L'analyse du cœur foetal en dépistage aux 2e et 3e trimestre

E.Quarello

IMAGE
Institut Méditerranéen d'Imagerie Médicale Appliquée
À la Gynécologie, la Grossesse Et l'Enfance

CNEOF 2023

- Activité cardiaque (chiffrer la fréquence cardiaque si ellle semble inhabituelle)
- Position du cœur
- Aspect des quatre cavités cardiaques
- Equilibre des cavités
- Position et aspect des gros vaisseaux
- Position et aspect de l'estomac

2e trimestre



3e trimestre



La coupe des 3 Vaisseaux

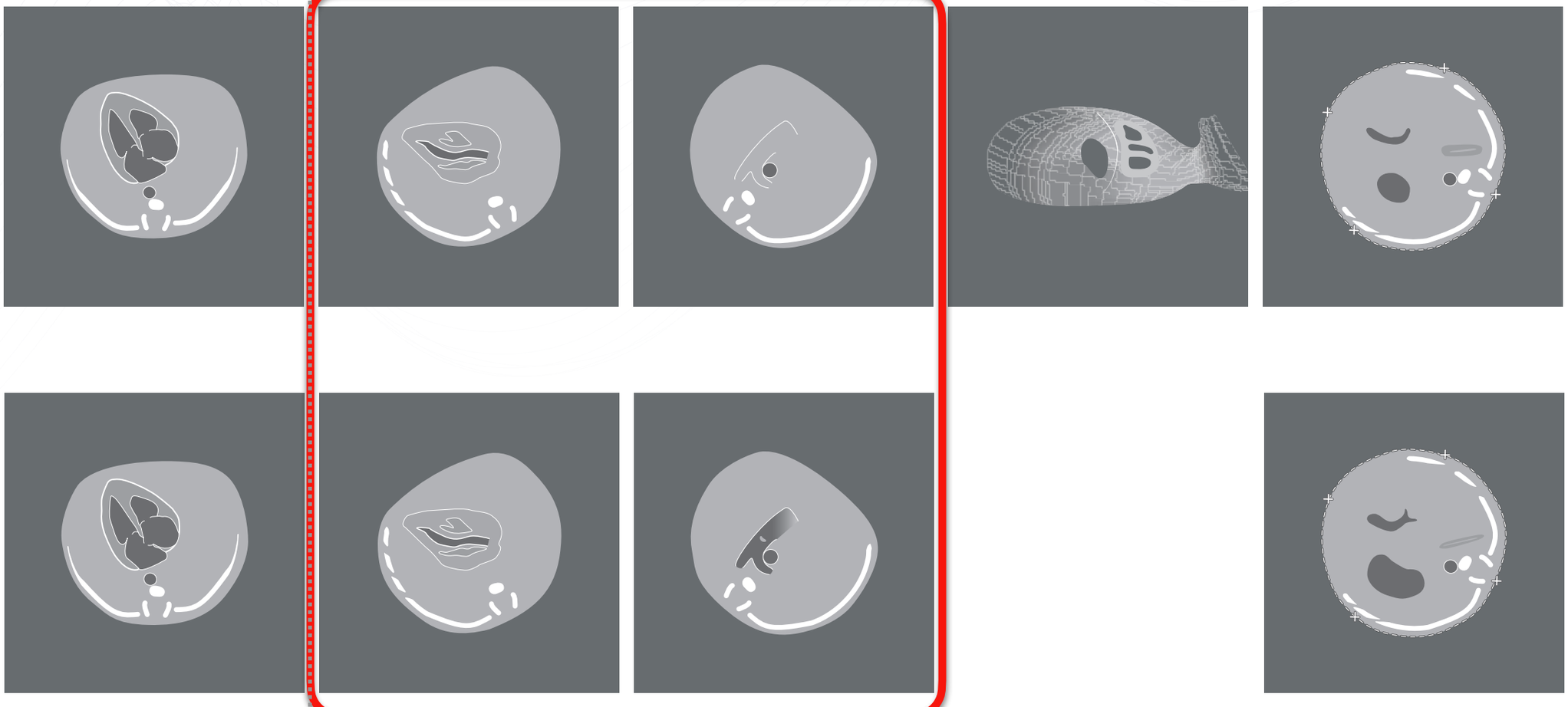
E.Quarello

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Institut Méditerranéen d'Imagerie Médicale Appliquée
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2e trimestre



3e trimestre

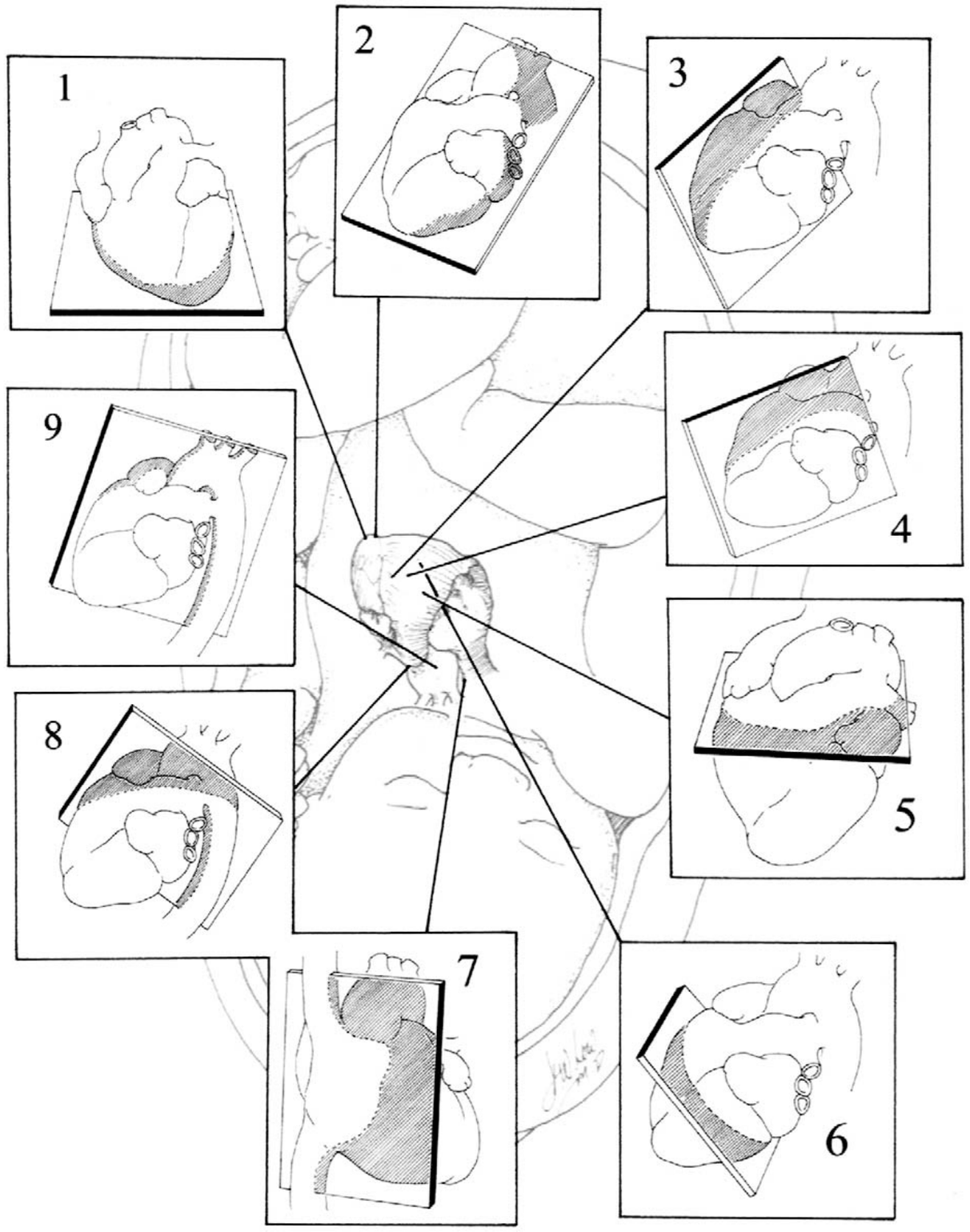
Admission **Ejection**

AMERICAN SOCIETY OF ECHOCARDIOGRAPHY REPORT

American Society of Echocardiography Guidelines and Standards for Performance of the Fetal Echocardiogram

A statement of the Pediatric Council of the American Society of Echocardiography represented by, Jack Rychik, MD, Nancy Ayres, MD, Bettina Cuneo, MD, Nina Gotteiner, MD, Lisa Hornberger, MD, Philip J. Spevak, MD, and Mary Van Der Veld, MD

J Am Soc Echocardiogr 2004;17:803-10.

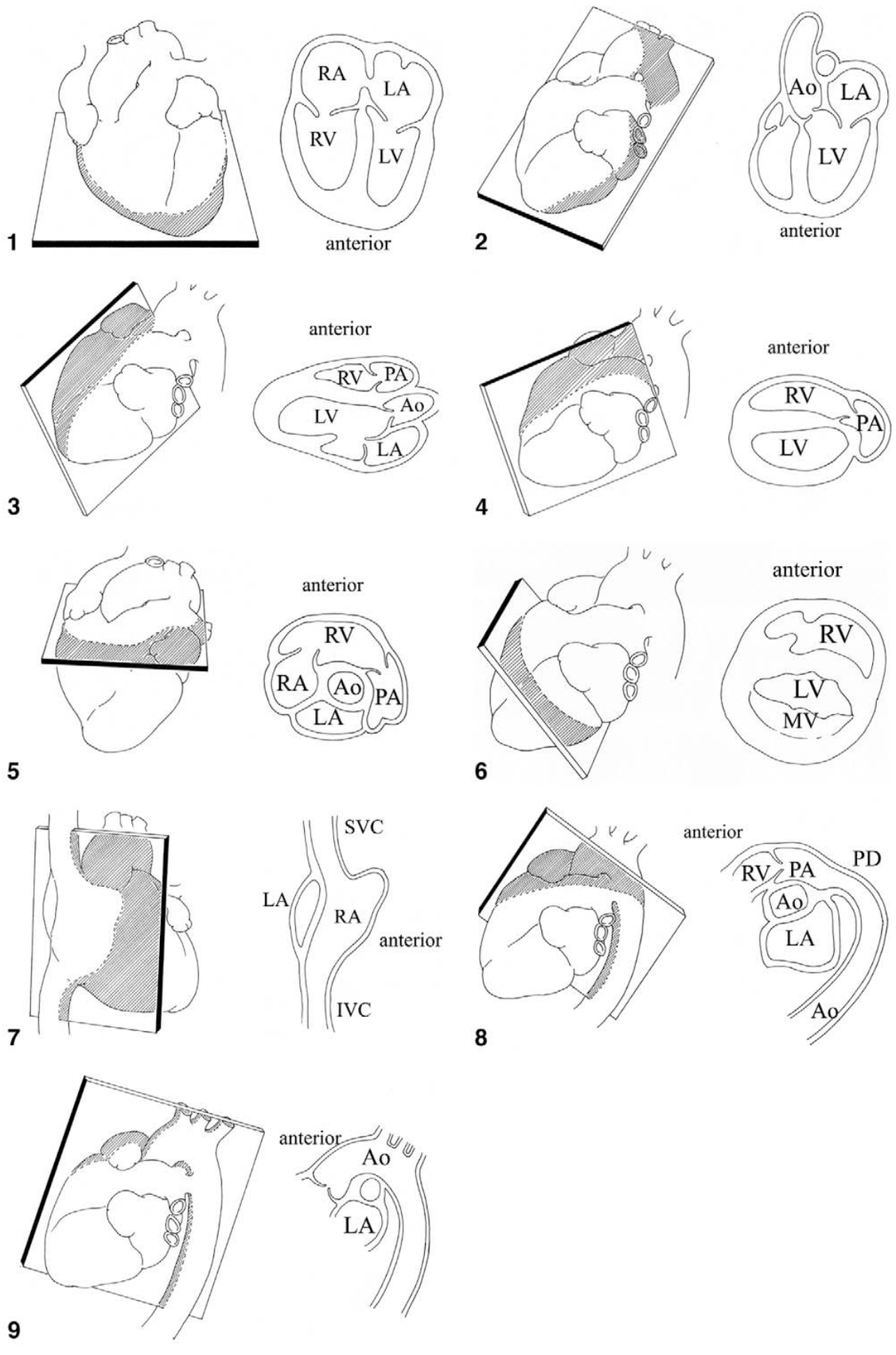


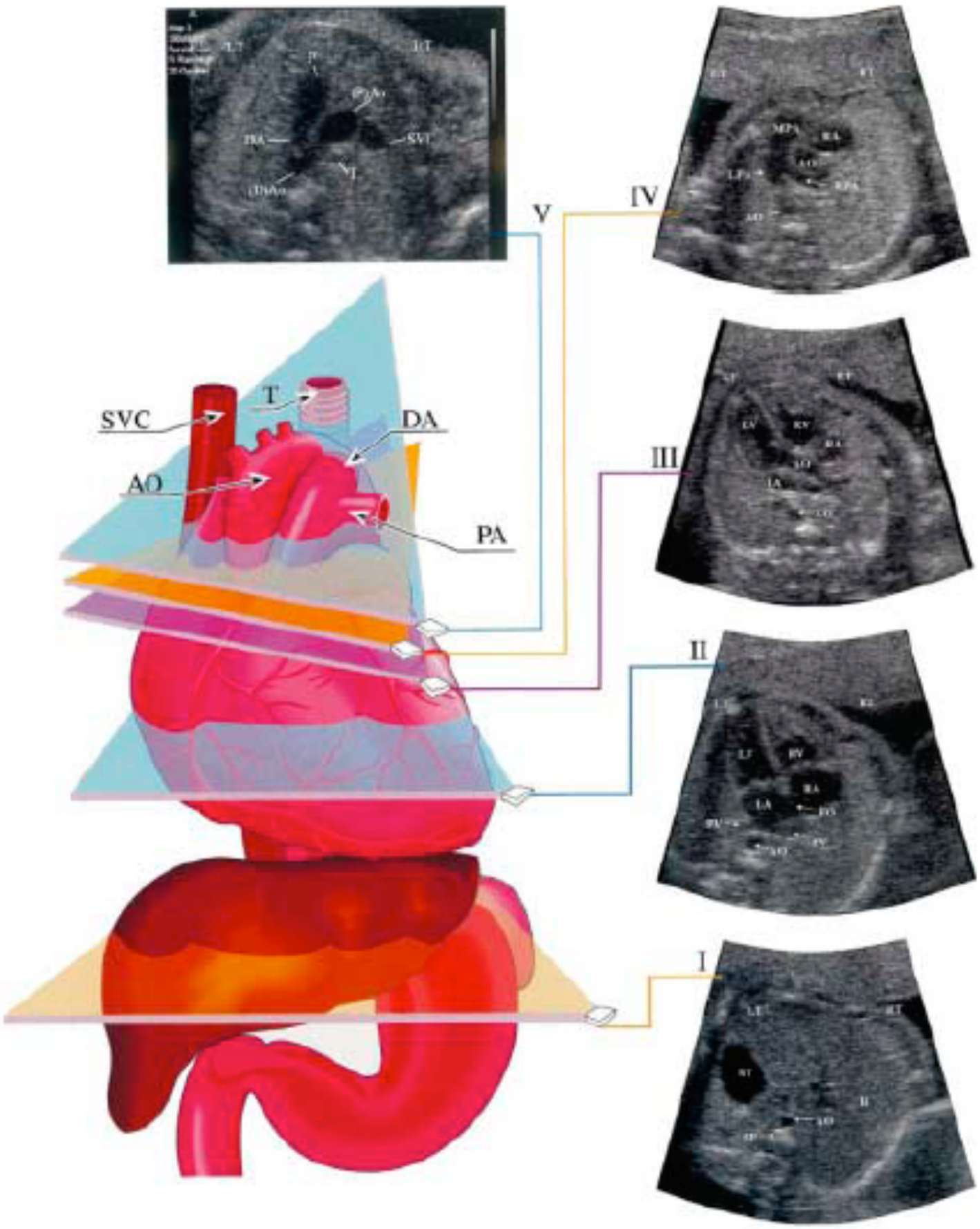
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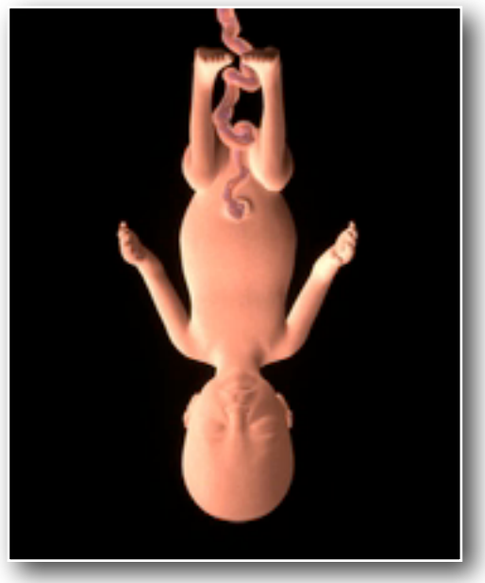
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J Am Soc Echocardiogr 2004;17:803-10.





