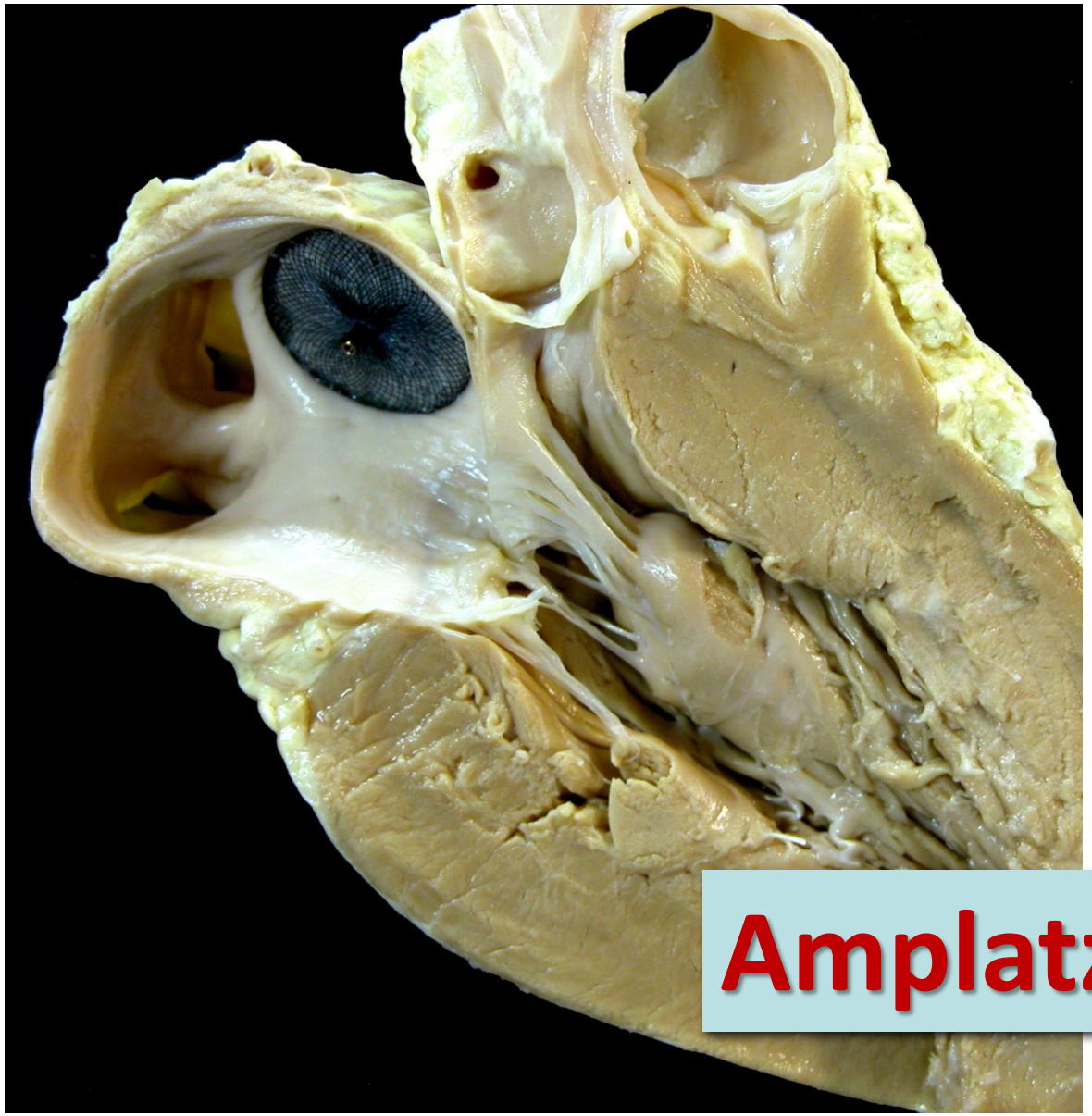
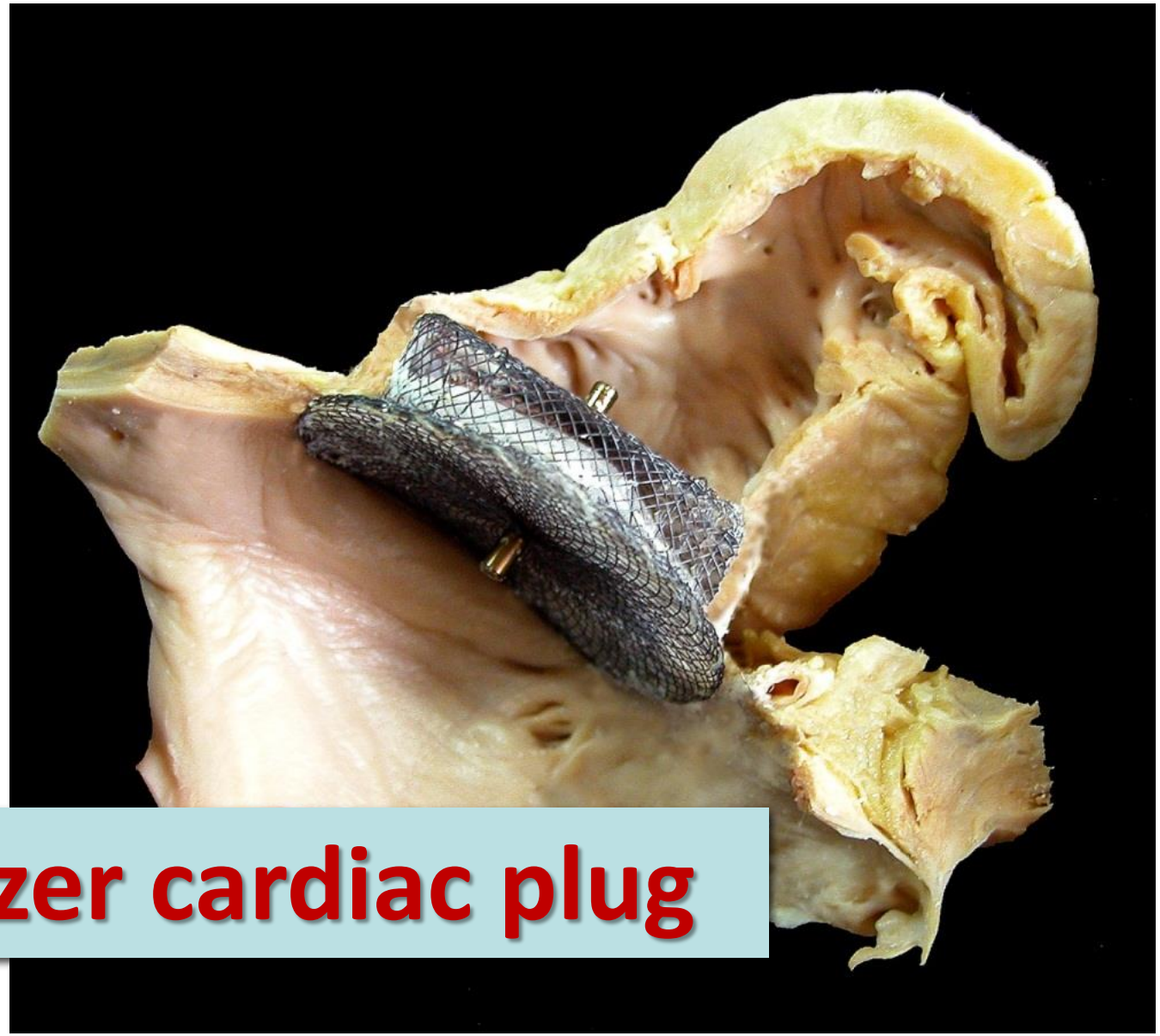
LAA occlusion



