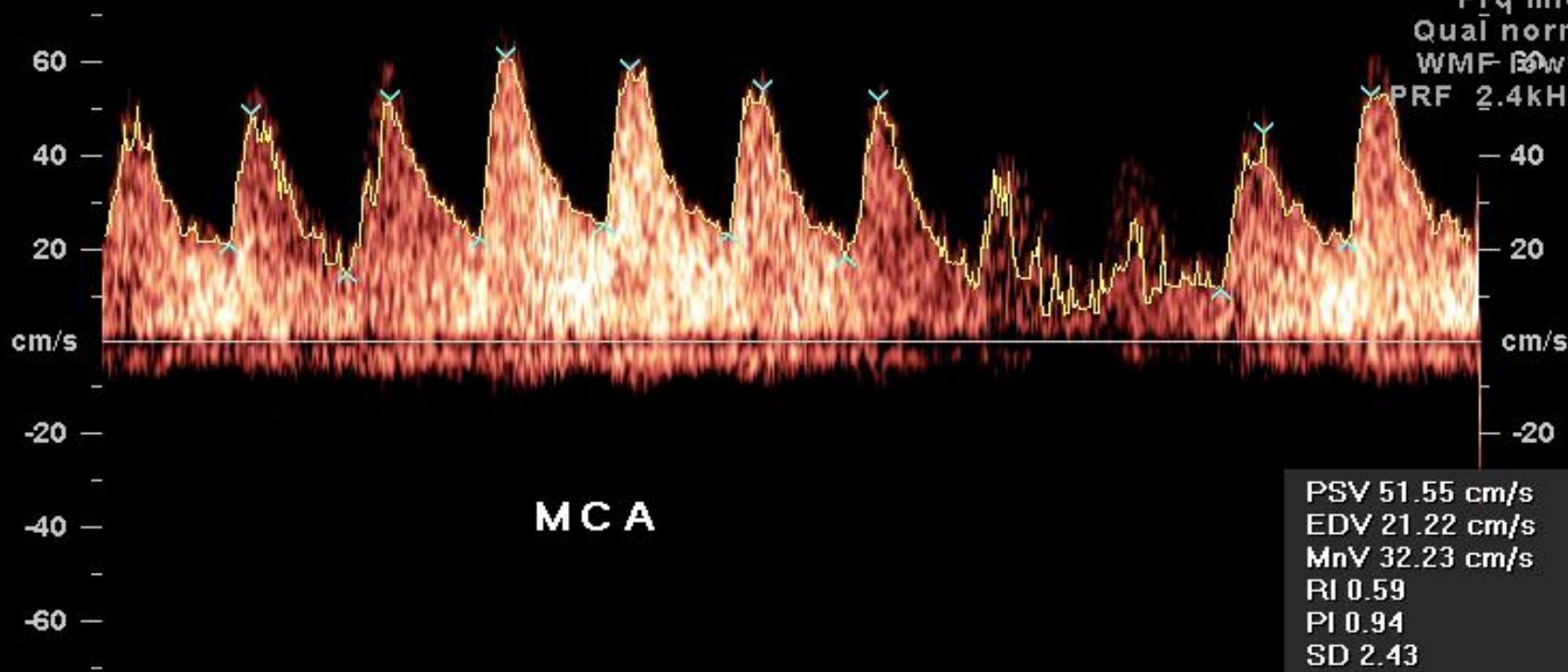
-34cm/s

62



Routine 1
Har-low
Pwr 100 dB
Gn 3
C7 / M5
P5 / E3