Analyse étagée du coeur fœtal



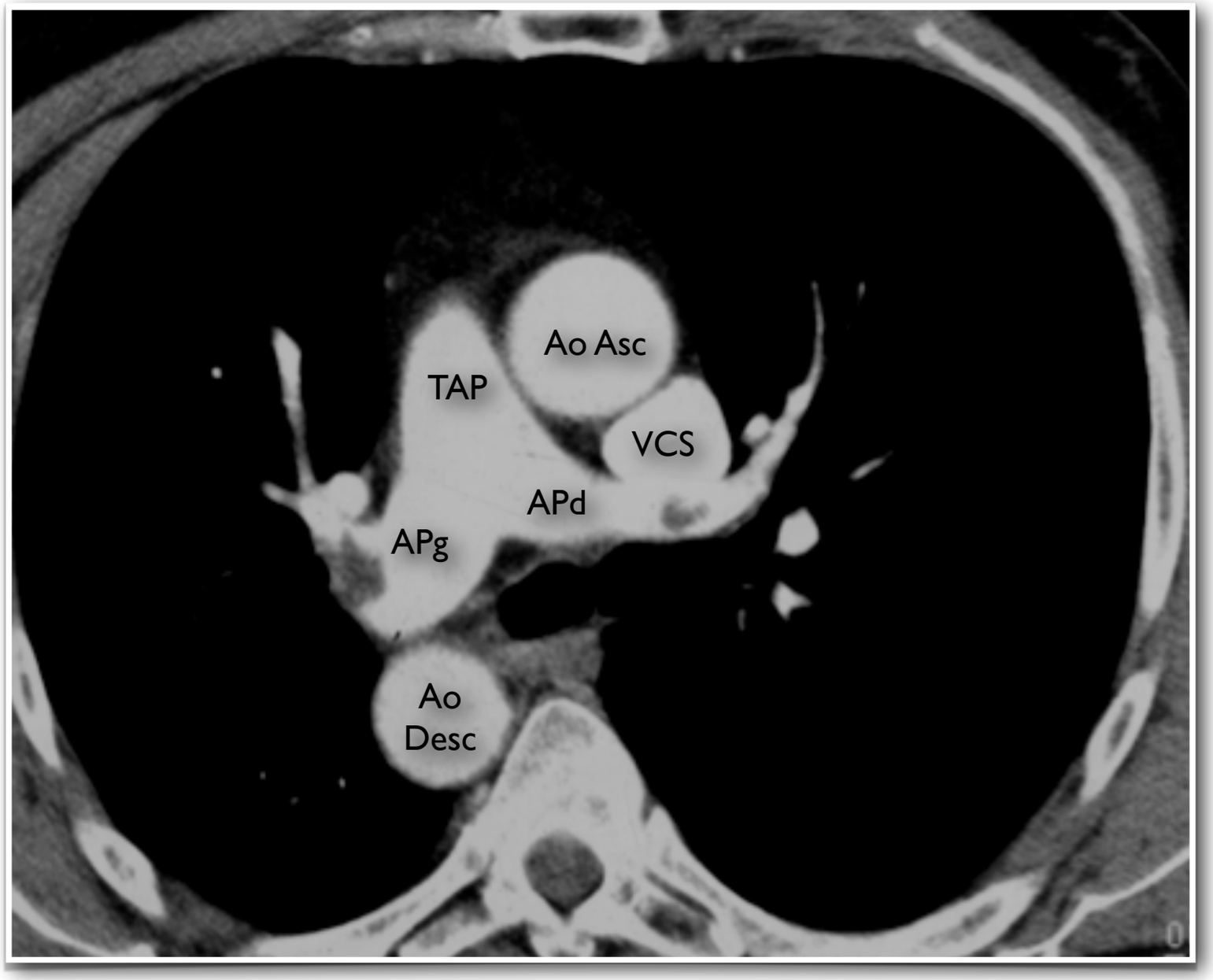
De Vore ISUOG

Céphalique

Coupe Axiale / TDM

Ant

Gauche



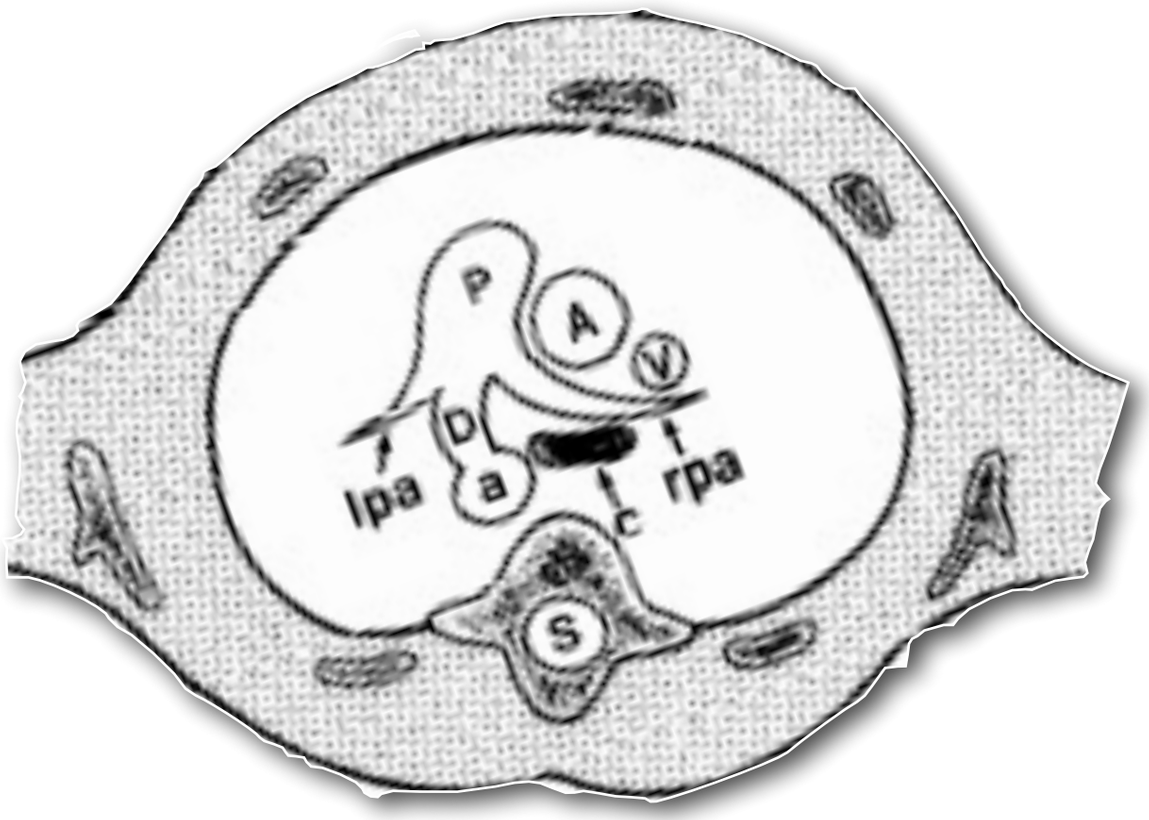
Droite

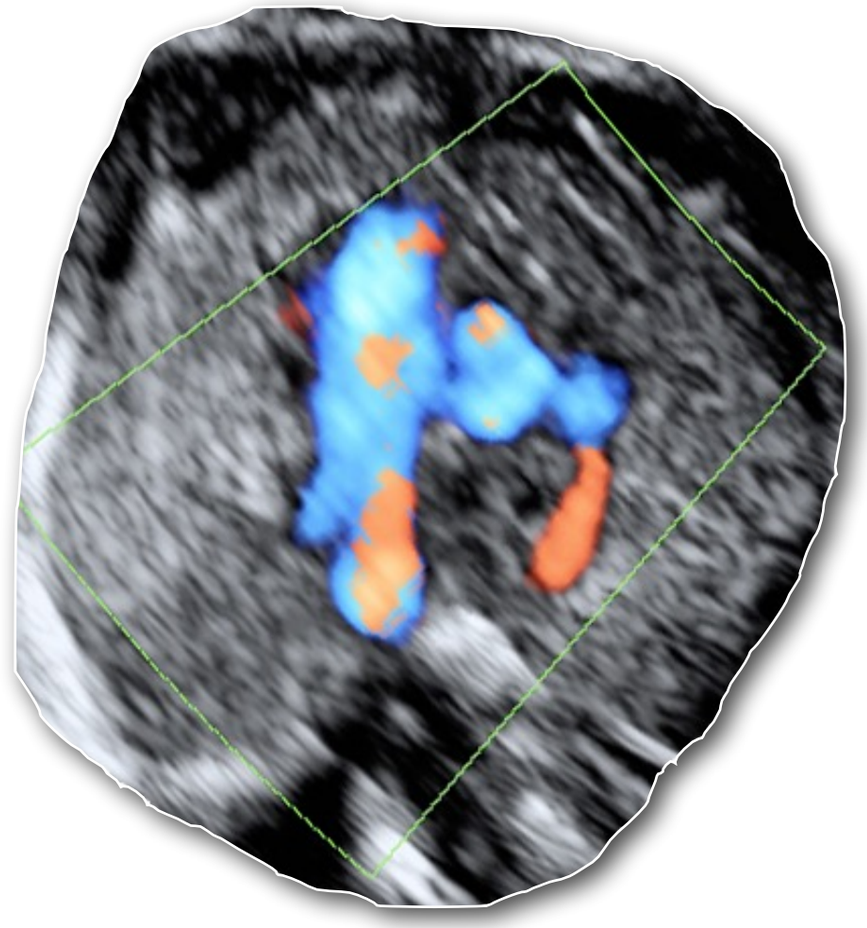
Post

Three-vessel view of the fetal upper mediastinum: an easy means of detecting abnormalities of the ventricular outflow tracts and great arteries during obstetric screening

S.-J. Yoo[*‡†††], *Y.-H. Lee*[*], *E. S. Kim*[†], *H. M. Ryu*[†], *M. Y. Kim*[†], *H.-K. Choi*[‡], *K. S. Cho*[‡] *and A. Kim*[**]

Ultrasound Obstet. Gynecol. 9 (1997) 173–182

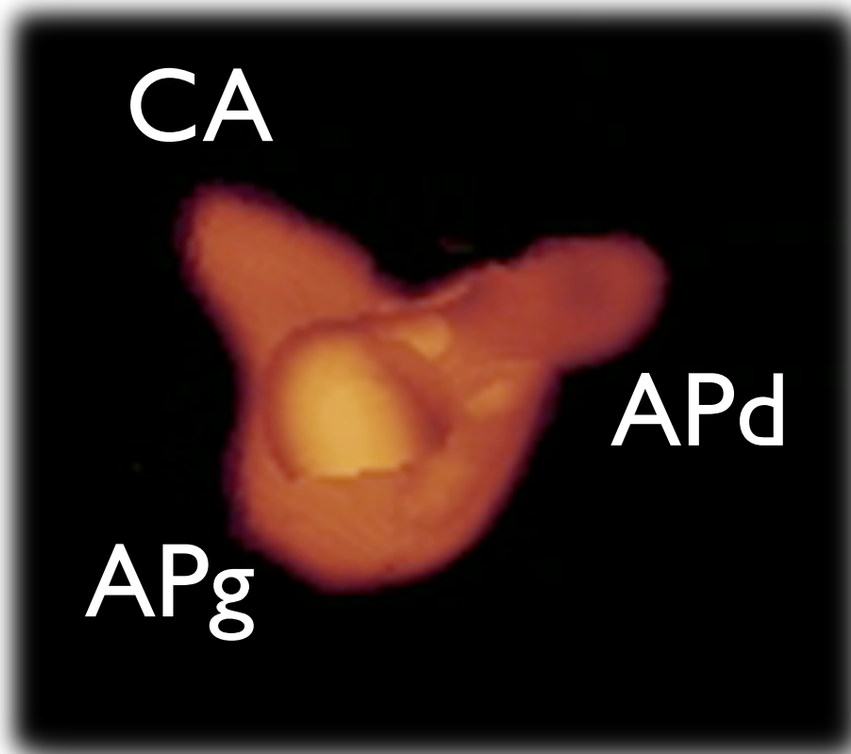








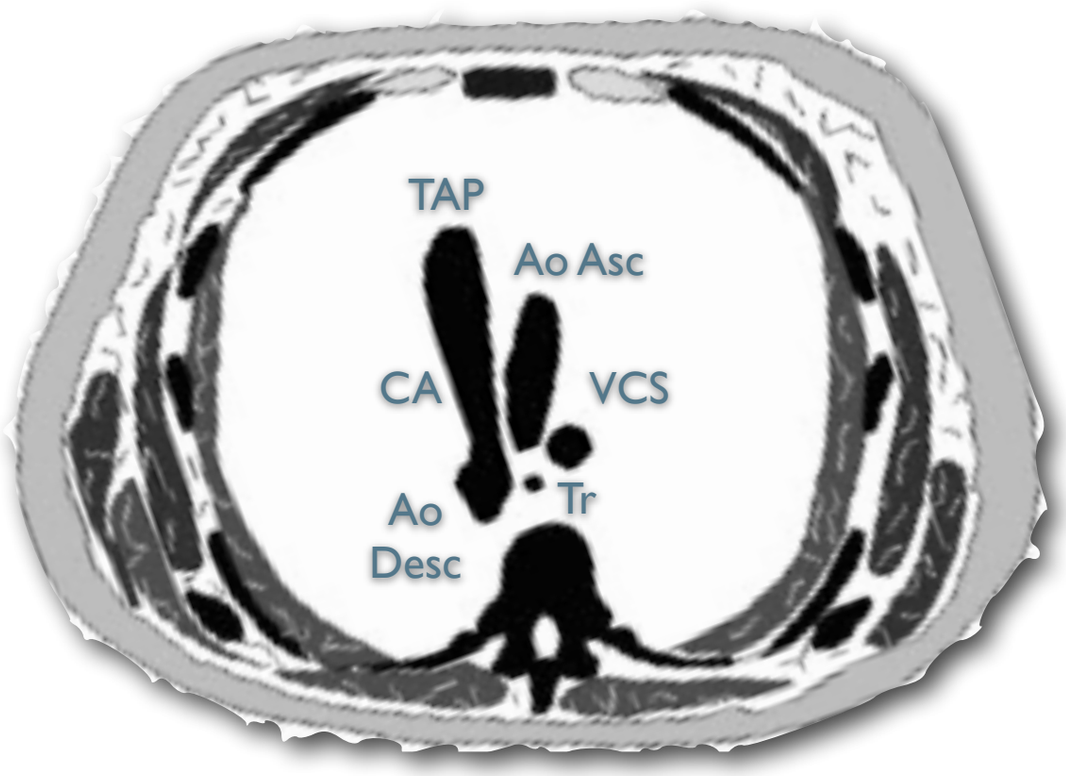
Dr JP.Bault

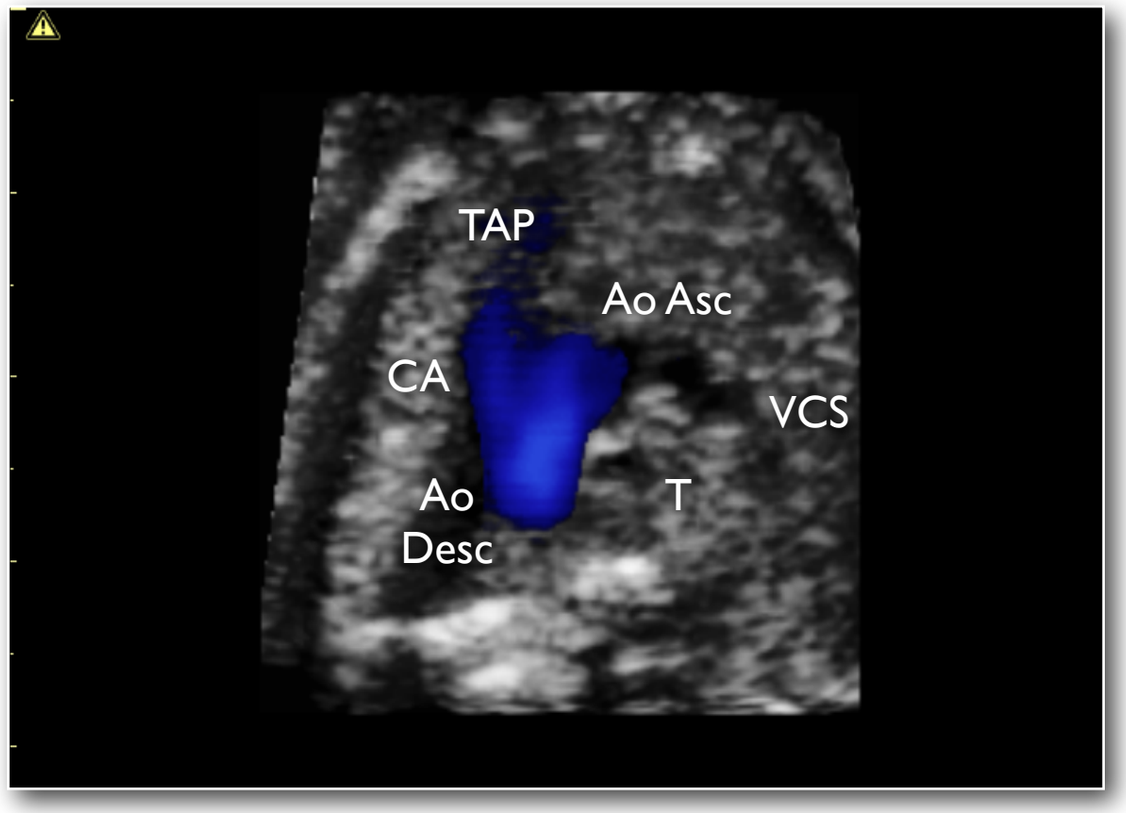


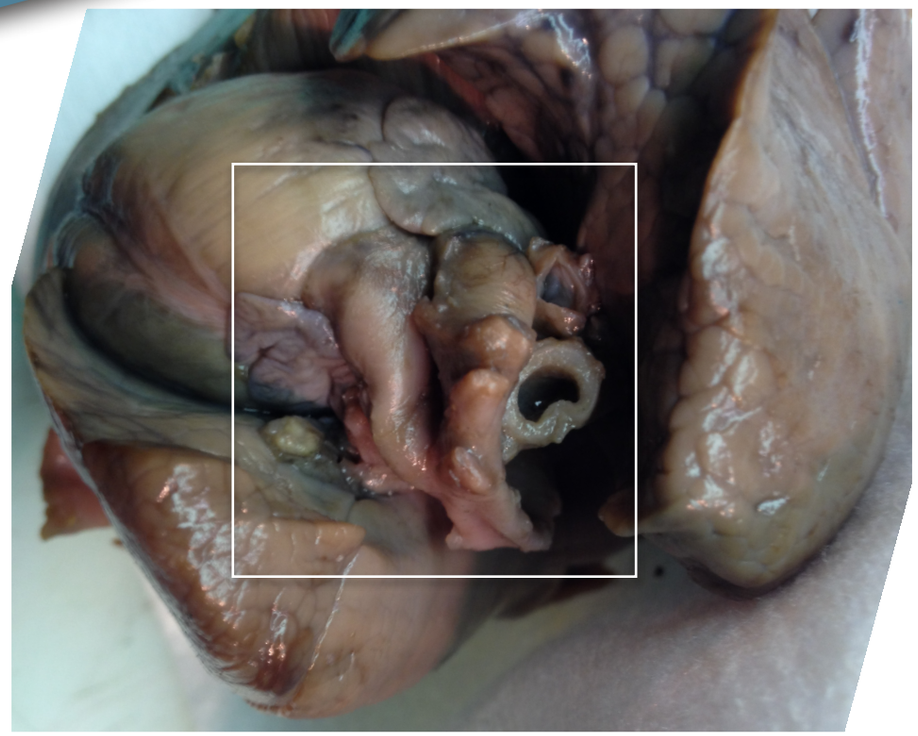
The three vessels and trachea view (3VT) in fetal cardiac scanning