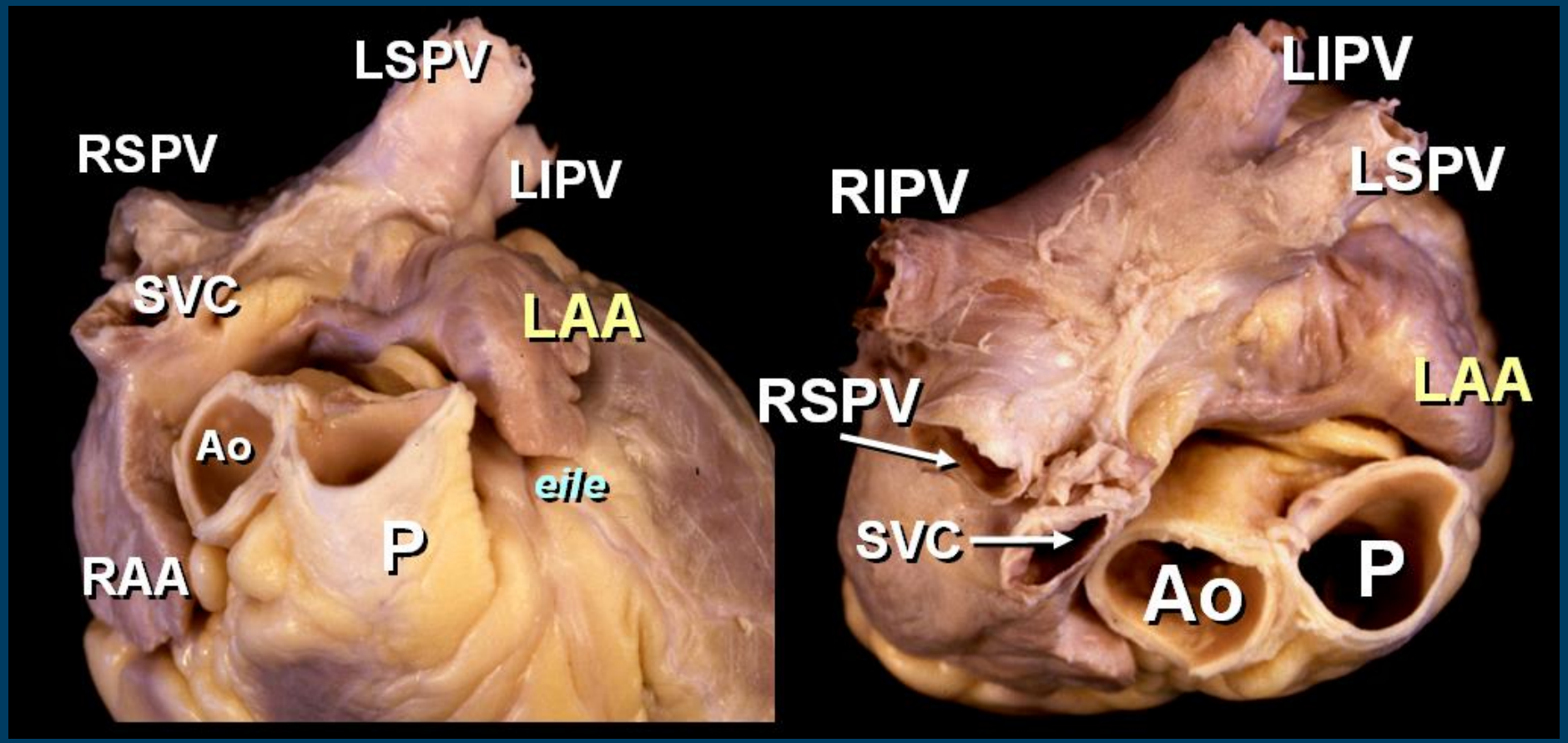


Amplatzer cardiac plug

LAA occlusion: preprocedure

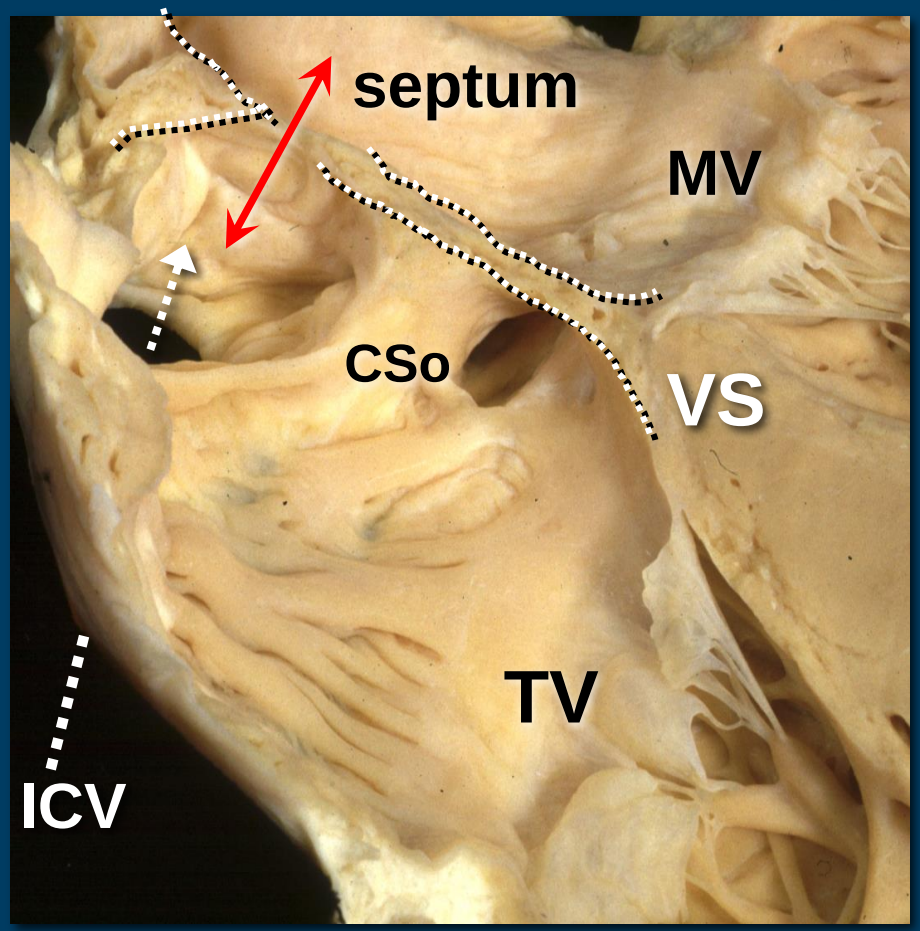
Anatomic variability / complexity

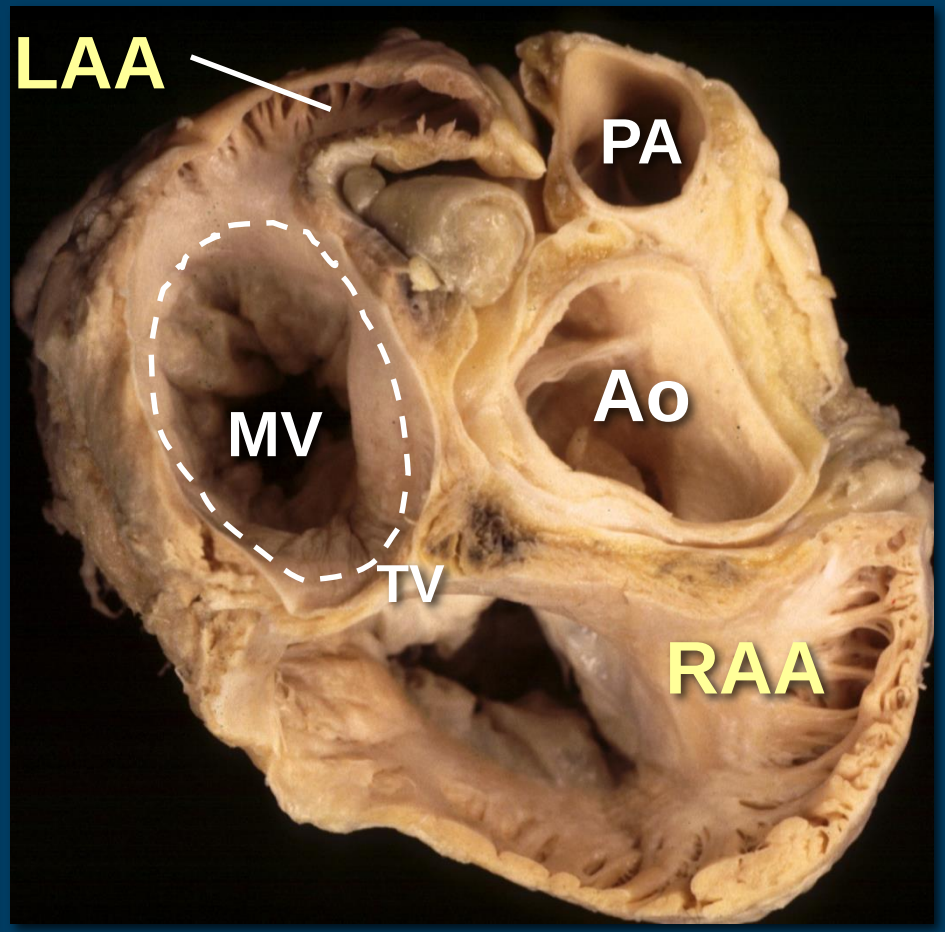
Morphology and dimensions of the LA & LAA



