

EuroValve
April 26-27, 2018

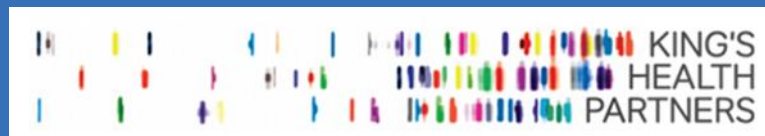


Tricuspid Valve Anatomy for the imager and the interventionist

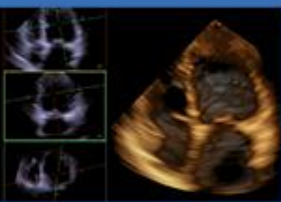
Madalina Garbi, MD MA FRCP

Consultant Cardiologist

King's College Hospital NHS Foundation Trust



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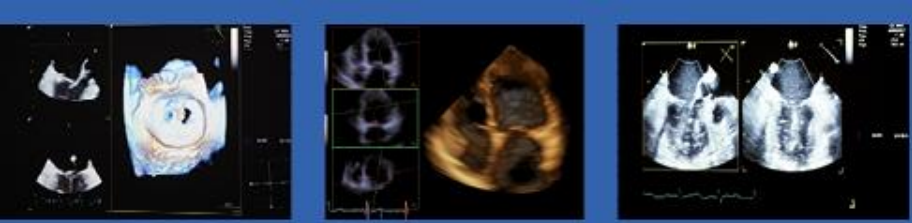
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I have **no financial relationships** to disclose

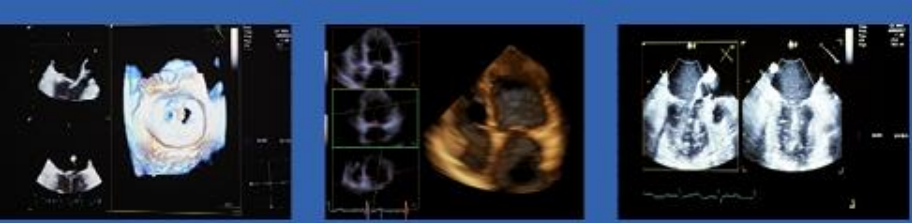


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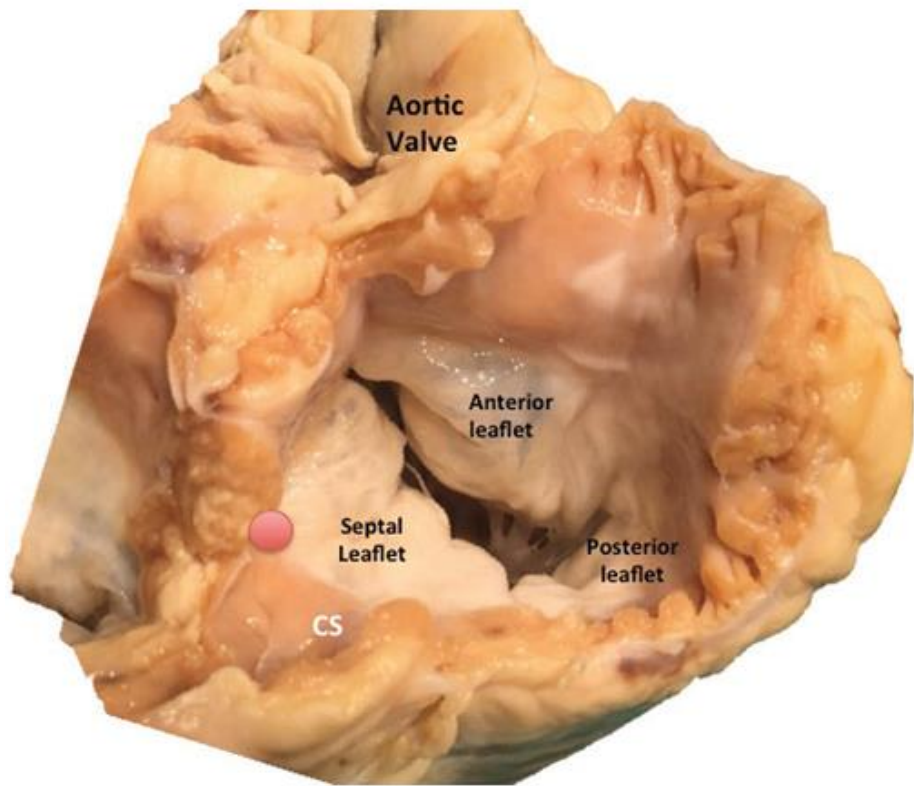
Leonardo da Vinci anatomy drawings



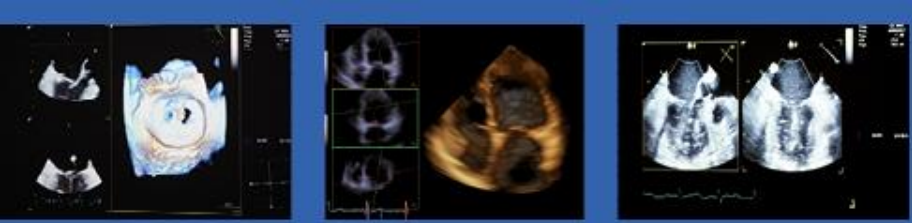


Pathology specimen

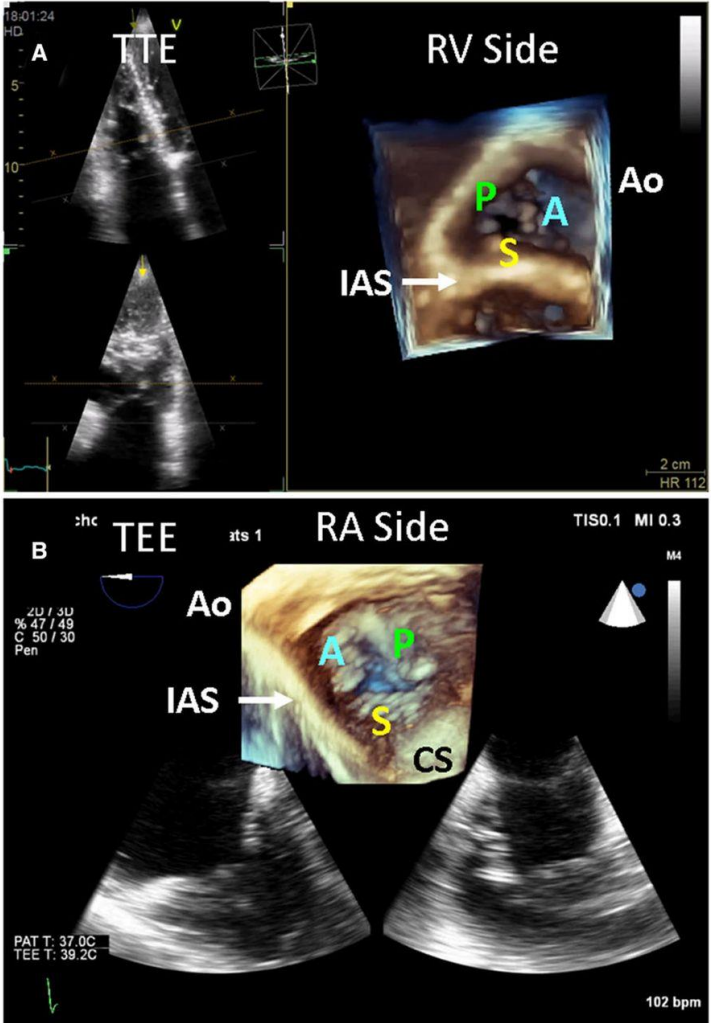
death happens in systole - TV appears triangular as in daVinci drawings

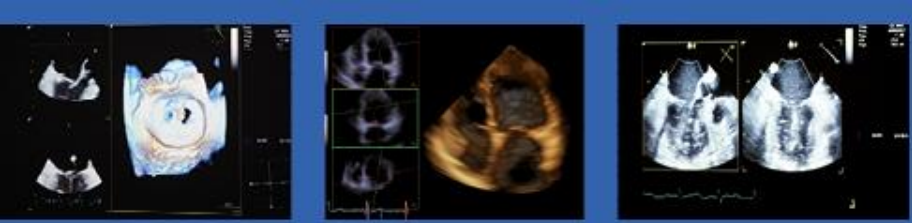


The red spot indicates the location of the atrioventricular node; CS = coronary sinus.

