HeBee
FETAL HEART MODEL
FOR PRENATAL DIAGNOSIS

M3C

PRENATAL DIAGNOSIS OF

TETRALOGY OF FALLOT

B. Stos, M3C Academy

UN DAN FACILE ?

ACC-CHD categories	N	Prenatal diagnosis %	Prenatal diagnosis 95% CI	Postnatal ≤7 days %
1. Heterotaxy, including isomerism and mirror-imagery	37	89.2	74.6 to 97.0	8.1
2. Anomalies of the venous return	25	16.0	4.5 to 36.1	32.0
3. Anomalies of the atria and interatrial communications	164	4.3	1.7 to 8.6	29.3
4. Anomalies of the atrioventricular junctions and valves	91	67.0	56.4 to 76.5	19.8
5. Complex anomalies of atrioventricular connections	13	100.0	75.3 to 1.0*	0.0
6. Functionally univentricular hearts	133	92.5	86.7 to 96.3	6.0
			o 11.3	67.4
			to 43.6	29.6
9. Anomalies of the extrapericardial arterial trunks	143	44.7	36.4 to 53.3	28.7
10. Congenital anomalies of the coronary arteries	9	0.0	0.0 to 33.6*	0.0
All, excluding cases with chromosomal anomalies	2471	25.6	23.9 to 27.3	48.0
All, excluding cases with chromosomal anomalies or genetic syndromes	2387	24.8	23.1 to 26.6	48.8
All, excluding cases with chromosomal, genetic syndromes or other anomalies	2036	23.1	21.2 to 24.9	50.9
All, excluding cases with chromosomal or other anomalies and IVSD*	930	40.2	37.0 to 43.4	28.6

FALLOT 60 %

Prevalence, timing of diagnosis and mortality of newborns with congenital heart defects: a population-based study

Babak Khoshnood,[1] Nathalie Lelong,[1] Lucile Houyel,[2] Anne-Claire Thieulin,[1] Jean-Marie Jouannic,[3] Suzel Magnier,[4] Anne-Lise Delezoide,[5] Jean-François Magny,[6] Caroline Rambaud,[7] Damien Bonnet,[8] François Goffinet,[1,9] on behalf of the EPICARD Study Group

Heart, 2012

Impact of prenatal diagnosis on survival of newborns with four congenital heart defects: a prospective, population-based cohort study in France (the EPICARD Study).

Khoshnood B[1], Lelong N, Houyel L[2], Bonnet D[3], Ballon M[1], Jouannic JM[4], Goffinet F[1,5]; EPICARD Study group.

Method

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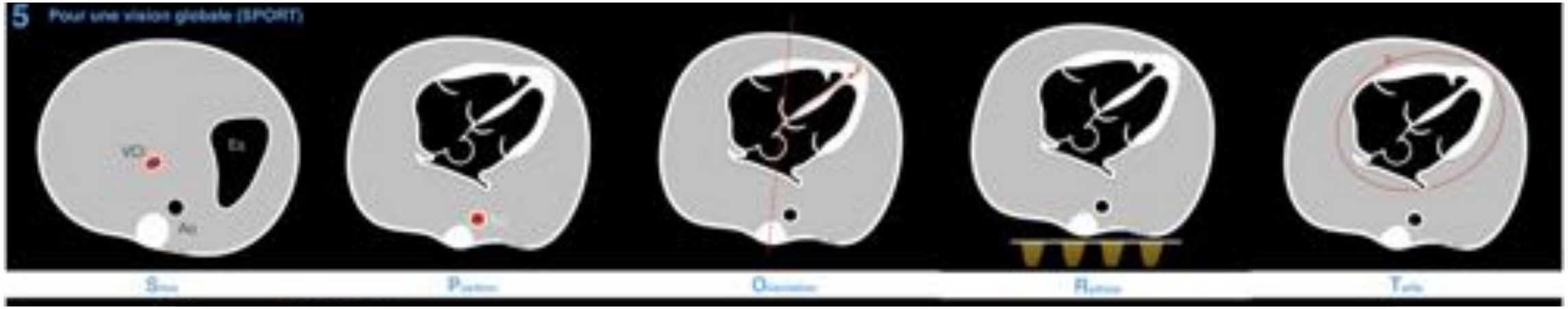
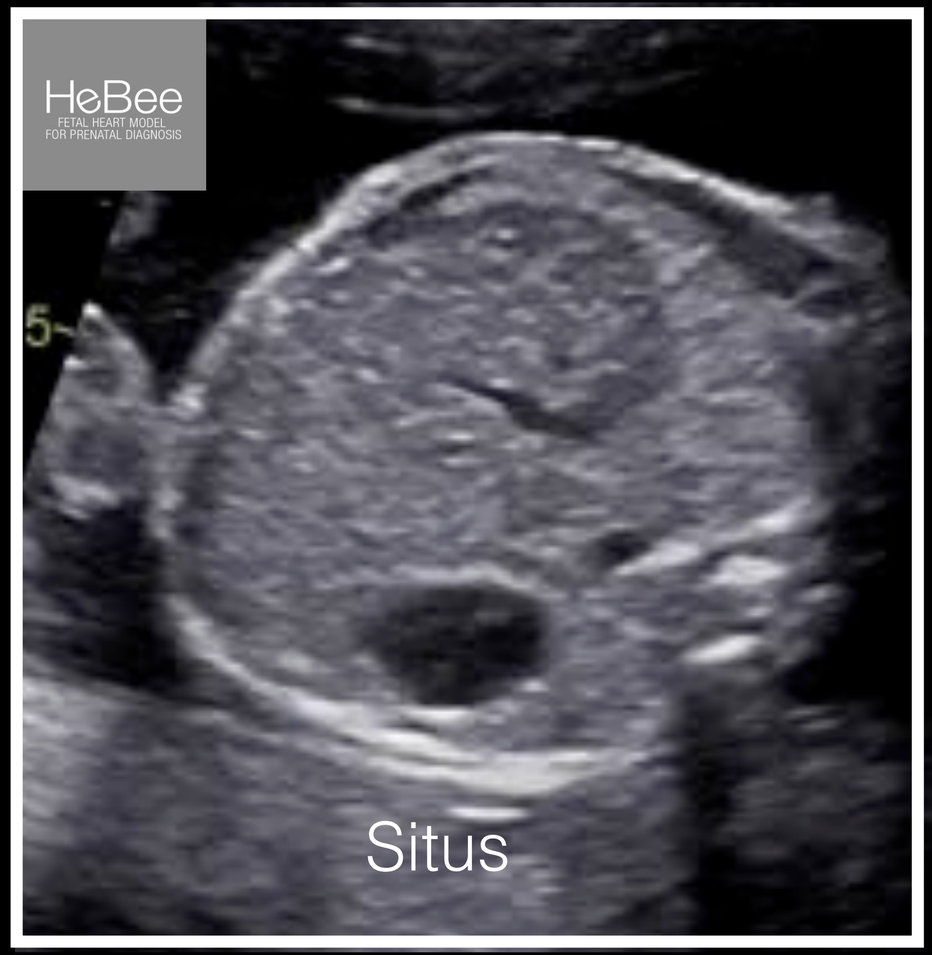
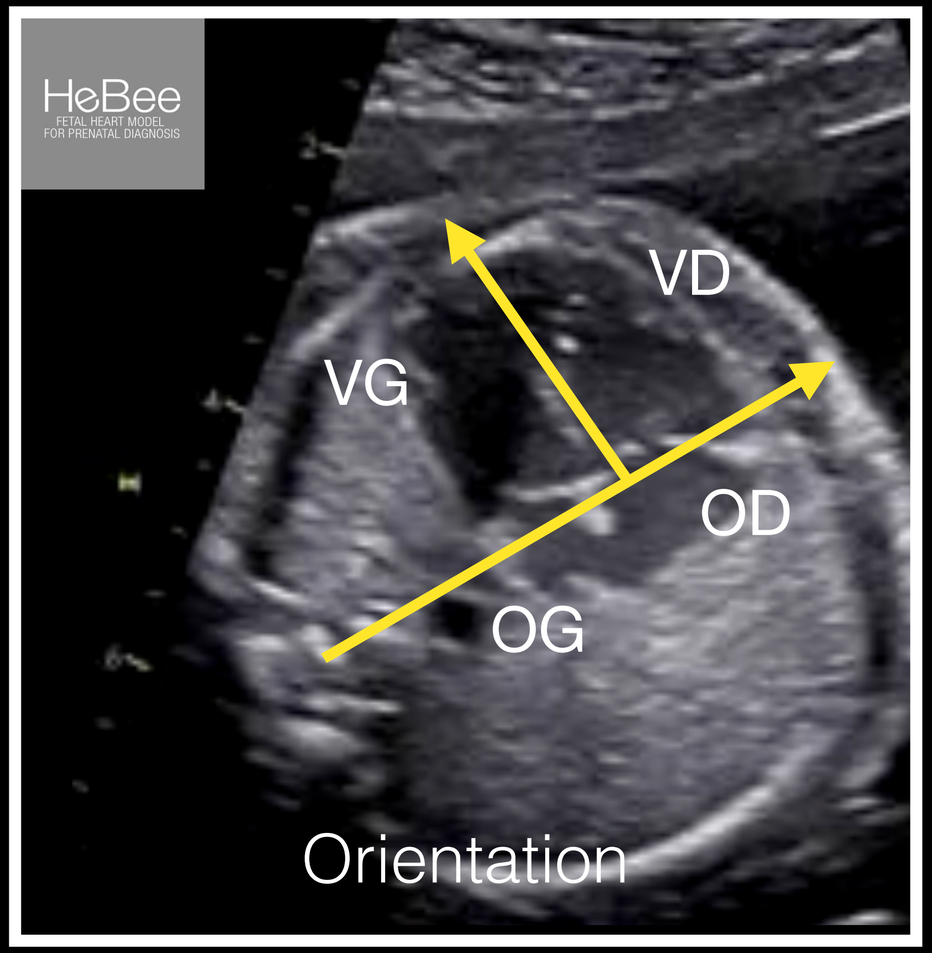
FOR PRENATAL DIAGNOSIS