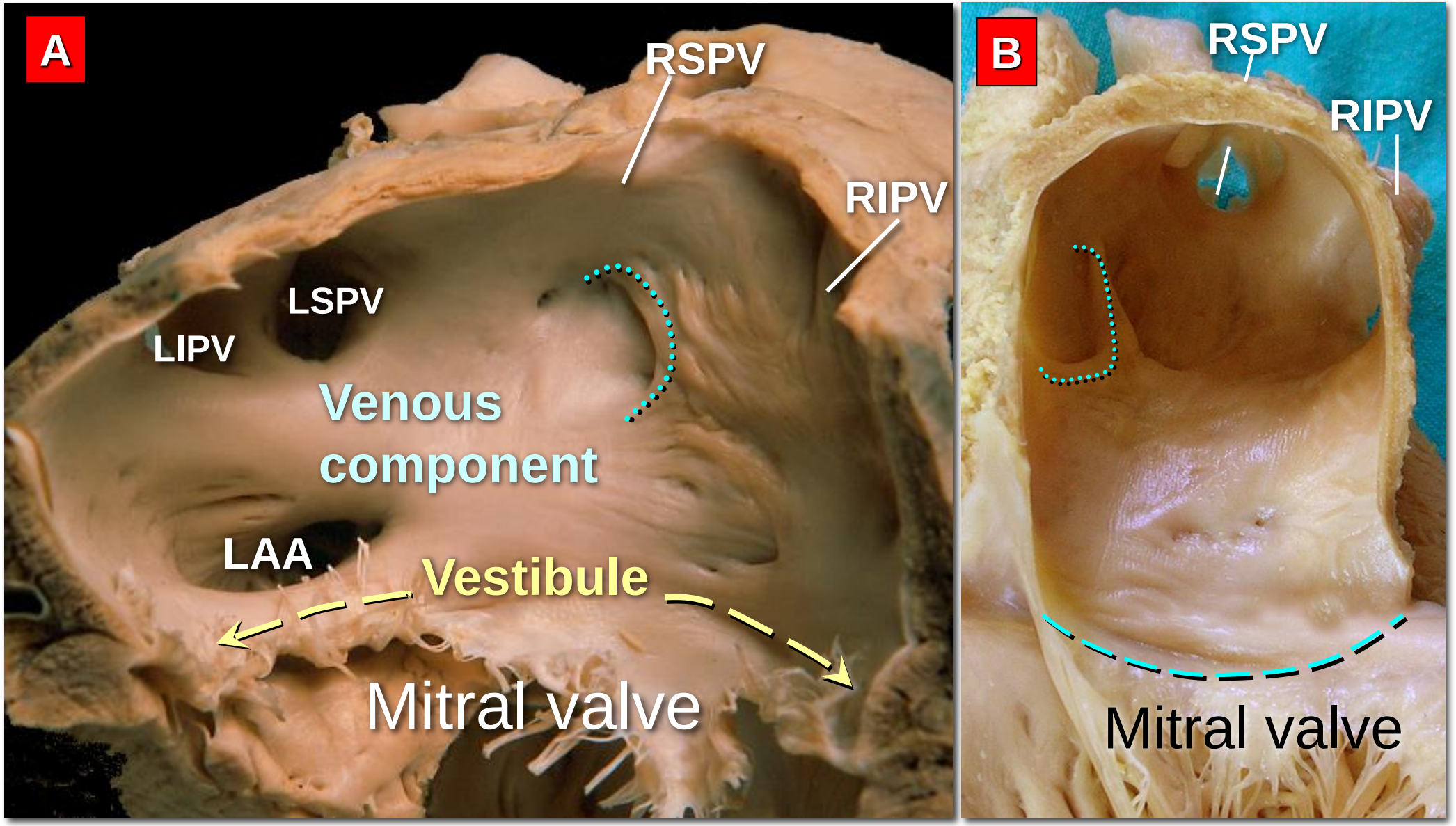
LAA occlusion: preprocedure

septum & venous componet appendage & vestibule





Components of the LA



Determinants of the LA

Left atrium

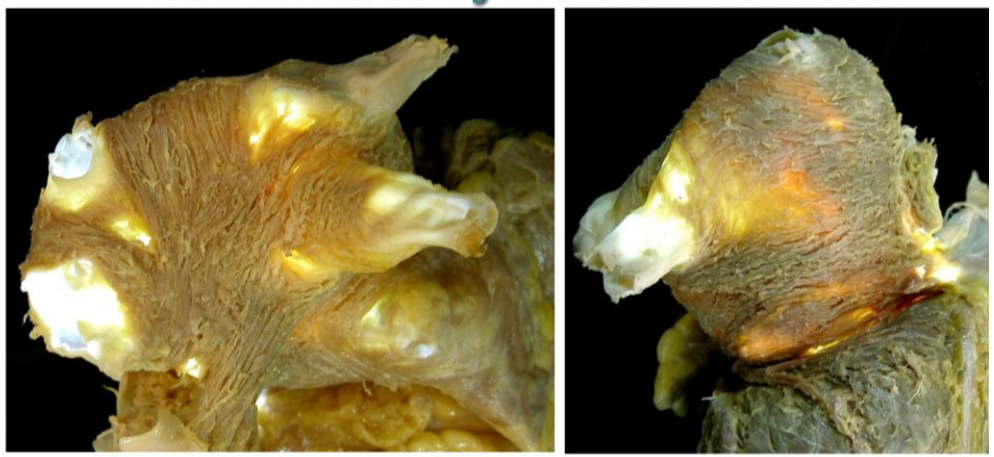
Dimensions of the LA: for all devices

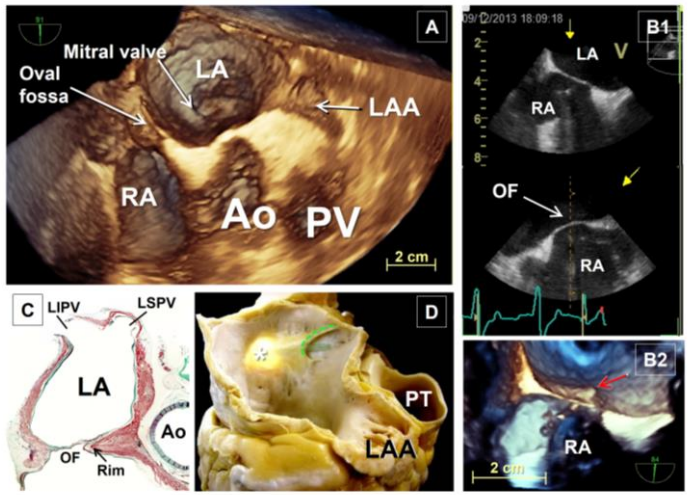
Myocardial thickness: anterior wall and venoatrial junctions may be very thin

Distance from the OF to the LAA ostium: for all devices

Interatrial septum: should be a low posterior transseptal puncture . OF dimensions, rim thickness, proximity to the aortic root, PFO, patches, occluder devices and septal aneurysm

