

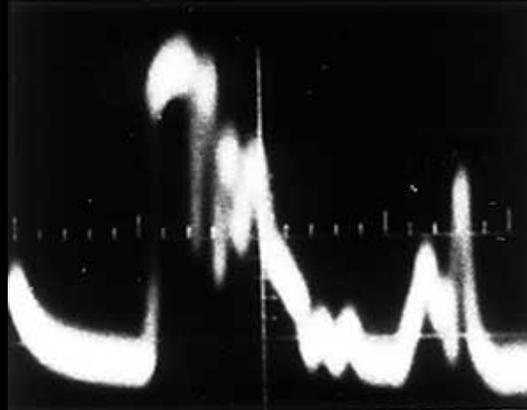
Ultrasound for Dilation and Evacuation

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2 October 2014



NATIONAL
ABORTION
FEDERATION

Orientation to Ultrasound



BASICS OF ULTRASOUND

Transabdominal Probe

- All probes have a line or notch that marks the “top” of the probe
- Keep the line towards the patient’s head or right
 - This will keep your images oriented properly
 - And keep you oriented!

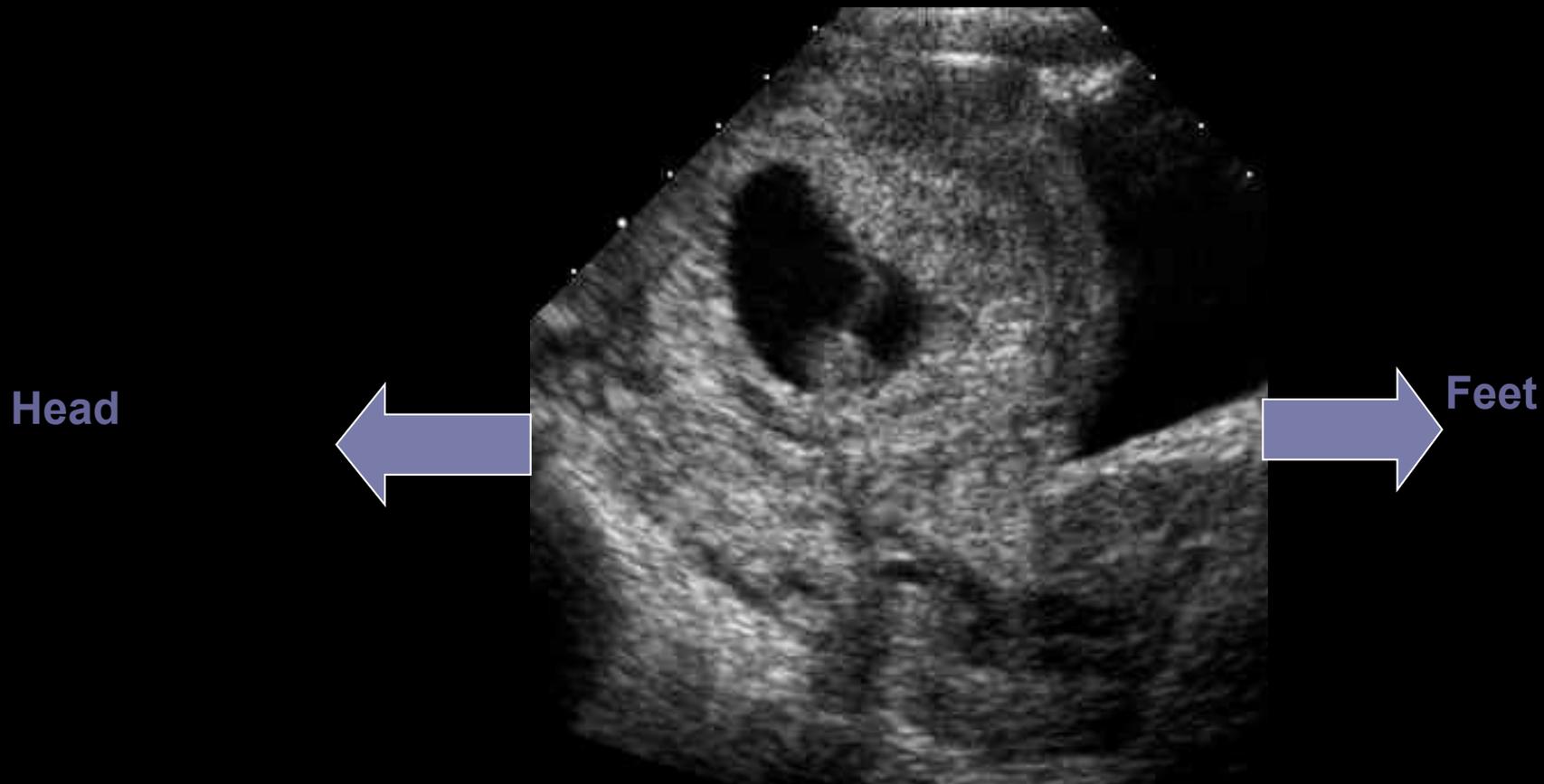


Transabdominal: Transverse Views



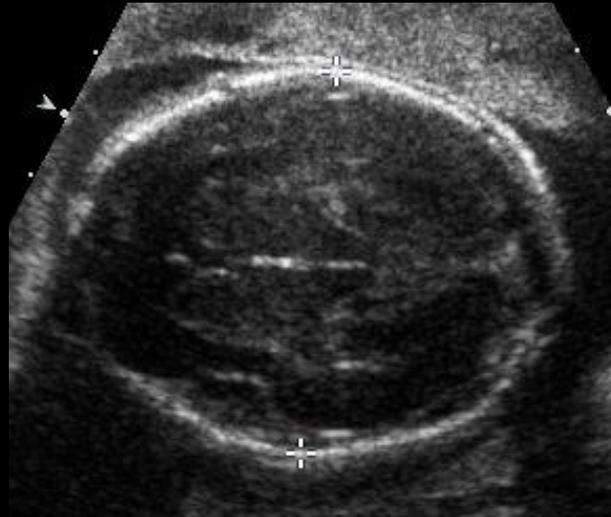
- Right to right & Left to left
 - If you keep notch on probe to the right!
- Abdominal wall on top

Transabdominal: Longitudinal Views



- Head to right; Feet to left
- Abdominal wall on top

Ultrasound for D&E



GESTATIONAL AGE DETERMINATION

Hadlock formulas

TABLE I: Regression Equations for Predicting Menstrual Age (MA) from Fetal Measurements (12–42 wks)