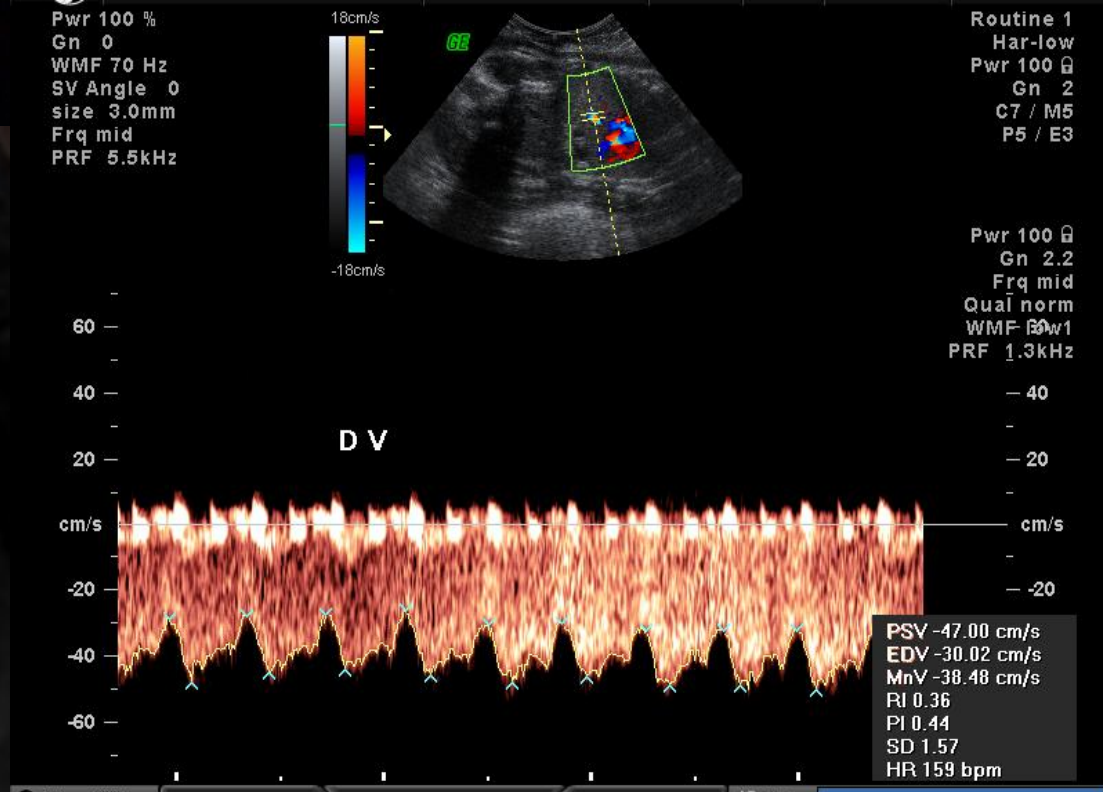
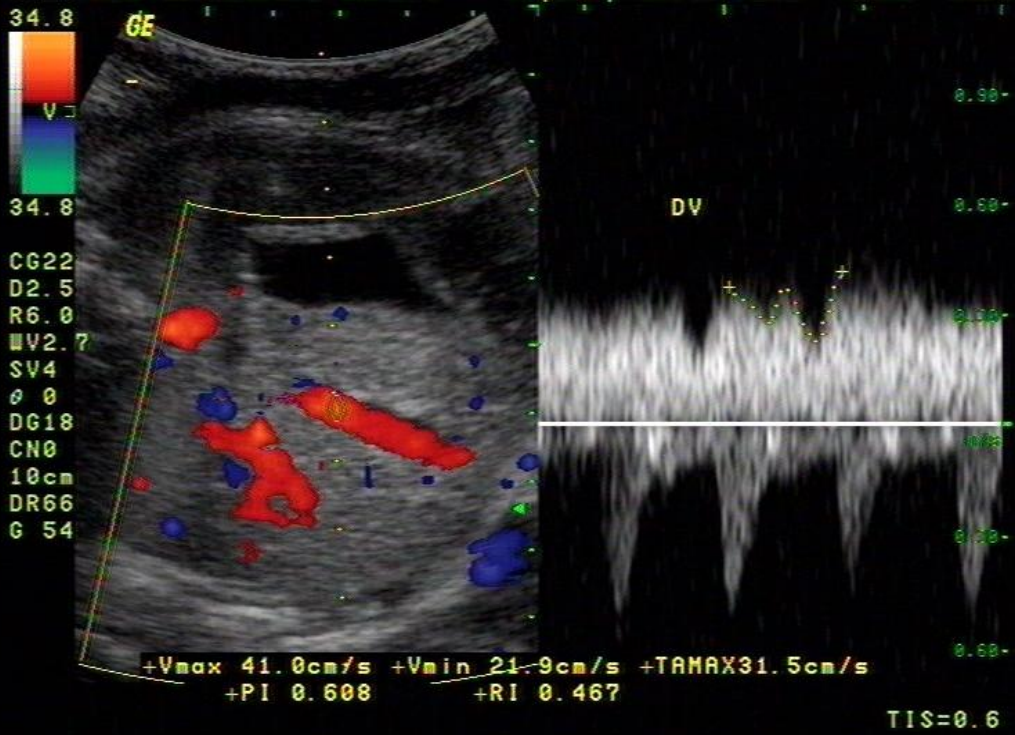
Pwr 100 dB
Gn 2.2
Frq mid
Qual norm
WMF 70 Hz
PRF 2.4kHz