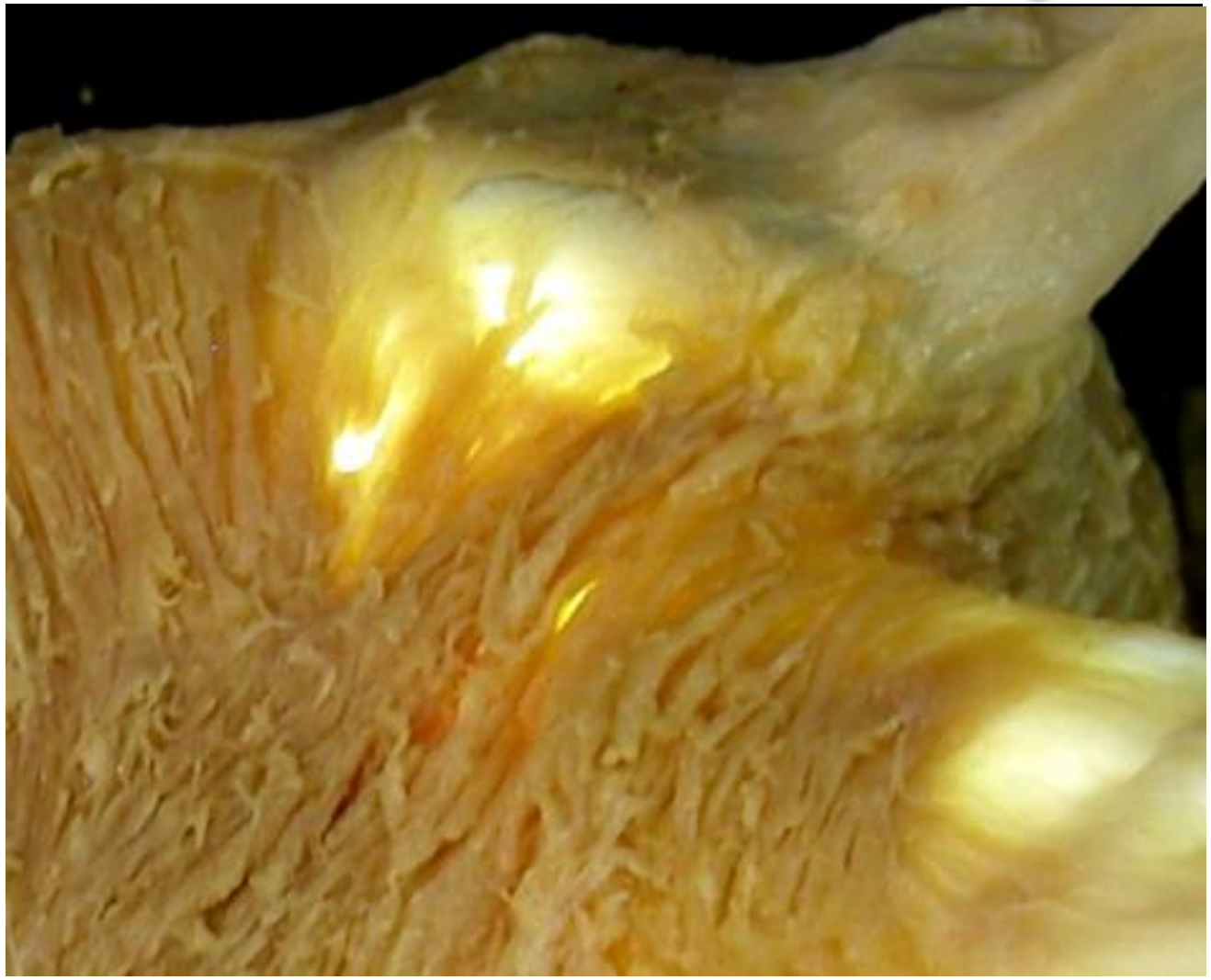
Non-uniform myocardial thickness

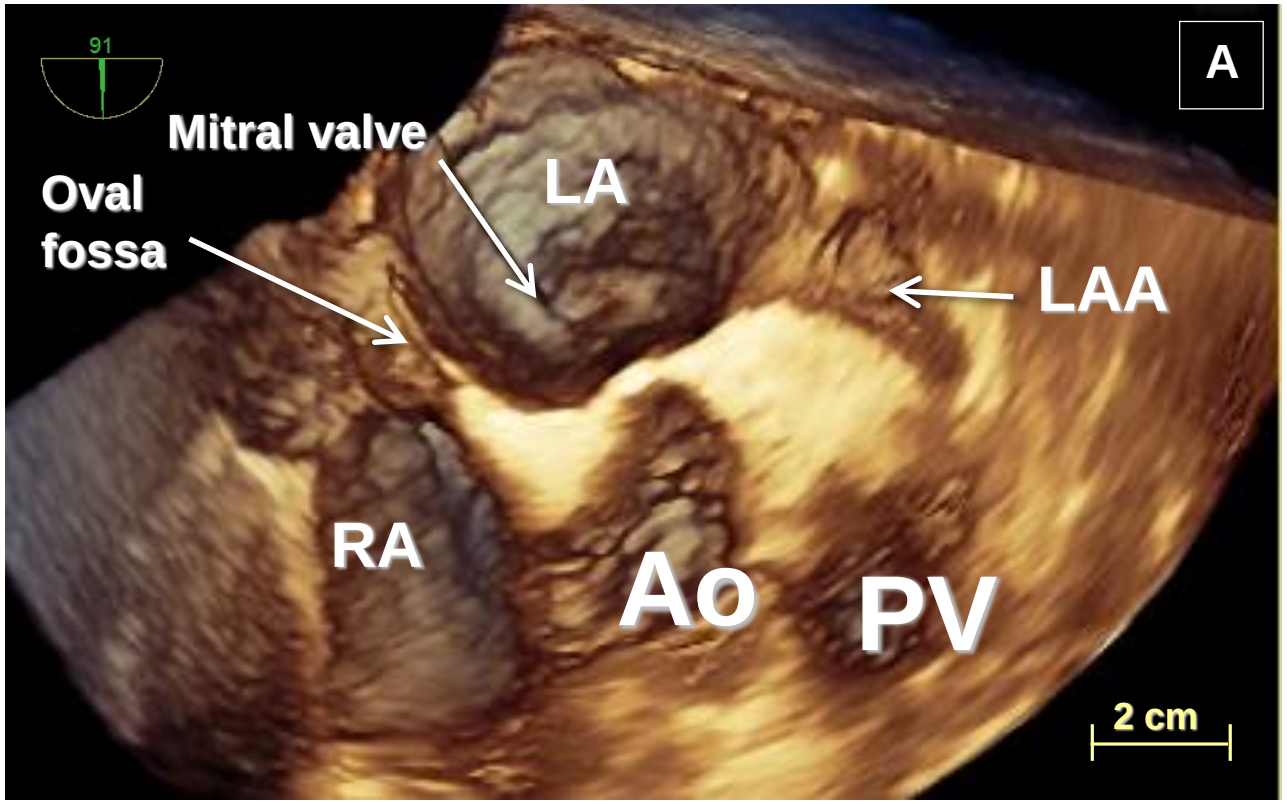


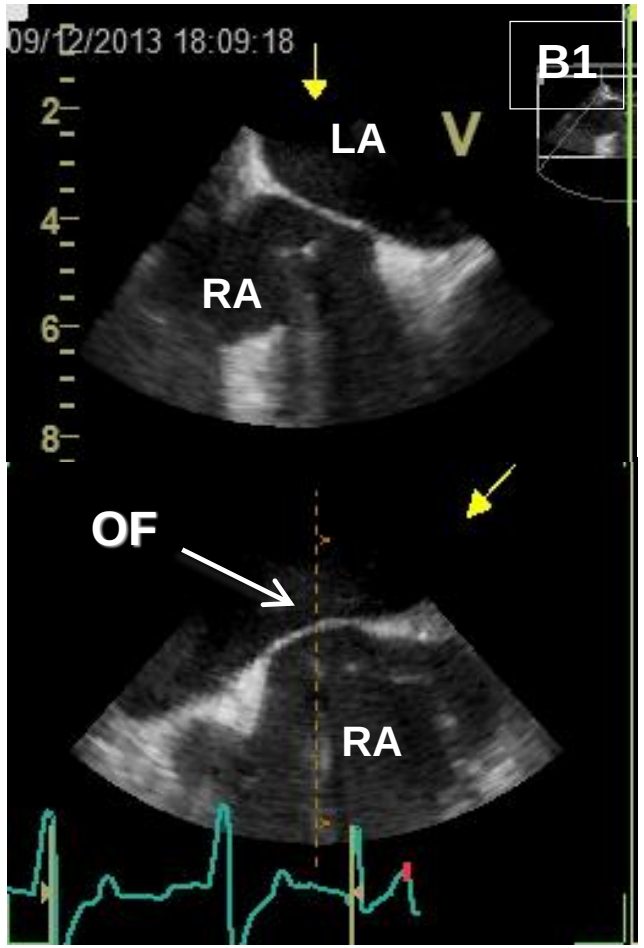