S. YAGEL*, R. ARBEL†, E. Y. ANTEBY*, D. RAVEH‡ and R. ACHIRON§

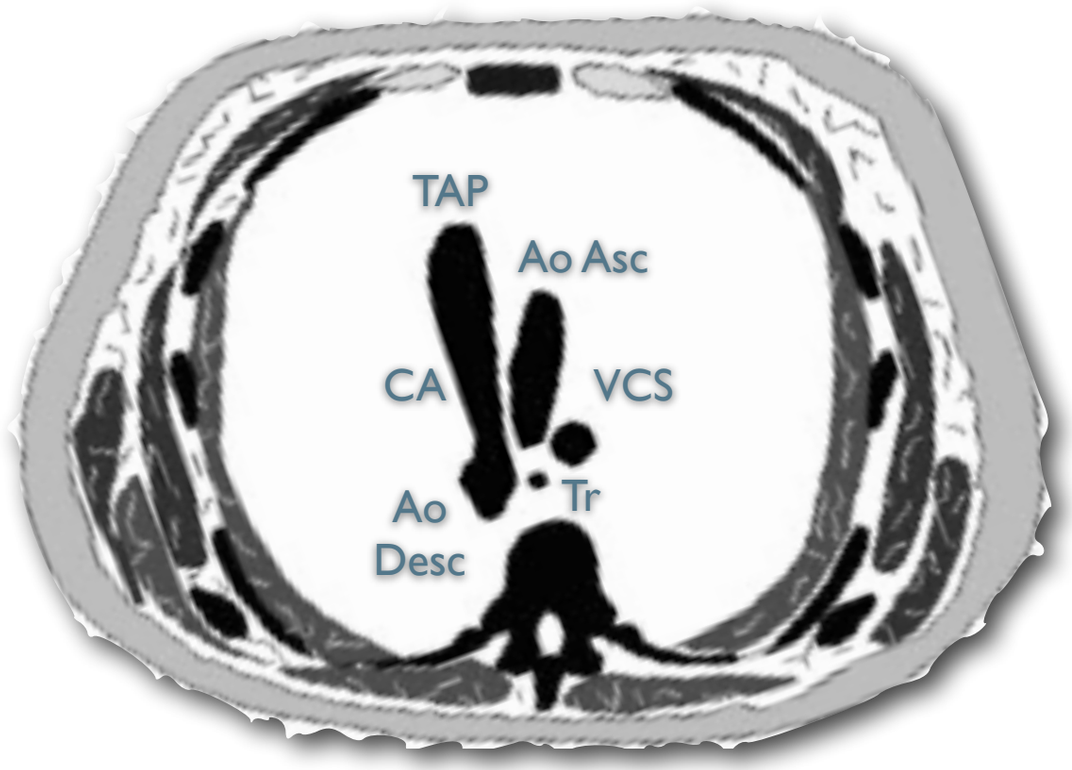
Ultrasound Obstet Gynecol 2002; 20: 340–345

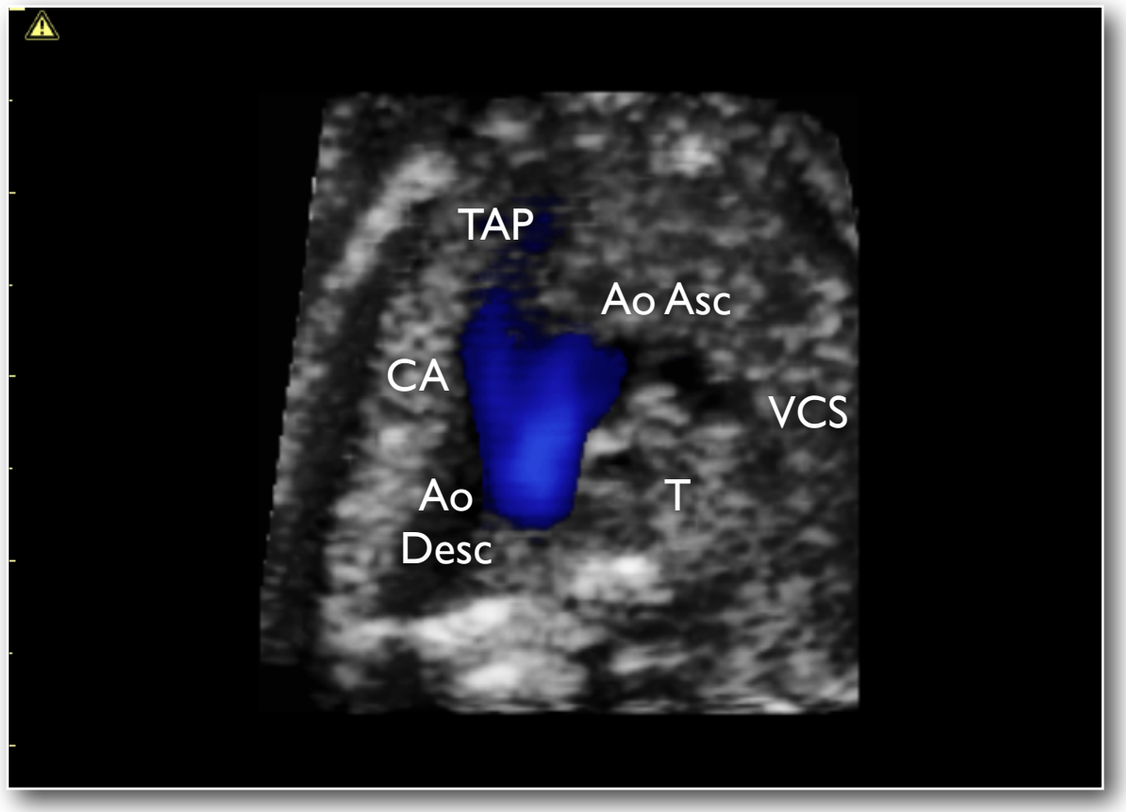






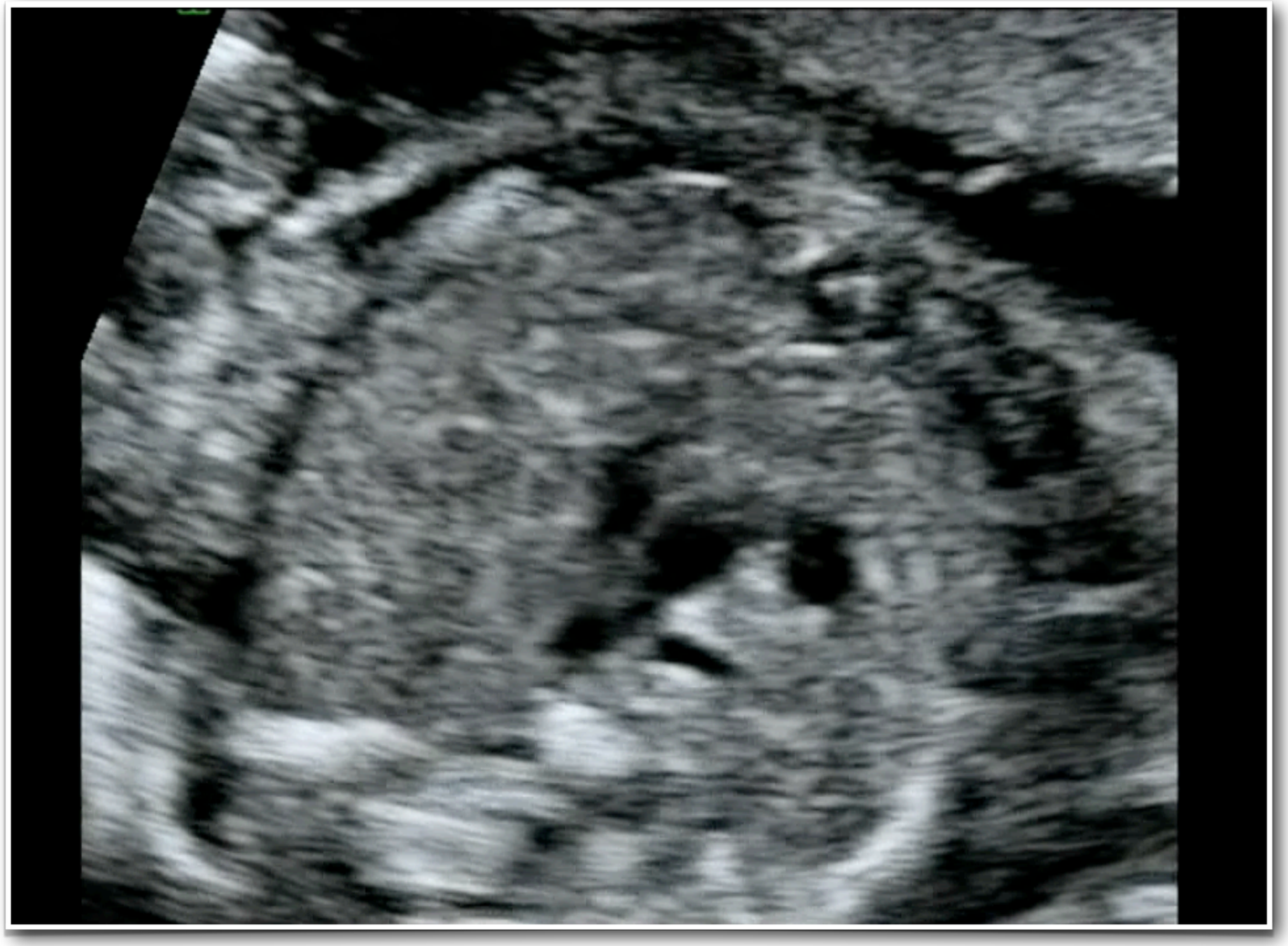



TAP
Ao Asc
CA
VCS
Ao
Desc
Tr


TAP
Ao Asc
CA
VCS
Ao
Desc
T

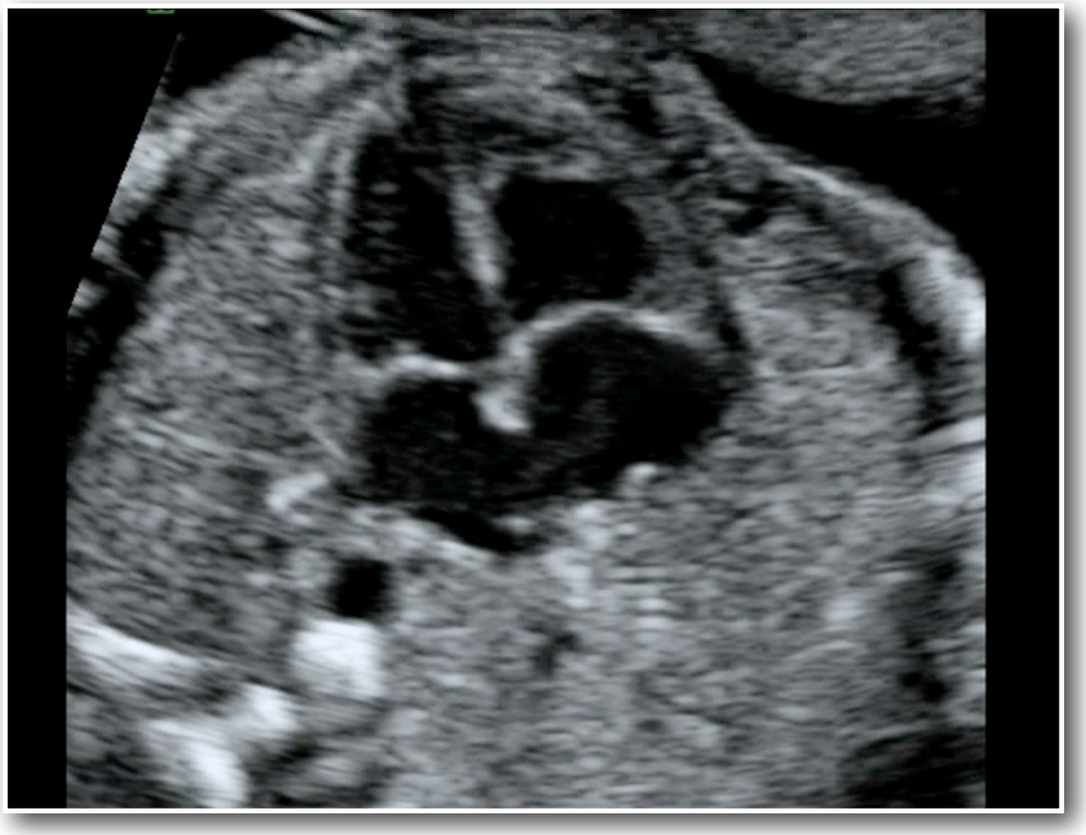
la coupe des 3 vaisseaux est une coupe DYNAMIQUE !!!