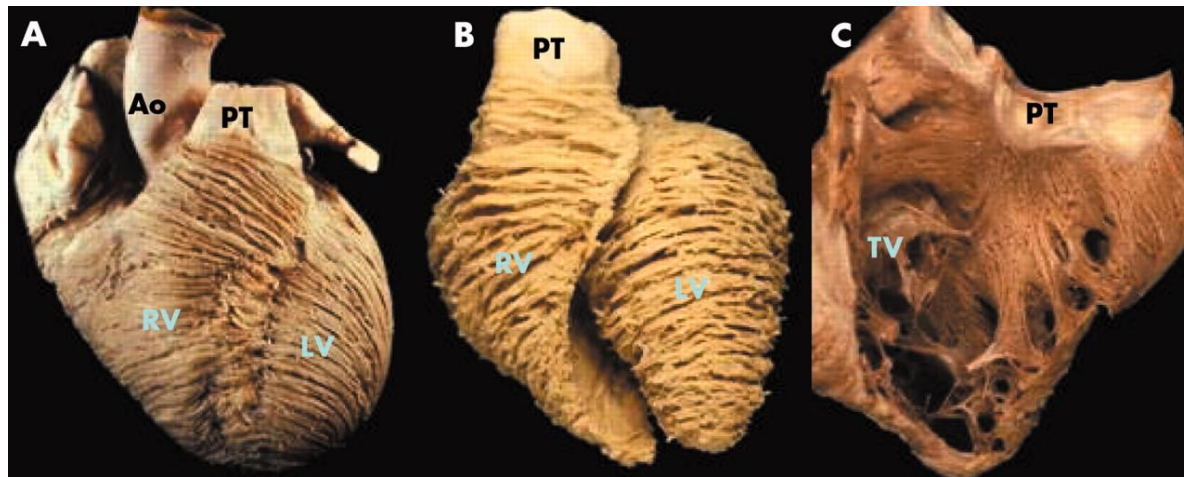


TTE & TOE systolic frame

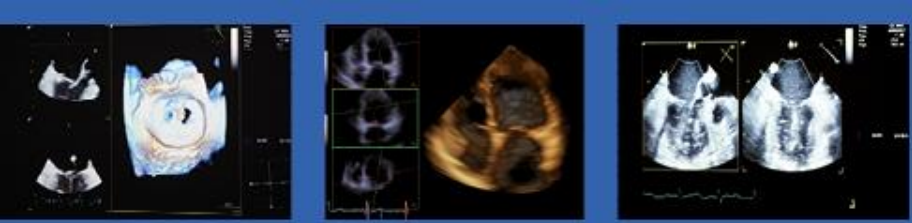




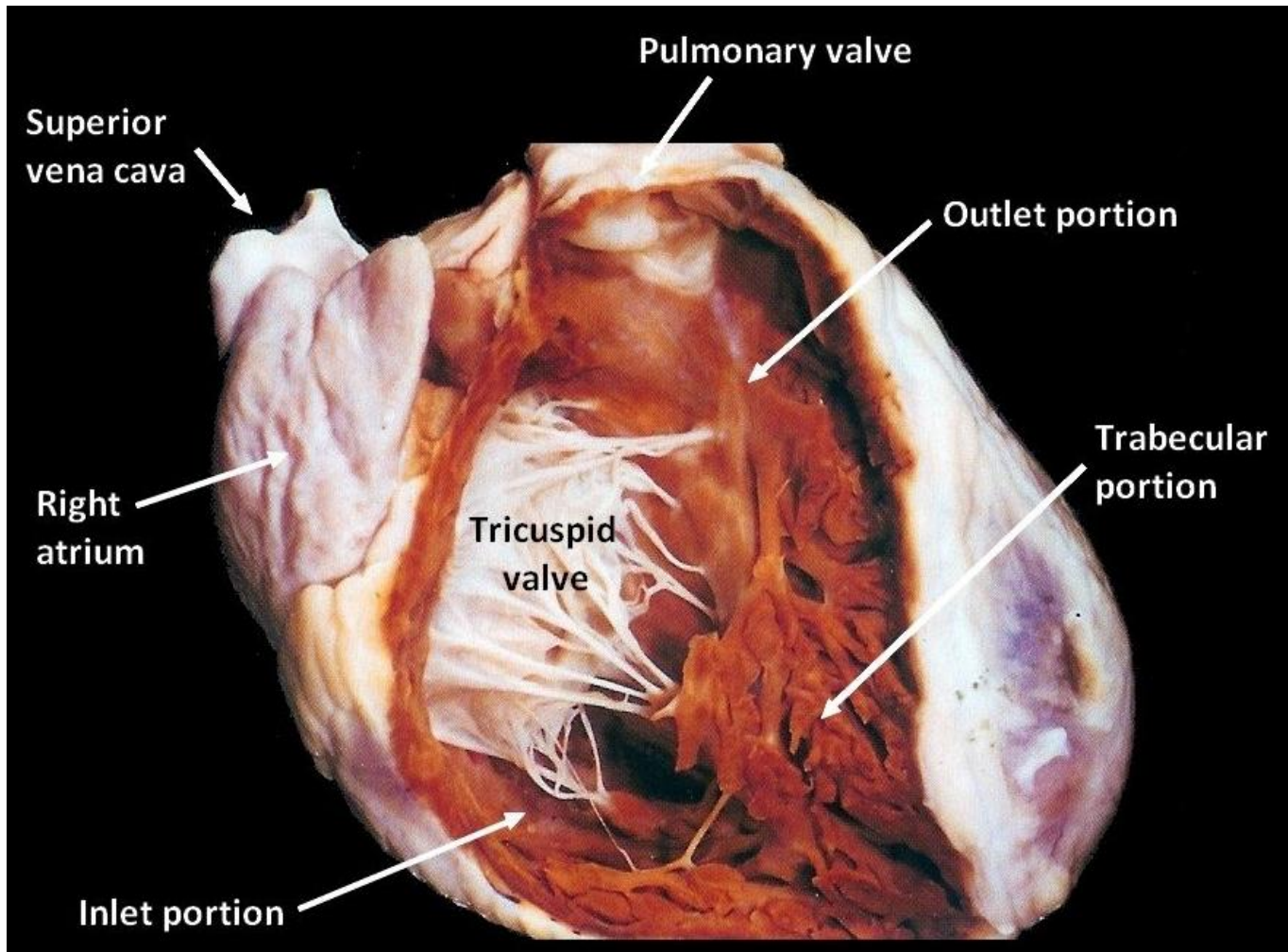
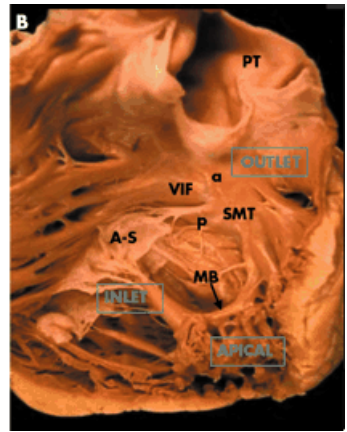
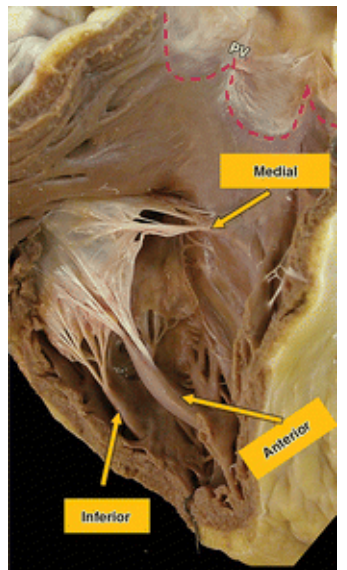
TV belongs to RV
RV has complex shape, wrapped around the LV

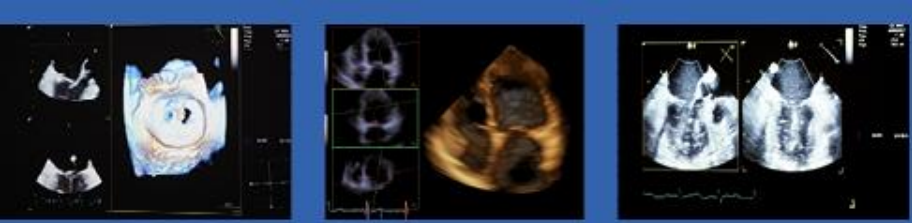


Sequential dissection by Prof D Sanchez-Quintana, University of Extremadura, Spain



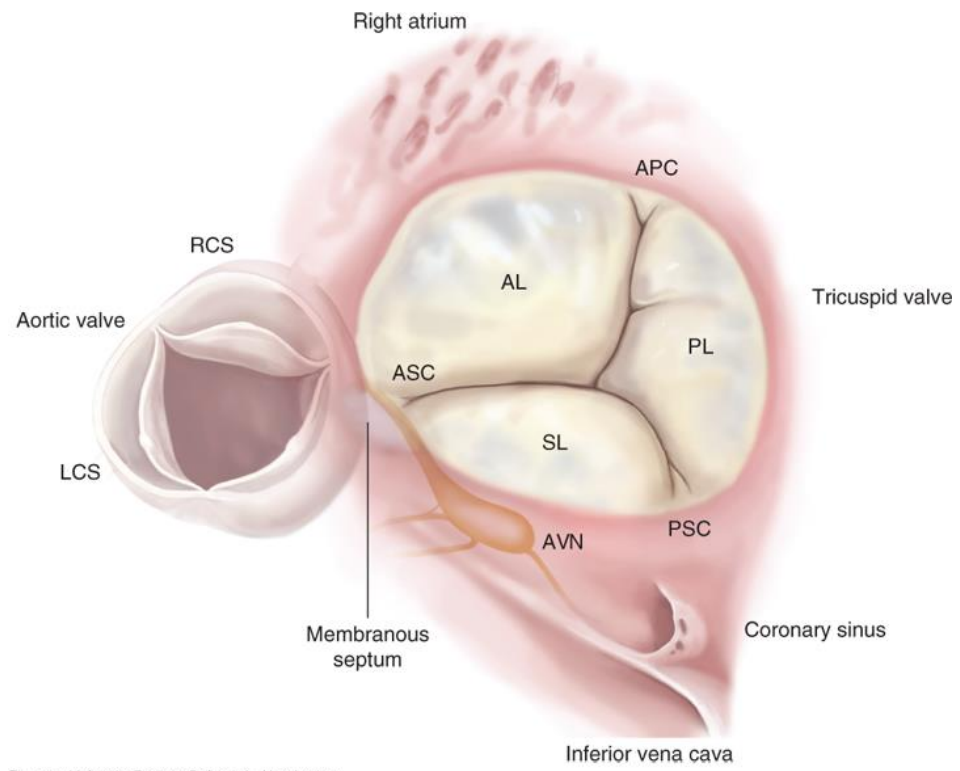
2 or 3 papillary muscles, septal leaflet chords to septum, moderator band, no PV - TV continuity



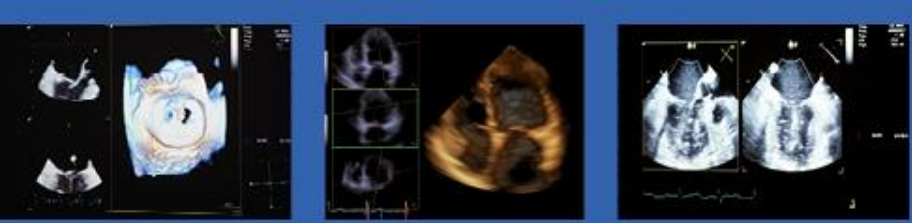


Leaflets

posterior leaflet may have scallops or poor separation from anterior leaflet

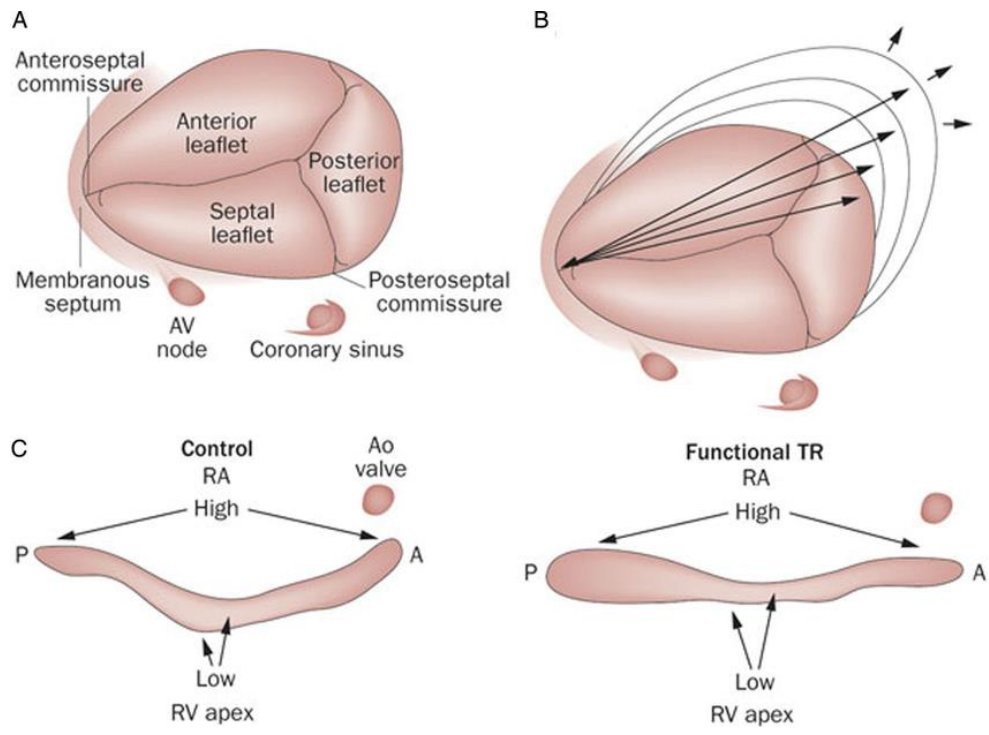


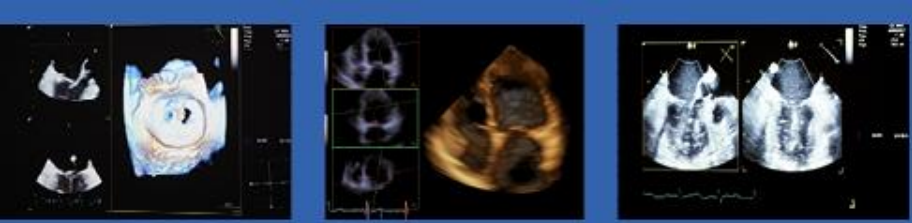
Source: Valentin Fuster, Robert A. Harrington, Jagat Narula, Zubin J. Eapen: Hurst's The Heart,