Fetal Measurements (cm)	Regression Equation	Standard Deviation (wks)	Maximum Error (wks)
BPD	$MA = 9.54 + 1.482 (BPD) + 0.1676 (BPD)^2$	1.36	5.1
HC	$MA = 8.96 + 0.540 (HC) + 0.0003 (HC)^3$	1.23	4.1
AC	$MA = 8.14 + 0.753 (AC) + 0.0036 (AC)^2$	1.31	4.6
FL	$MA = 10.35 + 2.460 (FL) + 0.170 (FL)^2$	1.28	4.9
BPD, AC	$MA = 9.57 + 0.524 (AC) + 0.1220 (BPD)^2$	1.18	3.8
BPD, HC	$MA = 10.32 + 0.009 (HC)^2 + 1.3200 (BPD) + 0.00012 (HC)^3$	1.21	3.5
BPD, FL	$MA = 10.50 + 0.197 (BPD) (FL) + 0.9500 (FL) + 0.7300 (BPD)$	1.10	3.6
HC, AC	$MA = 10.31 + 0.012 (HC)^2 + 0.3850 (AC)$	1.15	4.3
HC, FL	$MA = 11.19 + 0.070 (HC) (FL) + 0.2630 (HC)$	1.04	3.3
AC, FL	$MA = 10.47 + 0.442 (AC) + 0.3140 (FL)^2 - 0.0121 (FL)^3$	1.11	3.8
BPD, AC, FL	$MA = 10.61 + 0.175 (BPD) (FL) + 0.2970 (AC) + 0.7100 (FL)$	1.06	3.4
HC, BPD, FL	$MA = 11.38 + 0.070 (HC) (FL) + 0.9800 (BPD)$	1.04	3.2
HC, AC, FL	$MA = 10.33 + 0.031 (HC) (FL) + 0.3610 (HC) + 0.0298 (AC) (FL)$	1.03	3.4
HC, AC, BPD	$MA = 10.58 + 0.005 (HC)^2 + 0.3635 (AC) + 0.02864 (BPD) (AC)$	1.14	4.0
BPD, HC, AC, FL	$MA = 10.85 + 0.060 (HC) (FL) + 0.6700 (BPD) + 0.1680 (AC)$	1.02	3.2

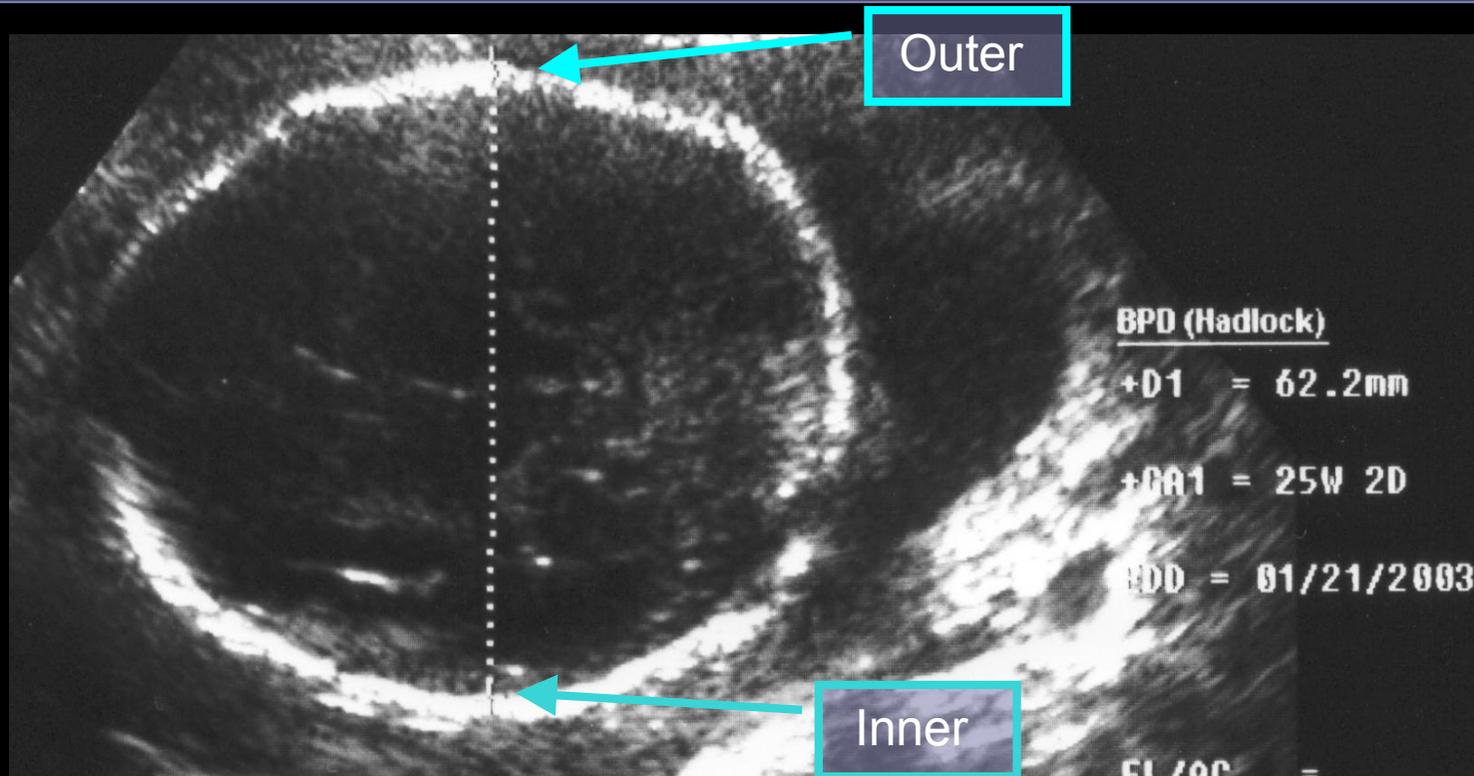
From Hadlock FP, Deter RL, B. HR, Park SK. Estimating fetal age: computer-assisted analysis of multiple fetal growth parameters. Radiology 1984;152(2):497-501.

Error in Hadlock formulas

TABLE II: Subgroup Variability in Predicting Menstrual Age Using the Regression Equations in TABLE I

Fetal Parameters	Subgroup Variability (± 2 SD) in Weeks				
	12-18 Weeks (N = 43)	18-24 Weeks (N = 69)	24-30 Weeks (N = 76)	30-36 Weeks (N = 95)	36-42 Weeks (N = 78)
BPD	± 1.19	± 1.73	± 2.18	± 3.08	± 3.20
HC	± 1.19	± 1.48	± 2.06	± 2.98	± 2.70
AC	± 1.66	± 2.06	± 2.18	± 2.96	± 3.04
FL	± 1.38	± 1.80	± 2.08	± 2.96	± 3.12
BPD, AC	± 1.26	± 1.68	± 1.92	± 2.60	± 2.88
BPD, HC	± 1.08	± 1.49	± 1.99	± 2.86	± 2.64
BPD, FL	± 1.12	± 1.46	± 1.84	± 2.60	± 2.62
HC, AC	± 1.20	± 1.52	± 1.98	± 2.68	± 2.52
HC, FL	± 1.08	± 1.34	± 1.86	± 2.52	± 2.28
AC, FL	± 1.32	± 1.64	± 1.88	± 2.66	± 2.60
BPD, AC, FL	± 1.20	± 1.52	± 1.82	± 2.50	± 2.52
BPD, HC, FL	± 1.04	± 1.35	± 1.81	± 2.52	± 2.34
HC, AC, FL	± 1.14	± 1.46	± 1.86	± 2.52	± 2.34
HC, AC, BPD	± 1.21	± 1.58	± 1.94	± 2.60	± 2.52
BPD, HC, AC, FL	± 1.08	± 1.40	± 1.80	± 2.44	± 2.30