The Lévy-Stos method

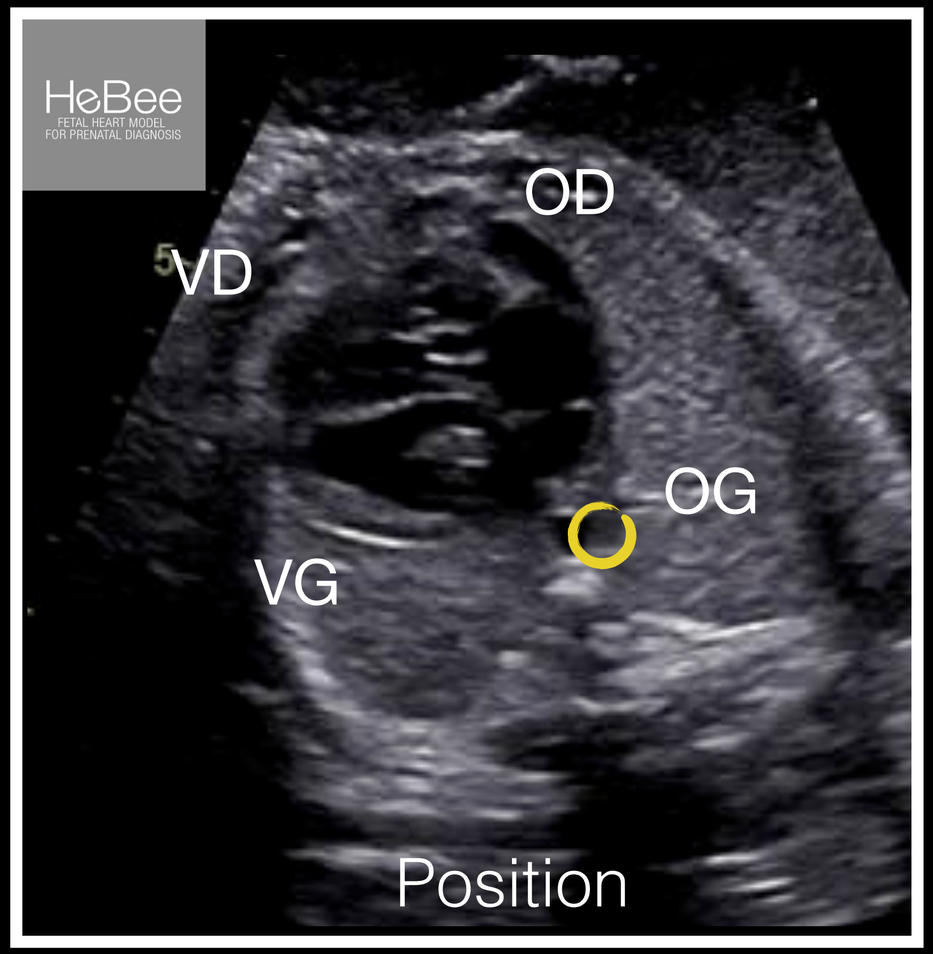


The Lévy-Stos method

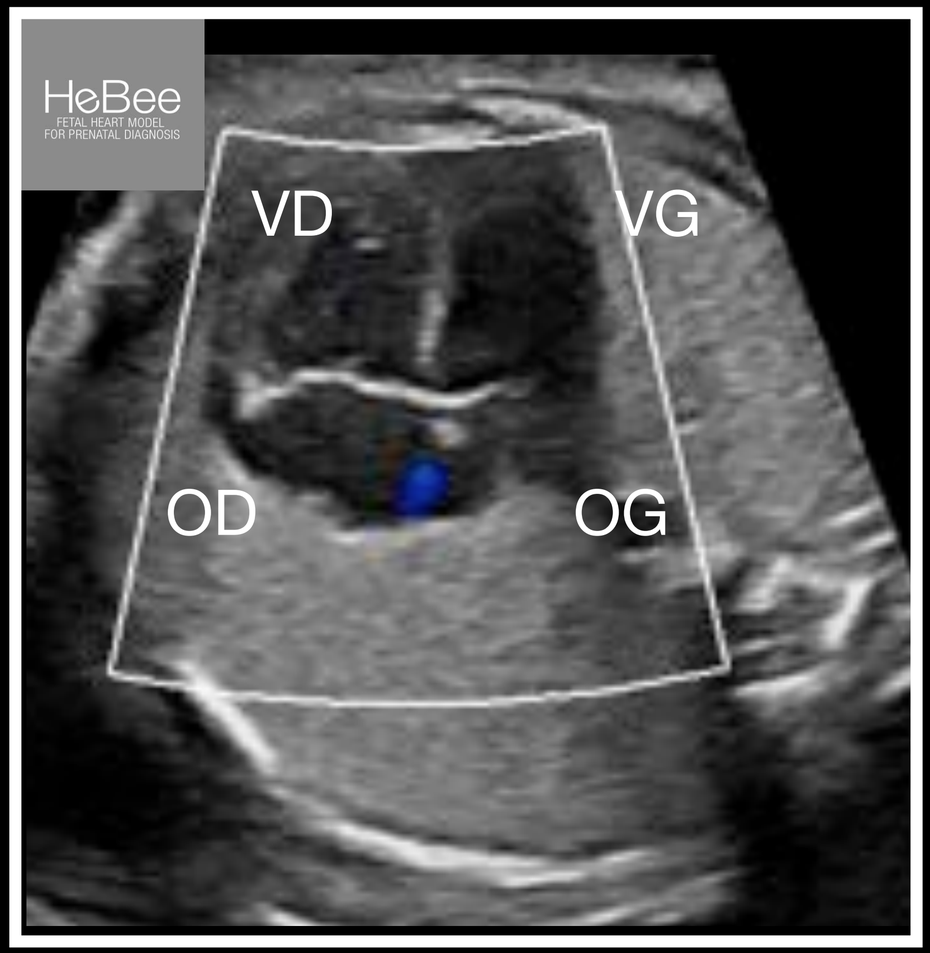




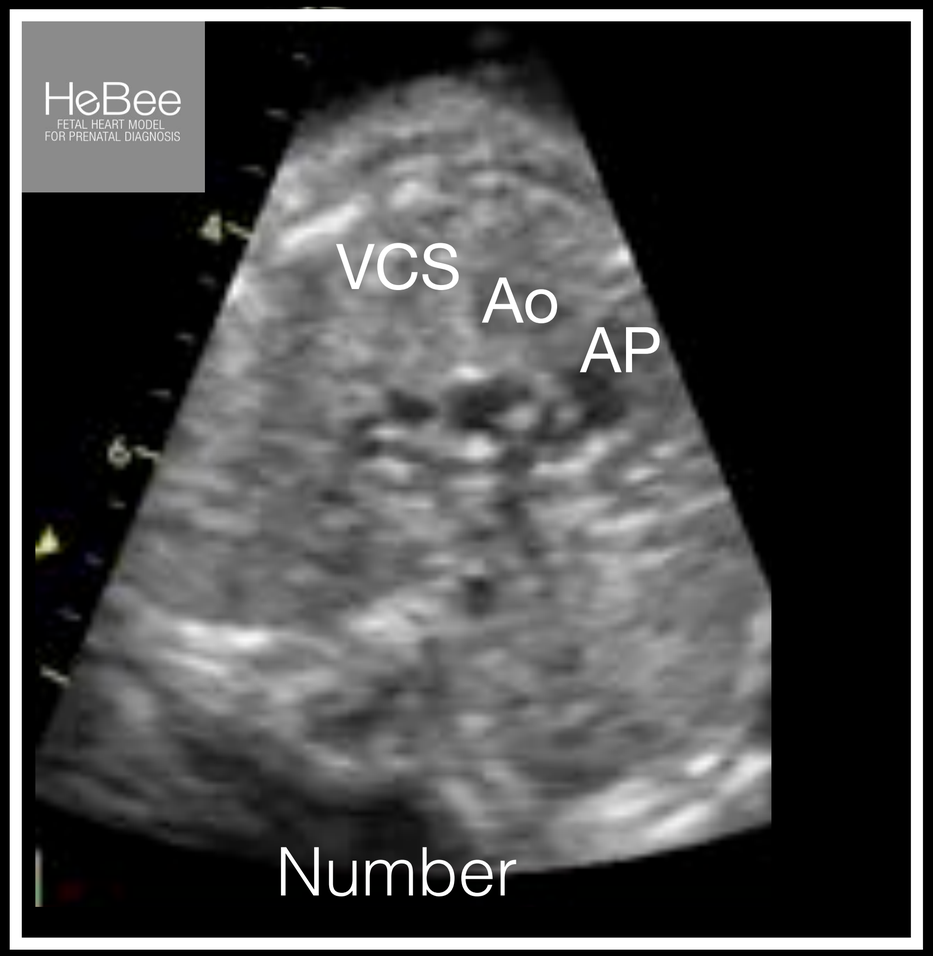
From transverse abdominal view to 4 chambers view