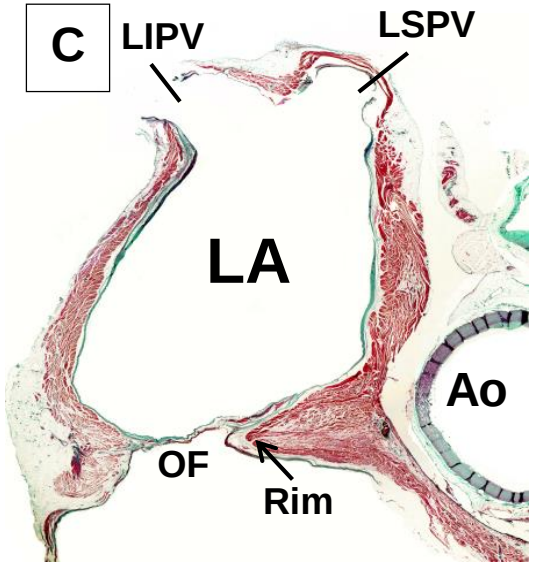
The lef atrial wall

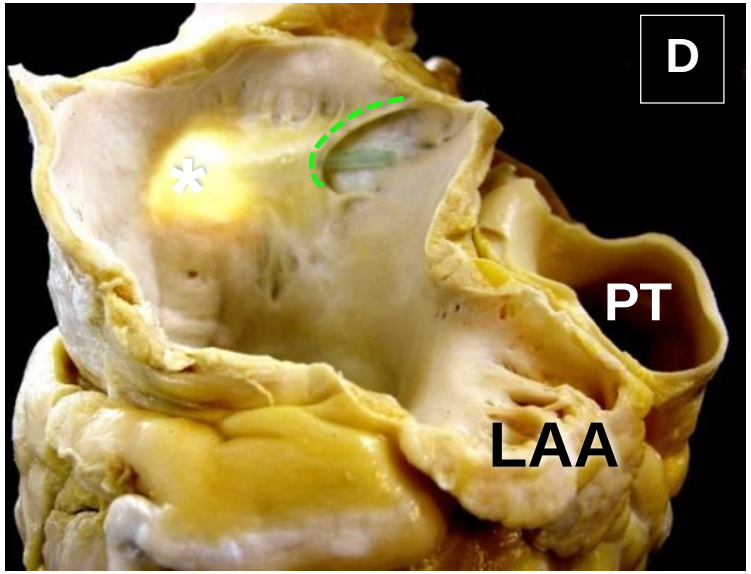
Non-uniform myocardial thickness

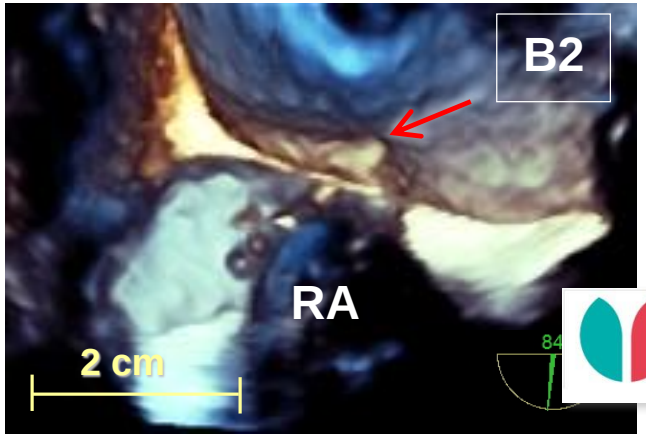