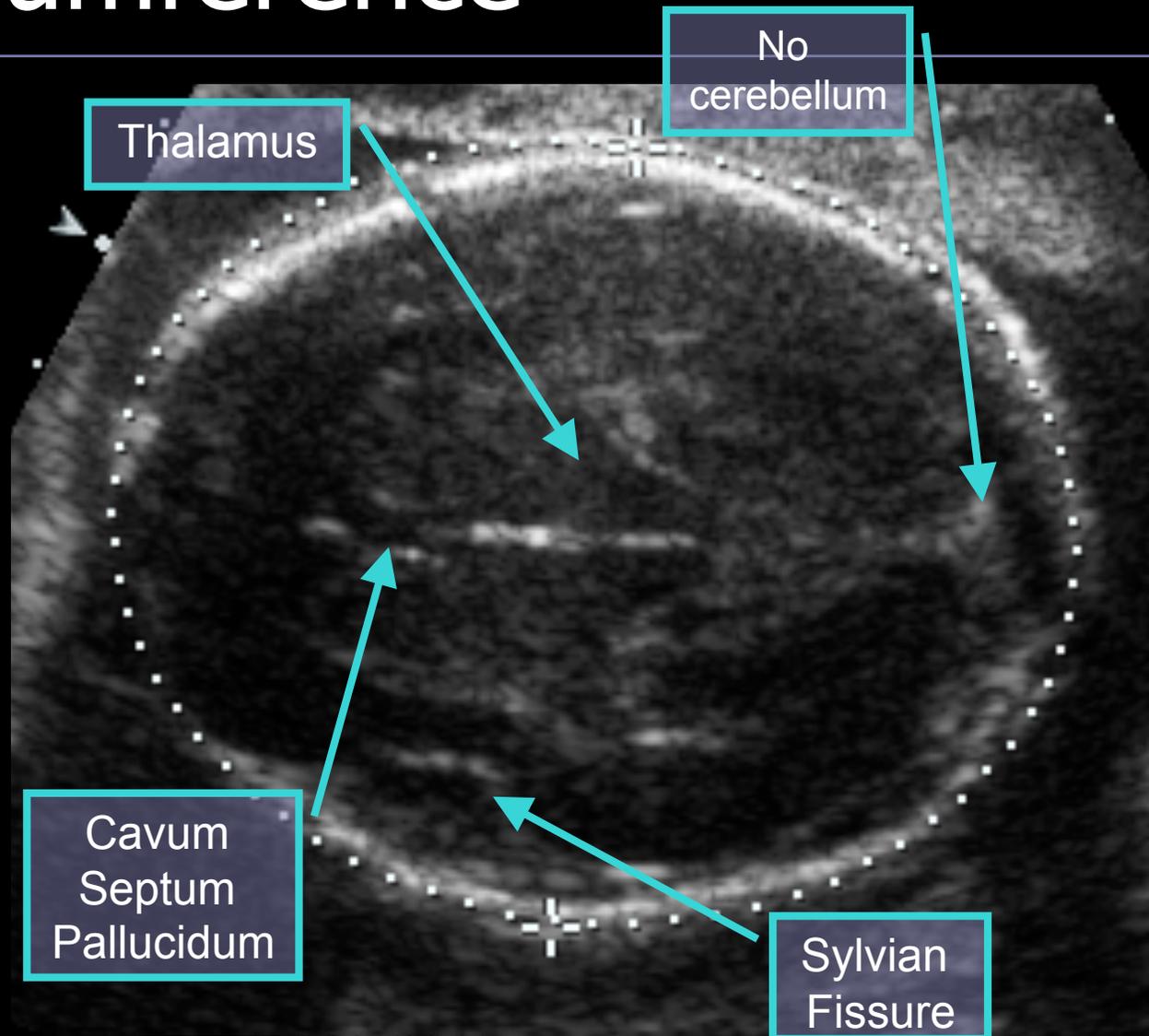
Biparietal Diameter (BPD)



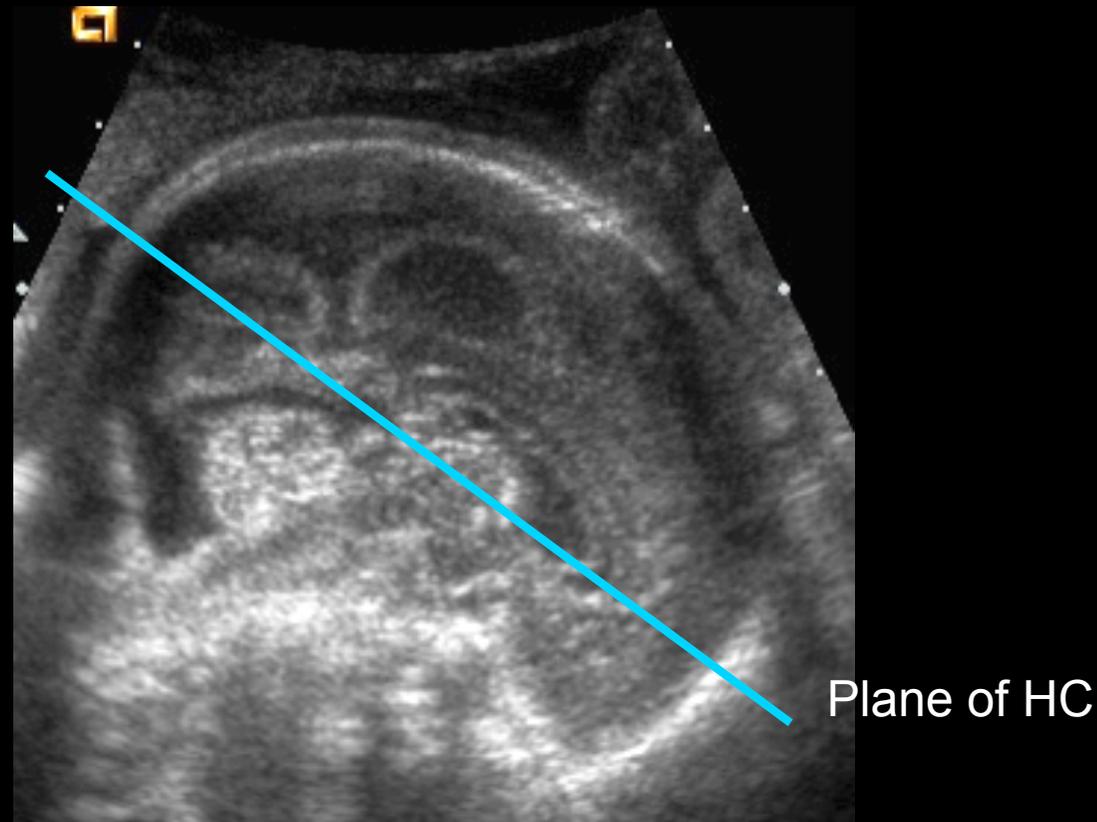
- Inner to outer parietal bones
 - Or middle to middle