Gauche



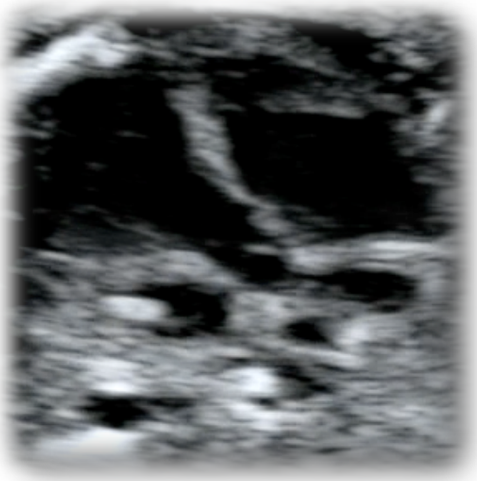


4 Cavités

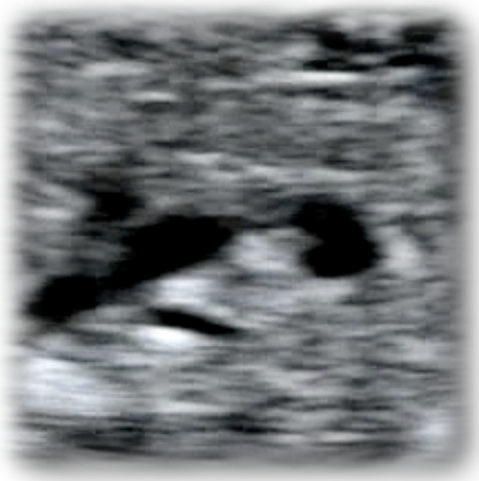




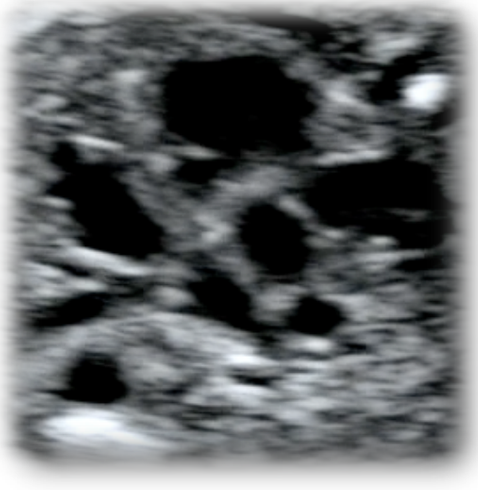
Isthme / V innominée



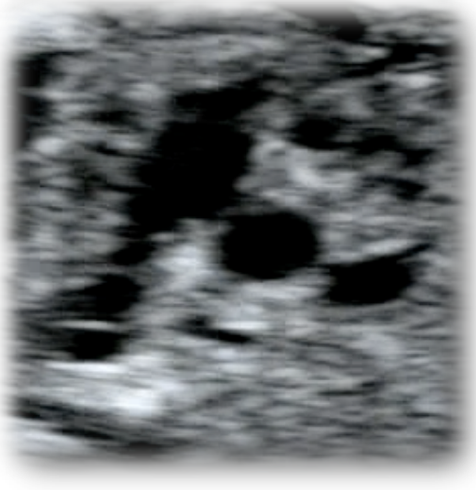
VG - Ao



Ao transverse - Isthme



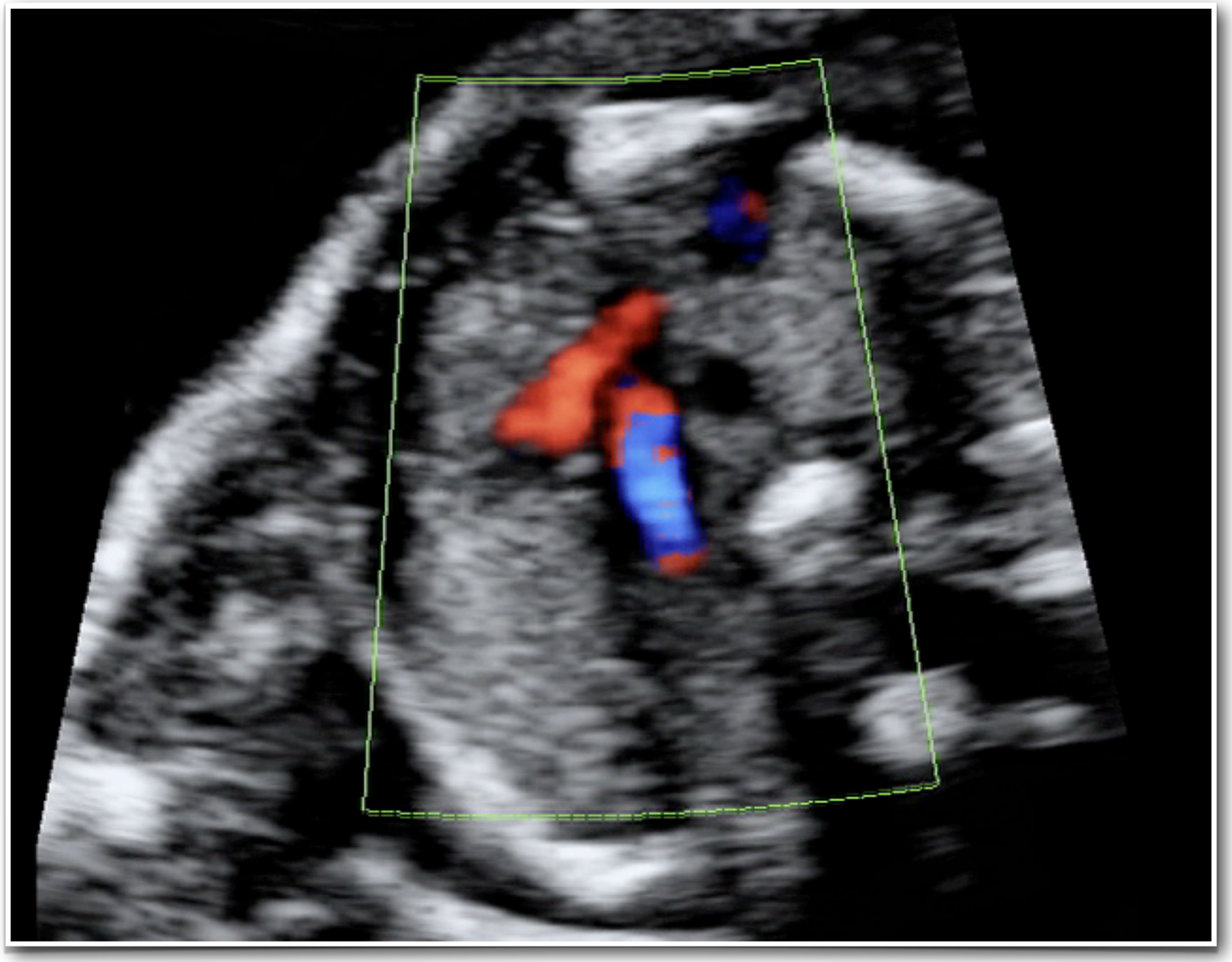
Confluence Aps

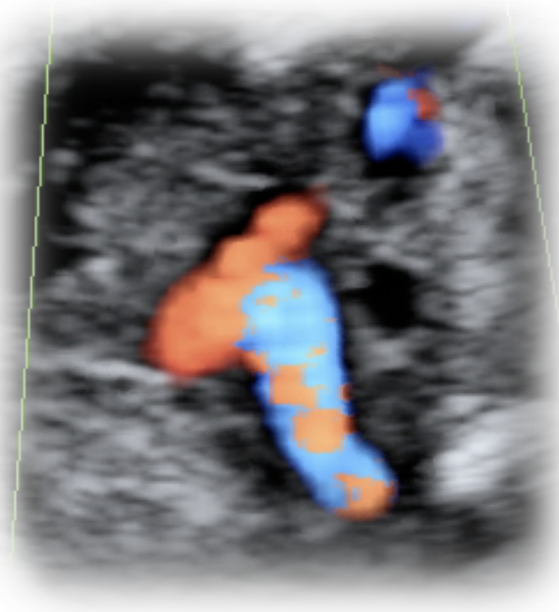


AP - CA / Ao asc

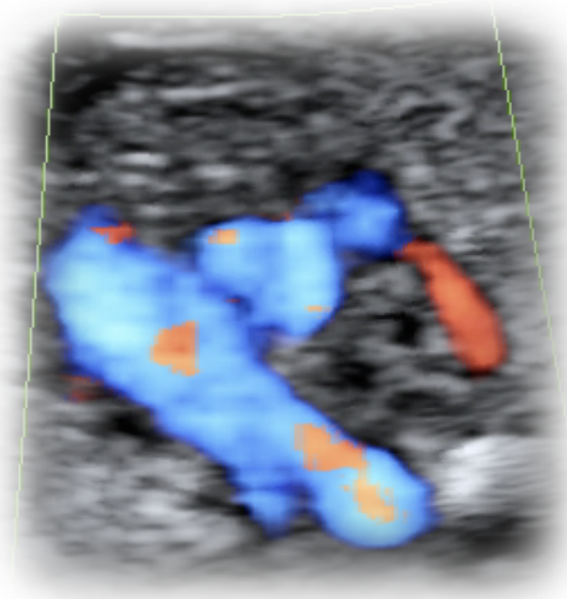
Antérieur

Gauche

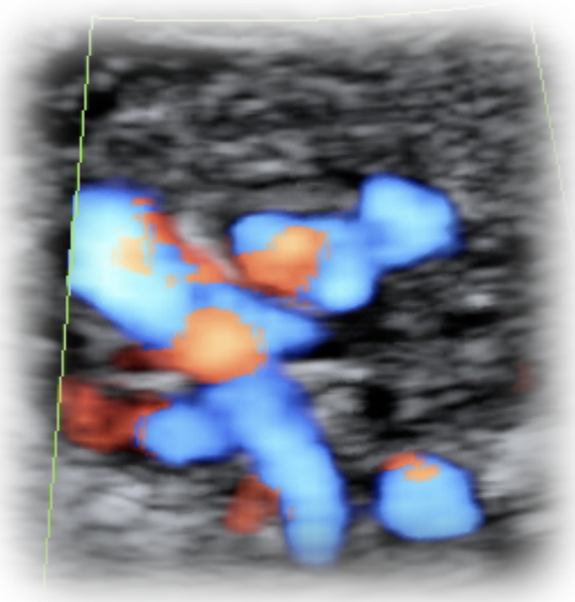




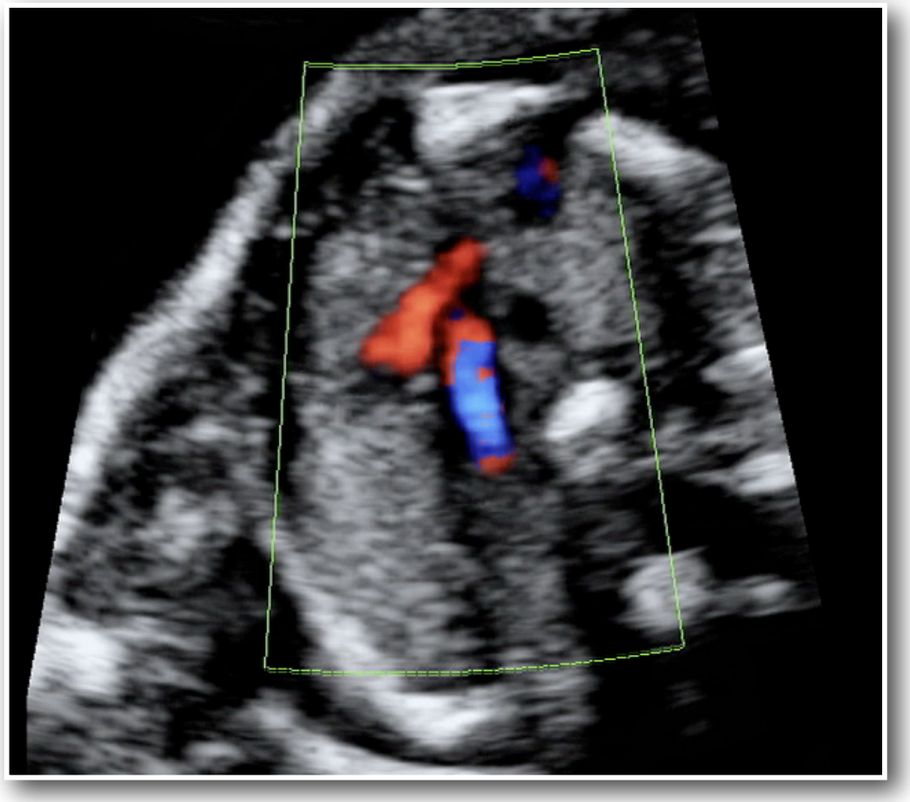
Ao transv / Isthme
V innominée

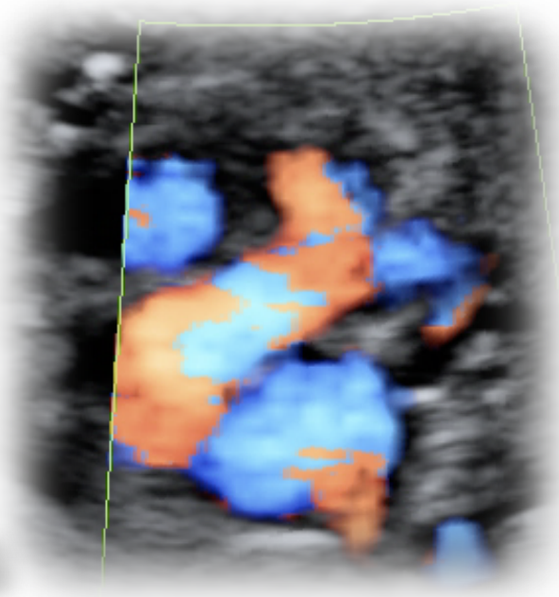


AP / CA / Ao asc

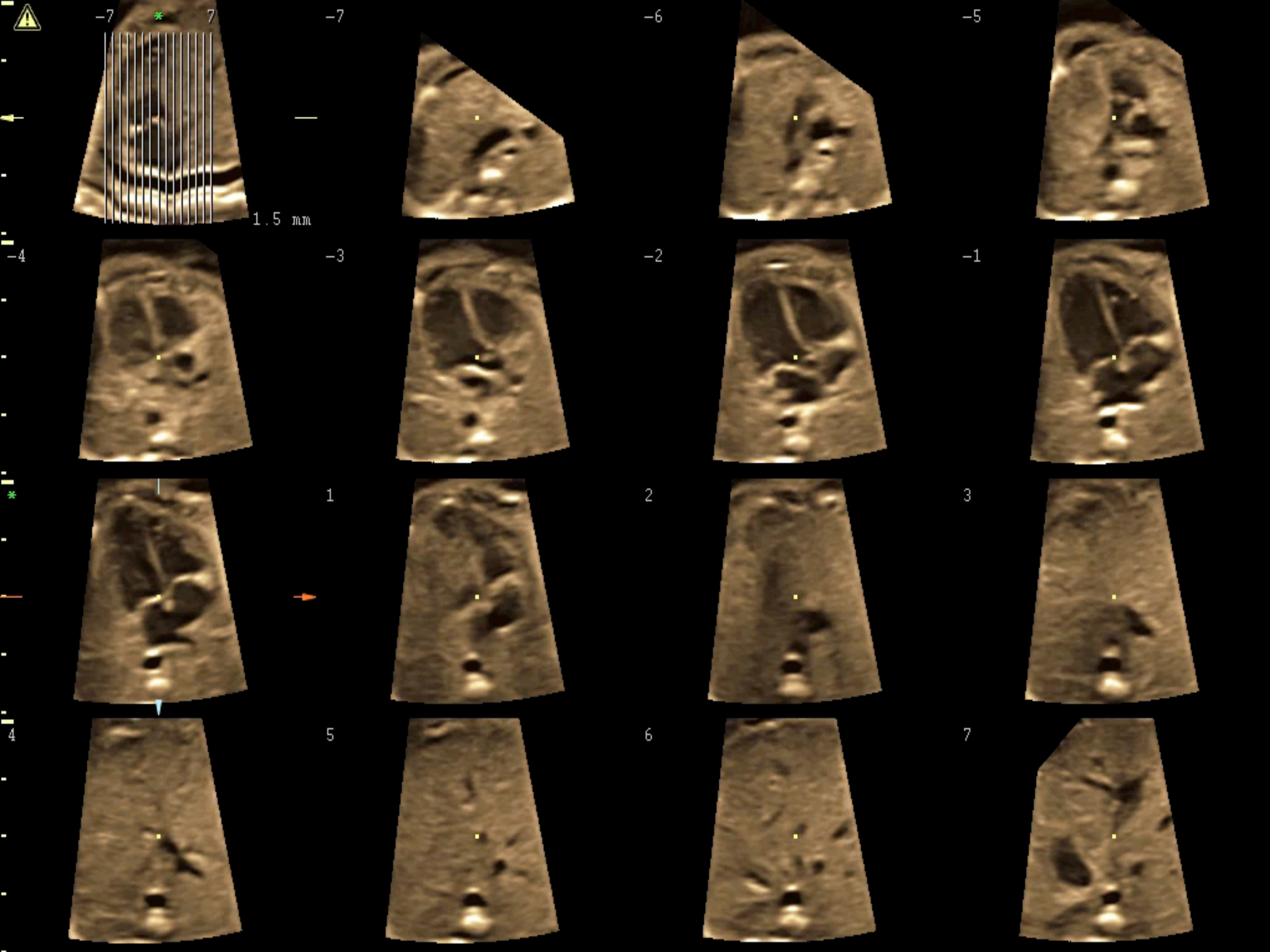


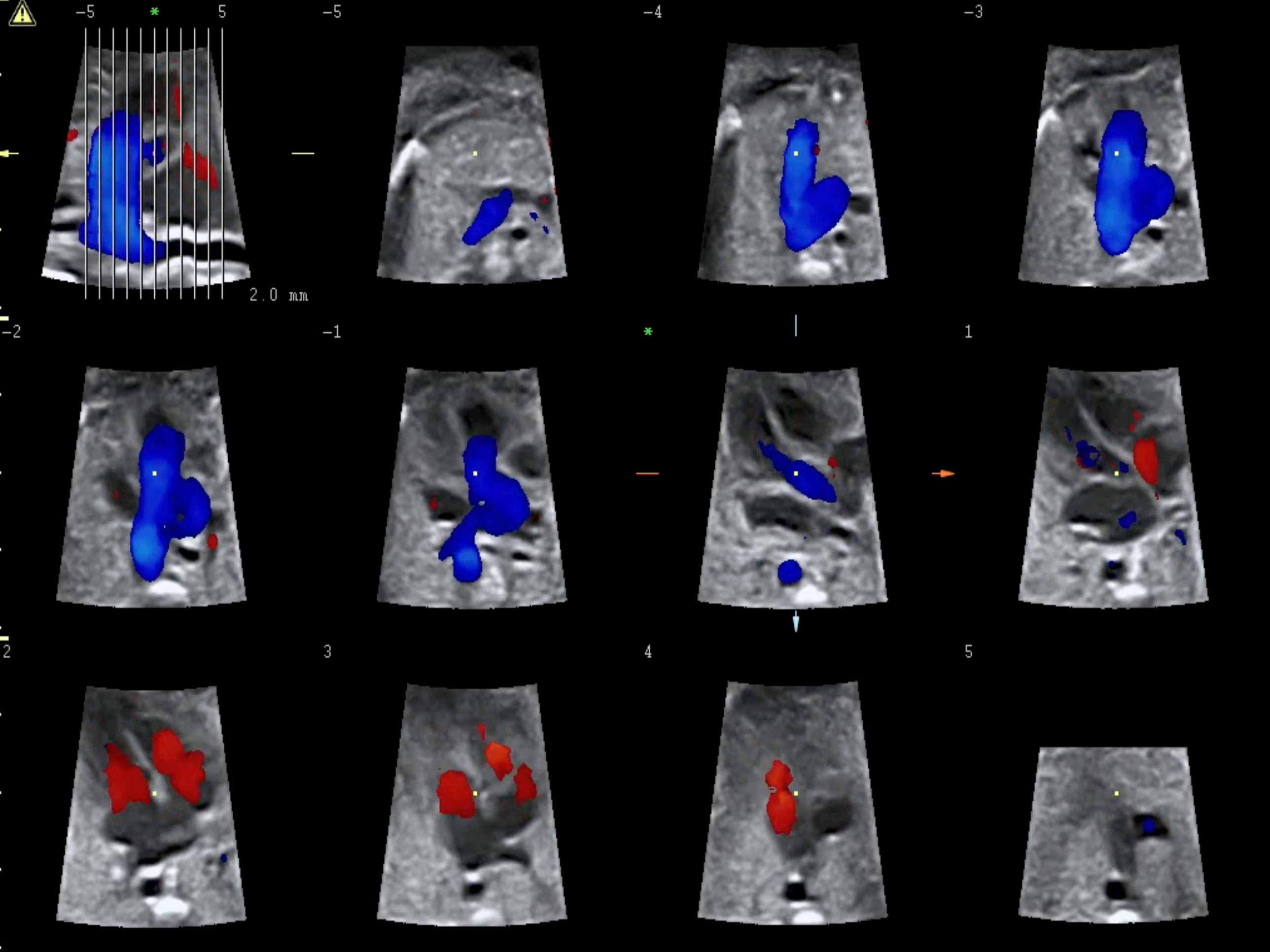
Confluence Aps





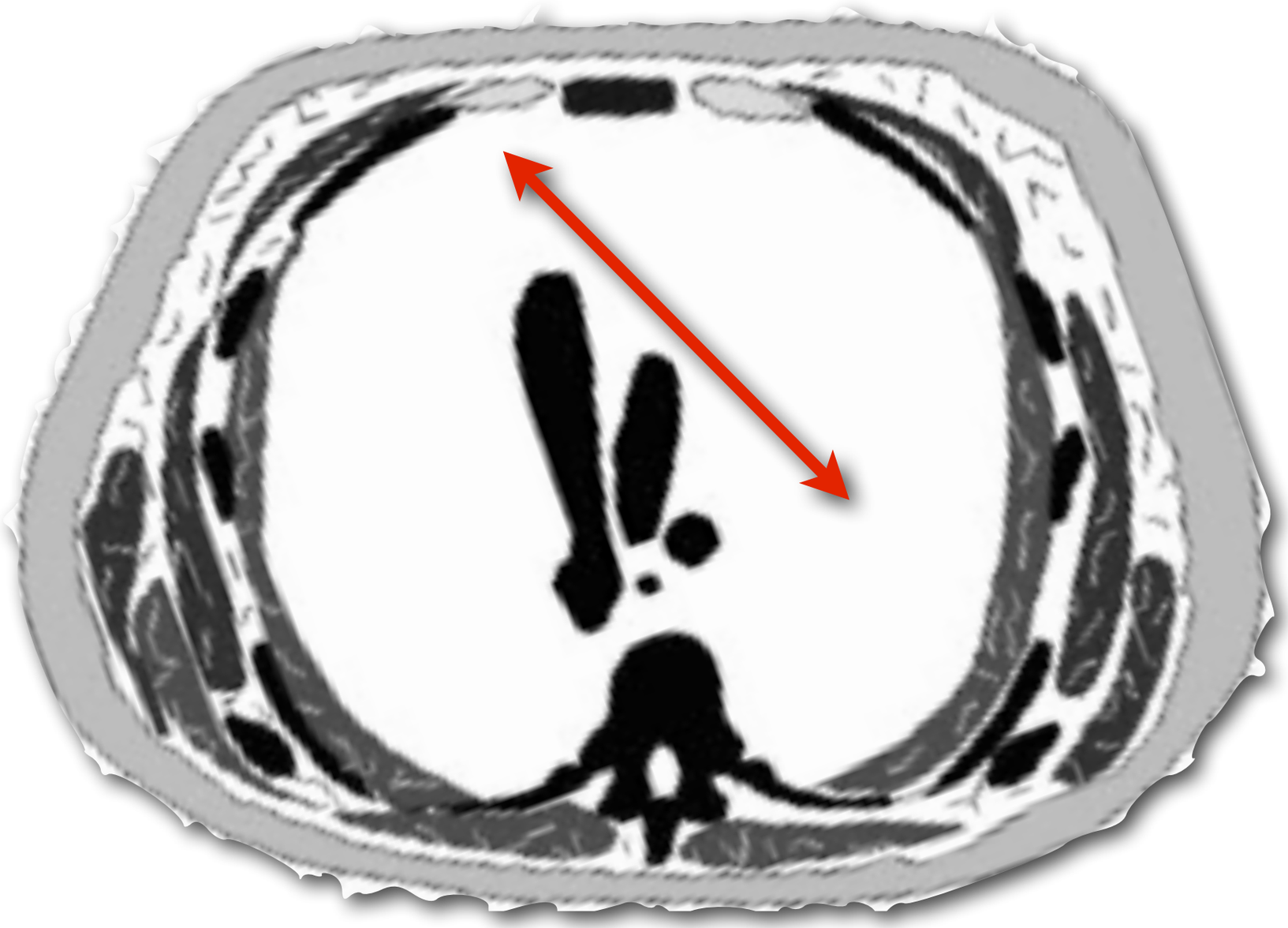
VG


-7
7
1.5 mm
-7
-6
-5
-4
-3
-2
-1
1
2
3
4
5
6
7


−5
*
5
2.0 mm
−5
−4
−3
−2
−1
*
1
2
3
4
5

Orientation normale

Ant

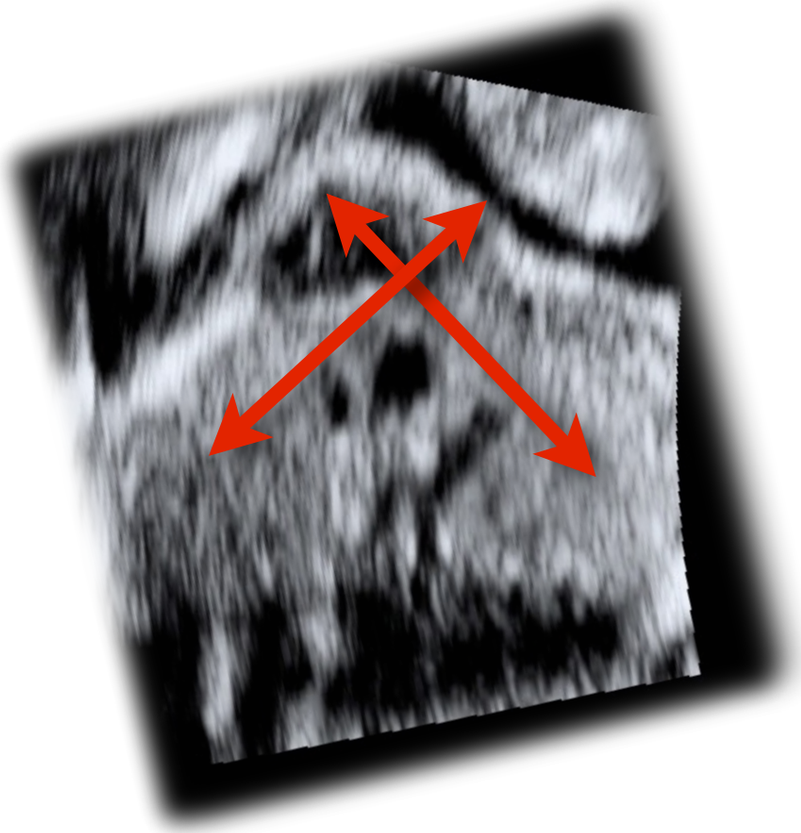


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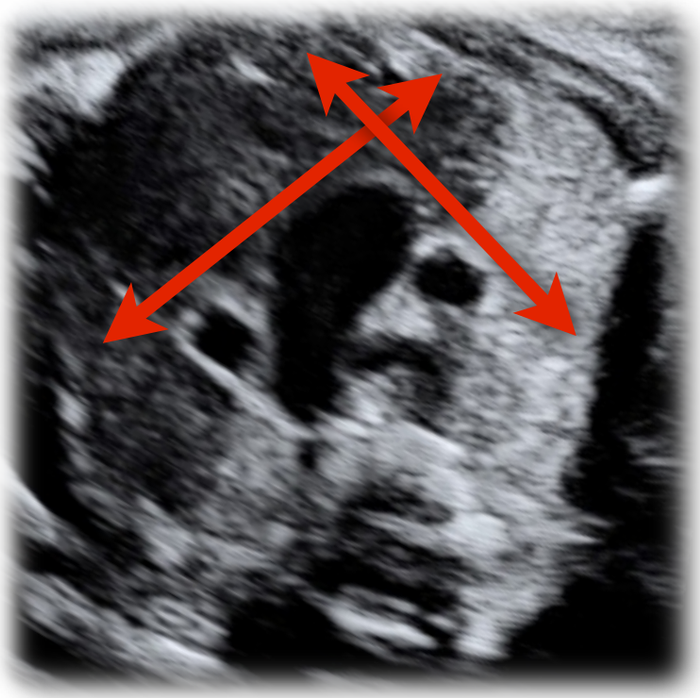
Droite