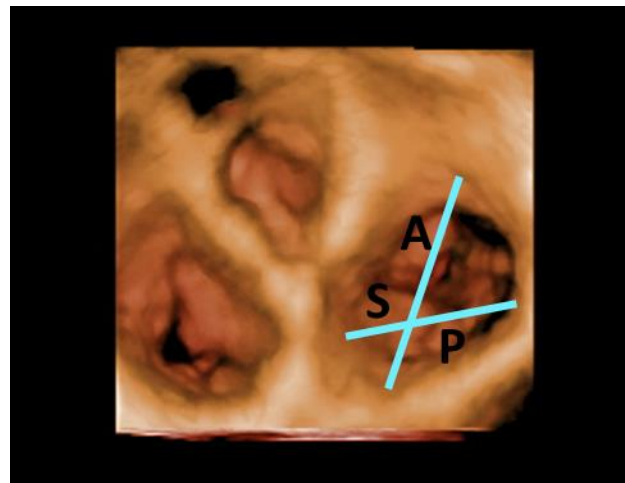
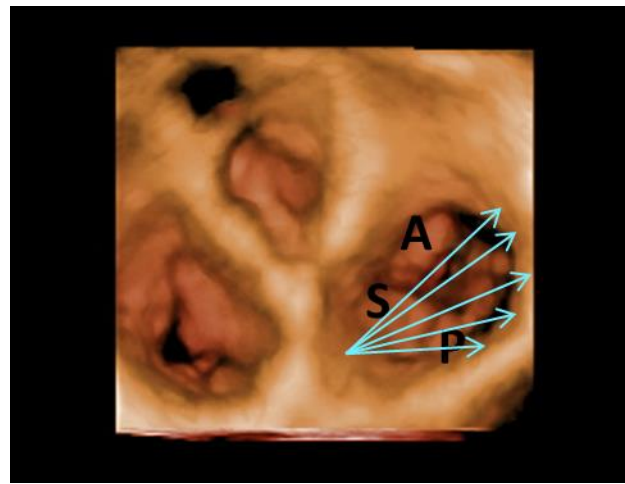
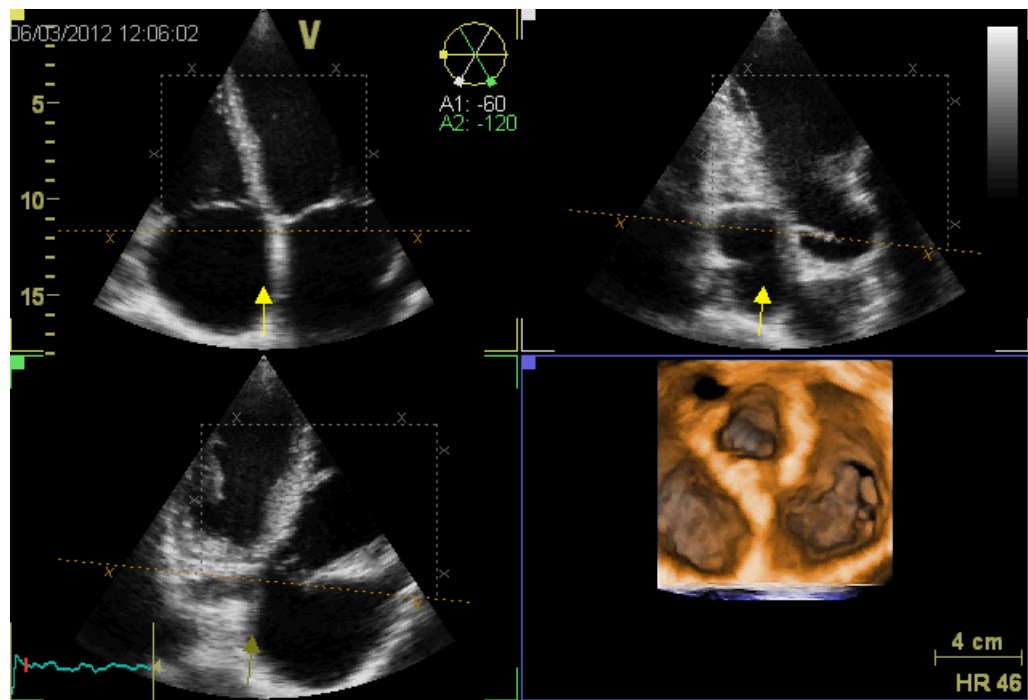
Annulus

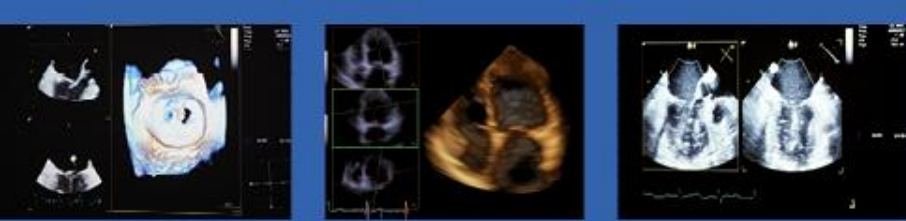
oval shape / non-planar





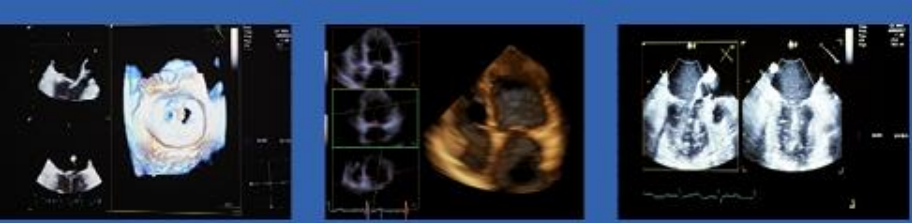
TV annulus dilatation





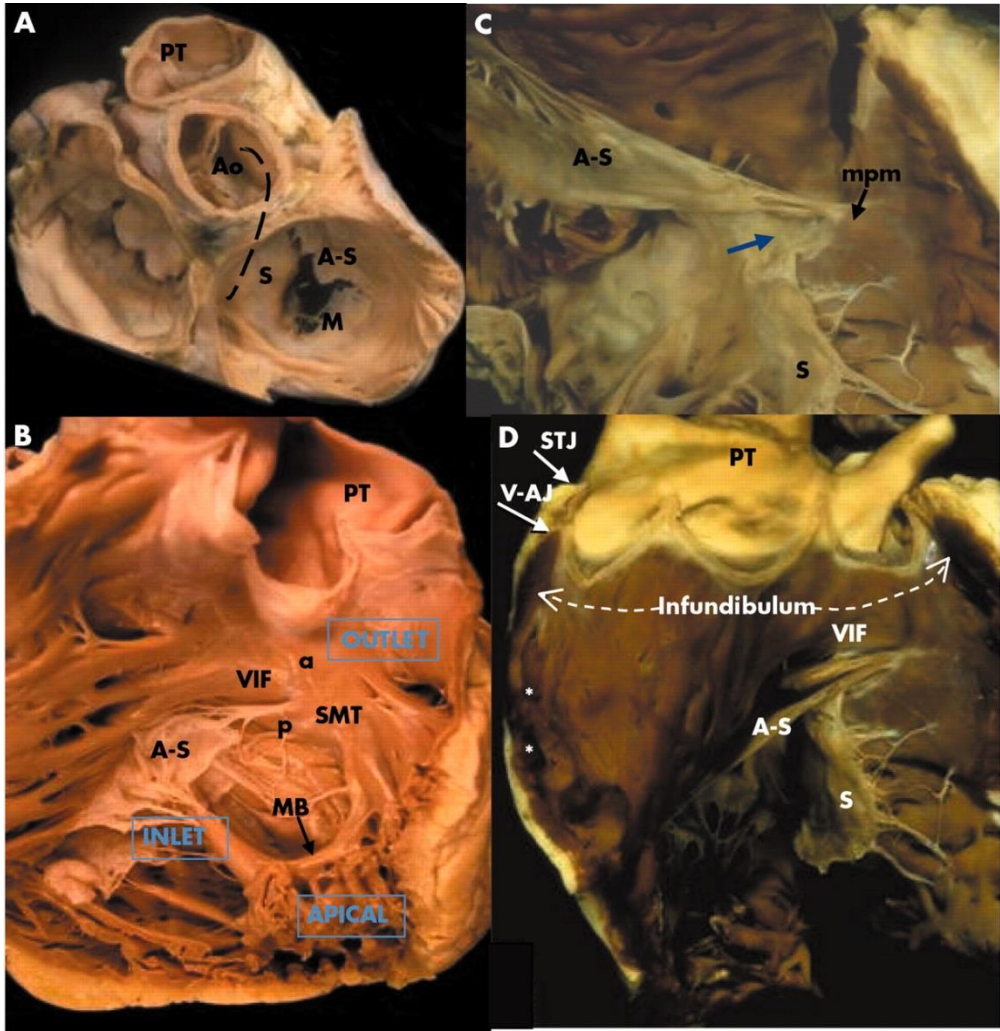
TV understanding / assessment **challenges**

- In 2D: difficult to identify the 3 leaflets
 - No anatomic landmark
 - 2D plane could intersect one or the other leaflet
 - In 3D all 3 leaflets in one view
- In 3D: difficult to visualise and analyse because
 - Complex non-planar 3D annulus and valve shape
 - Annular plane position and leaflets orientation
 - Thin structure – needs multicycle acquisition / stitching

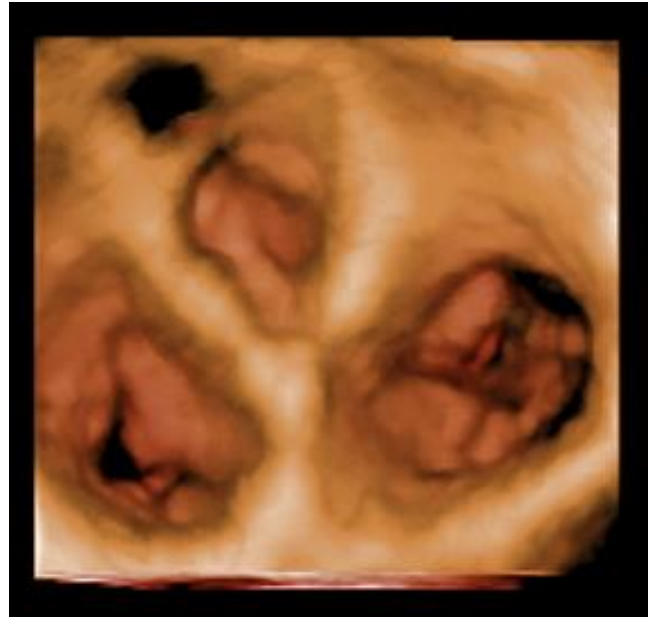


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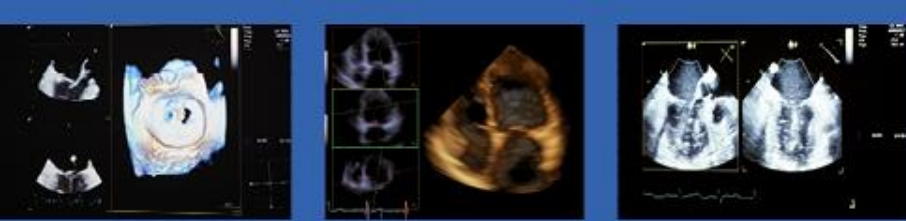
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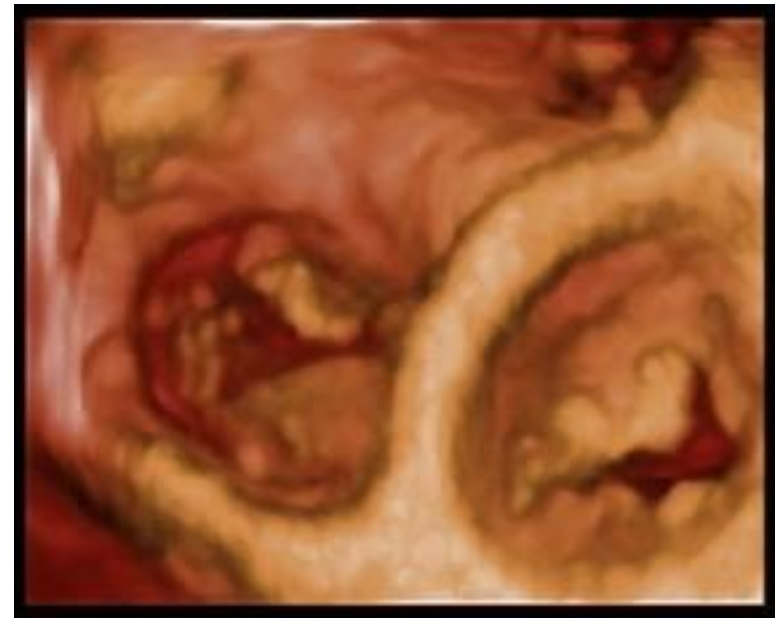
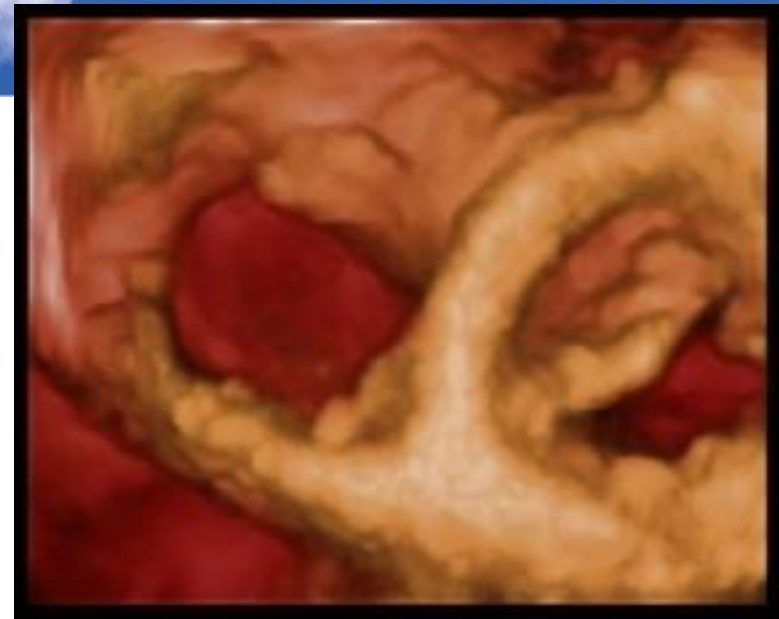
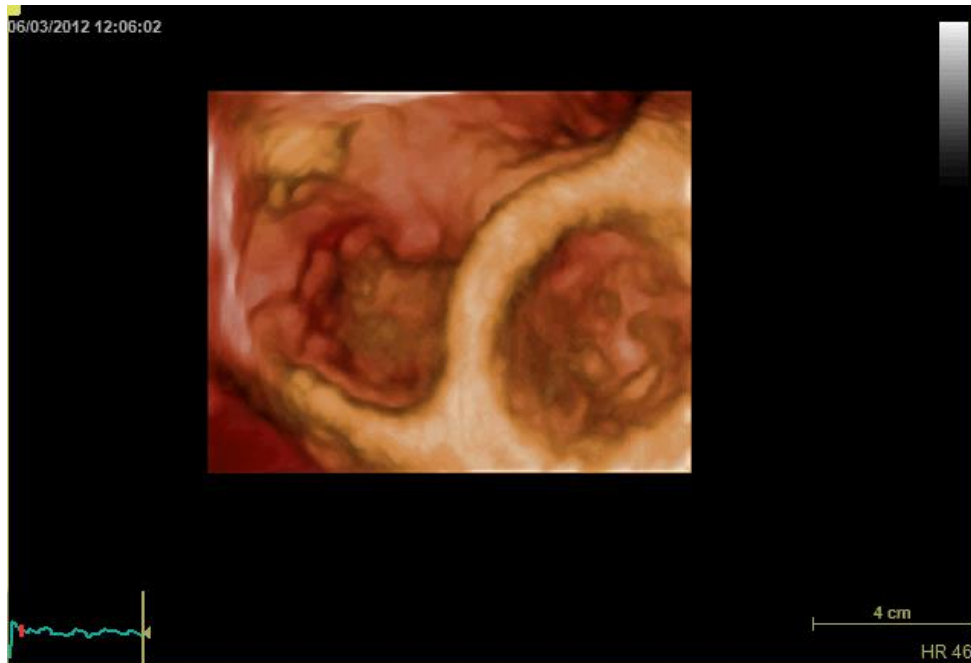
TV / MV different plane
PV / AV different plane