Head Circumference

- Brain is symmetric
 - Falx cerebri is midline
- Third ventricle is not visible
- HC view confirms multiple normal structures

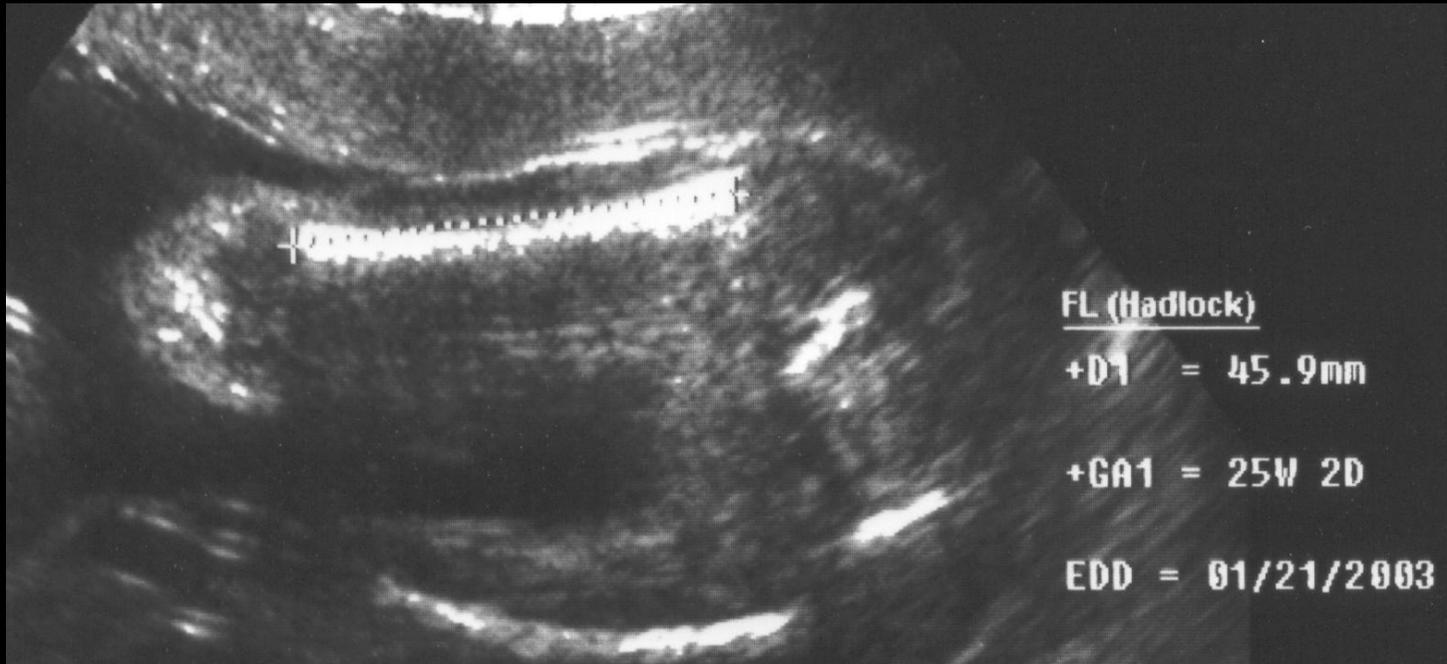


Longitudinal View of the Calvarium



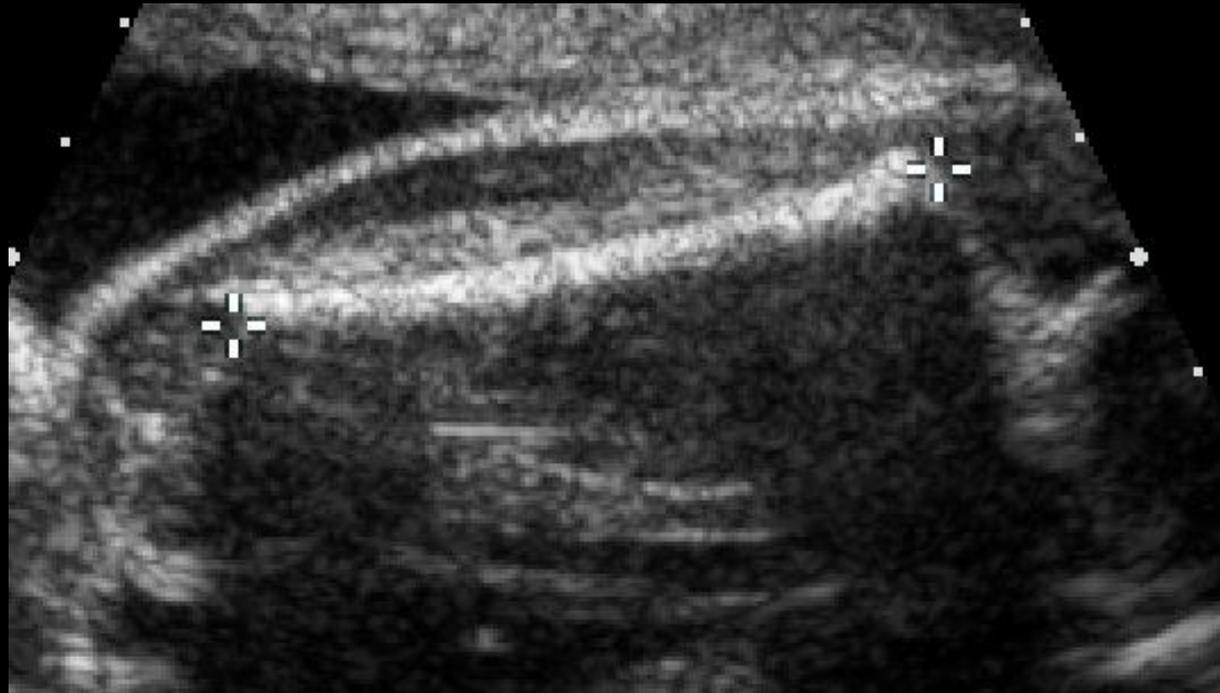
- Shows Corpus Callosum clearly
- Midbrain and Vermis of cerebellum visible