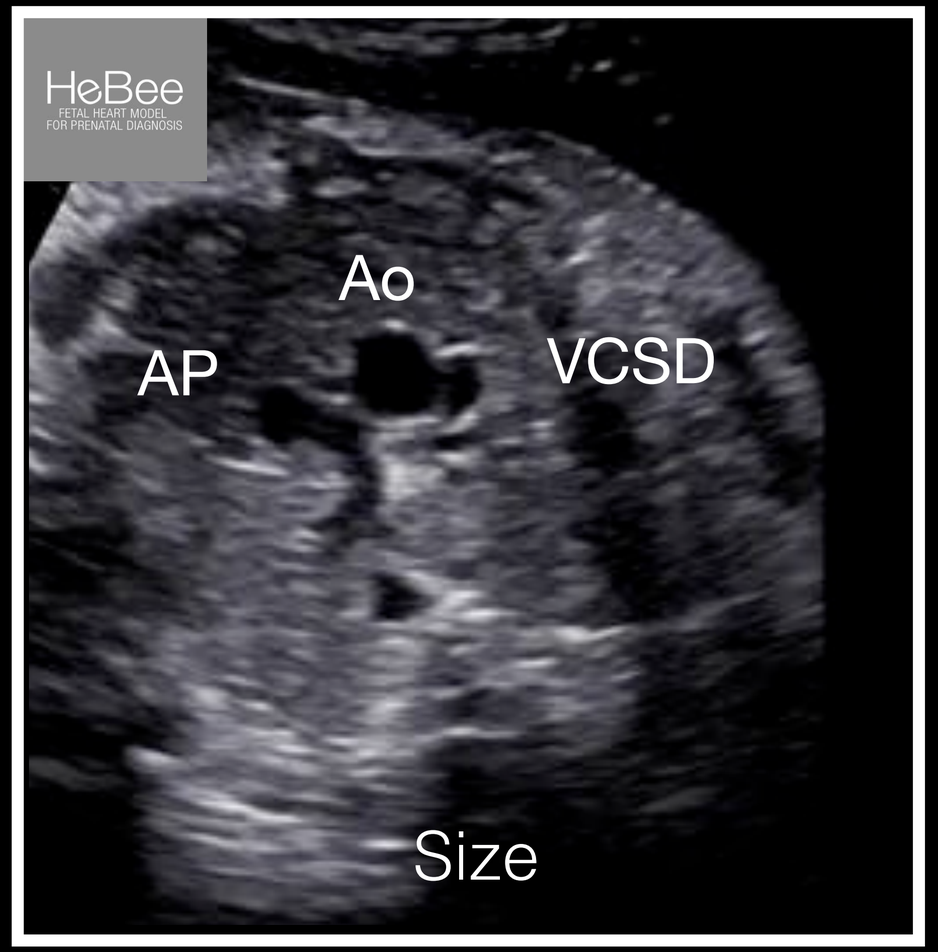


4 chambers view



4 chambers view



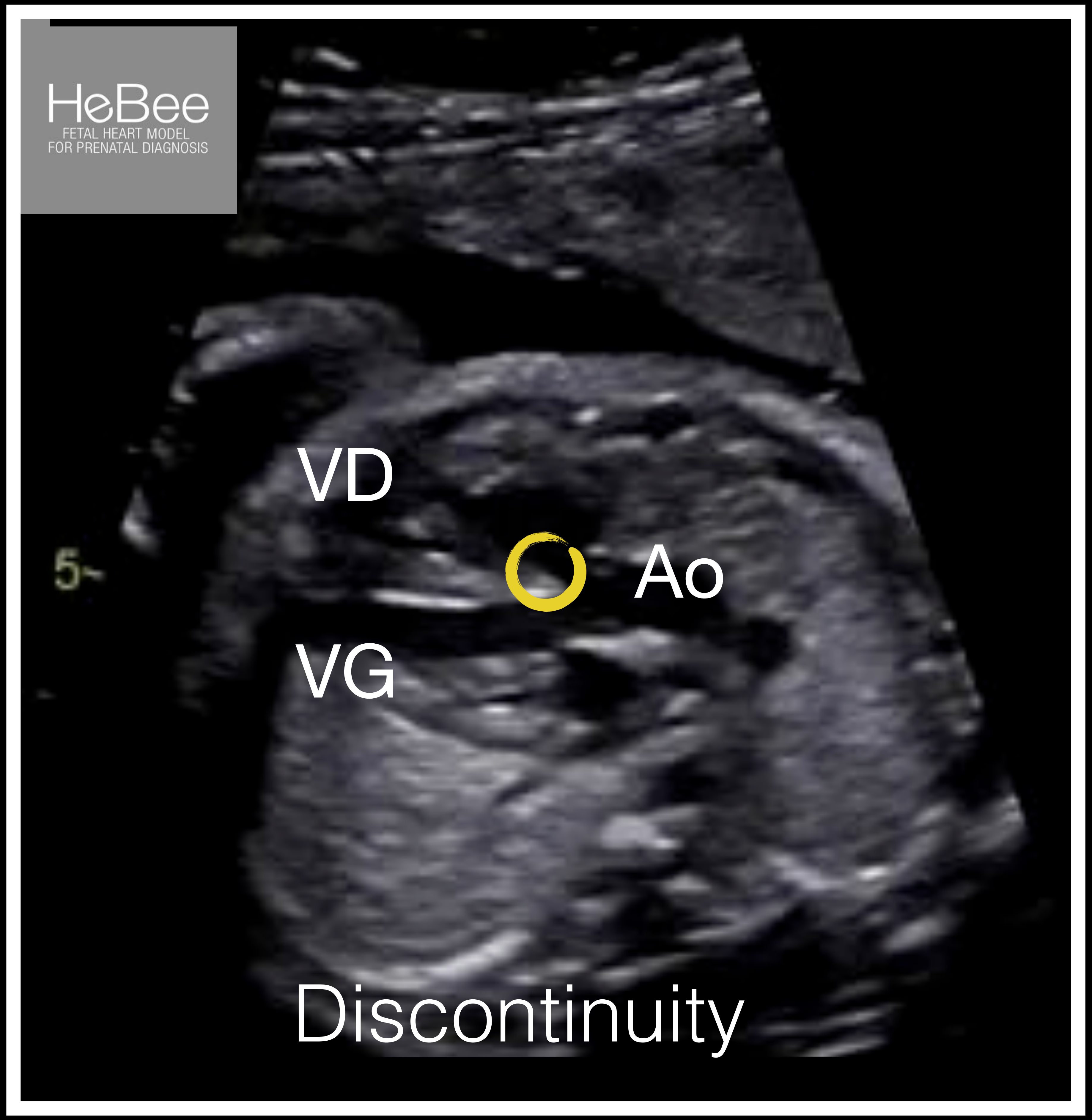


3 vessel view

Organization

Thymus