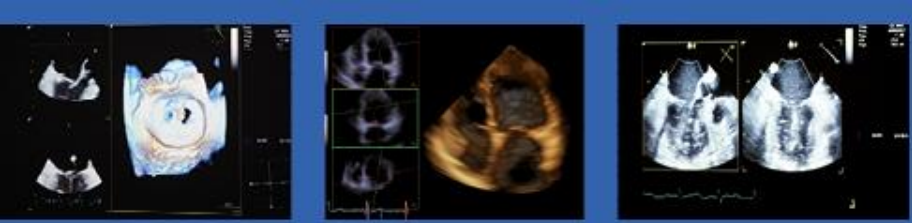


3D TTE - base of the heart



TV 3D TTE assessment:
plane at an angle with MV plane
leaflets always assessed from RV

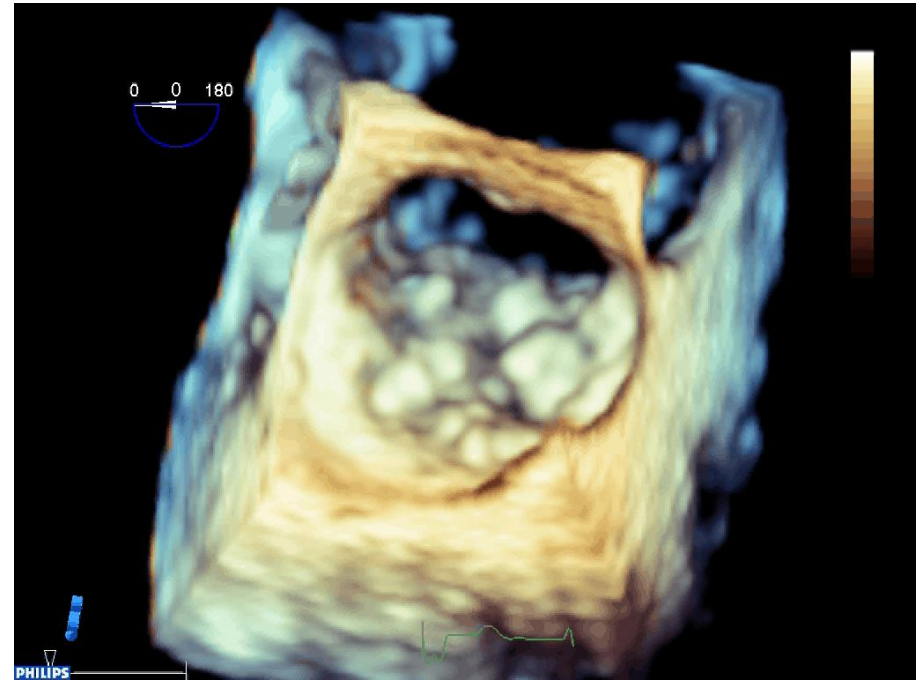
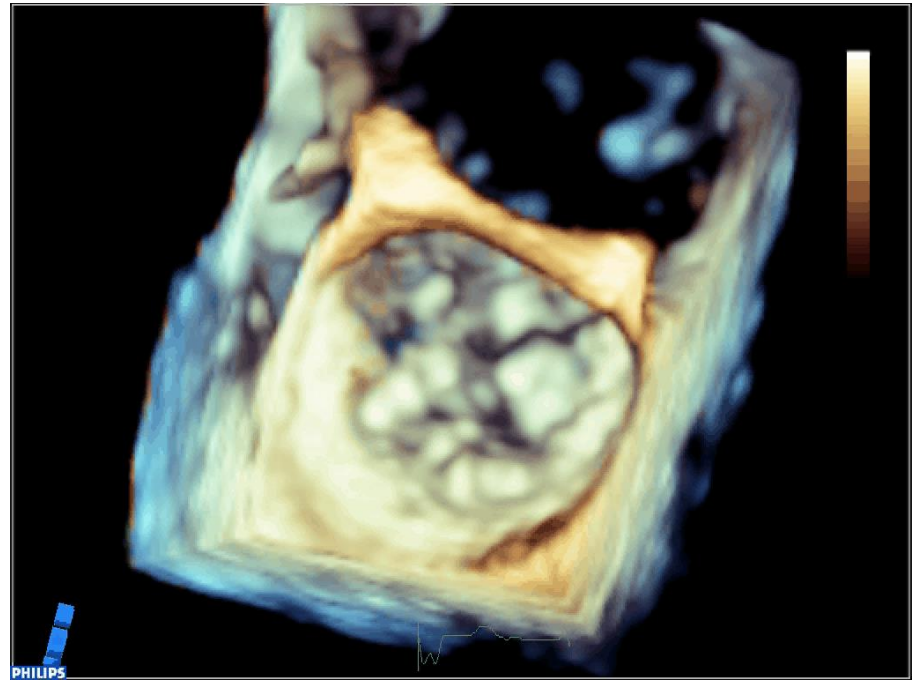


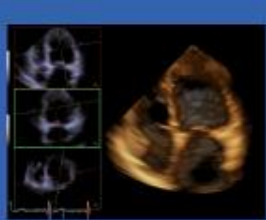


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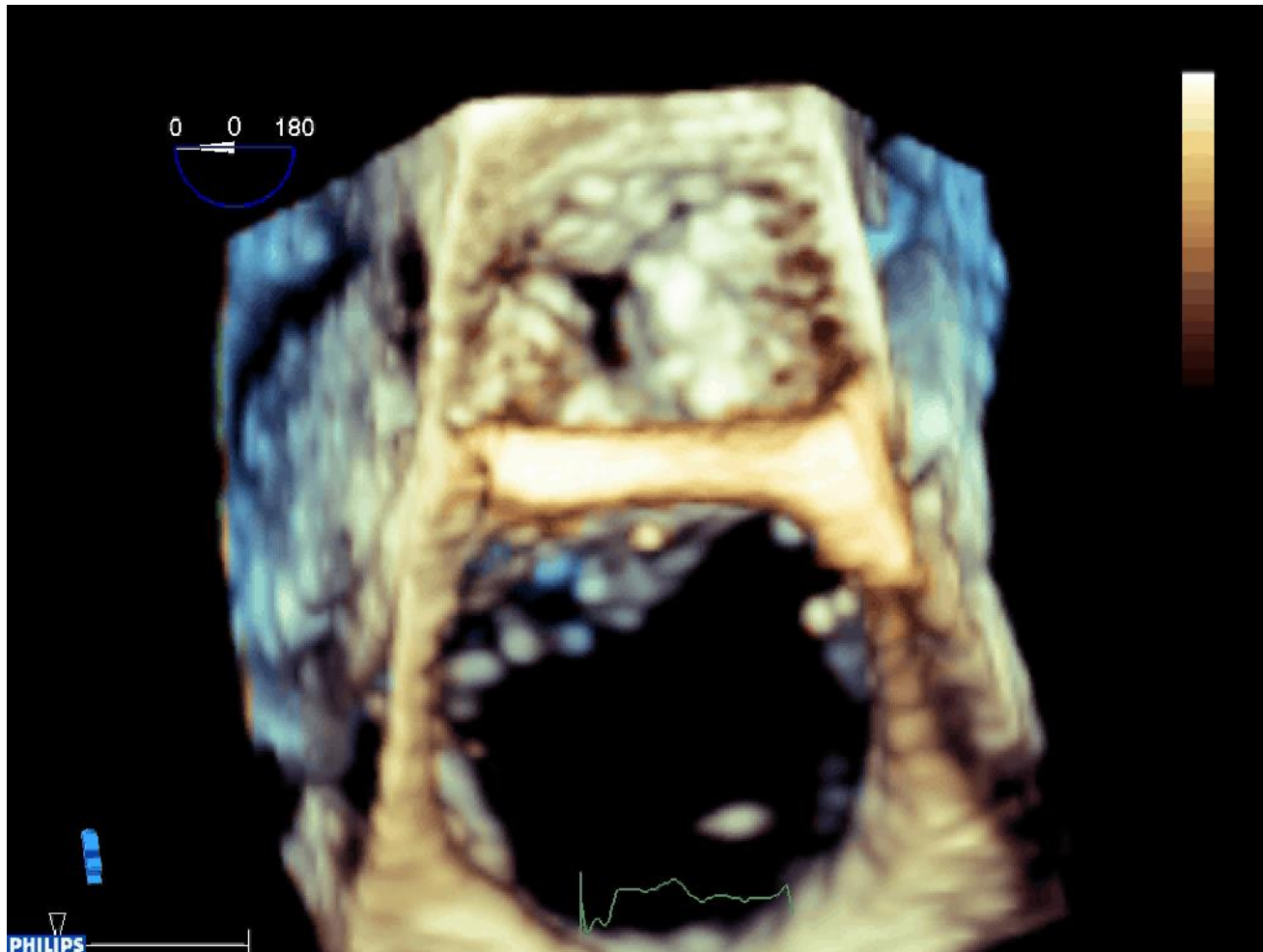
? TV