Femur Length



- Measure full length of diaphysis of femur

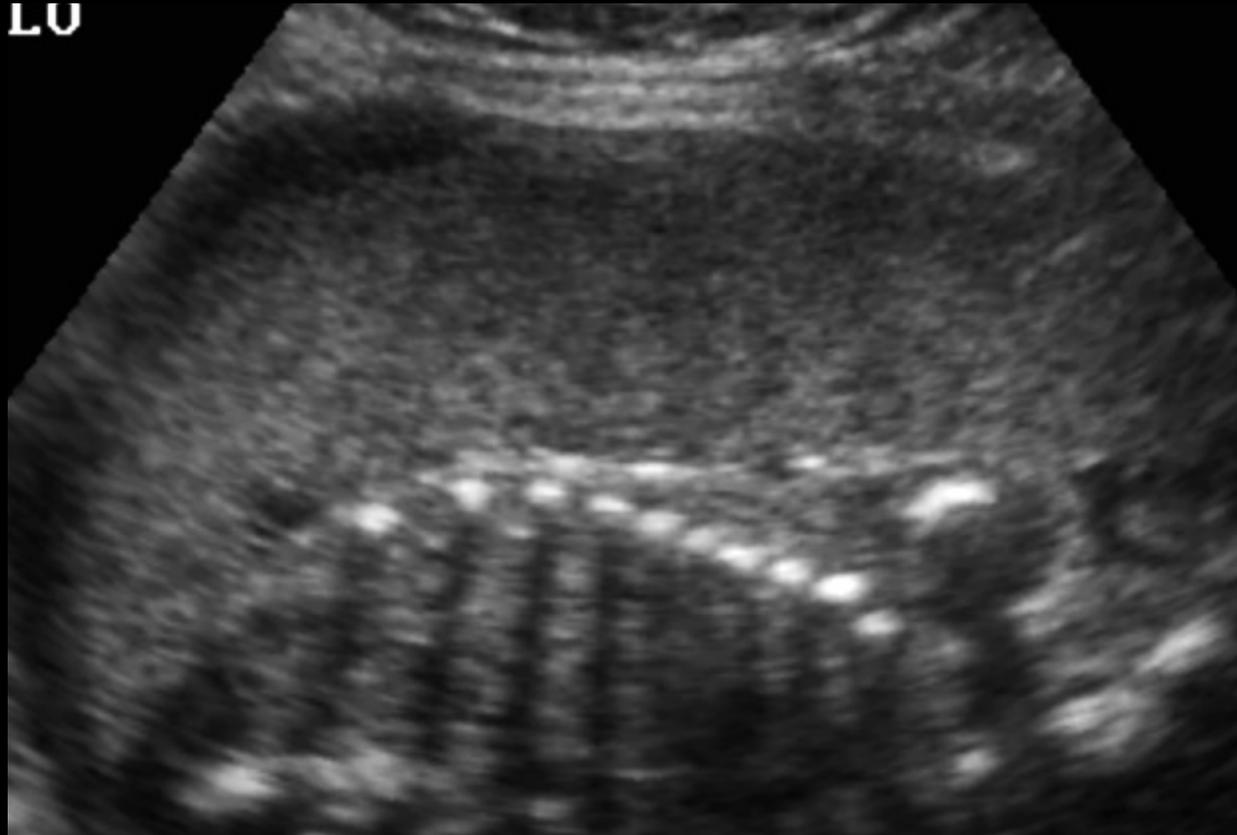
Femur Length



- Shadowing shows that the full length of the femur is seen

Placental Localization

LU



Focal uterine contractions



- Focal contractions can create the appearance of placenta previa
- Will resolve with time