3 vessel view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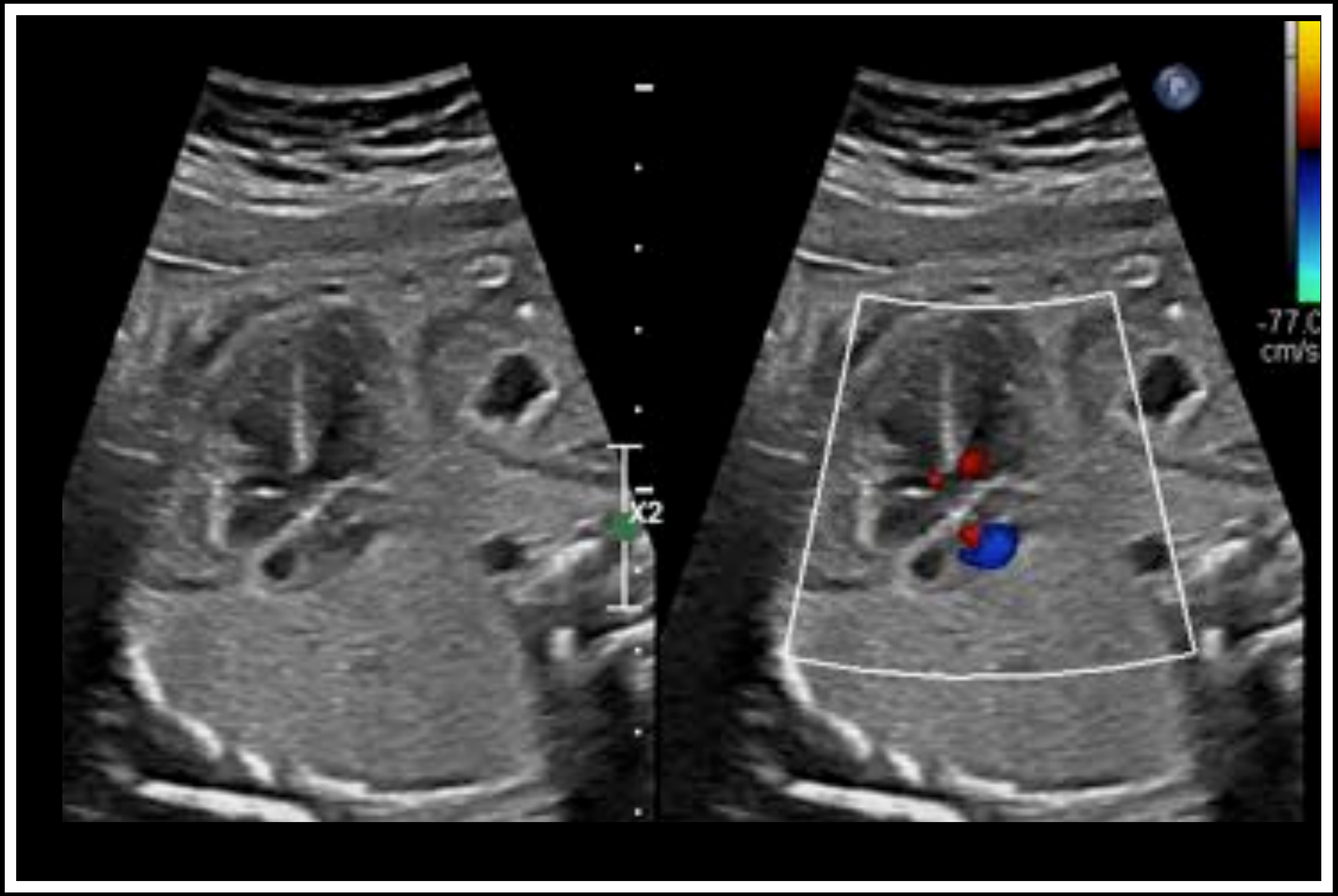
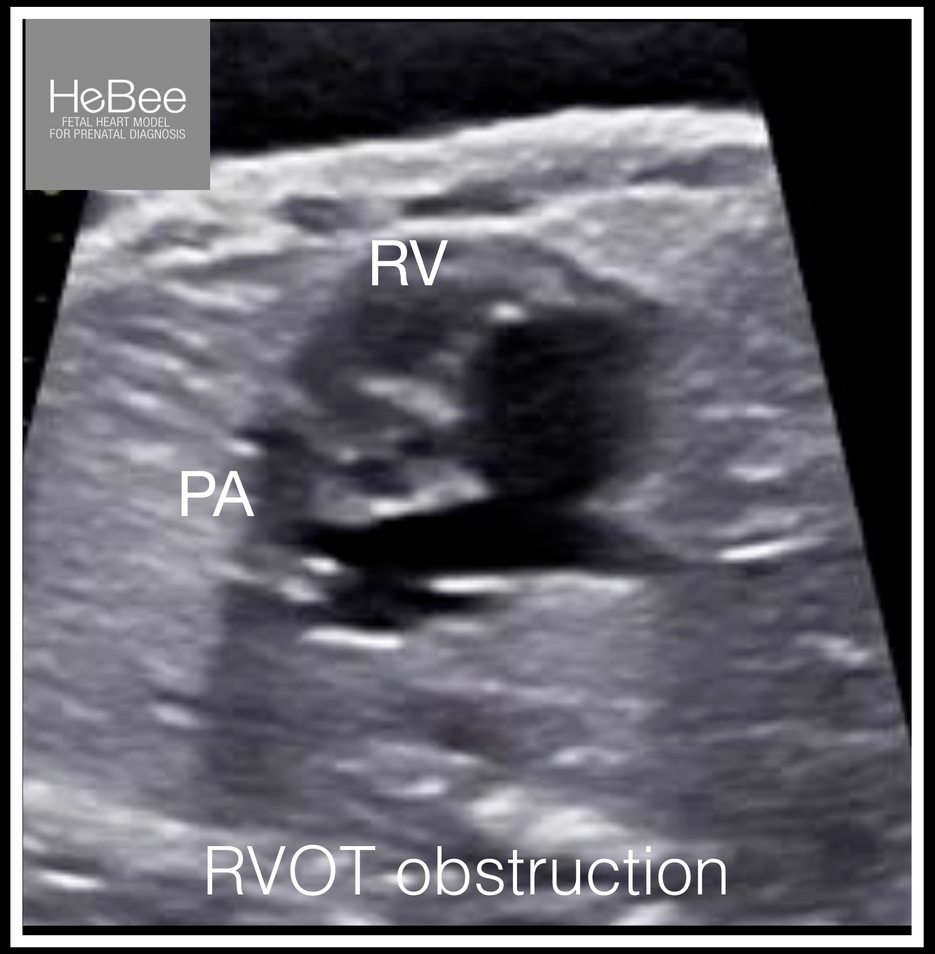
FOR PRENATAL DIAGNOSIS
VD
Ao
VG
Discontinuity