Post

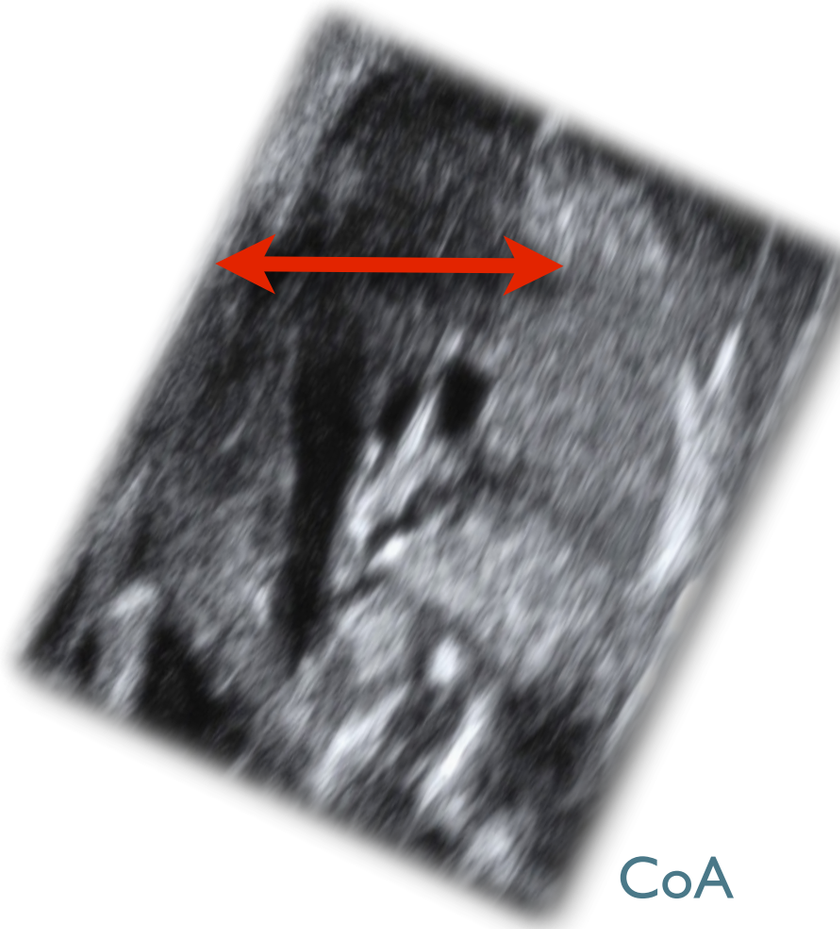
Orientation anormale



APSO



Fallot

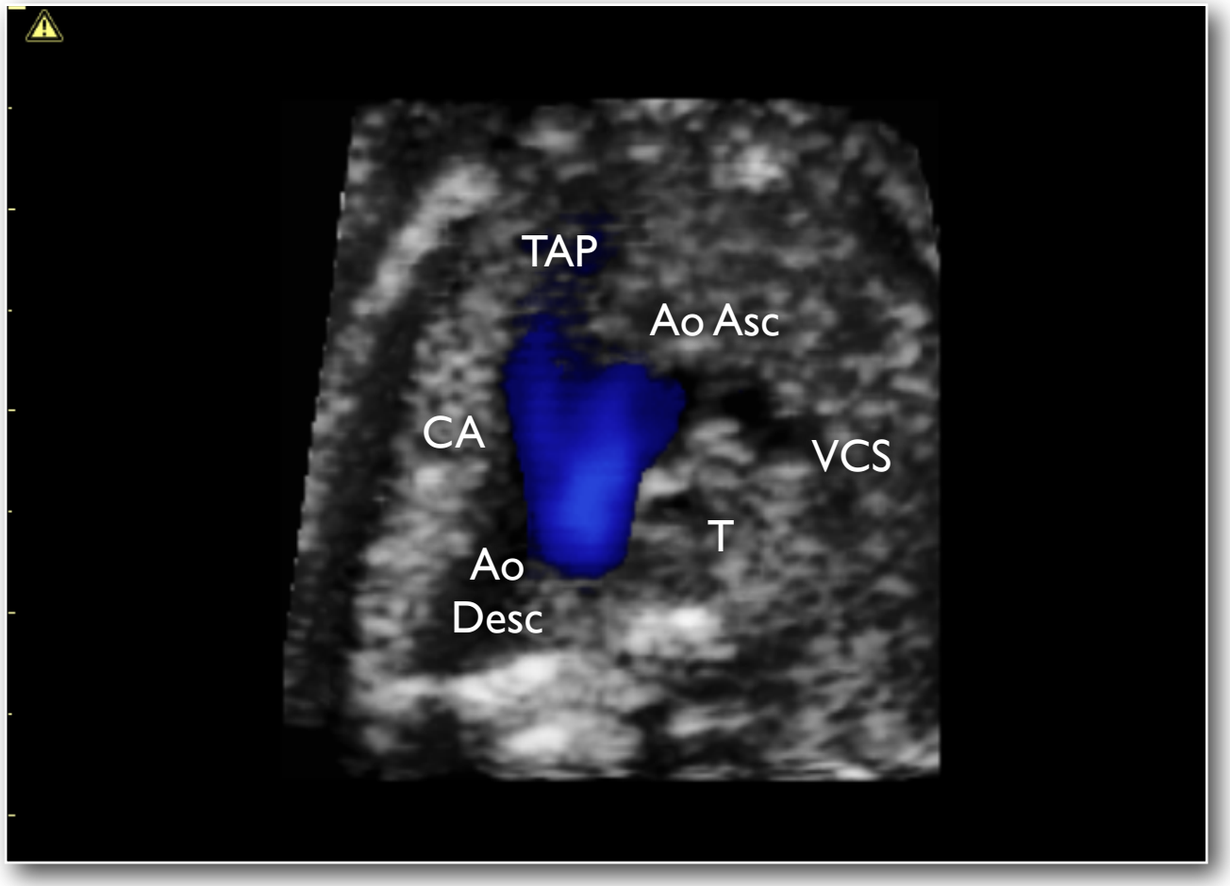


CoA

Nombre de vaisseaux

Taille des vaisseaux

- Art Pulmonaire
- Branches AP
- CA
- Aorte
- VCS
- V Azygos



Doppler

Flux
anté / rétrograde

- Aorte
- CA
- Art Pulmonaire

Position des vaisseaux

- Les uns par rapport aux autres
- par rapport à la trachée

The three-vessel and tracheal view of the fetal heart: an *in utero* sonographic evaluation

Yaron Zalel*, Yifat Wiener, Ronni Gamzu, Arie Herman, Eyal Schiff and Reuven Achiron

Prenat Diagn 2004; **24**: 174–178.

Table 1—Pulmonary artery diameter according to gestational age (mean and 95% confidence interval)

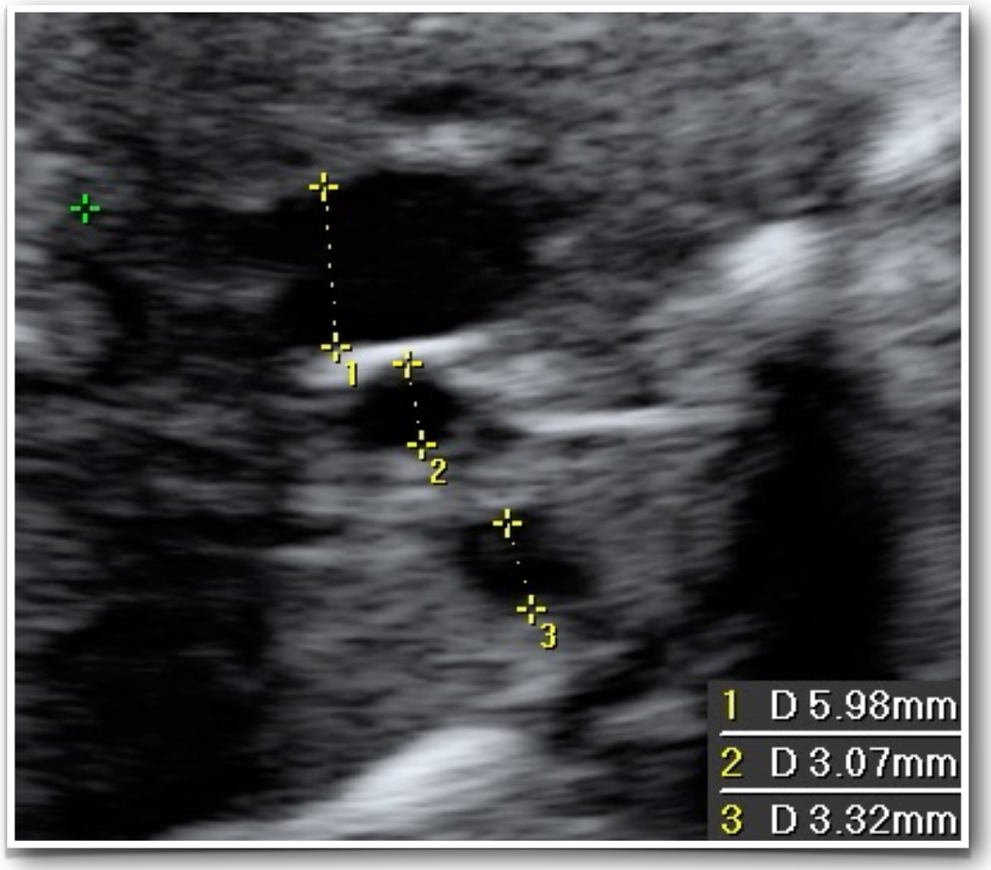
	Pulmonary artery diameter (mm)				
Gestational week	Count	Mean	Standard deviation	Lower 2.5%	Upper 97.5%
14–15	29	1.98	1.76	0.29	1.87
16–17	36	2.28	2.09	0.29	2.19
18–19	10	3.00	2.38	0.43	2.69
20–21	9	3.75	3.05	0.46	3.40
22–23	94	3.94	3.67	0.65	3.81
24–25	51	4.60	4.22	0.67	4.41
26–27	24	5.35	4.84	0.60	5.09
28–29	23	5.73	4.99	0.86	5.36
30–31	14	6.50	5.60	0.78	6.05
32–33	25	7.01	6.18	1.00	6.60
34–35	11	7.95	6.42	1.14	7.18
36–38	12	8.51	7.19	1.04	7.85

Table 2—Aortic diameter according to gestational age (mean and 95% confidence interval)

	Aortic diameter (mm)				
Gestational week	Count	Mean	Standard deviation	Lower 2.5%	Upper 97.5%
14–15	29	1.82	1.60	0.29	1.71
16–17	36	1.96	1.80	0.24	1.88
18–19	10	2.70	2.20	0.35	2.45
20–21	9	3.34	1.81	0.99	2.58
22–23	94	3.40	3.18	0.54	3.29
24–25	51	4.02	3.67	0.62	3.84
26–27	24	4.69	4.20	0.59	4.45
28–29	23	4.98	4.36	0.71	4.67
30–31	14	5.60	4.70	0.77	5.15
32–33	25	5.73	5.12	0.74	5.42
34–35	11	6.88	5.70	0.88	6.29
36–38	12	7.14	6.01	0.89	6.57

Table 3—Superior vena cava vein diameter according to gestational age (mean and 95% confidence interval)

	Superior vena cava diameter (mm)				
Gestational week	Count	Mean	Standard deviation	Lower 2.5%	Upper 97.5%
14–15	29	1.24	1.11	0.16	1.17
16–17	36	1.33	1.20	0.19	1.27
18–19	10	1.54	1.36	0.13	1.45
20–21	9	2.10	1.67	0.28	1.89
22–23	94	2.41	2.21	0.48	2.31
24–25	51	2.63	2.31	0.56	2.47
26–27	24	3.05	2.52	0.62	2.79
28–29	23	3.21	2.70	0.59	2.96
30–31	14	3.63	3.04	0.51	3.34
32–33	25	3.99	3.41	0.70	3.70
34–35	11	4.26	3.16	0.82	3.71
36–38	12	4.74	3.94	0.63	4.34



Three-vessel view of the fetal heart: In utero development of the great vessels

Min Hoan Moon[1], Jeong Yeon Cho[2]*, Eun Jung Park[1], Jee Yeon Min[3], Jeong-Ah Kim[1], Sung Il Jung[1] and Mi Jin Song[1]

Prenat Diagn 2007; **27**: 158–163.

Table 2—Means and 95% reference intervals for the AA/MPA ratio and SVC/AA ratio calculated for individual values of GA

	AA/MPA ratio		SVC/AA ratio	
GA (weeks)	mean	95% reference interval	Mean	95% reference interval
14	0.93	(0.78, 1.09)	0.59	(0.35, 0.83)
15	0.92	(0.76, 1.07)	0.59	(0.35, 0.83)
16	0.90	(0.75, 1.06)	0.59	(0.35, 0.83)
17	0.89	(0.73, 1.04)	0.59	(0.35, 0.83)
18	0.87	(0.72, 1.03)	0.59	(0.36, 0.83)
19	0.86	(0.70, 1.01)	0.59	(0.36, 0.83)
20	0.85	(0.69, 1.00)	0.60	(0.36, 0.83)
21	0.84	(0.68, 0.99)	0.60	(0.36, 0.84)
22	0.82	(0.67, 0.98)	0.60	(0.37, 0.84)
23	0.81	(0.66, 0.97)	0.61	(0.37, 0.84)
24	0.80	(0.65, 0.96)	0.61	(0.37, 0.85)
25	0.80	(0.64, 0.95)	0.61	(0.38, 0.85)
26	0.79	(0.63, 0.94)	0.62	(0.38, 0.85)
27	0.78	(0.63. 0.94)	0.62	(0.39, 0.86)
28	0.78	(0.62, 0.93)	0.63	(0.39, 0.87)
29	0.77	(0.62, 0.92)	0.63	(0.40, 0.87)
30	0.77	(0.61, 0.92)	0.64	(0.40, 0.88)
31	0.76	(0.61, 0.92)	0.65	(0.41, 0.88)
32	0.76	(0.60, 0.91)	0.65	(0.42, 0.89)
33	0.76	(0.60, 0.91)	0.66	(0.43, 0.90)
34	0.75	(0.60, 0.91)	0.67	(0.43, 0.91)
35	0.75	(0.60, 0.91)	0.68	(0.44, 0.91)
36	0.75	(0.60, 0.91)	0.69	(0.45, 0.92)
37	0.75	(0.60, 0.91)	0.69	(0.46, 0.93)
38	0.76	(0.60, 0.91)	0.70	(0.47, 0.94)

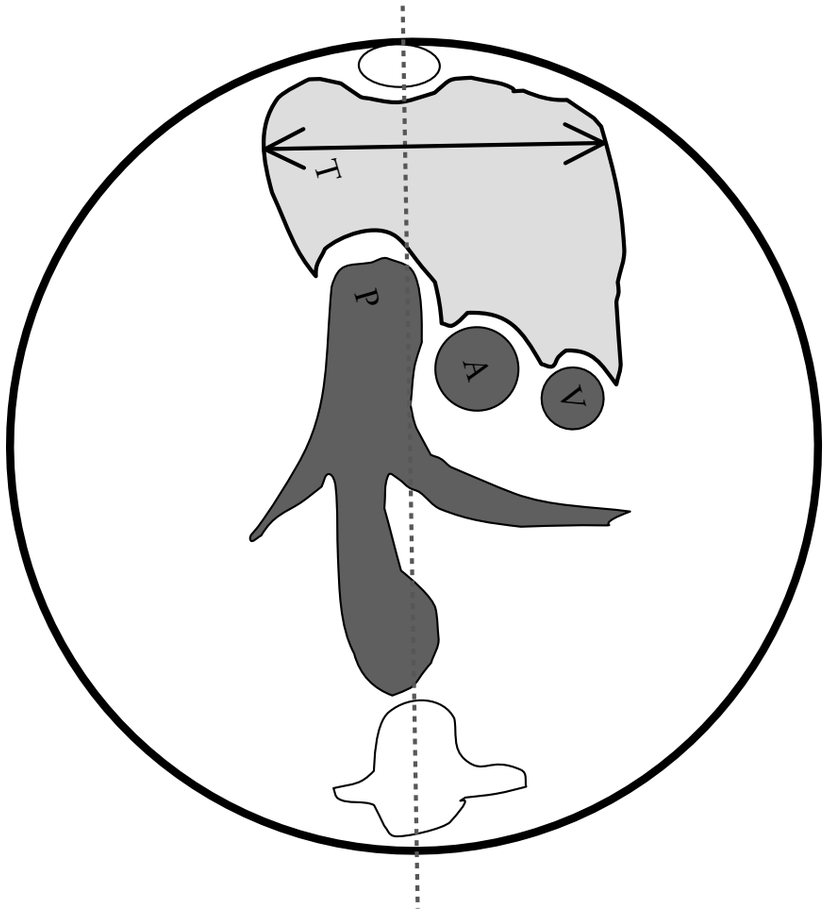
MPA, main pulmonary artery; AA, ascending aorta; SVC, superior vena cava; GA, gestational age.