Focal contractions

- Contraction resolved
- Placenta far from cervix



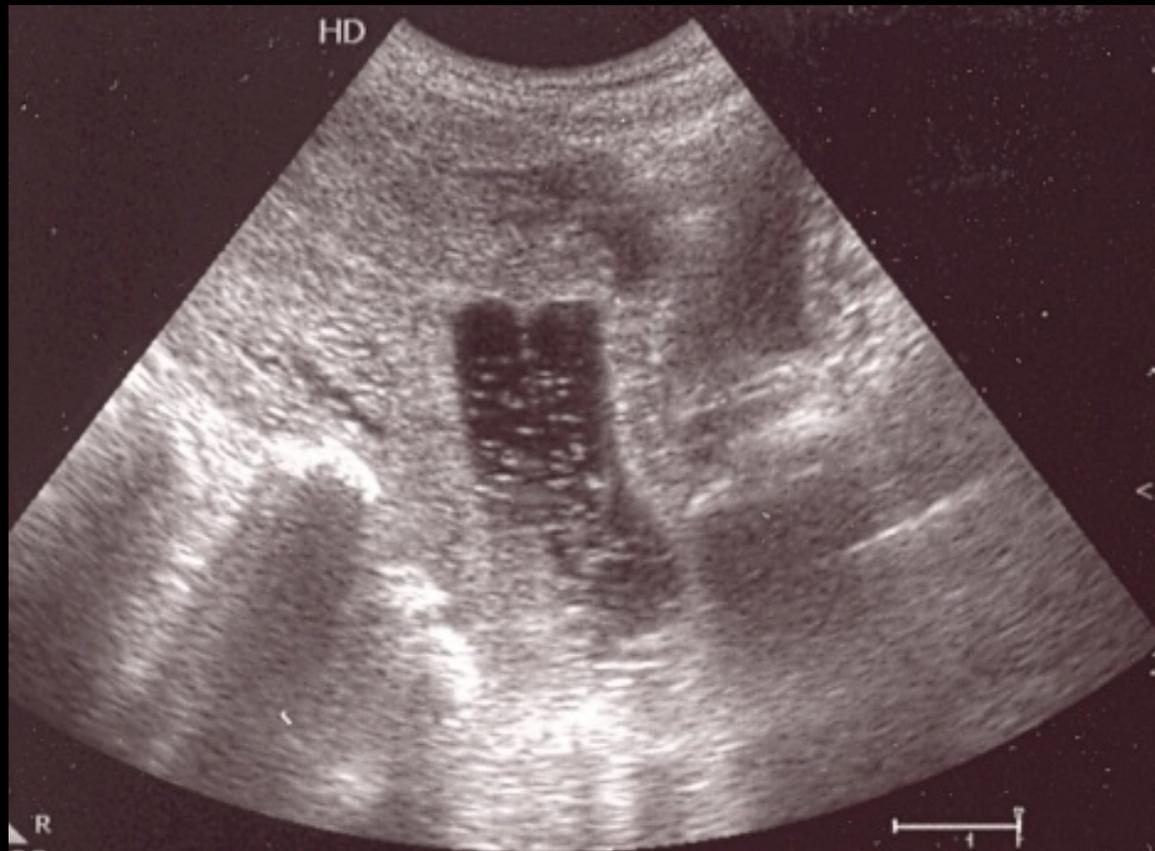
Ultrasound in Abortion Care

ULTRASOUND GUIDANCE AT DILATION & EVACUATION

Principles of Ultrasound Guidance

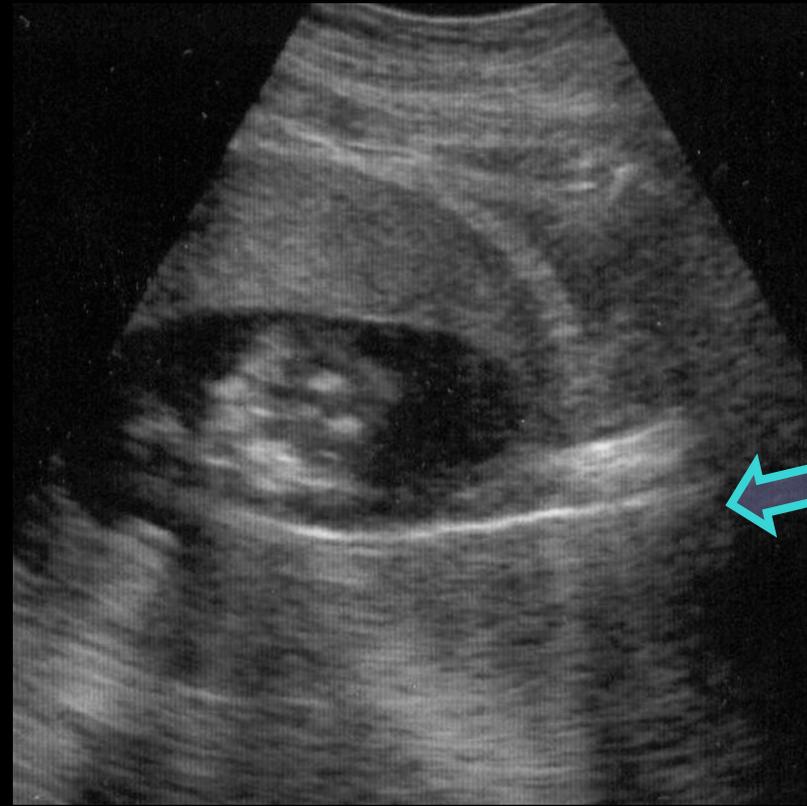
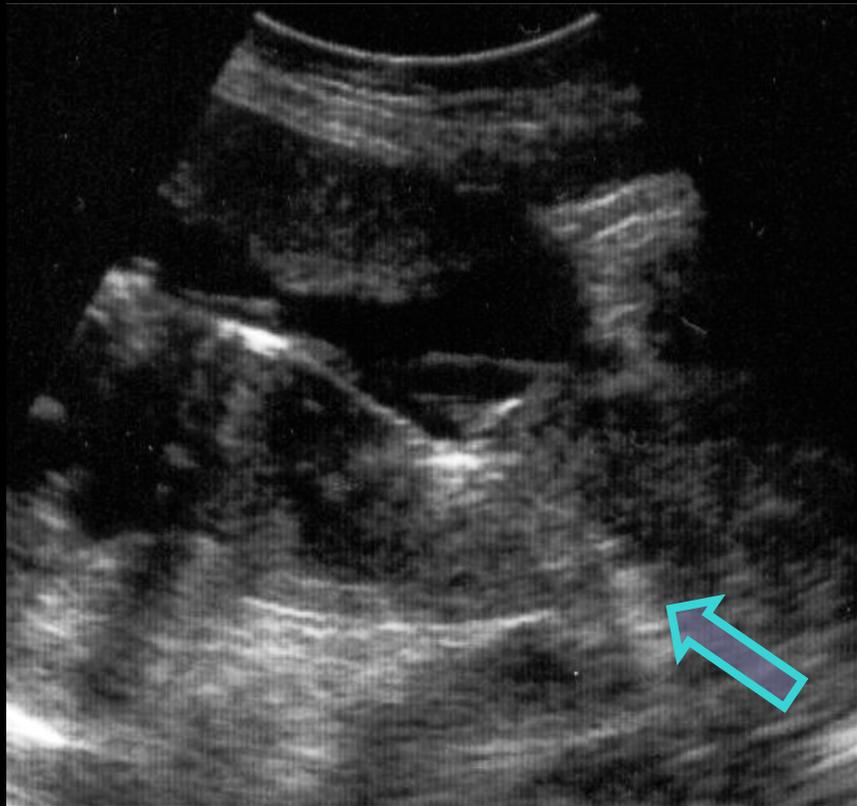
- Technique
 - Trans-abdominal in longitudinal plane
- Teamwork
 - Surgeon and sonographer need to work together
 - Sonographer should “guide” the surgeon
 - Show surgeon where to go
 - Not “follow”