LVOT view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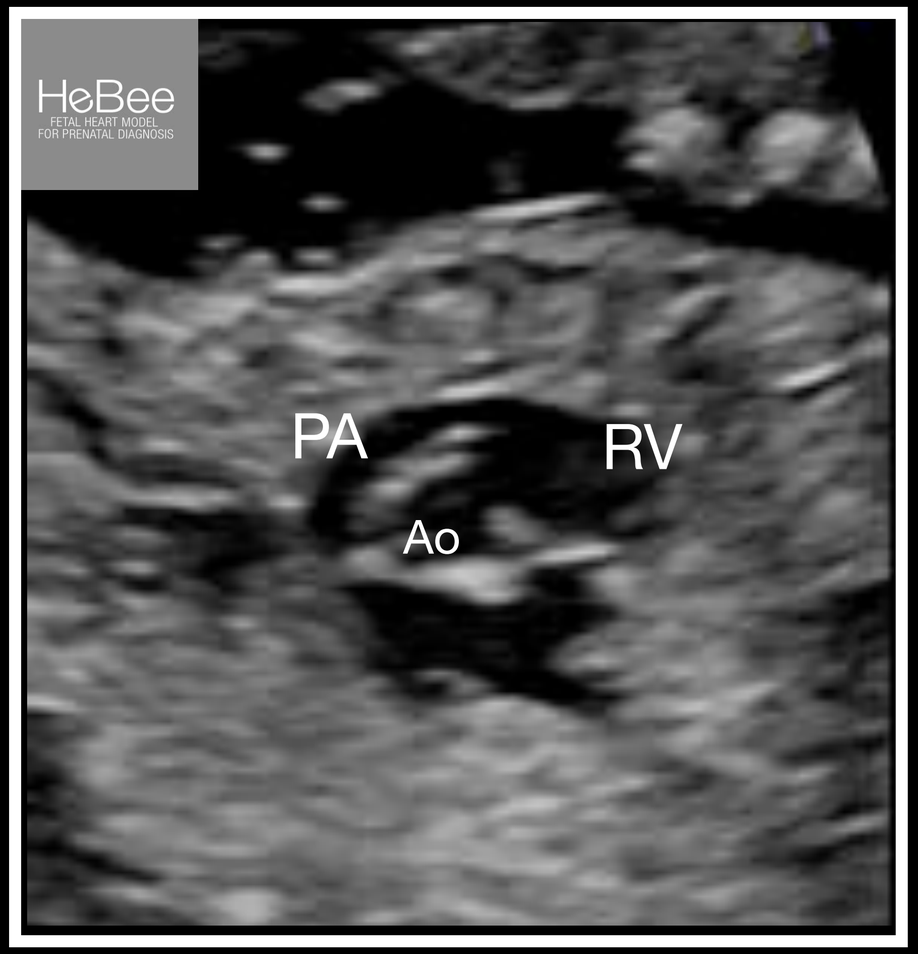
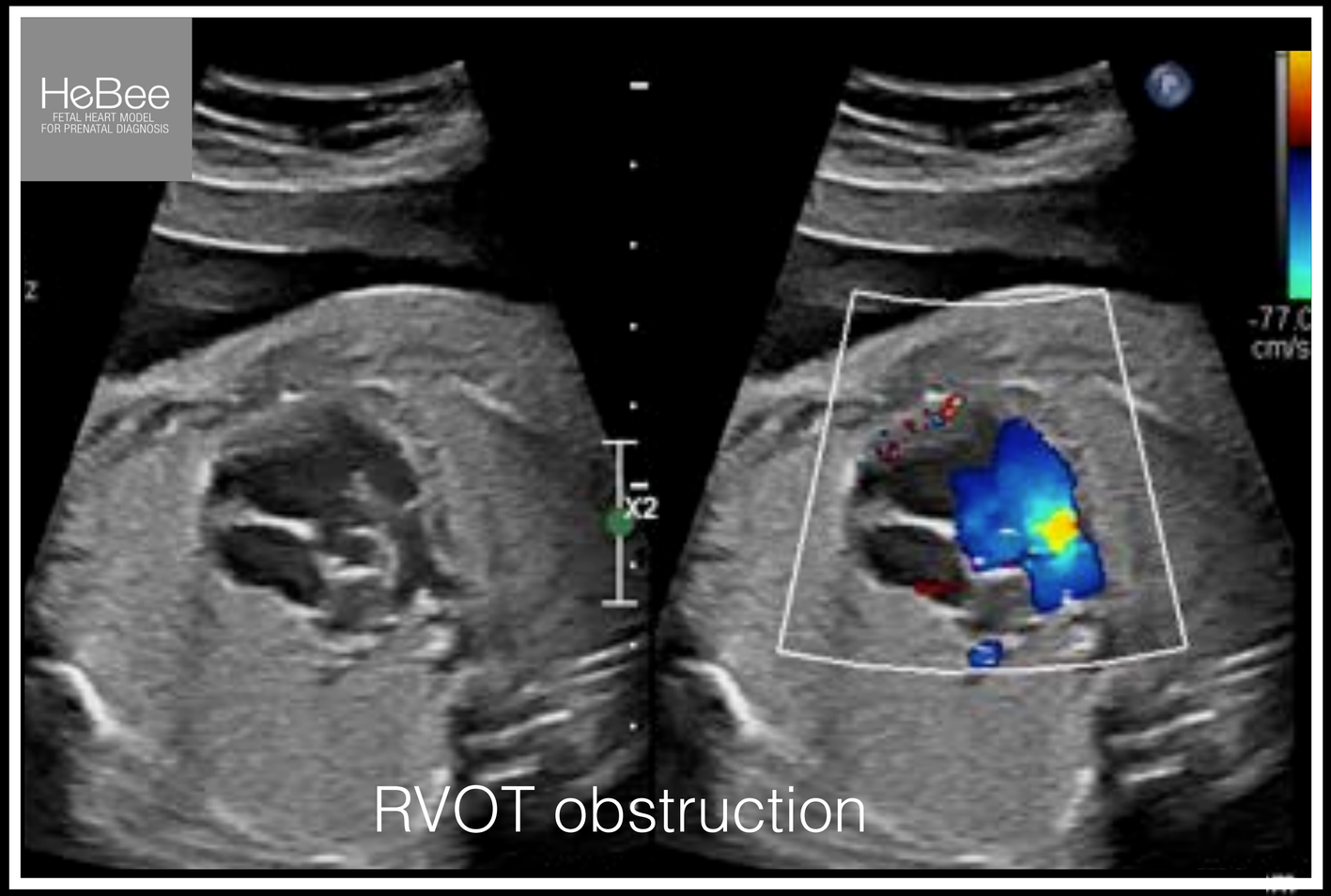
FOR PRENATAL DIAGNOSIS
RV
PA
RVOT obstruction