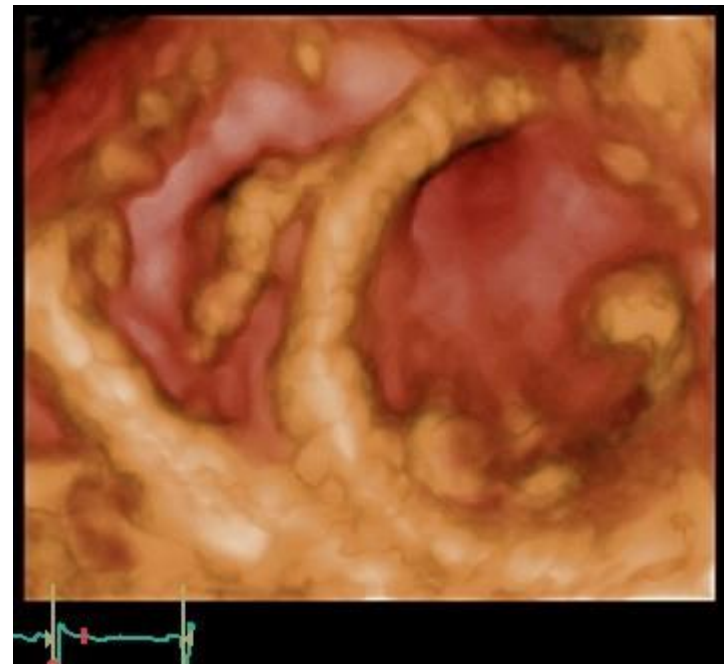
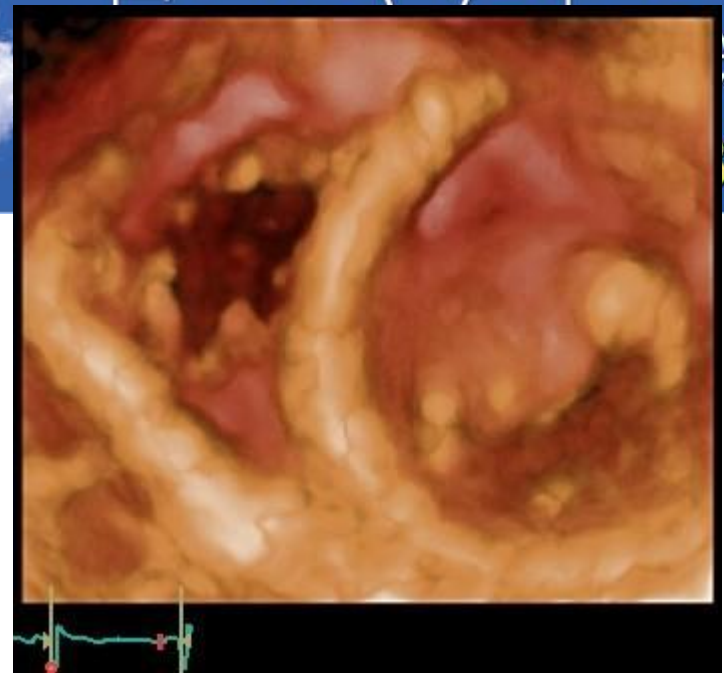
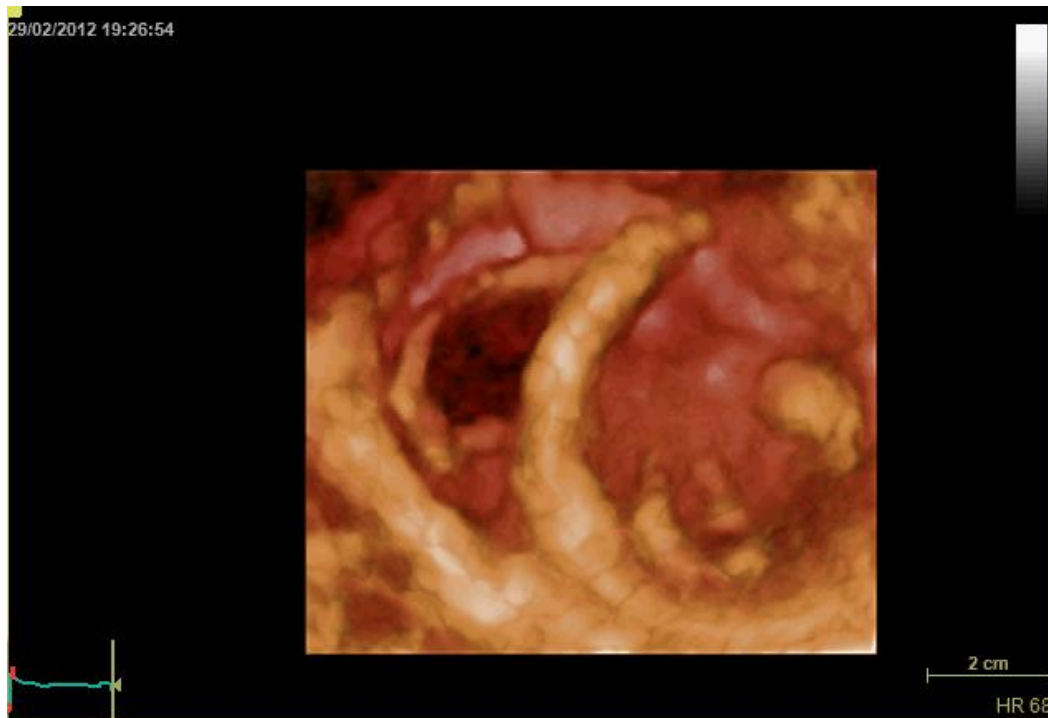
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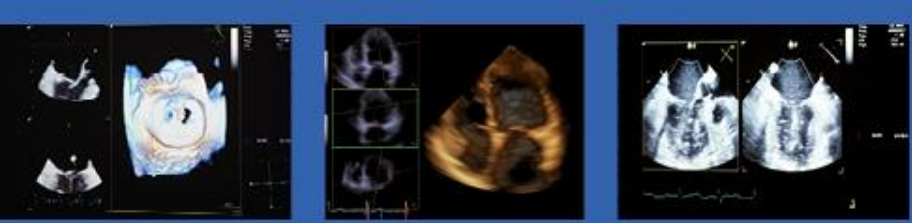
TV





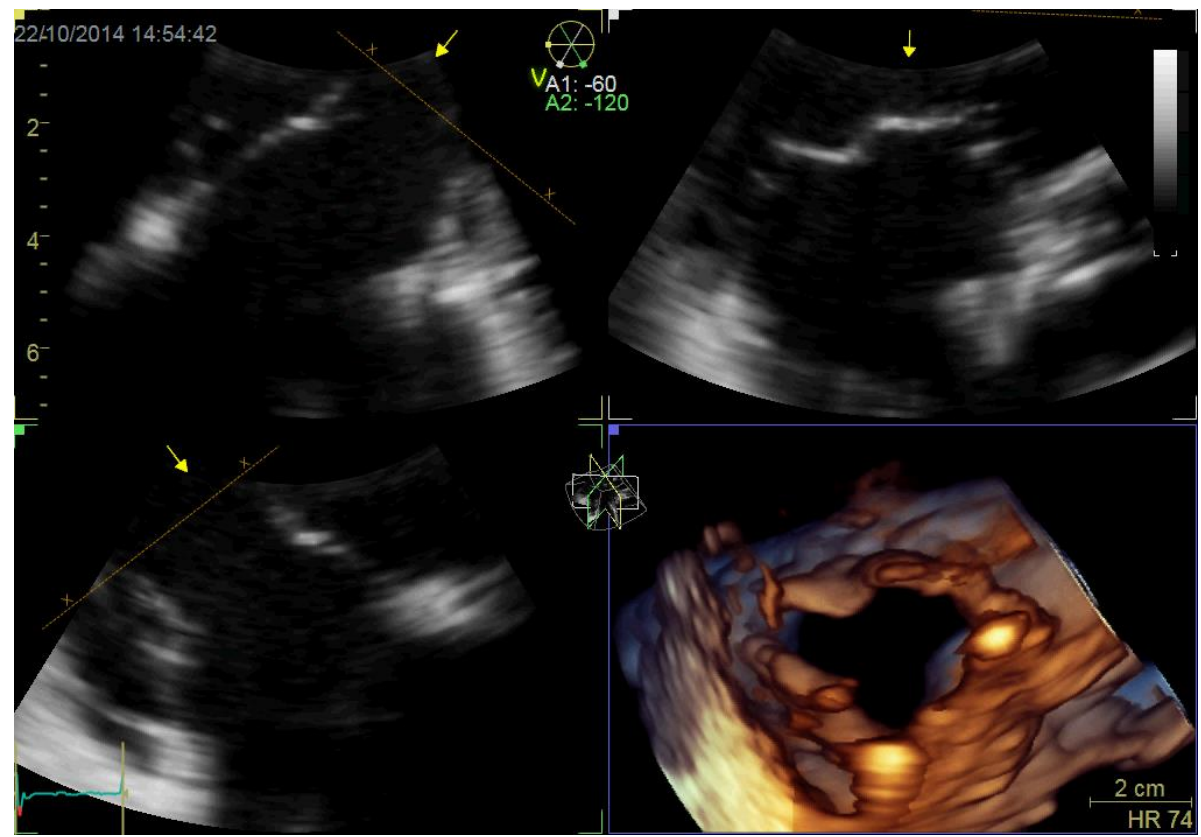
TV: thickened leaflet tips
(rheumatic – see MV doming)
RV-views

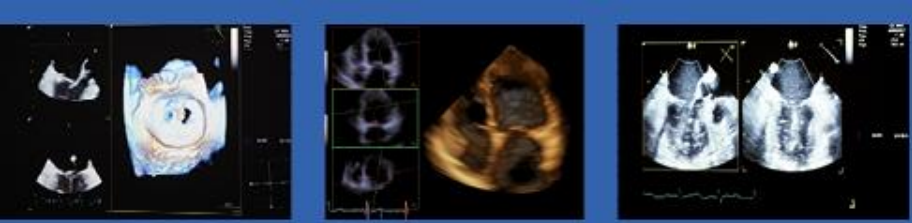




Secondary TR

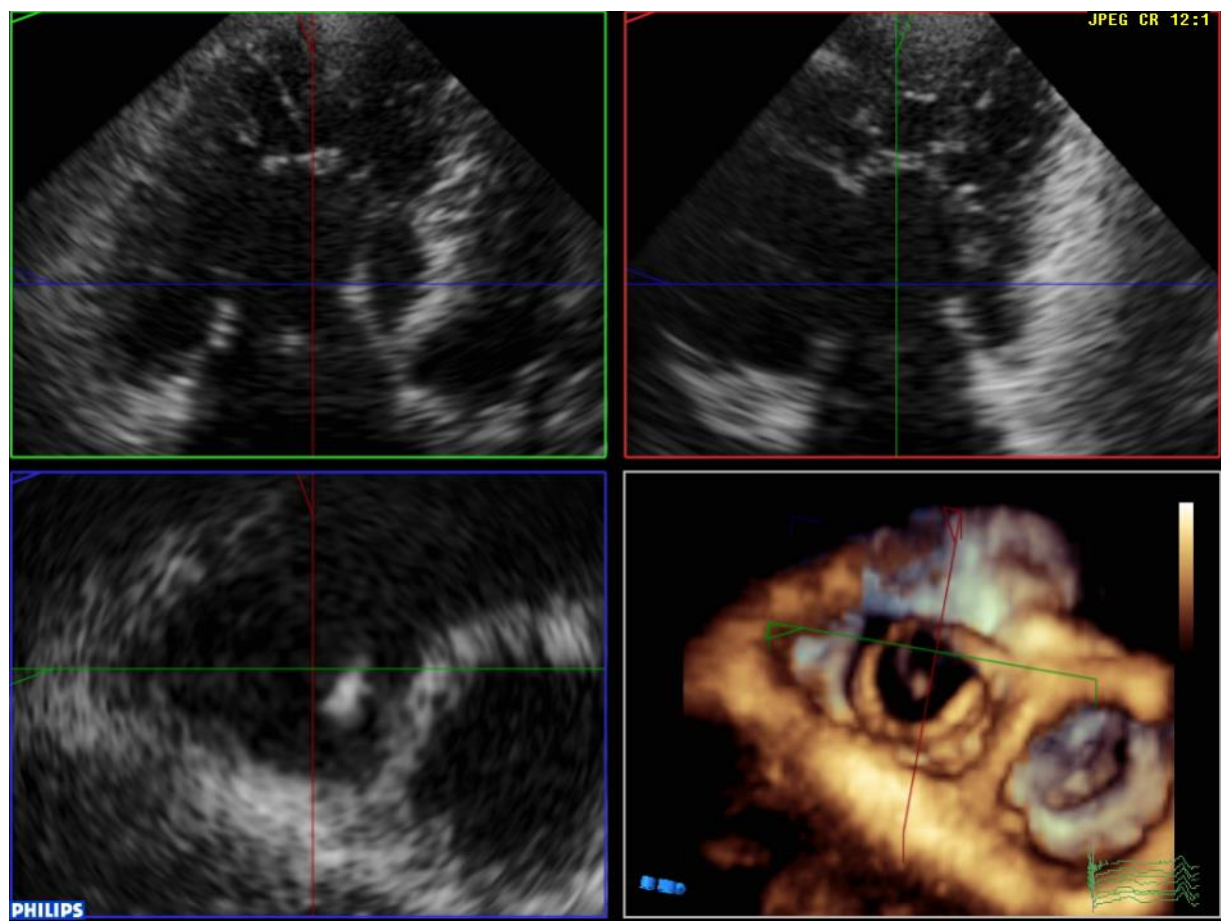
thin and mobile leaflets not reaching each other