Evaluation du thymus

Diameter of the normal fetal thymus on ultrasound

J. Y. CHO*, J. Y. MIN†, Y.-H. LEE†, B. McCRINDLE§, L. K. HORNBERGER§ and S.-J. YOO‡§

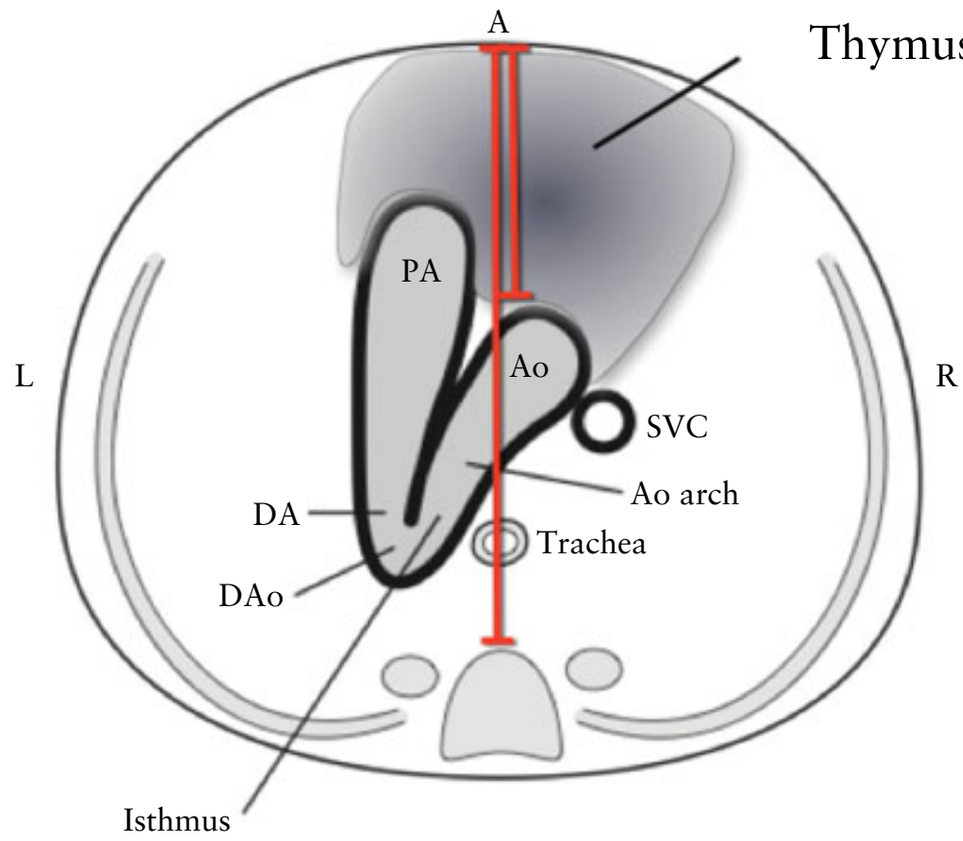
Ultrasound Obstet Gynecol 2007; **29**: 634–638



The thymic–thoracic ratio in fetal heart defects: a simple way to identify fetuses at high risk for microdeletion 22q11