HeBee
FETAL HEART MODEL
FOR PRENATAL DIAGNOSIS
PA
RV
Ao

RVOT view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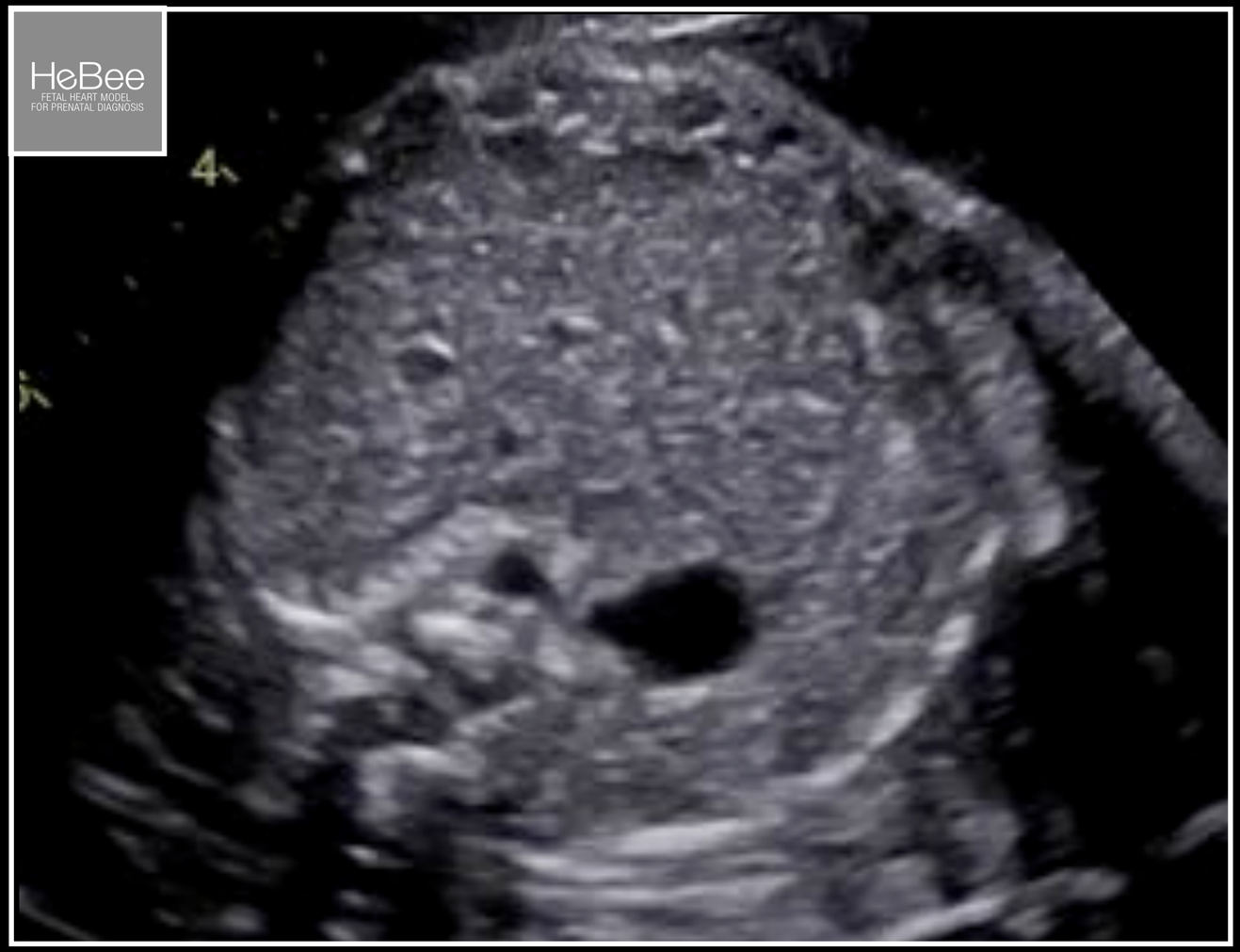
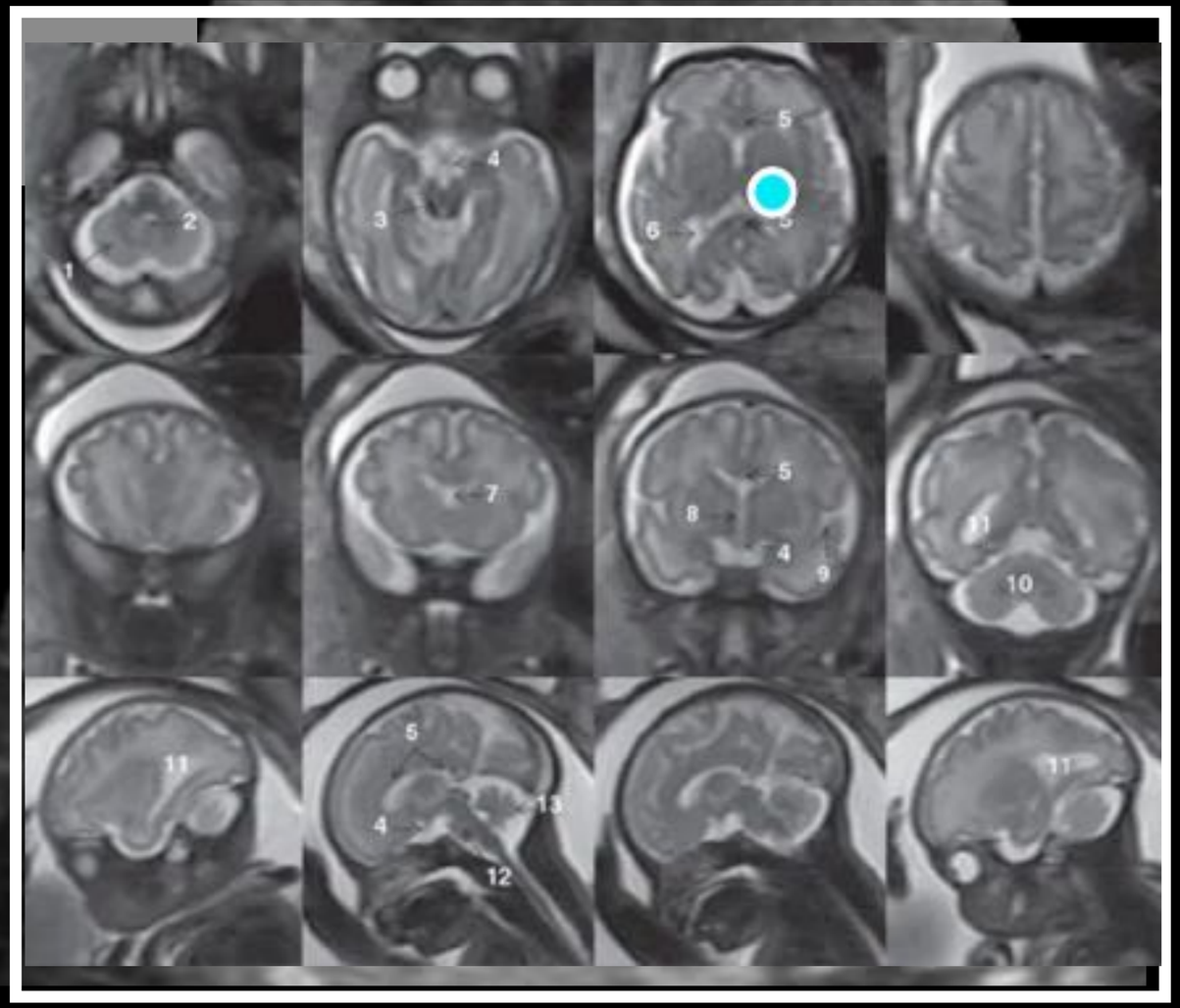
FETAL HEART MODEL
FOR PRENATAL DIAGNOSIS
X2
-77.0
cm/s
RVOT obstruction

RVOT view



Complete examination of the foetal heart

Facteurs pronostiques



Ultrasound Obstet Gynecol 2007; **29**: 625–627
Published online 2 April 2007 in Wiley InterScience (www.interscience.wiley.com). DOI: 10.1002/uog.3971

Tetralogy of Fallot in the fetus in the current era

L. C. Y. POON, I. C. HUGGON, V. ZIDERE and L. D. ALLAN
Harris Birthright Research Centre for Fetal Medicine, King's College Hospital Medical School, London, UK

Eur Heart J. 2008 Jun;29(11):1432-8. doi: 10.1093/eurheartj/ehn194. Epub 2008 May 8.

Foetal echocardiographic assessment of tetralogy of Fallot and post-natal outcome.

Kaguelidou F[1], Fermont L, Boudjemline Y, Le Bidois J, Batisse A, Bonnet D.

10-15 % Del 22
20% other Chr anomalies
30% extra cardiac disorders

Associated anomalies

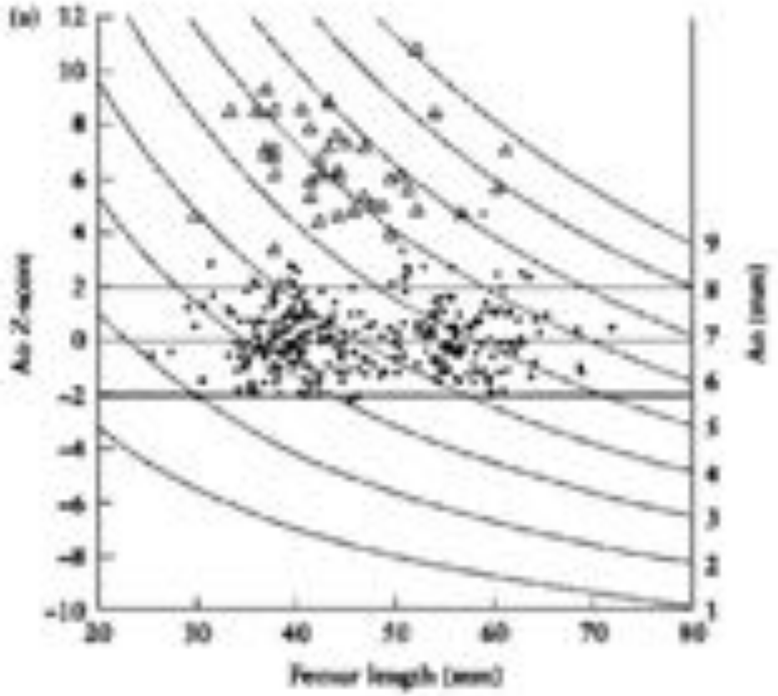
Axis > 65°
= poor prognosis
(more PA, increased mortality)