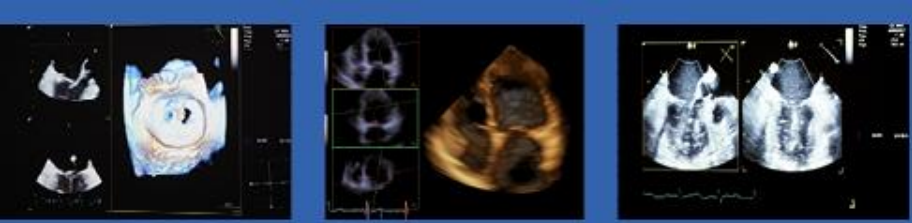




Carcinoid TV

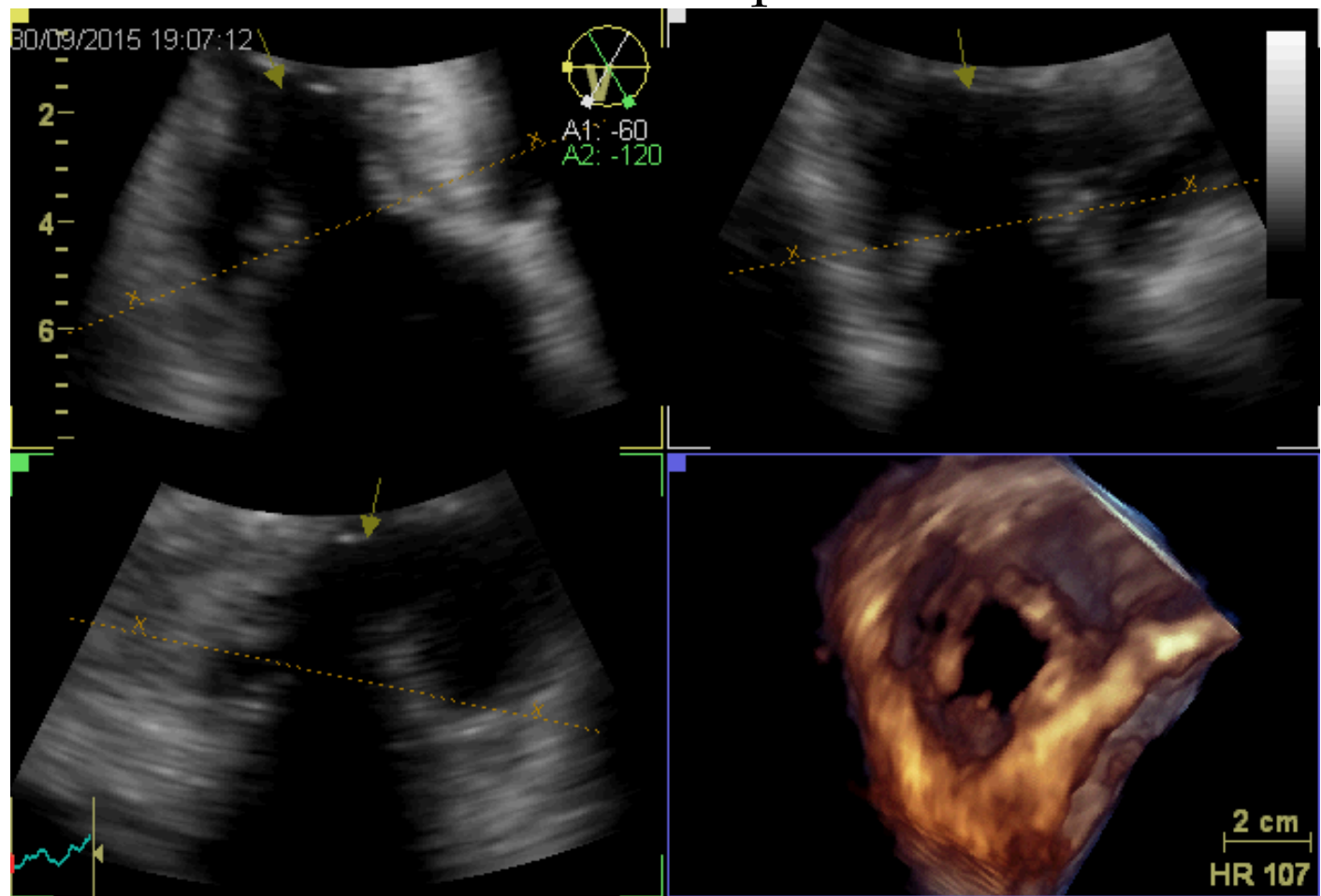
thickened immobile leaflets

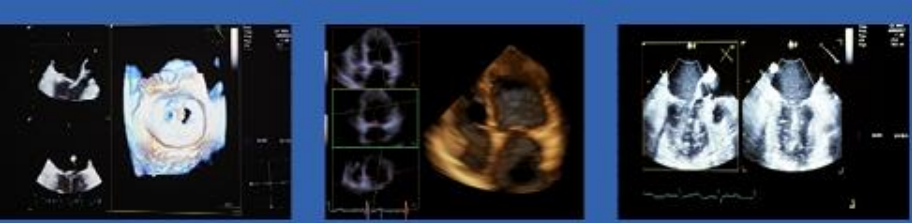




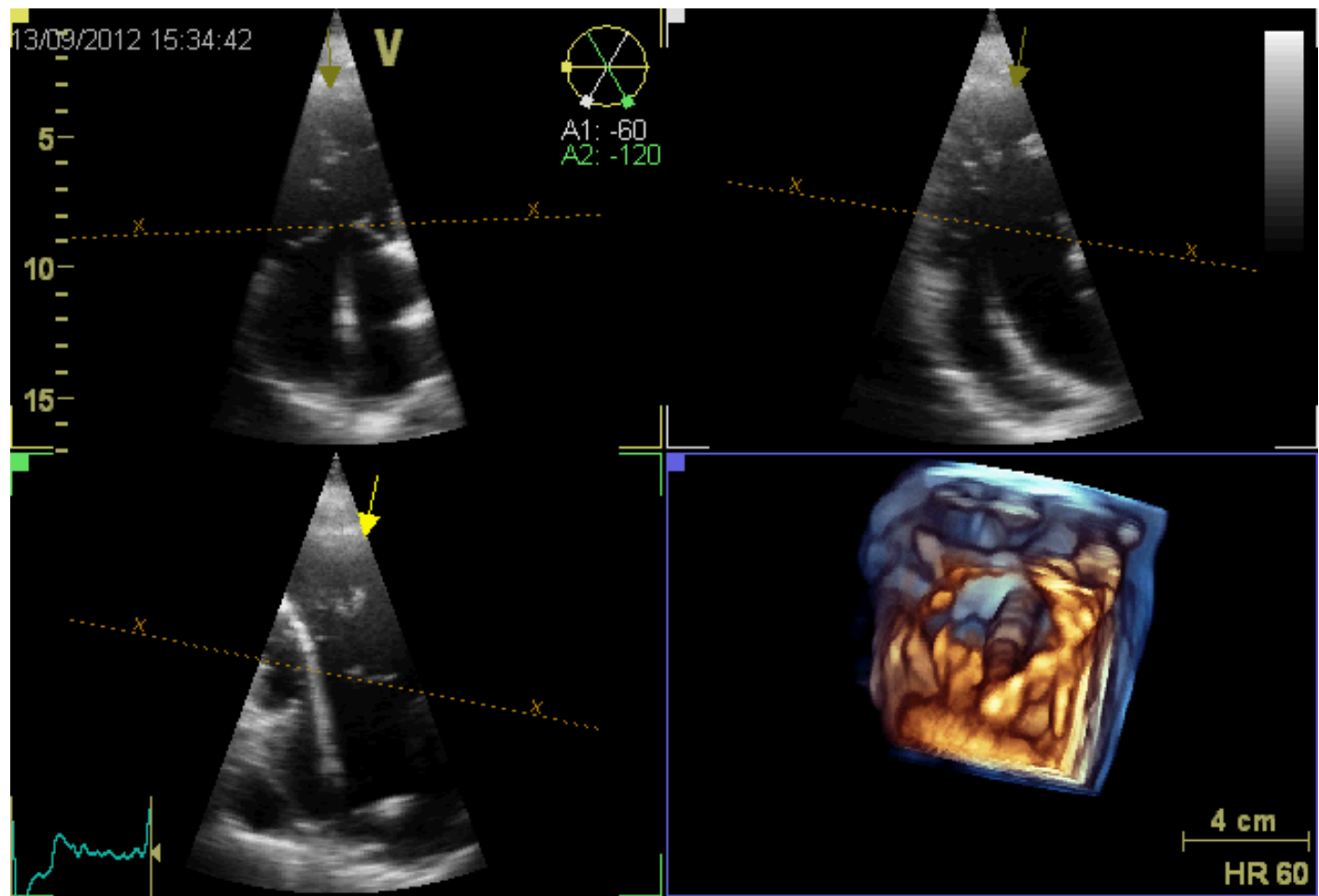
Amyloid

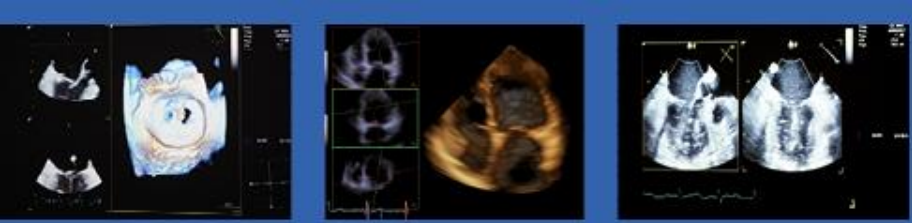
thickened leaflets help visualisation



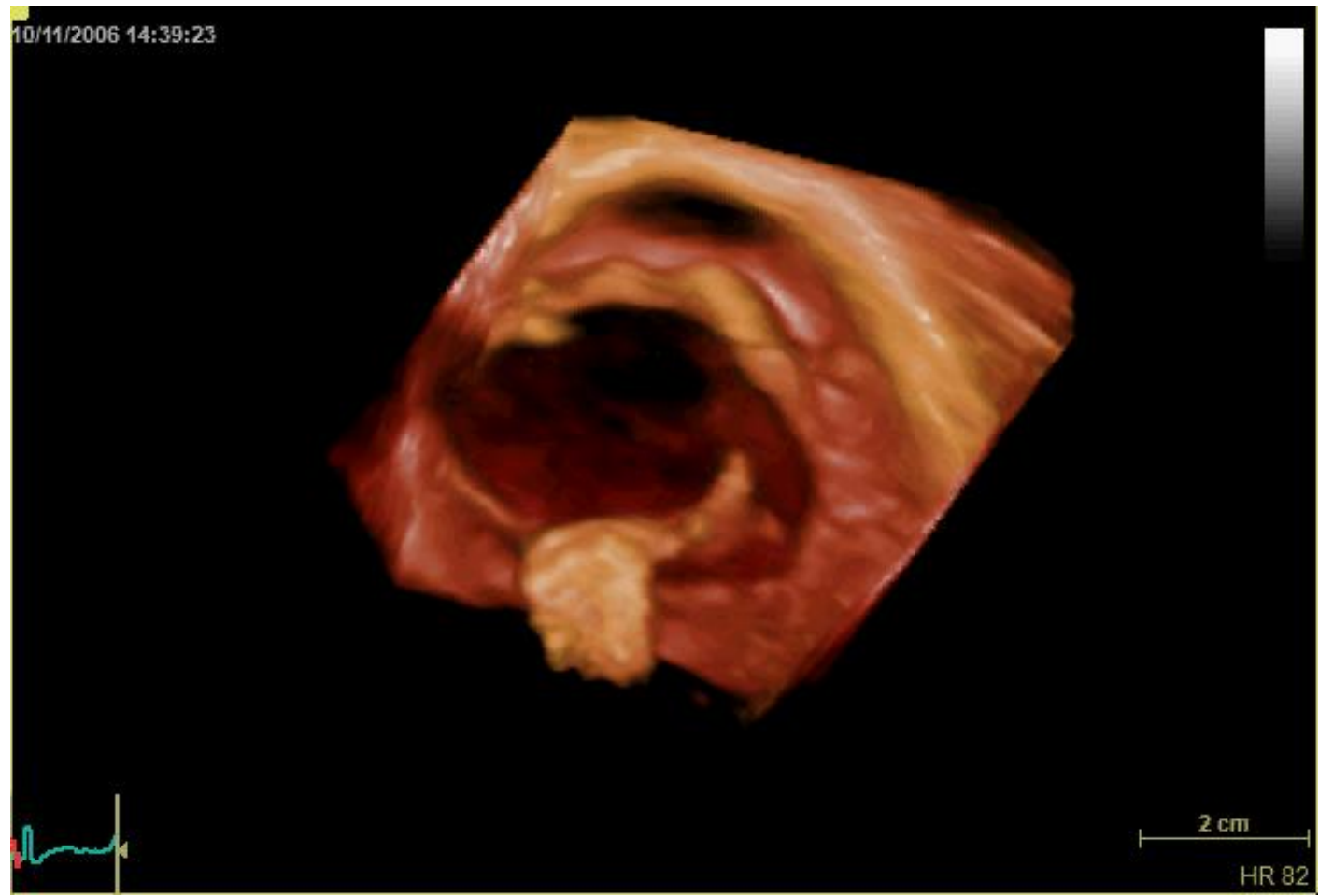