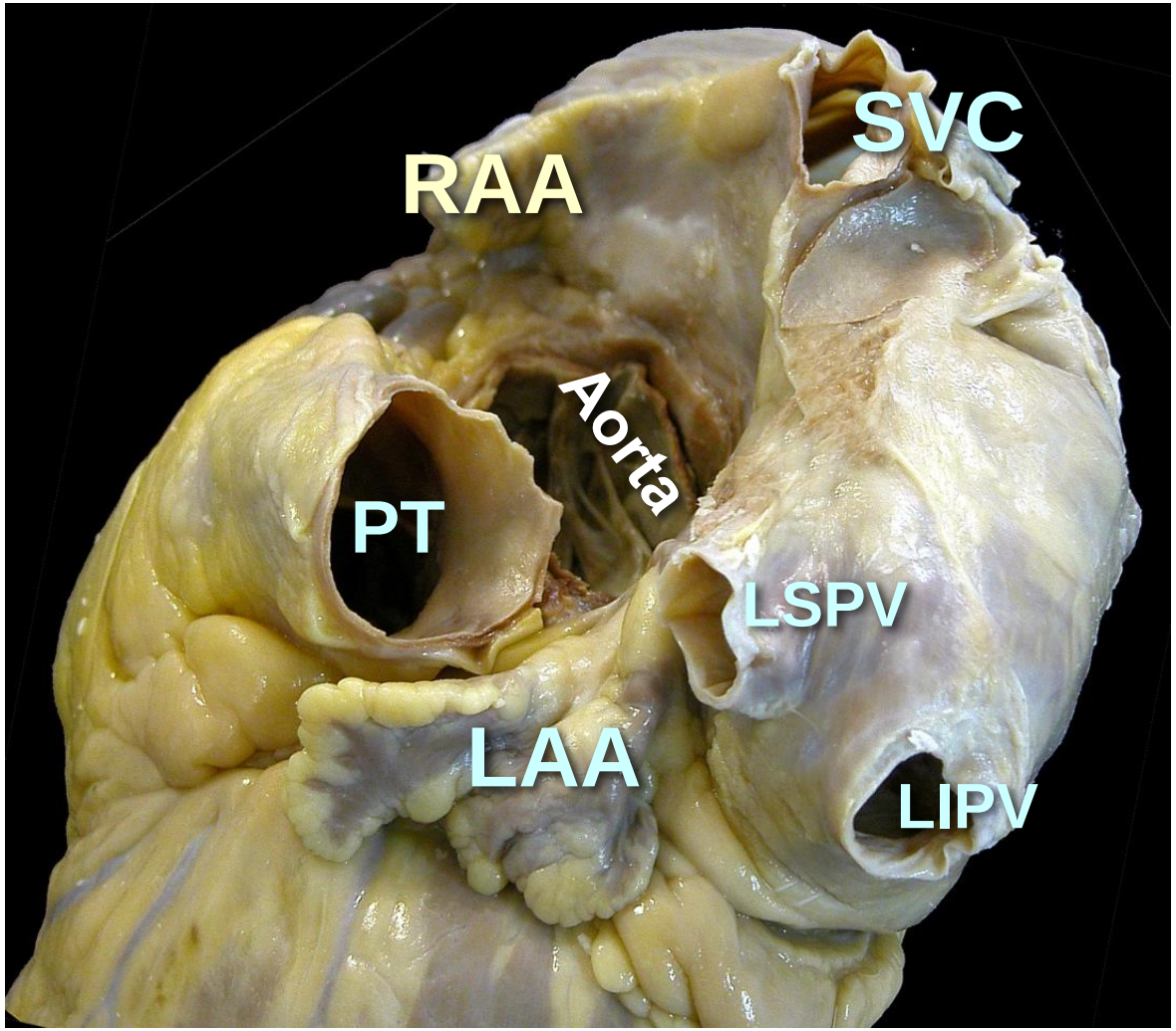




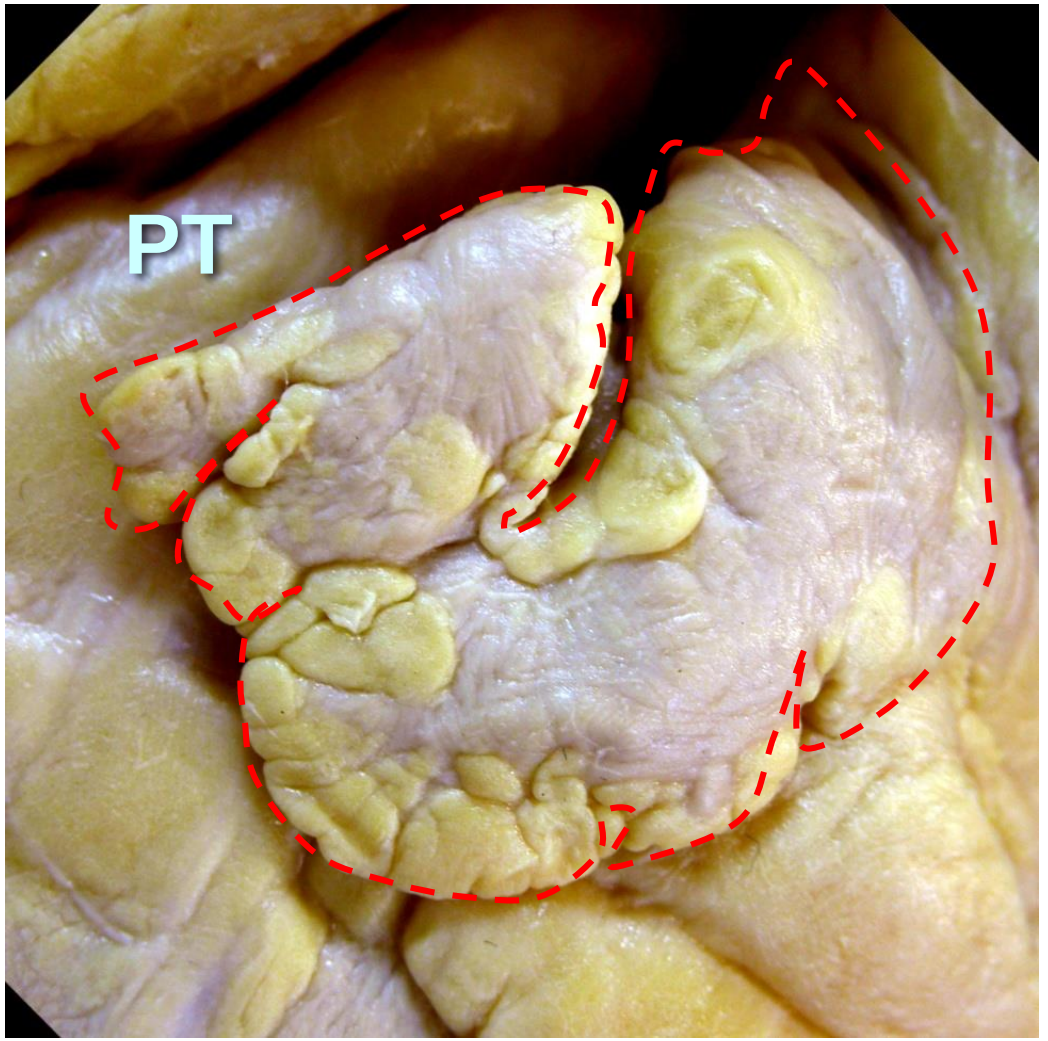


quirónsalud

The lef atrial appendage

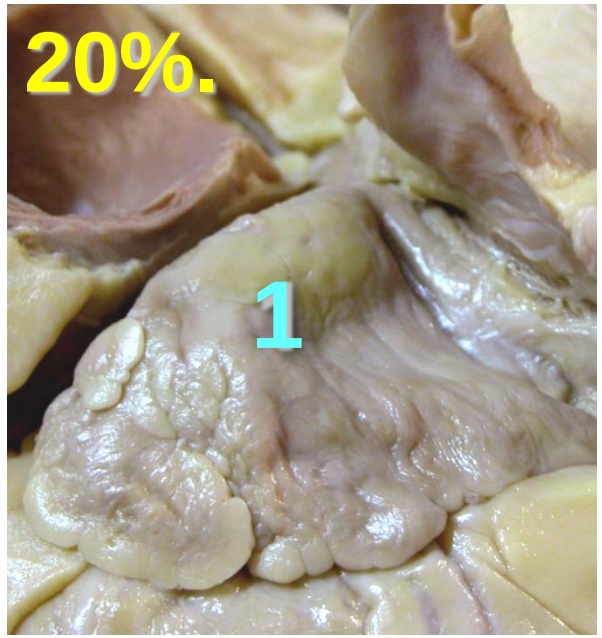