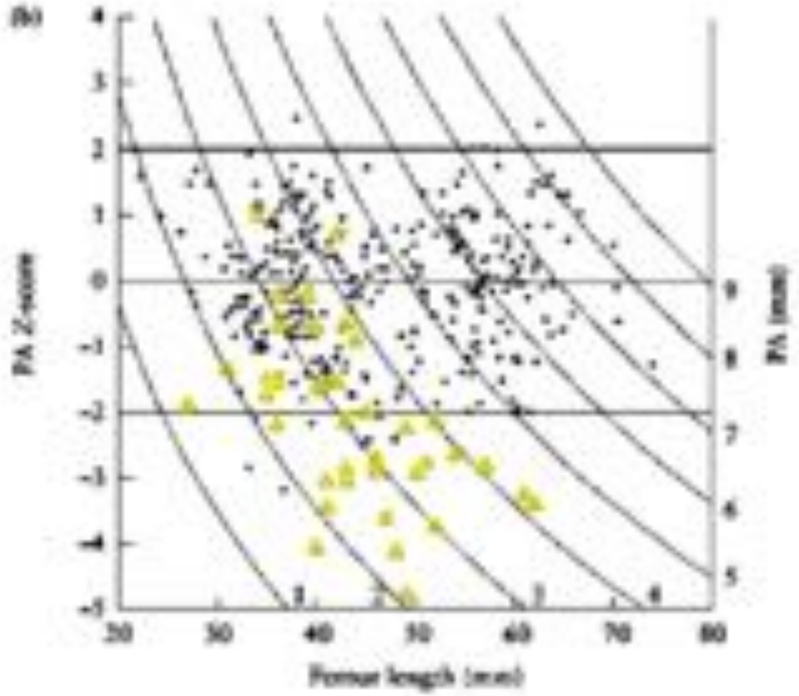
Ultrasound Obstet Gynecol. 2017 Jul;50(1):58-62. doi: 10.1002/uog.15998. Epub 2017 Jun 6.

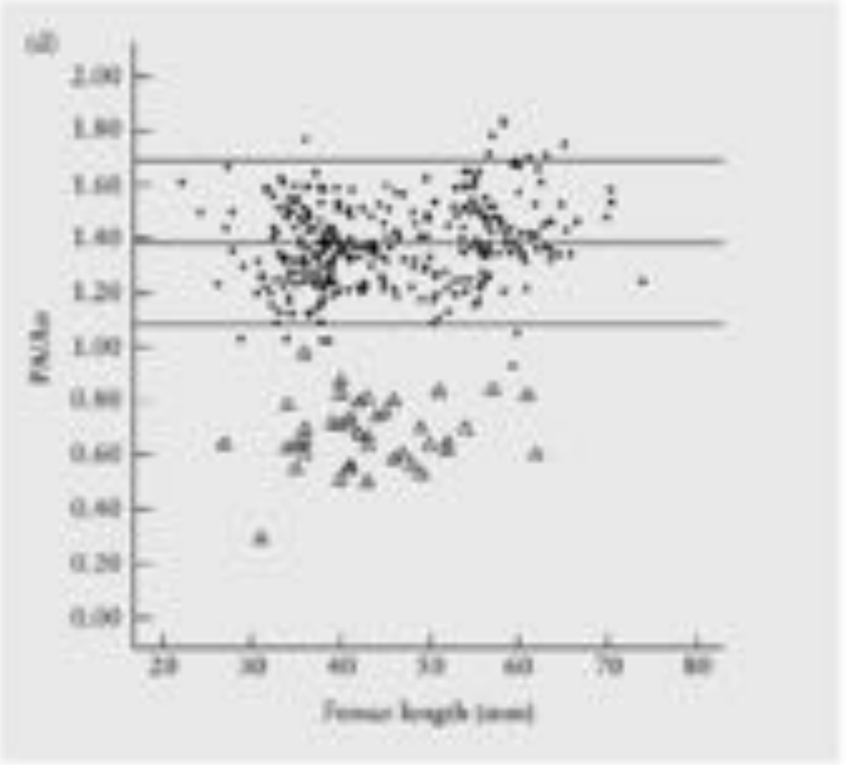
Fetal cardiac axis in tetralogy of Fallot: associations with prenatal findings, genetic anomalies and postnatal outcome.

Zhao Y[1], Edington S[2], Fleenor J[2], Sinkovskaya E[1], Porche L[1], Abuhamad A[1].

Cardiac axis



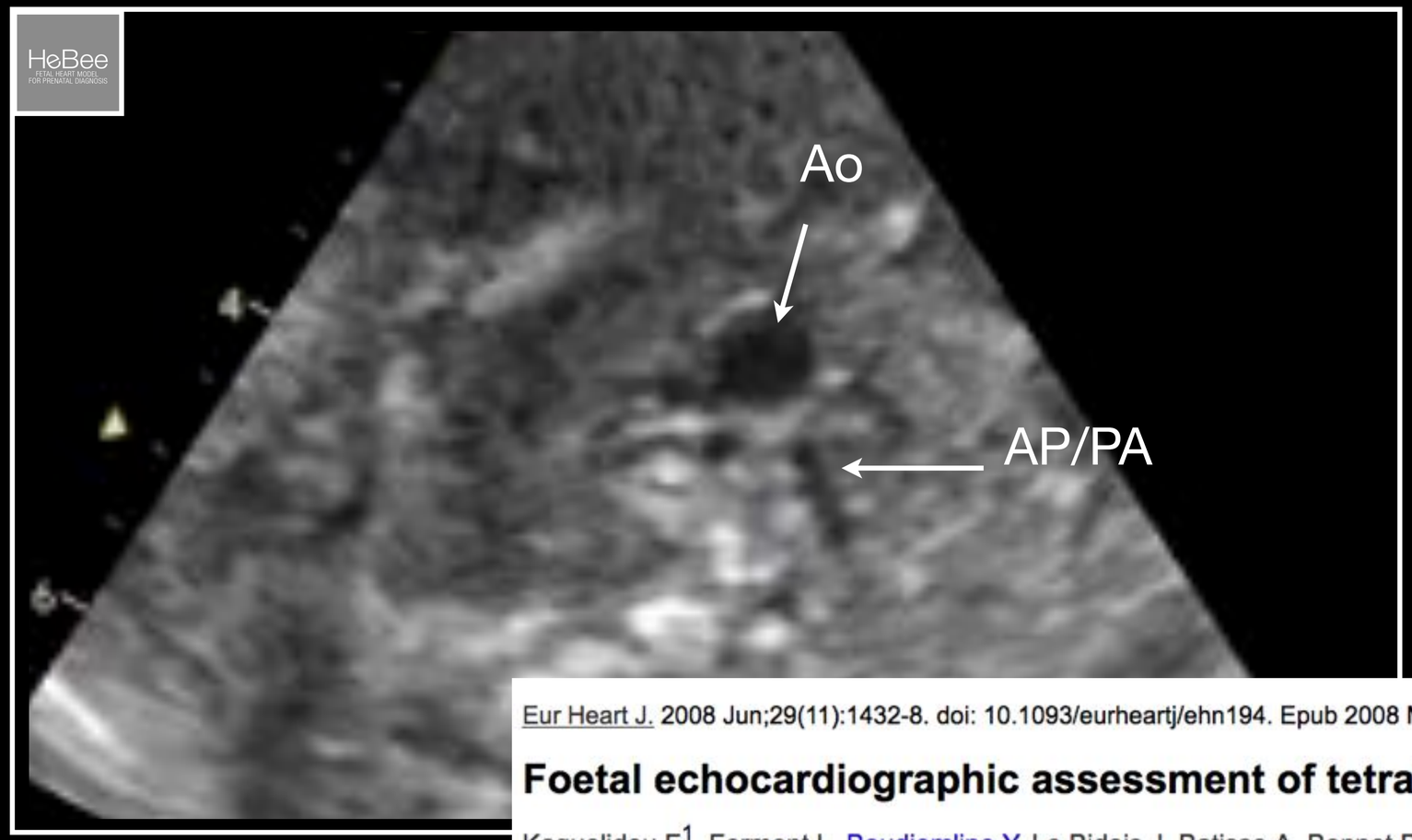




- Fallot (43 fœtus)
- Témoins (329 fœtus)

Wu LH et al, Ultrasound Obstet Gynecol 2014;44:674 (Guangzhou)

PAs size



presence of PAT +
non hypoplastic PAs
> 80% repair at 1 year

Eur Heart J. 2008 Jun;29(11):1432-8. doi: 10.1093/eurheartj/ehn194. Epub 2008 May 8.

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Kaguelidou F[1], Fermont L, Boudjemline Y, Le Bidois J, Batisse A, Bonnet D.