Dilapan in cervix

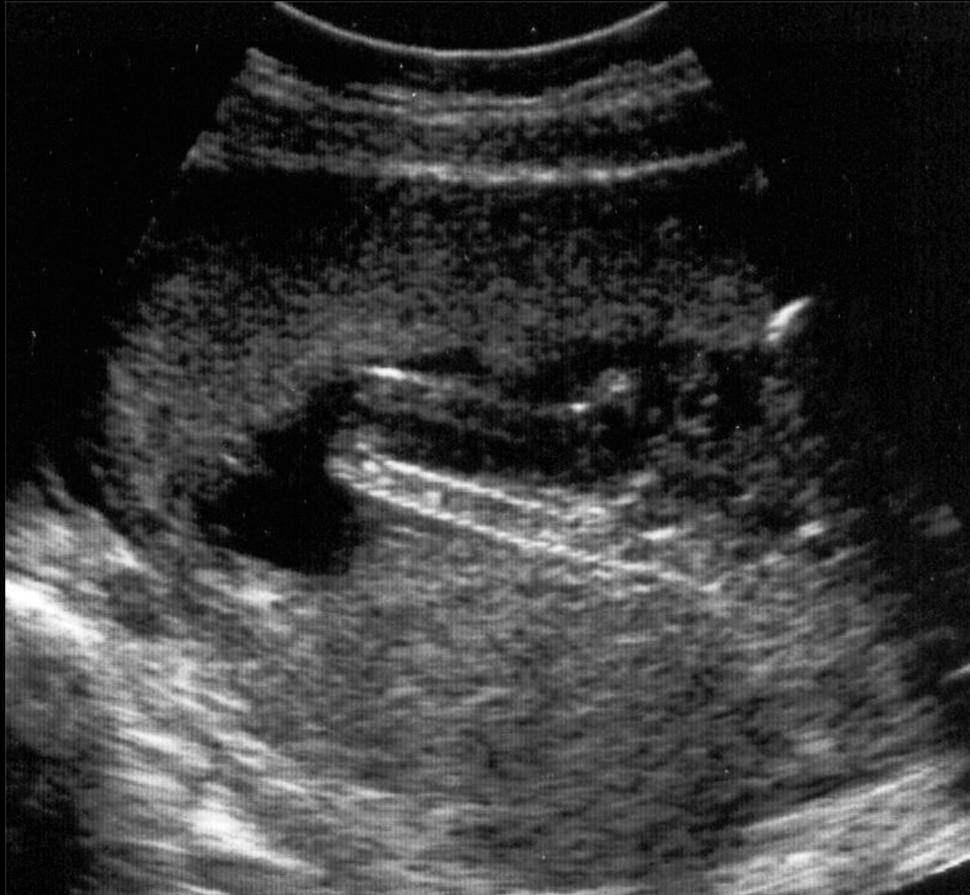


- Dilapan in the cervix in a patient with anhydramnios

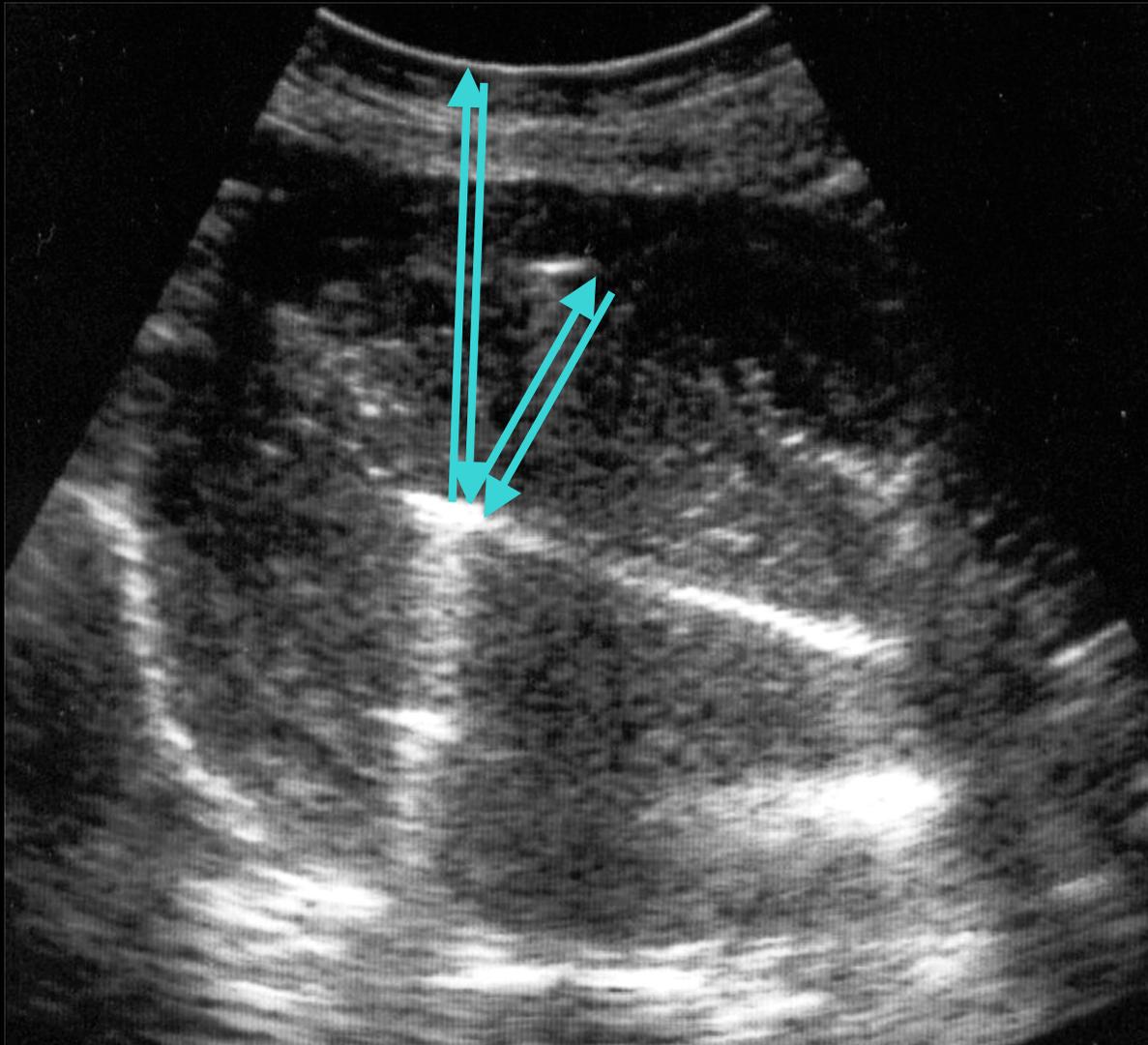
Rigid dilator in uterus



Forceps in uterus

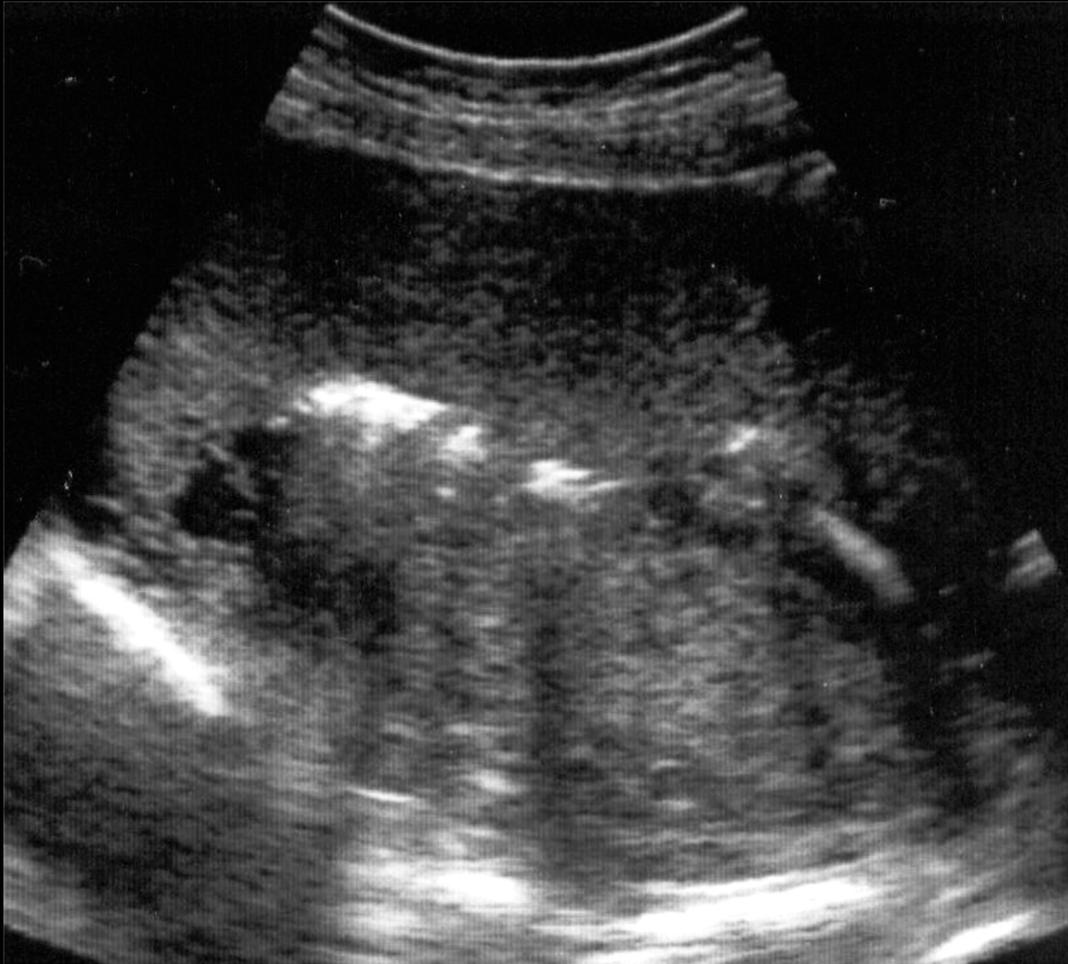


Forcep Artifact



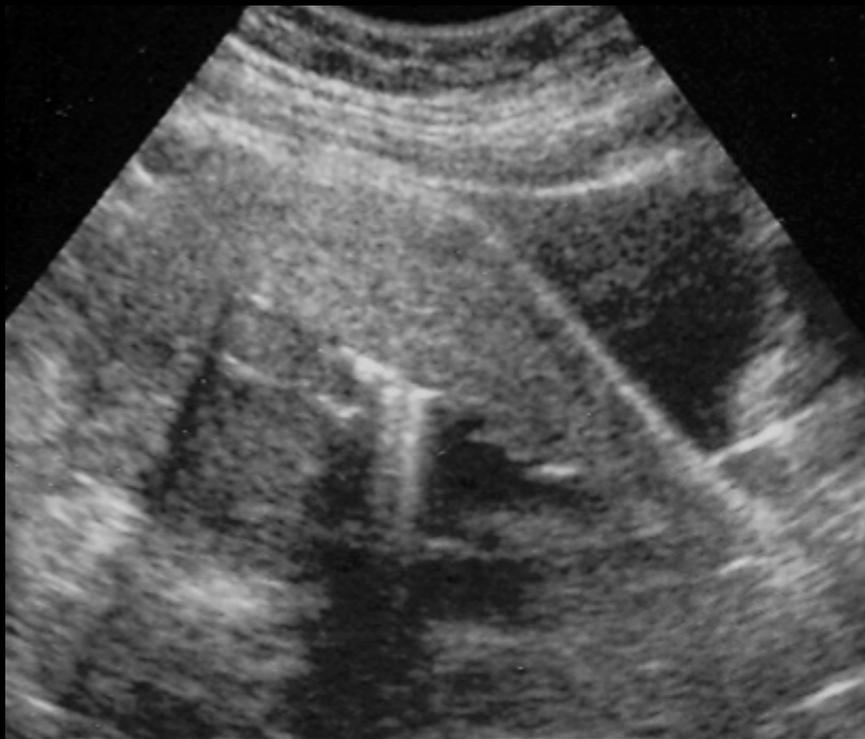
- 3 forcep blades are seen
- The closer pair are real

Air in uterus



- Air is introduced with each passage of instruments through the cervix