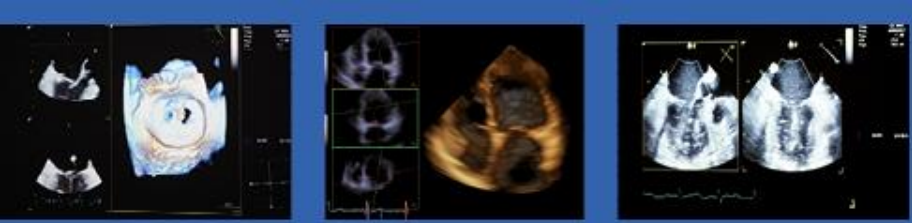
TR due to ICD lead



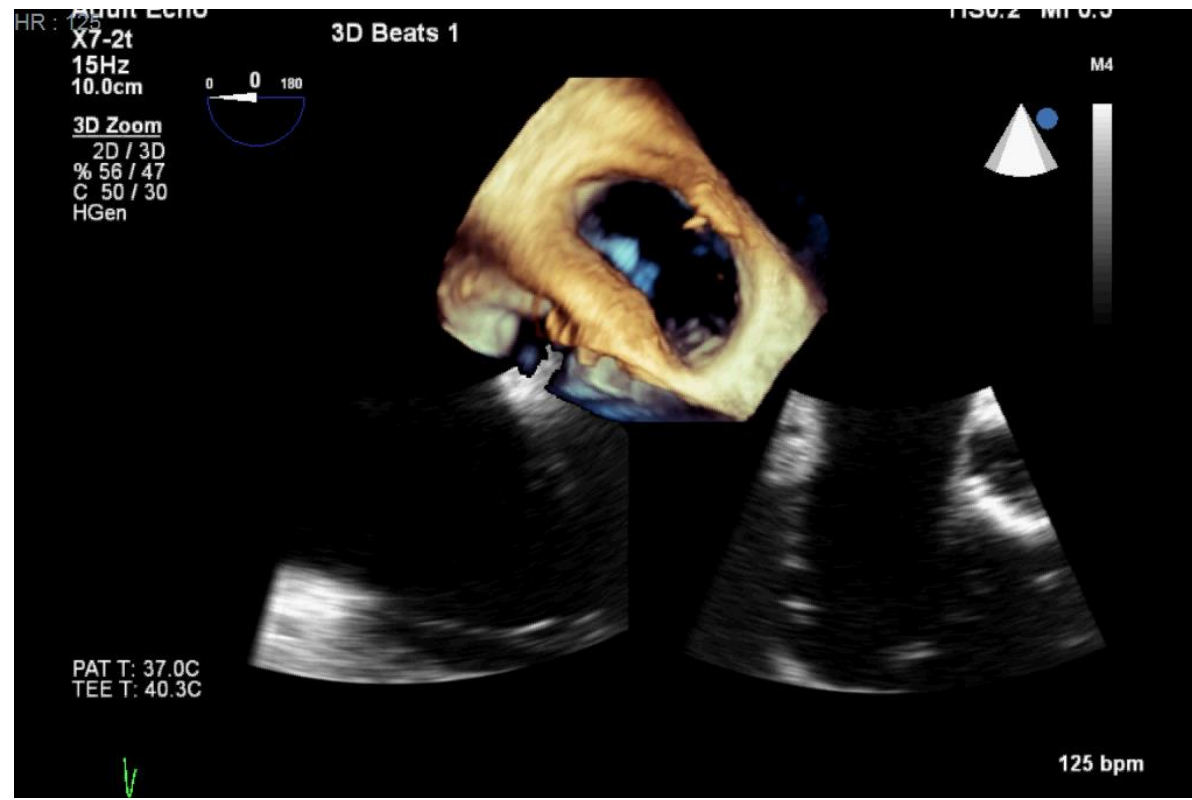


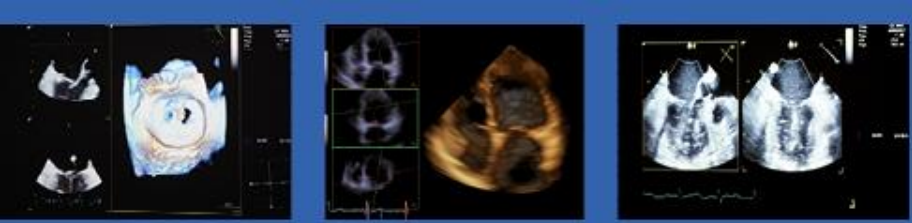
TV vegetation





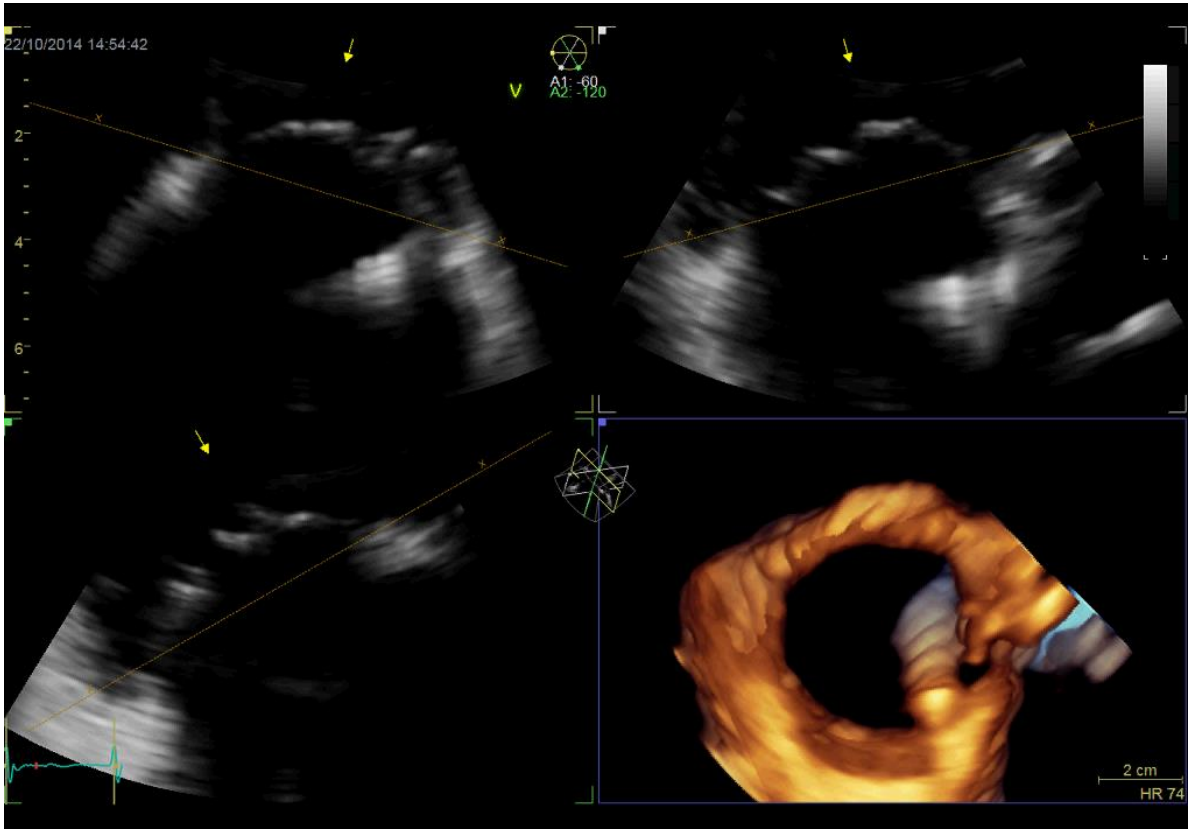
Annulus shape

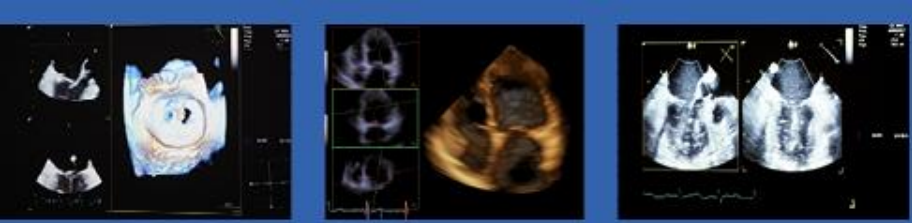




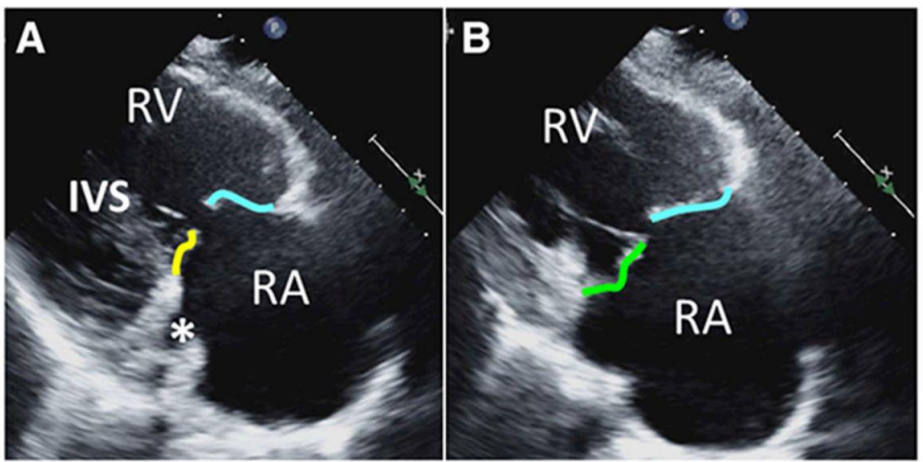
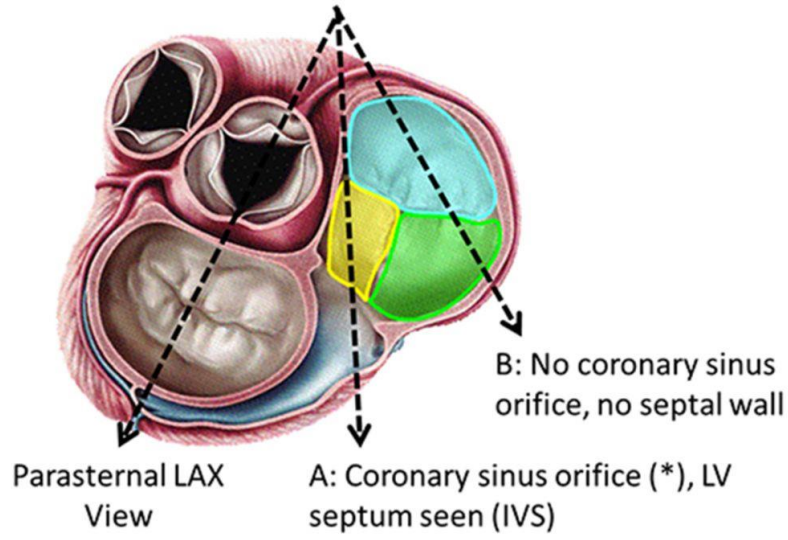
Annulus shape