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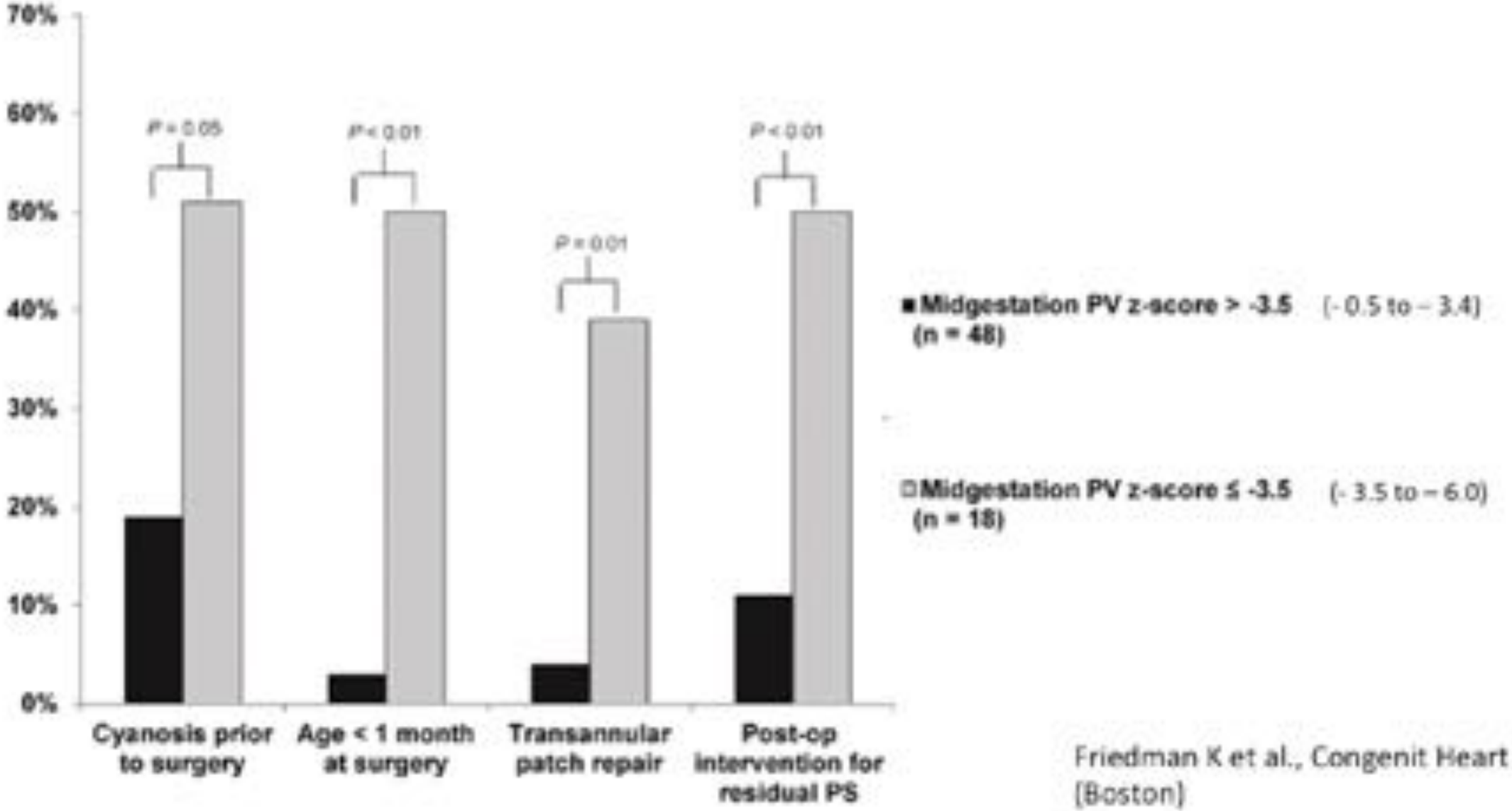
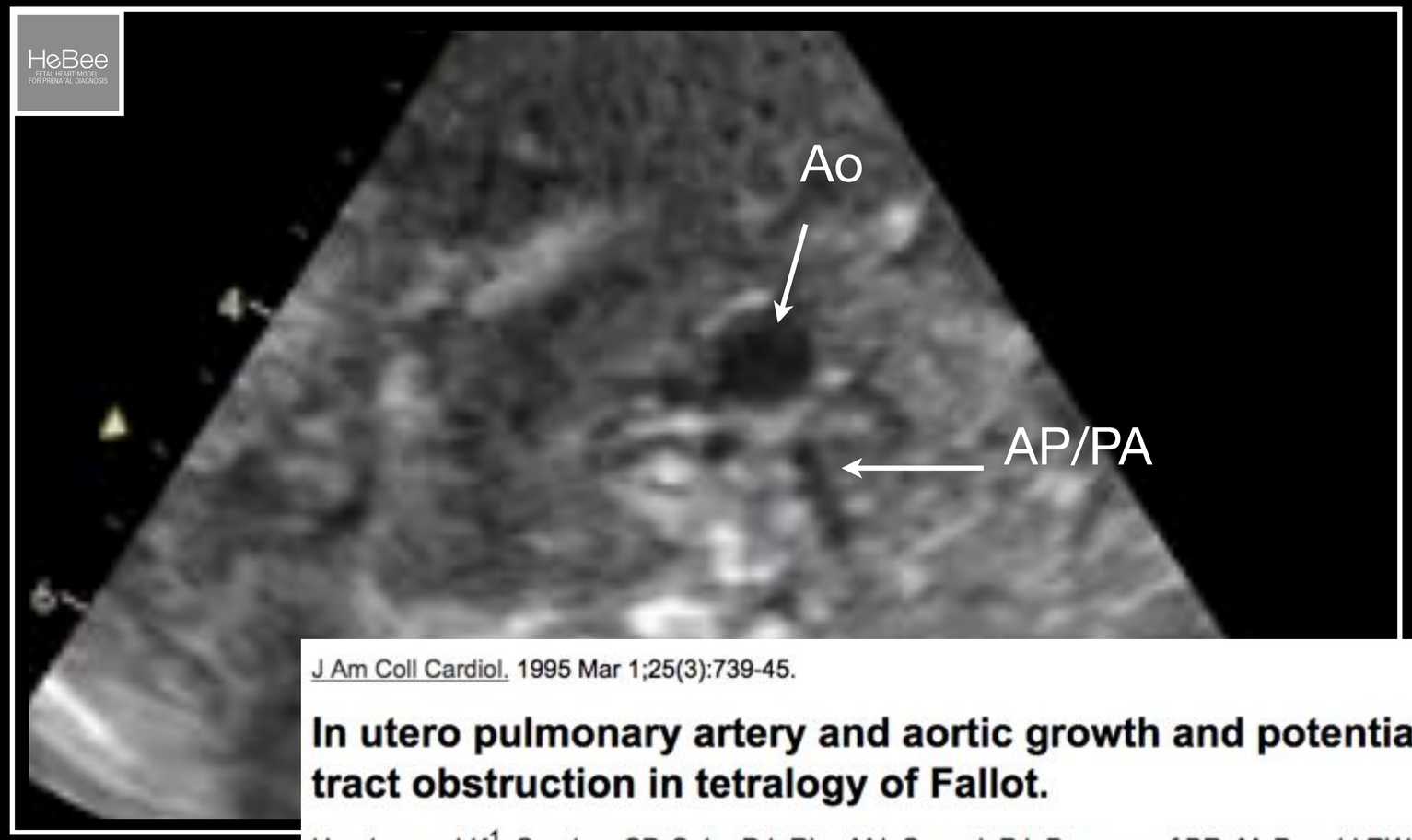


Friedman K et al., Congenit Heart Dis 2014;9:187 (Boston)

PAs size



Evolutive cardiopathy

Follow up !

J Am Coll Cardiol. 1995 Mar 1;25(3):739-45.

In utero pulmonary artery and aortic growth and potential for progression of pulmonary outflow tract obstruction in tetralogy of Fallot.

Hornberger LK[1], Sanders SP, Sahn DJ, Rice MJ, Spevak PJ, Benacerraf BR, McDonald RW, Colan SD.

PAs size

DA dependency

Neonatal emrgency

Cardiol Young. 2003 Jun;13(3):240-7.

An echocardiographic study of tetralogy of Fallot in the fetus and infant.

Pepas LP[1], Savis A, Jones A, Sharland GK, Tulloh RM, Simpson JM.

Retrograde flow in the DA

Retrograde flow in the DA

COUNSELLING AND DECISIONS

- Counselling

which words to employed? life? quality? death? repair? risks? outcome?

- Looking for extra cardiac anomalies
- Delivery planification

Dépending on néonatal risk prediction; follow up

- TOP

Should we accept a TOP request ?

- Psychological support