R. CHAOUI*, K.-S. HELING*, A. SARUT LOPEZ*, G. THIEL* and K. KARL†

Ultrasound Obstet Gynecol 2011; **37**: 397–403



R = **0,44** +/- 0,043

22q11 -

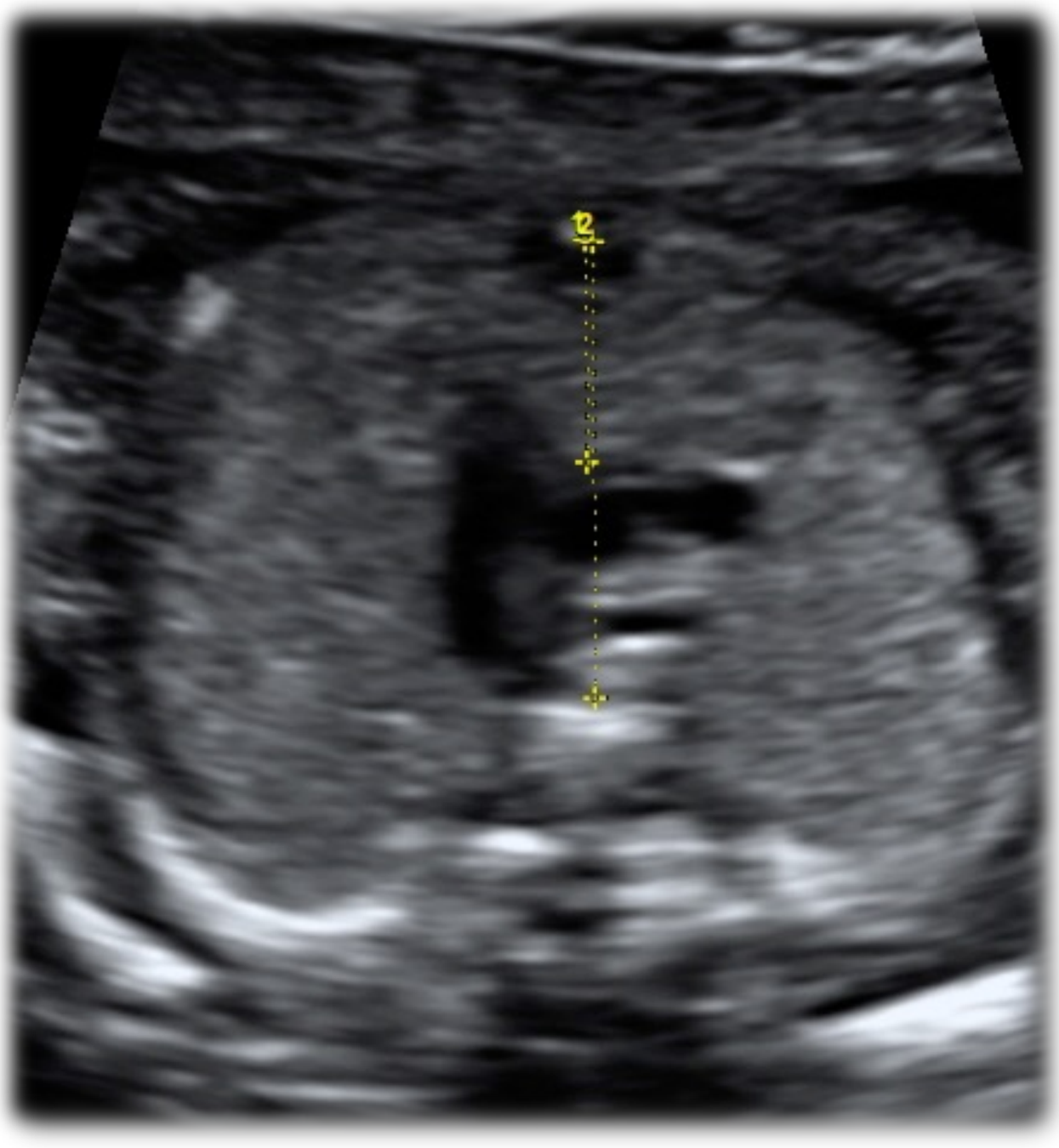
vs

R = **0,25** +/- 0,09

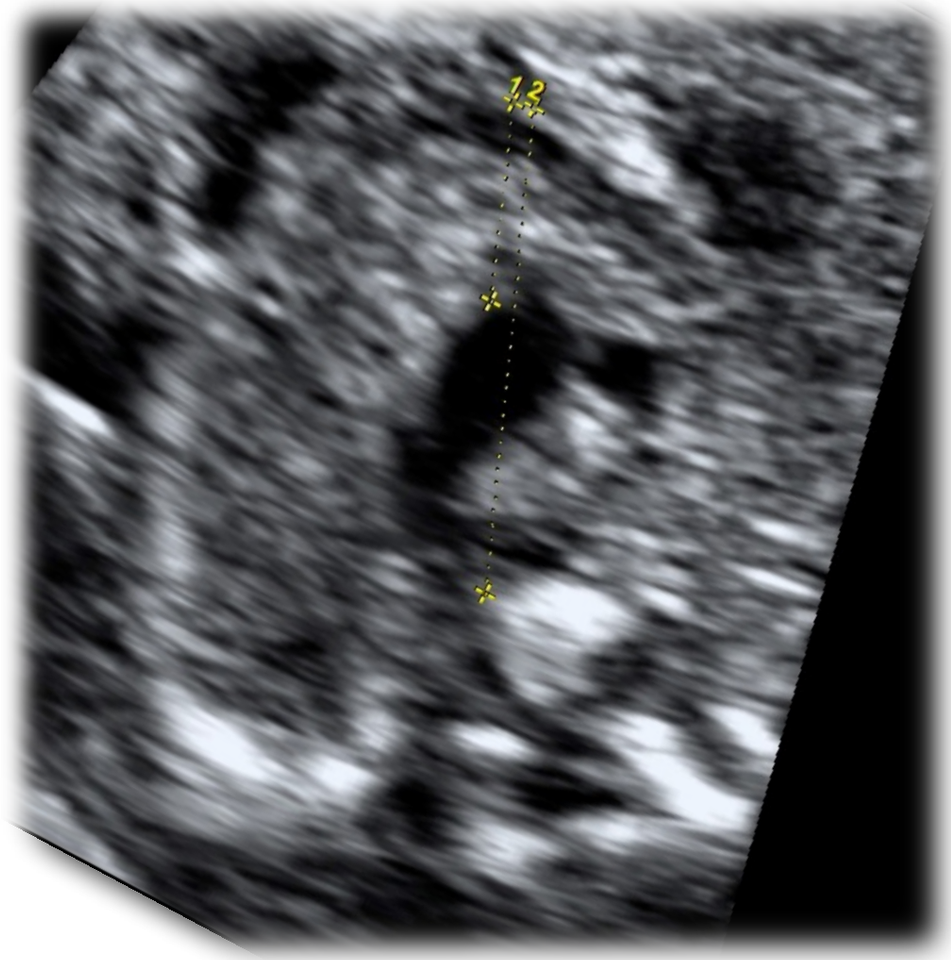
22q11+

Evaluation du thymus

R=0,49

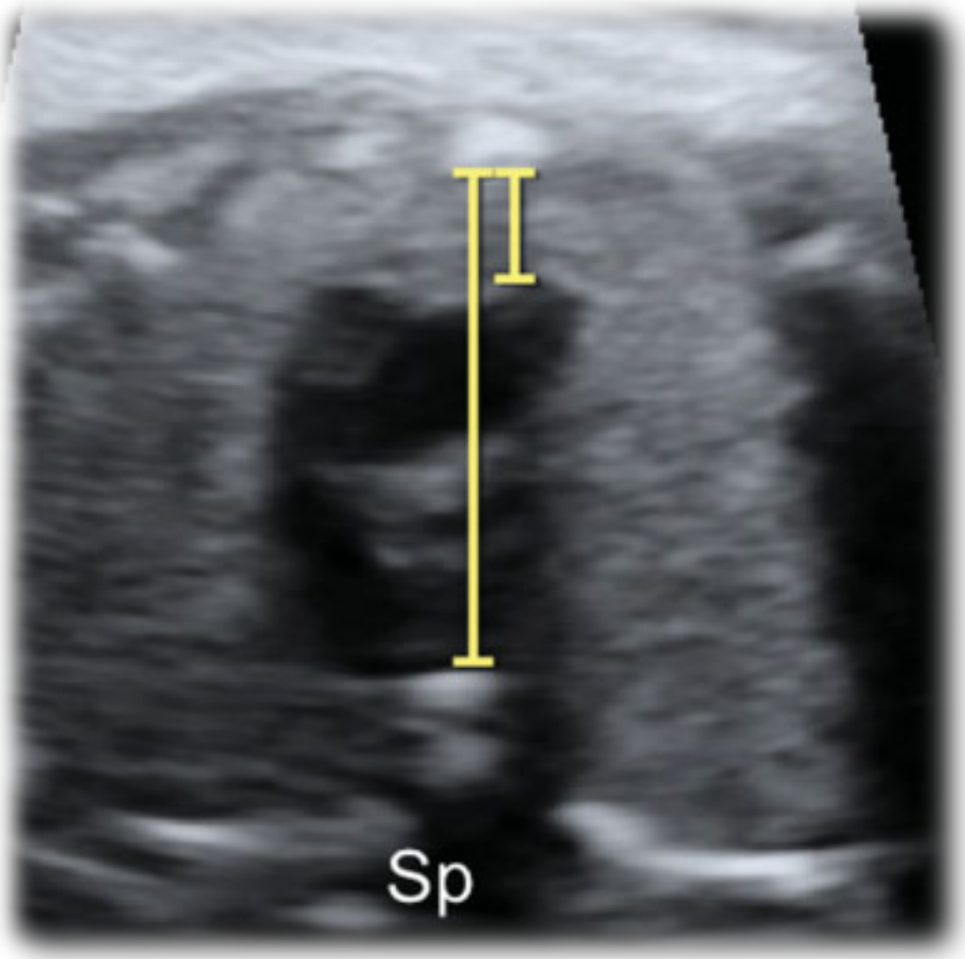


Evaluation du thymus



R=0,49

22qII -



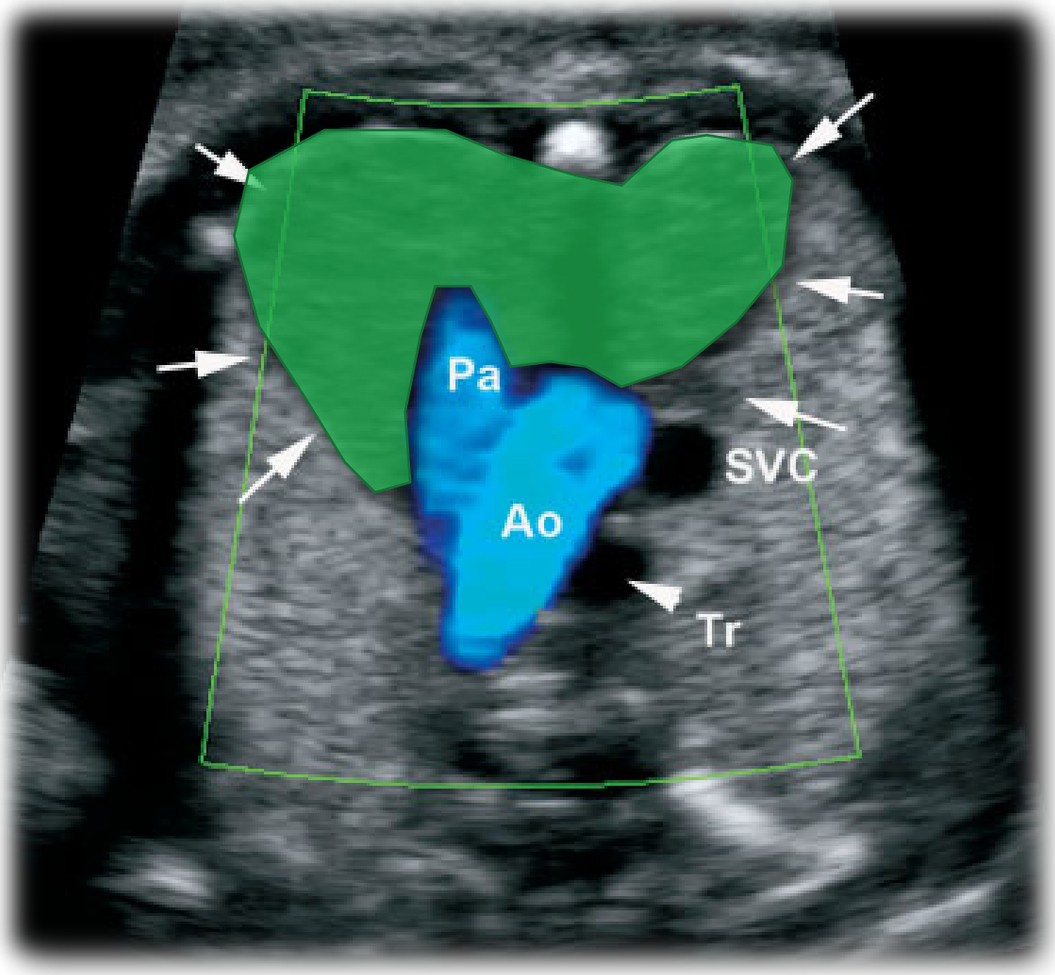
R=0,25

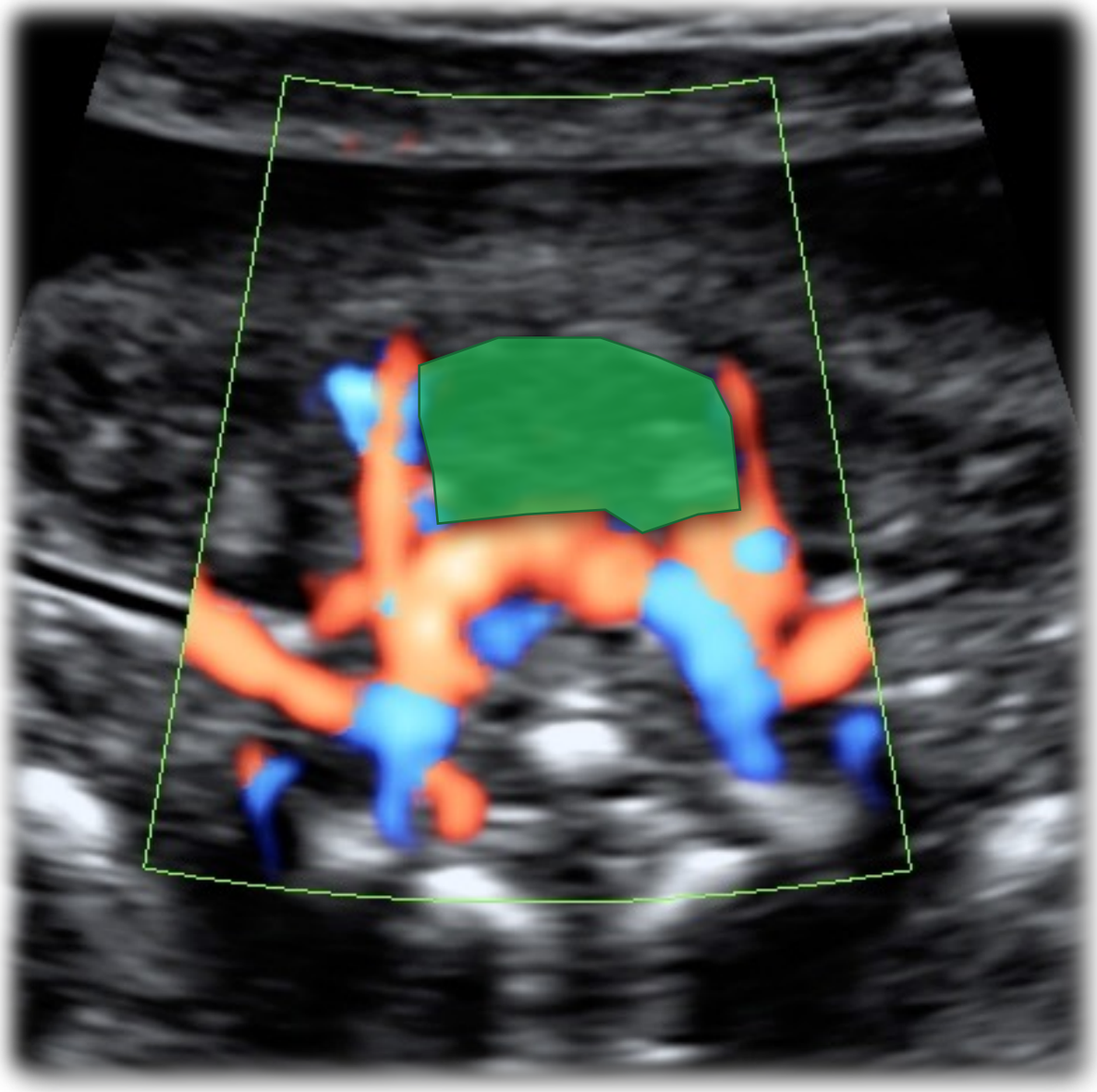
22qII +

How to identify the thymus in the fetus: the thy-box

D. PALADINI

Ultrasound Obstet Gynecol 2011; 37: 488–492

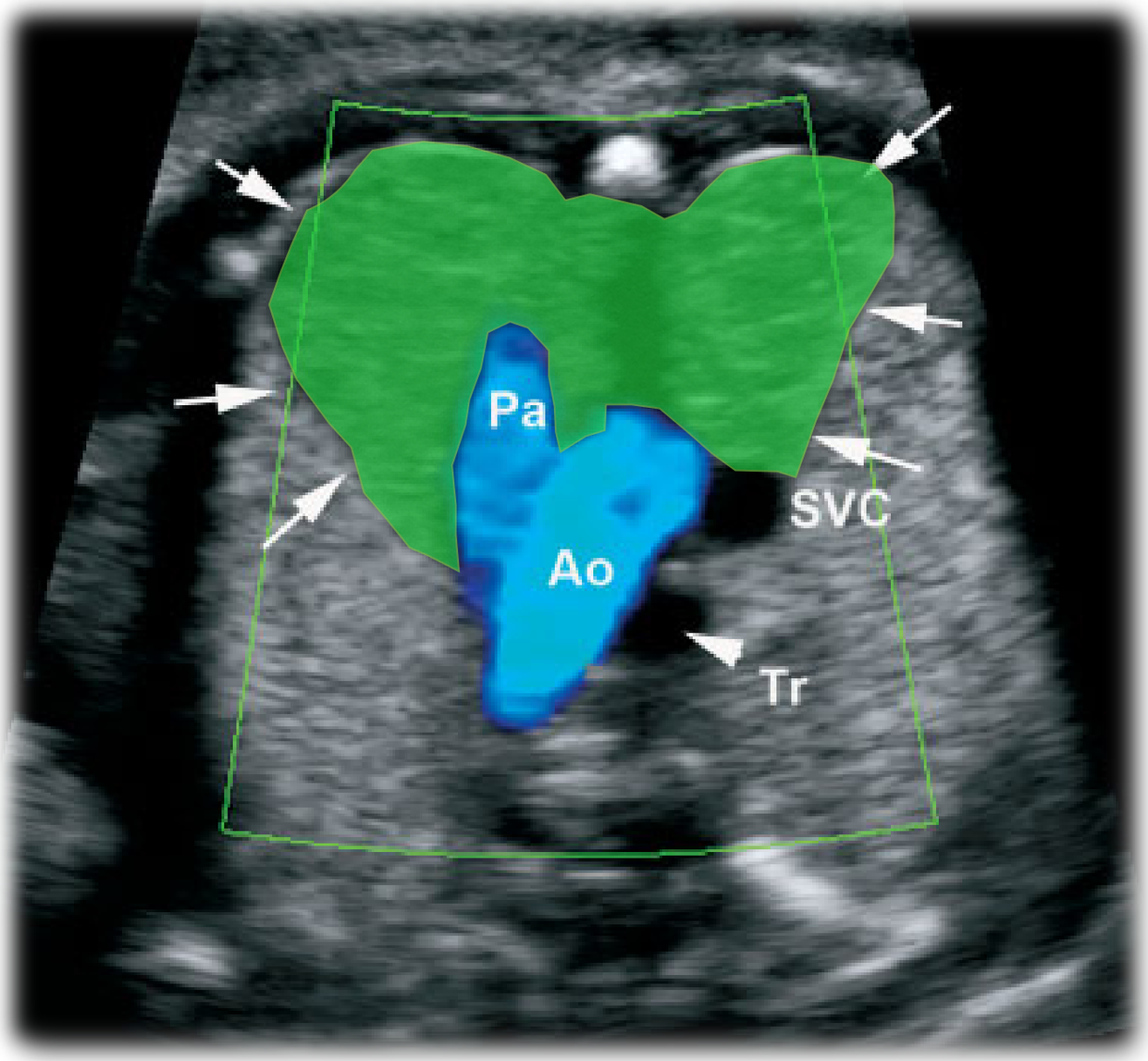


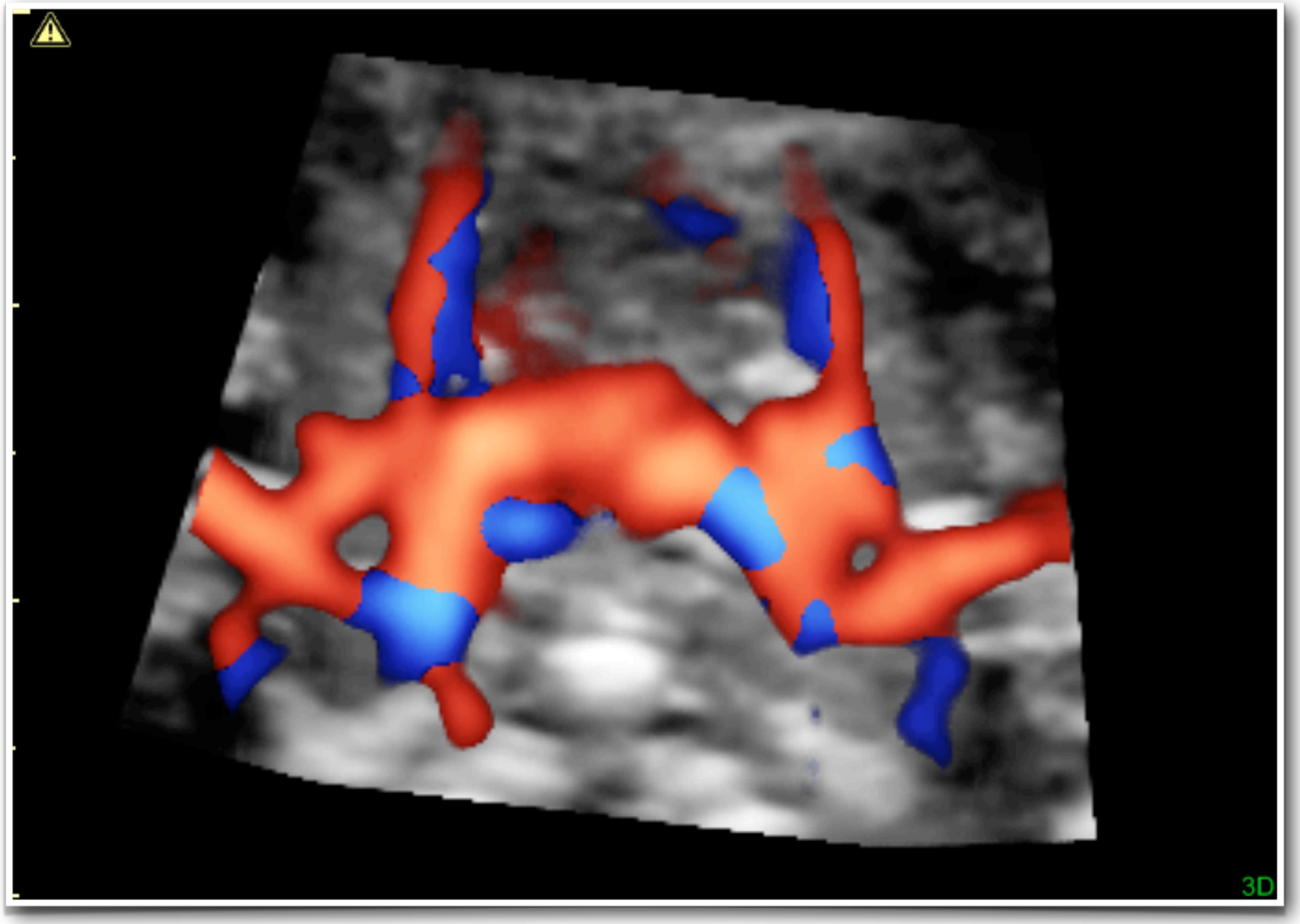


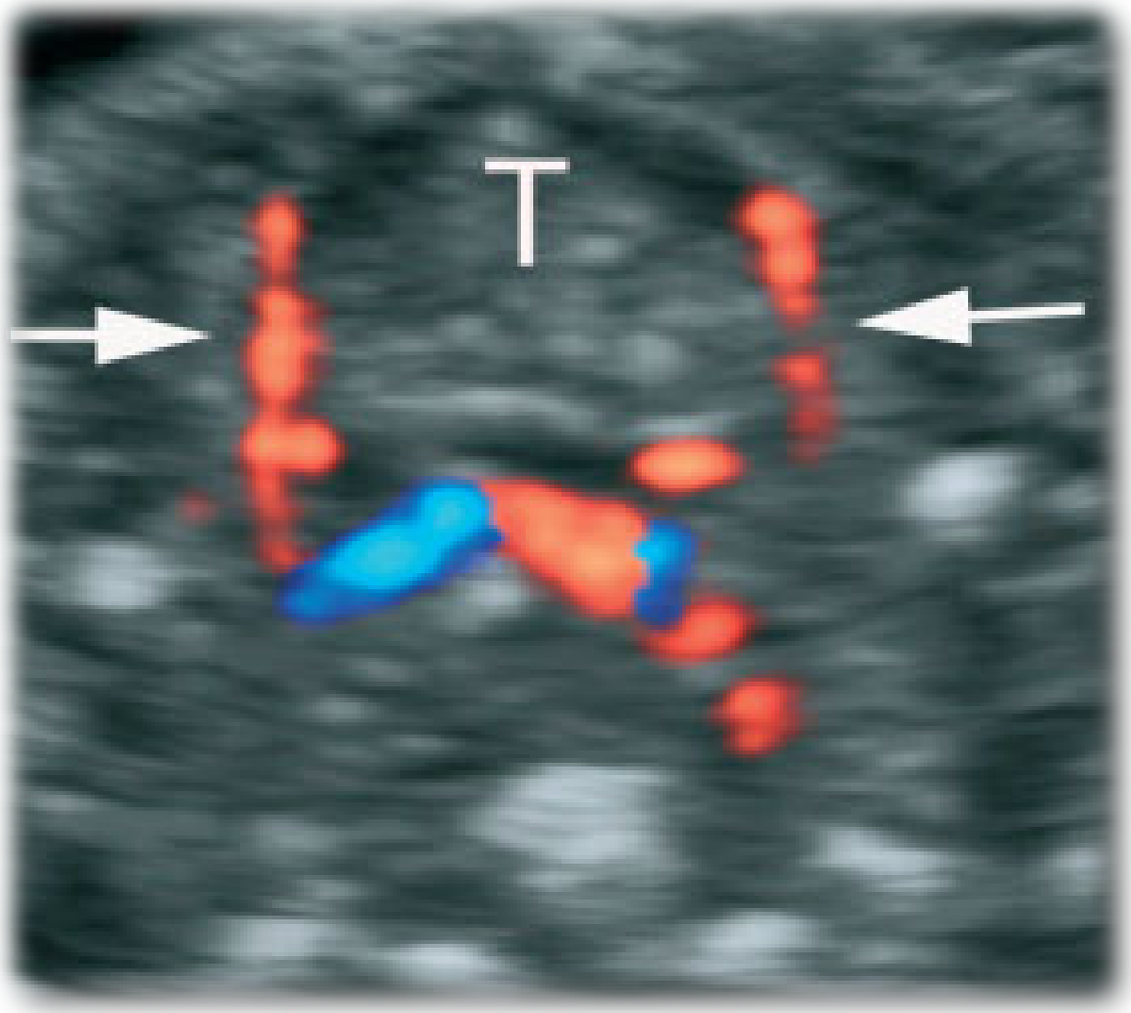
How to identify the thymus in the fetus: the thy-box