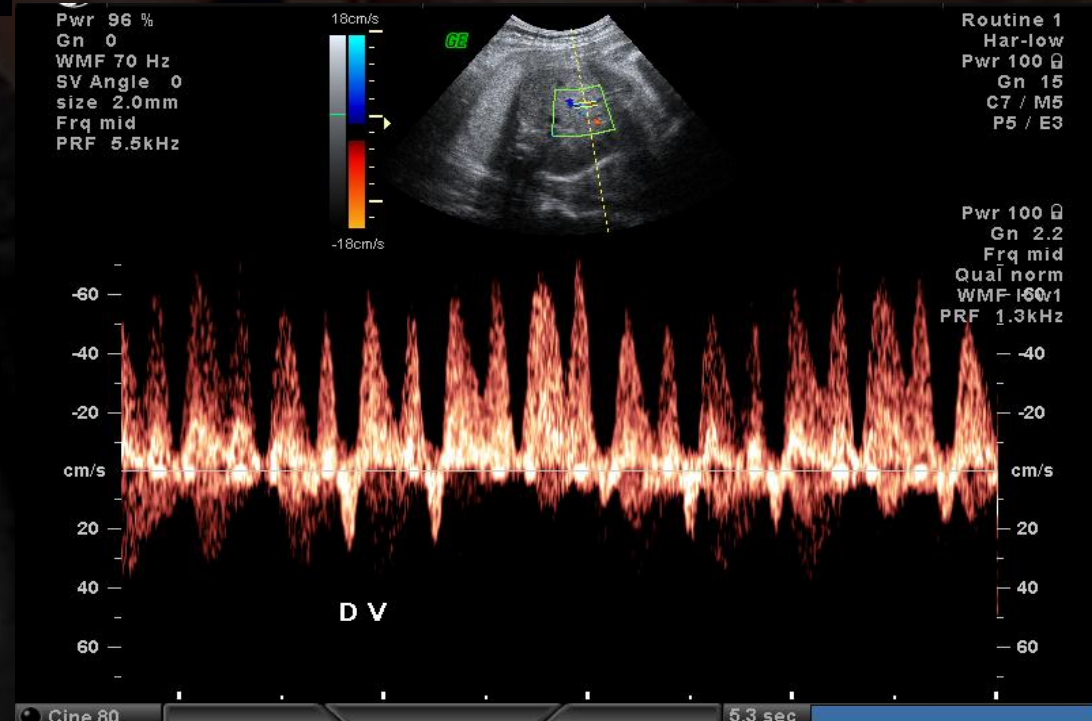
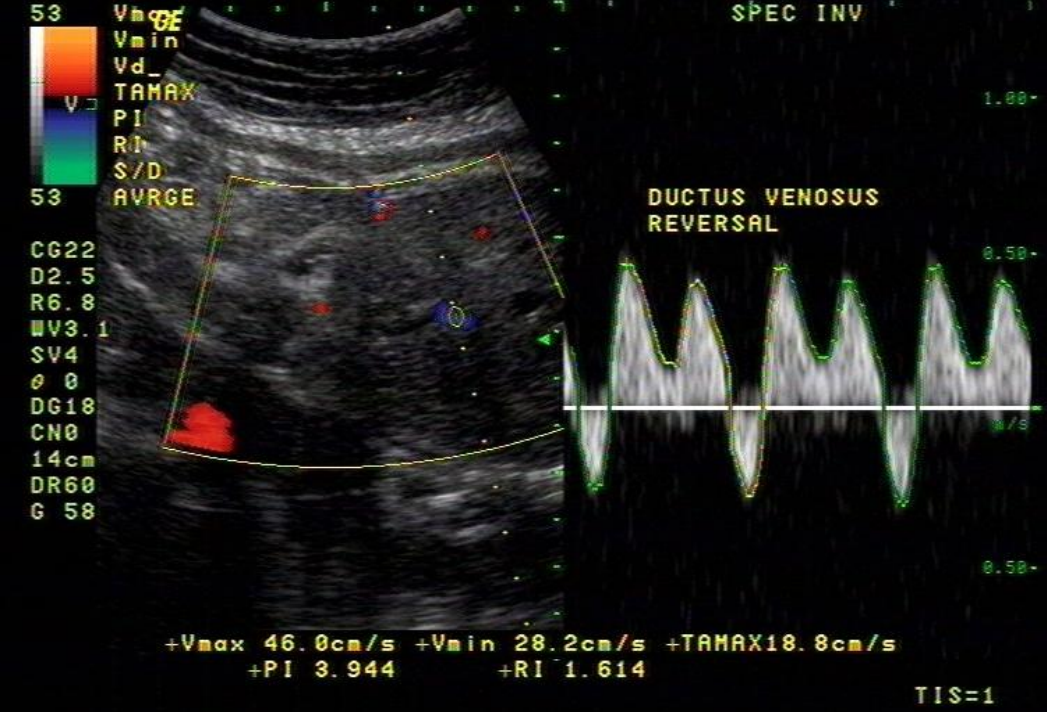


PSV 51.55 cm/s
EDV 21.22 cm/s
MnV 32.23 cm/s
RI 0.59
PI 0.94
SD 2.43
HR 154 bpm

Cine 62

4.0 sec





Thank You