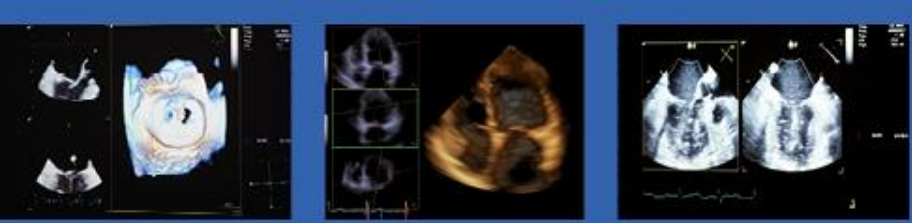
plane of rendering at the annulus



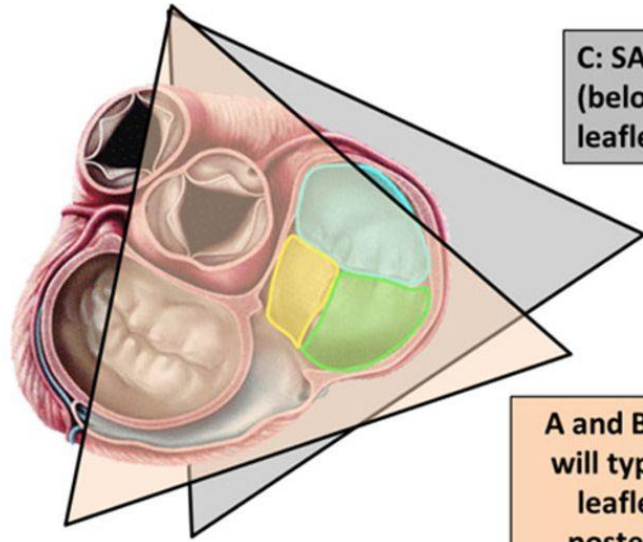


Parasternal RV inflow views



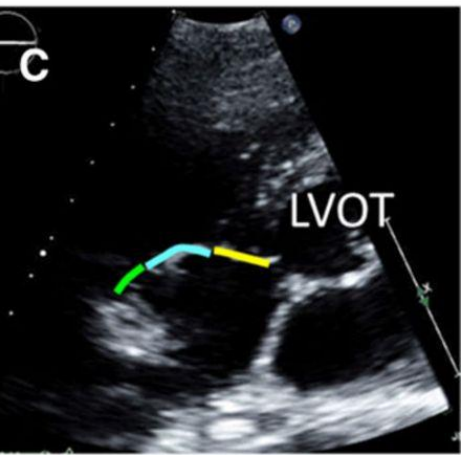
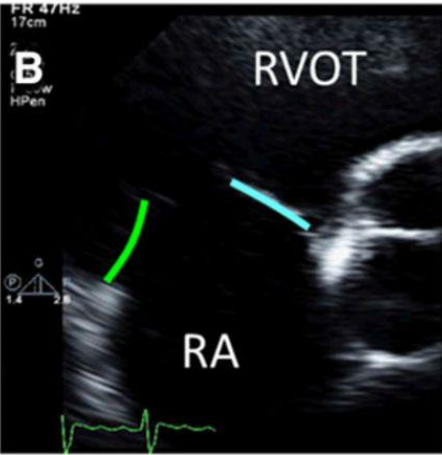
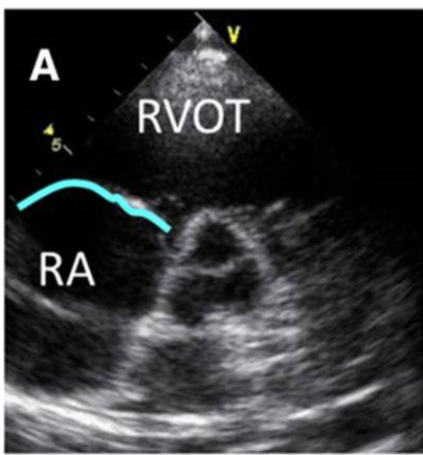


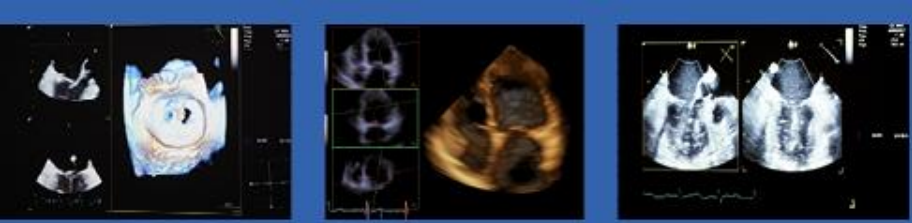
Parasternal SAX views



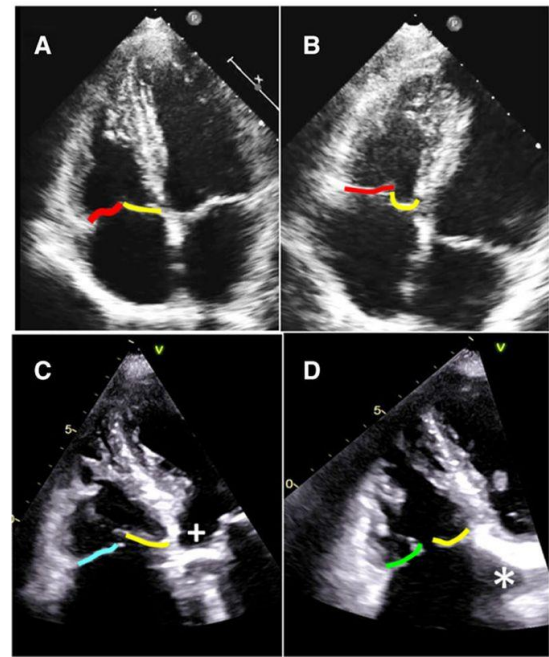
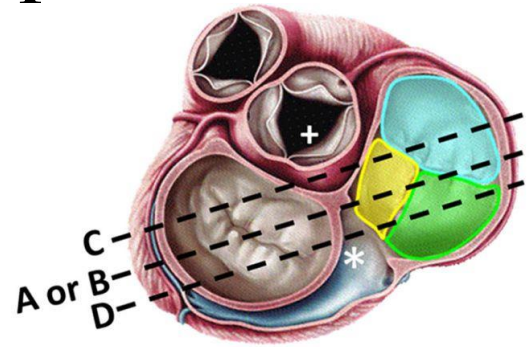
C: SAX at level of LV outflow tract (below AV) with imaging of the septal leaflet

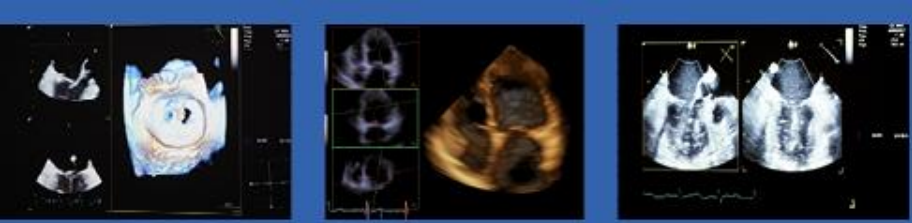
A and B: SAX view at the level of AV will typically image just the anterior leaflet (A) however anterior and posterior leaflets may be seen (B)



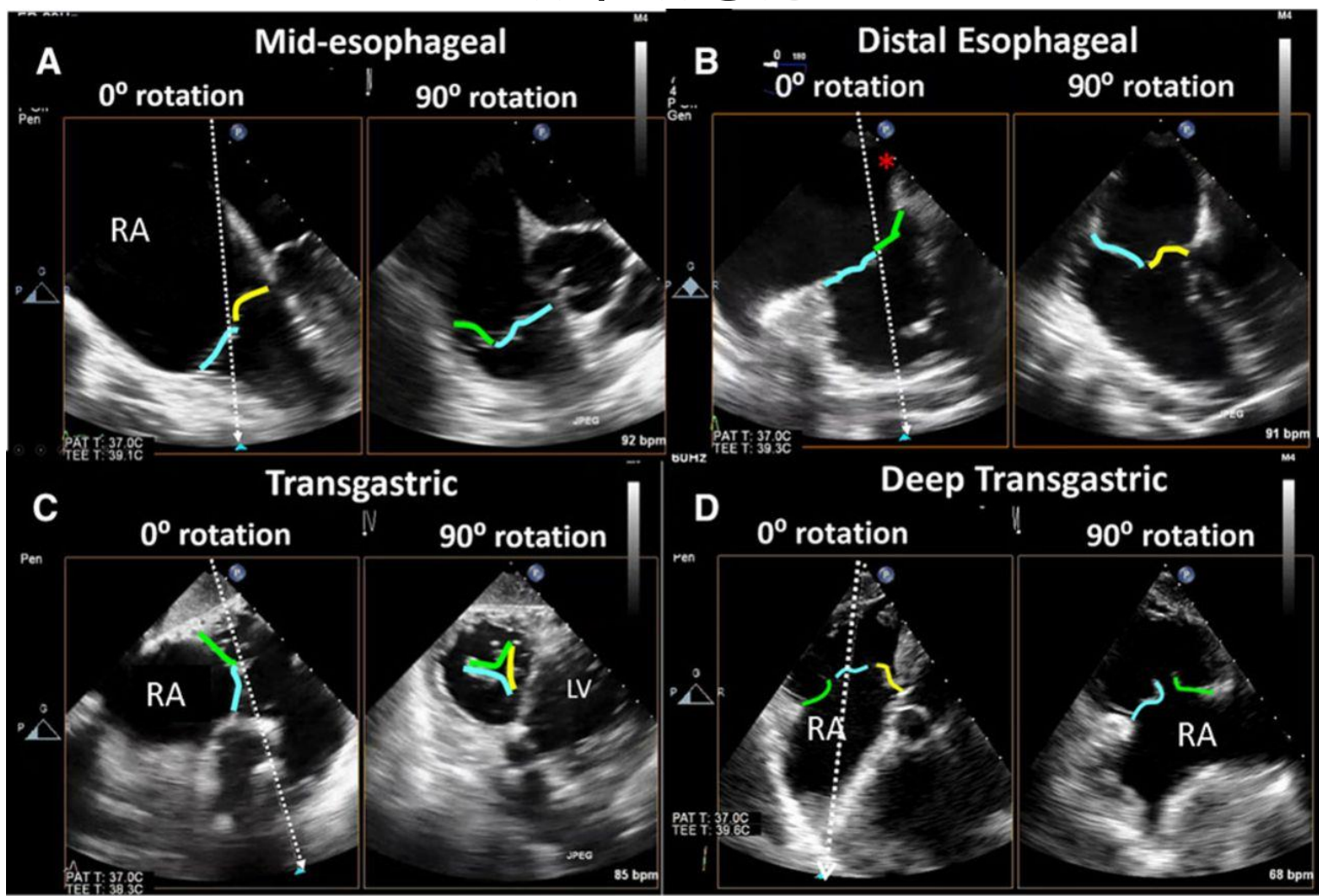


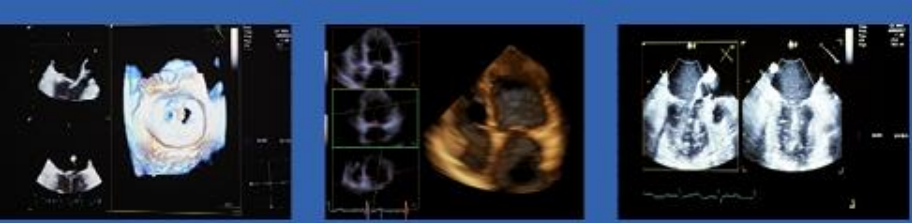
Apical 4-ch views





TV TOE





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Thank you