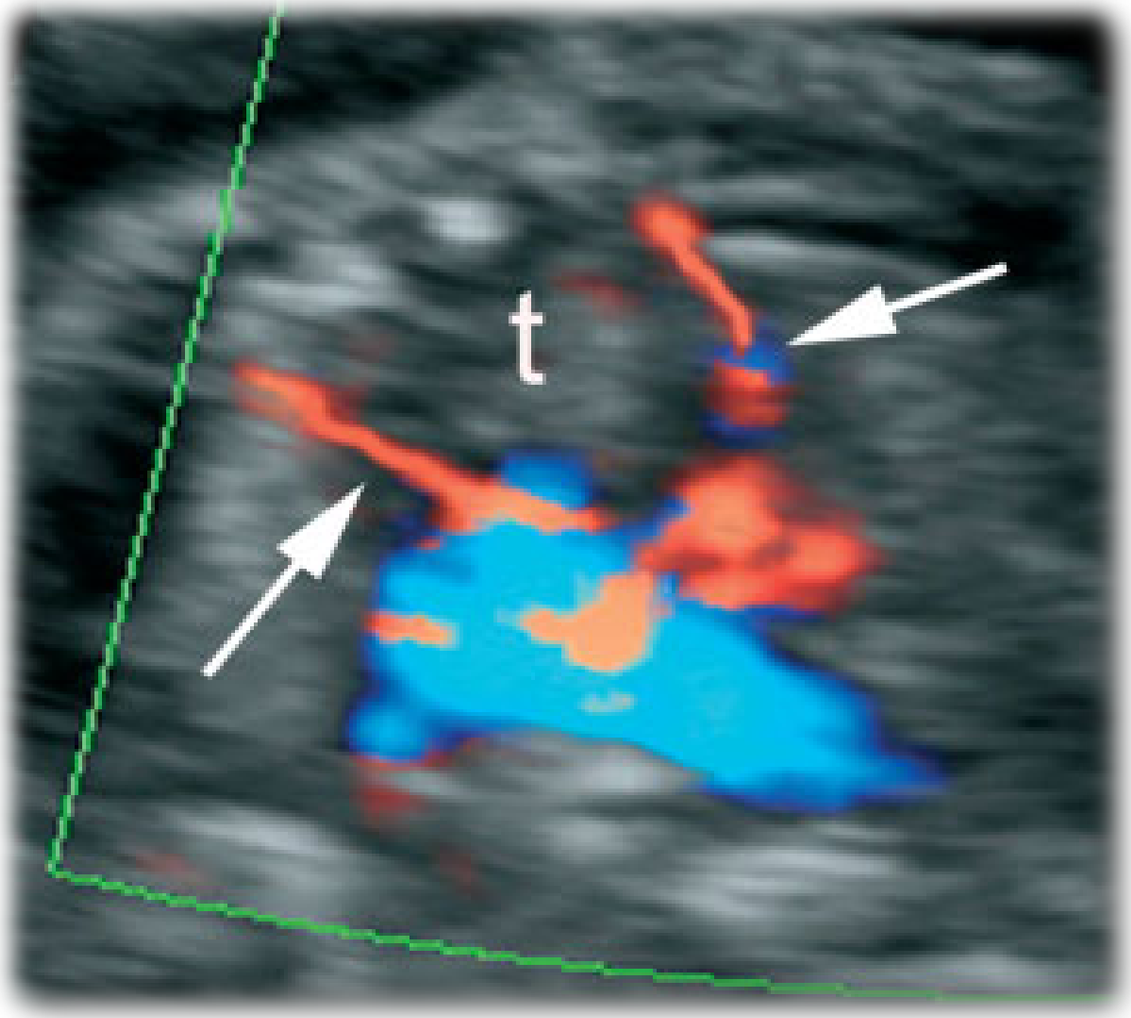
D. PALADINI

Ultrasound Obstet Gynecol 2011; **37**: 488–492




3D


T


t

le 1er trimestre

GA=13s2d

La coupe des 3 Vaisseaux

le pathologique

La coupe des 3 vaisseaux

- Nombre de vaisseaux: 3 / 2 / 4

- Taille des vaisseaux

- Position des vaisseaux

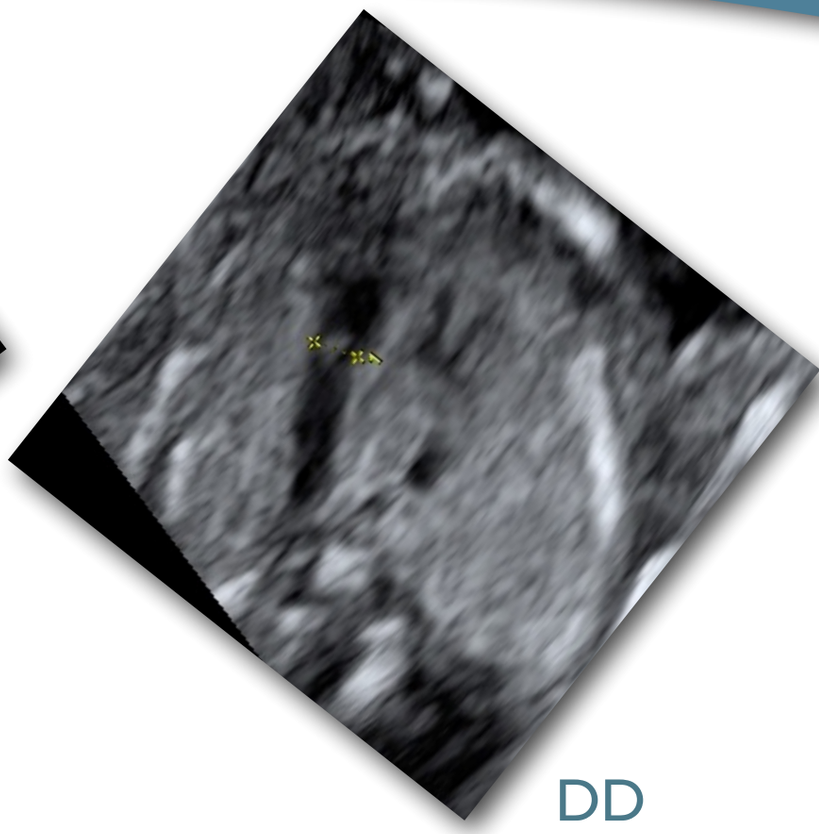
- Doppler



Fallot et atrésie pulmonaire



TAC type I



DD

Nombre de vaisseaux: 2



VDDI

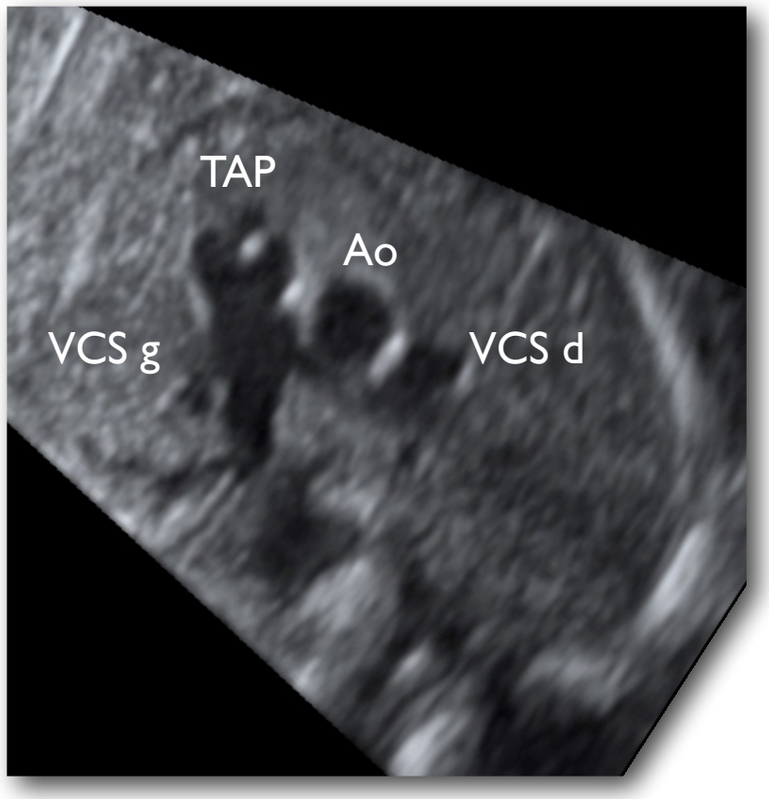


Sténose aortique

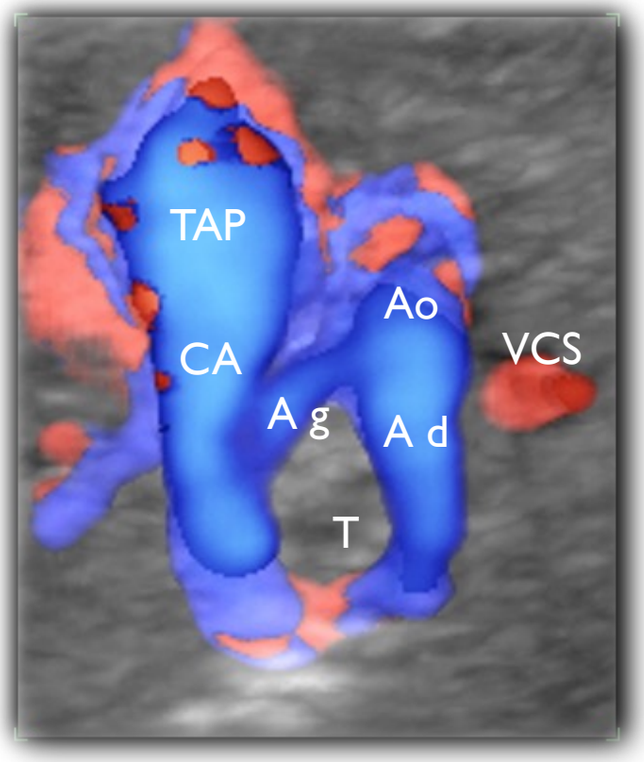


HypoVG

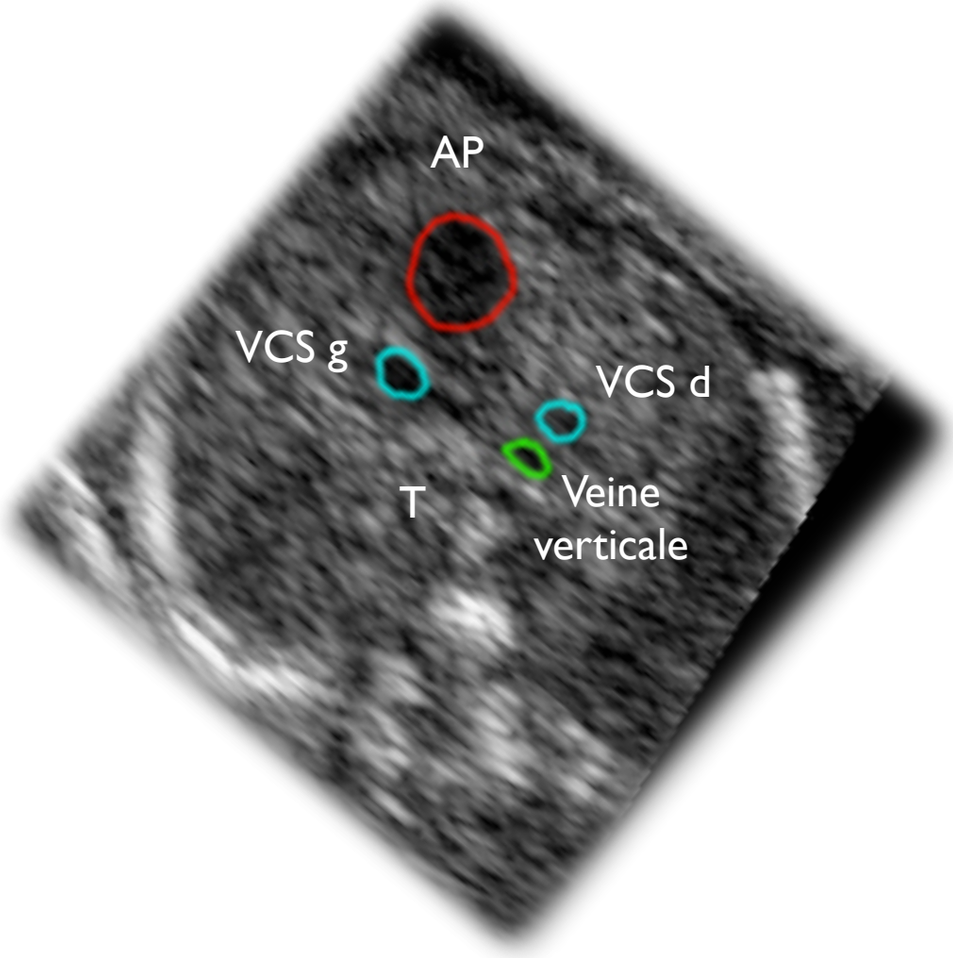
Nombre de vaisseaux: 4



VCS bilatérale



Double arc aortique



Isomérisme Droit et
canal collecteur vertical / RVPAT
(drainage supracardiaque)

La coupe des 3 vaisseaux

- Nombre de vaisseaux: 3 / 2 / 4

- Taille des vaisseaux

- Position des vaisseaux

- Doppler

- Art Pulmonaire
- CA
- Aorte
- VCS
- V Azygos

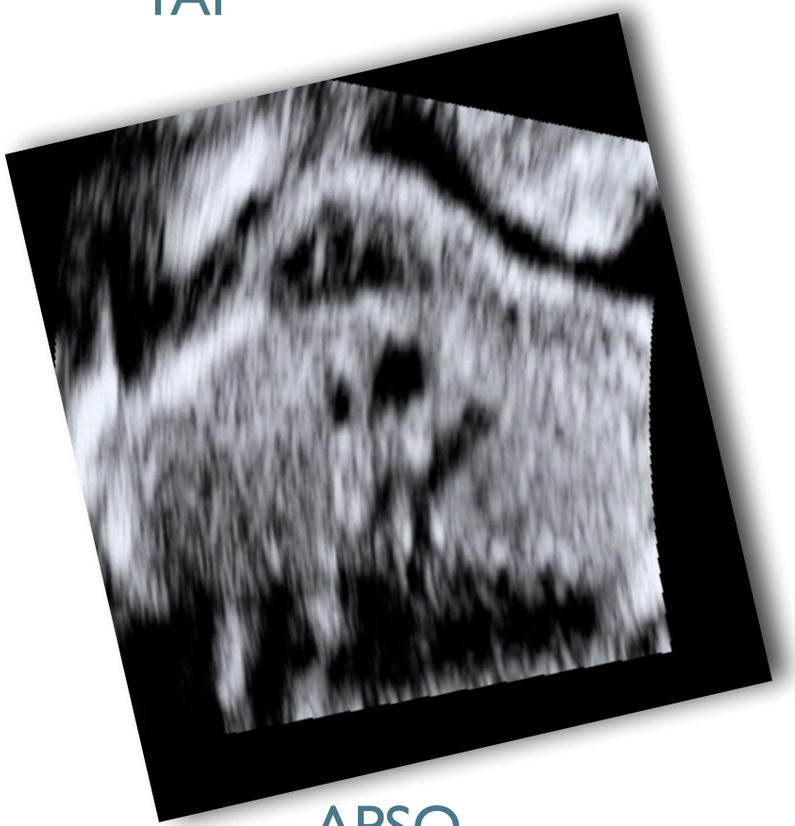
Taille des vaisseaux



TAF



CoA



APSO



Dilat V Azygos

Absence VCI



HypoVG

La coupe des 3 vaisseaux

- Nombre de vaisseaux: 3 / 2 / 4

- Taille des vaisseaux

- Position des vaisseaux

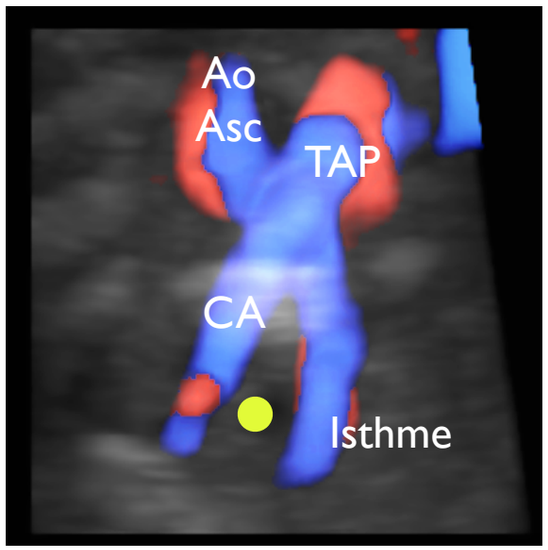
- Doppler

Position des vaisseaux

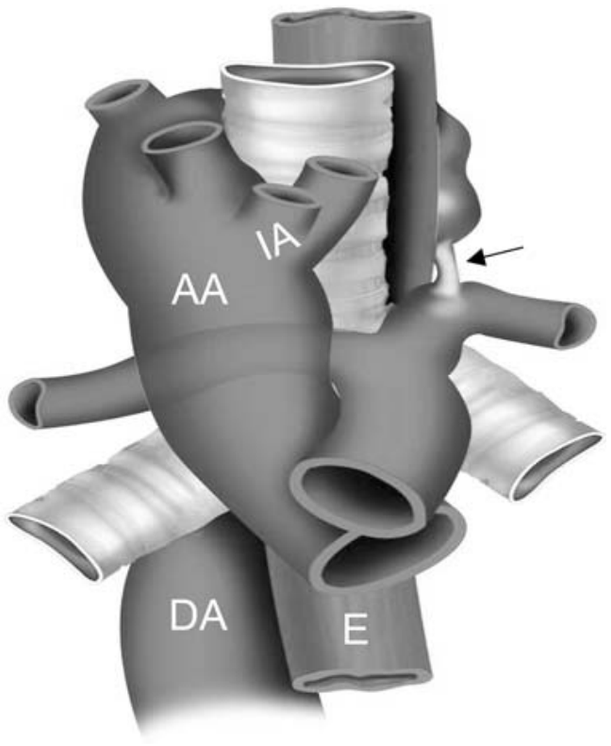
- Les uns par rapport aux autres
- par rapport à la trachée



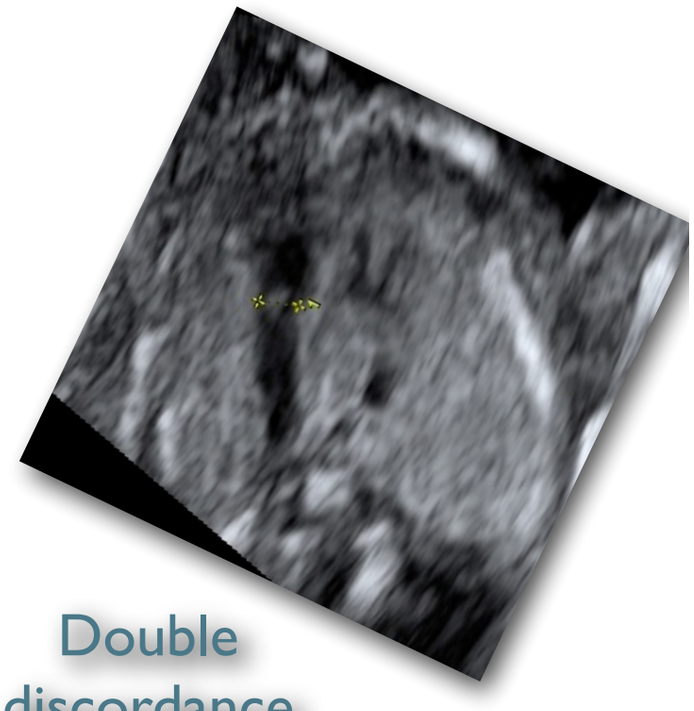
CA tortueux
et sténose Ao



Arc Aortique droit



Marta Hernanz-Schulman
Vascular rings: a practical approach to imaging diagnosis
Pediatr Radiol (2005) 35: 961–979



Double
discordance



La coupe des 3 vaisseaux

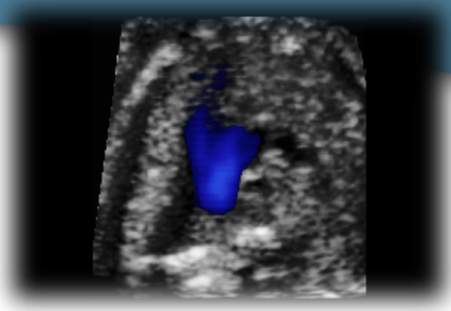
- Nombre de vaisseaux: 3 / 2 / 4

- Taille des vaisseaux

- Position des vaisseaux

- Doppler

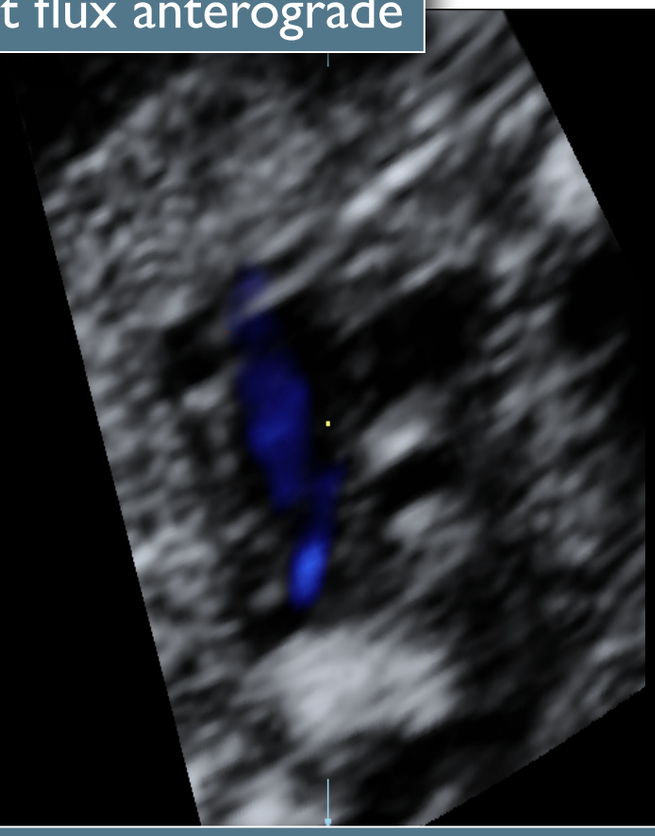
Doppler



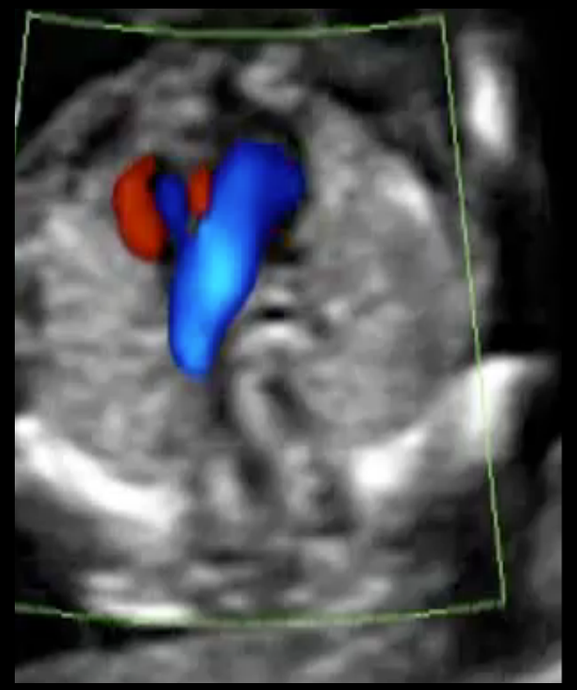
HypoVG



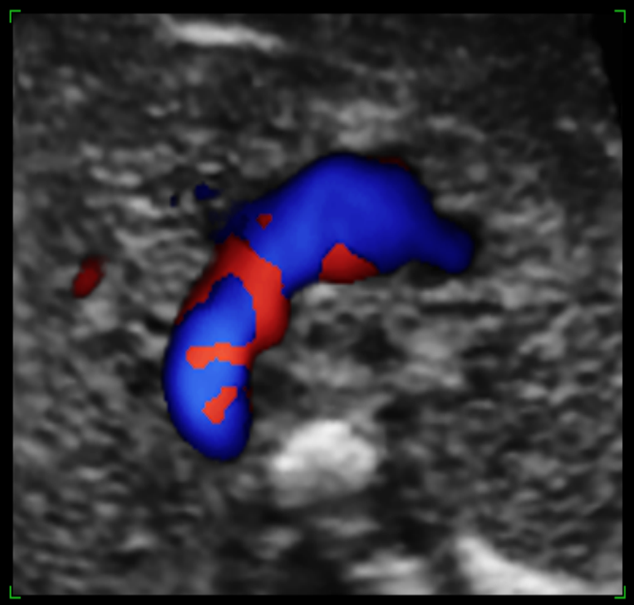
CoA et flux antérograde



APSI



Fallot et AP



Sténose Ao critique et flux rétrograde