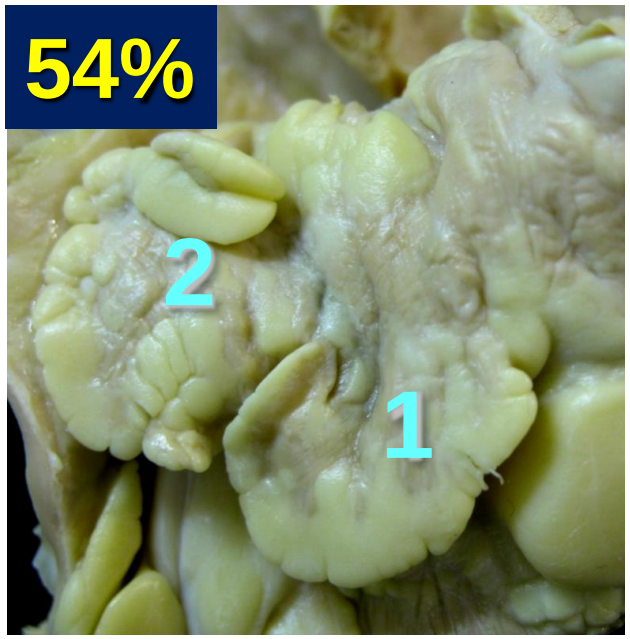
Left supero-lateral view

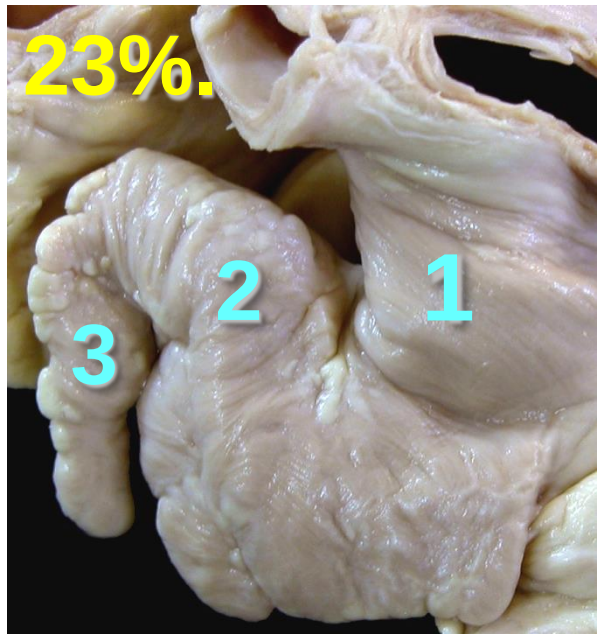


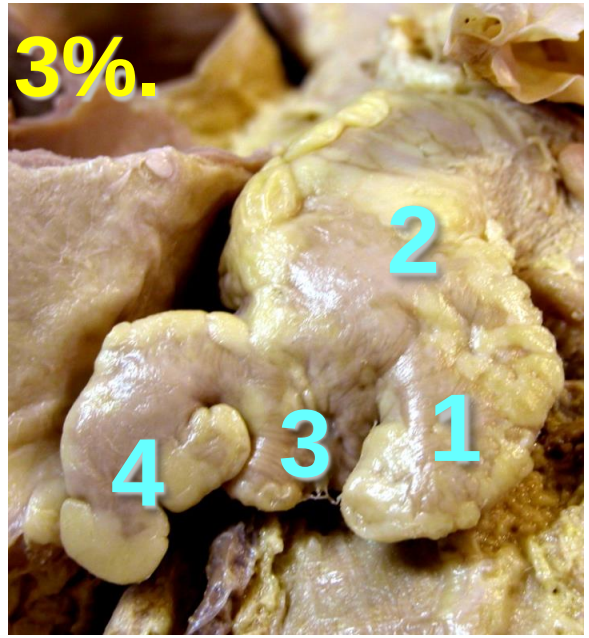
Left lateral view

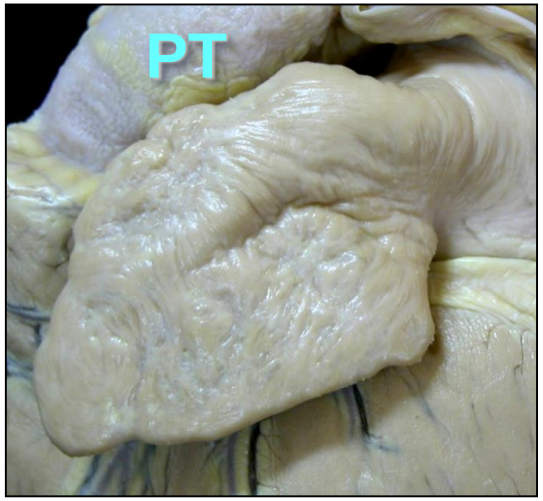