- Air can make it harder to see in hard cases

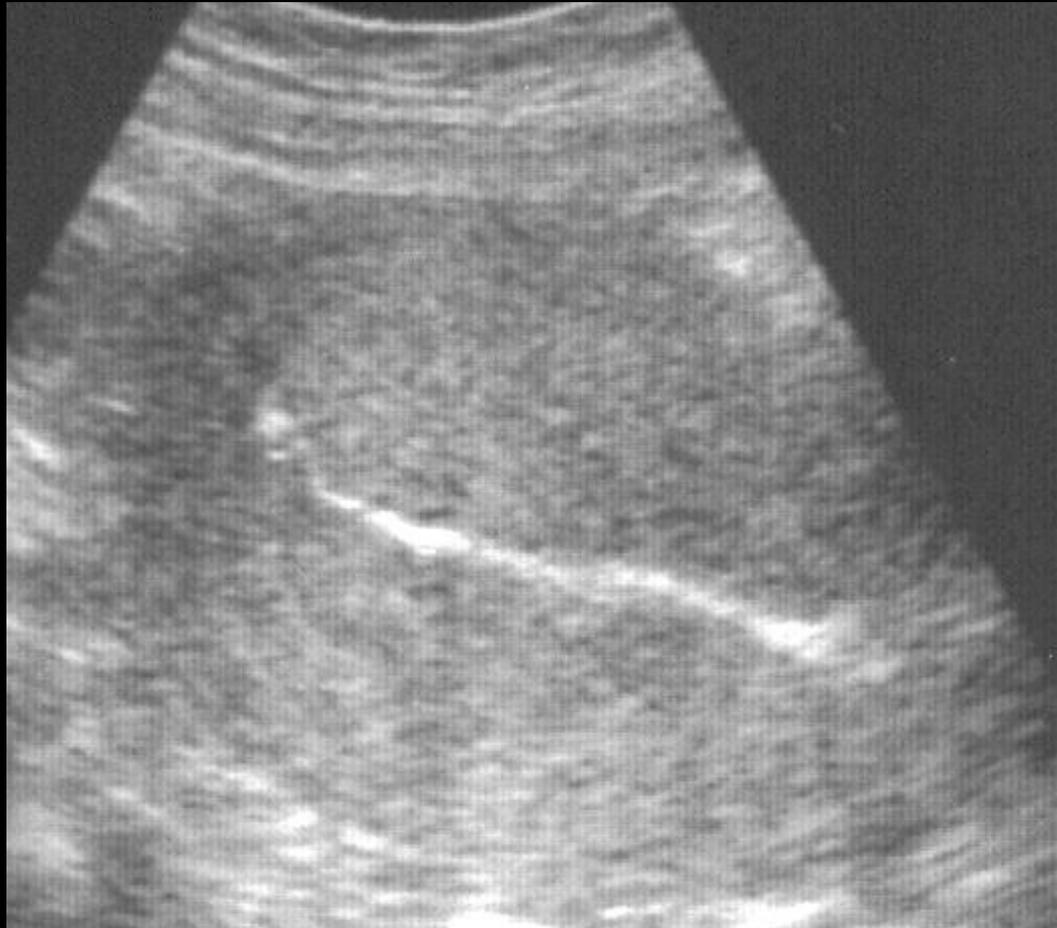
Canula in uterus



Sharp curet in uterus



Post-D&E



Ultrasound for D&E

- BPD and FL are sufficient for gestational age determination
 - Additional measurements do not increase accuracy
- Teamwork is key
- One step to confirming completion

Thank you

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