LA appendage morphologies

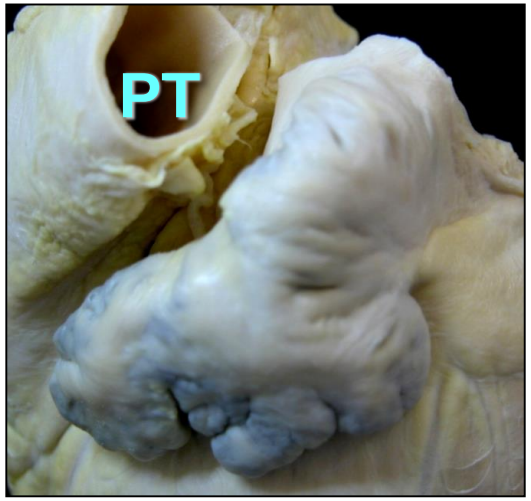


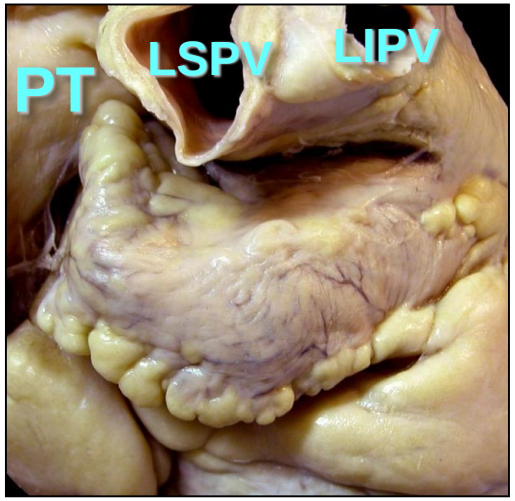




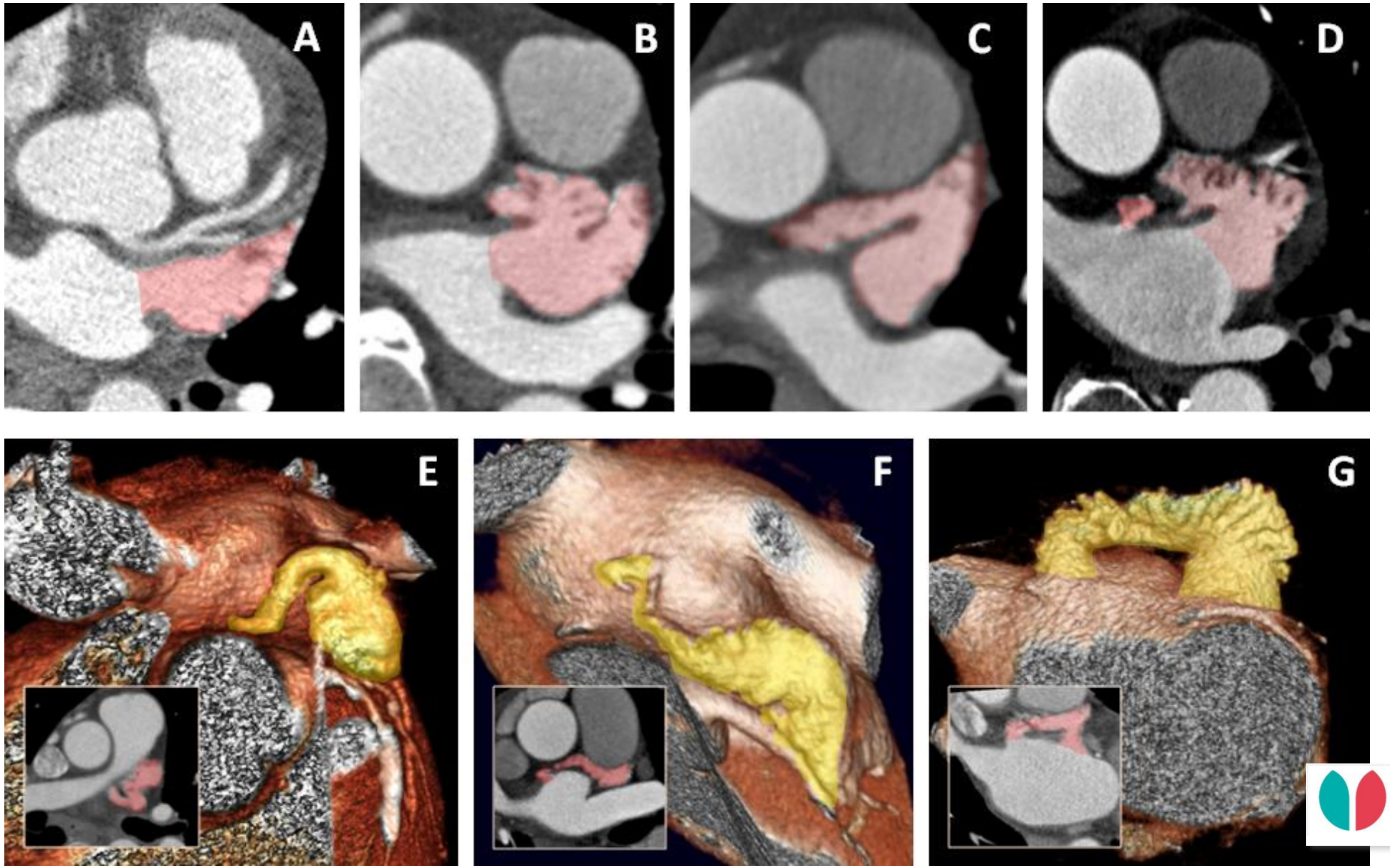




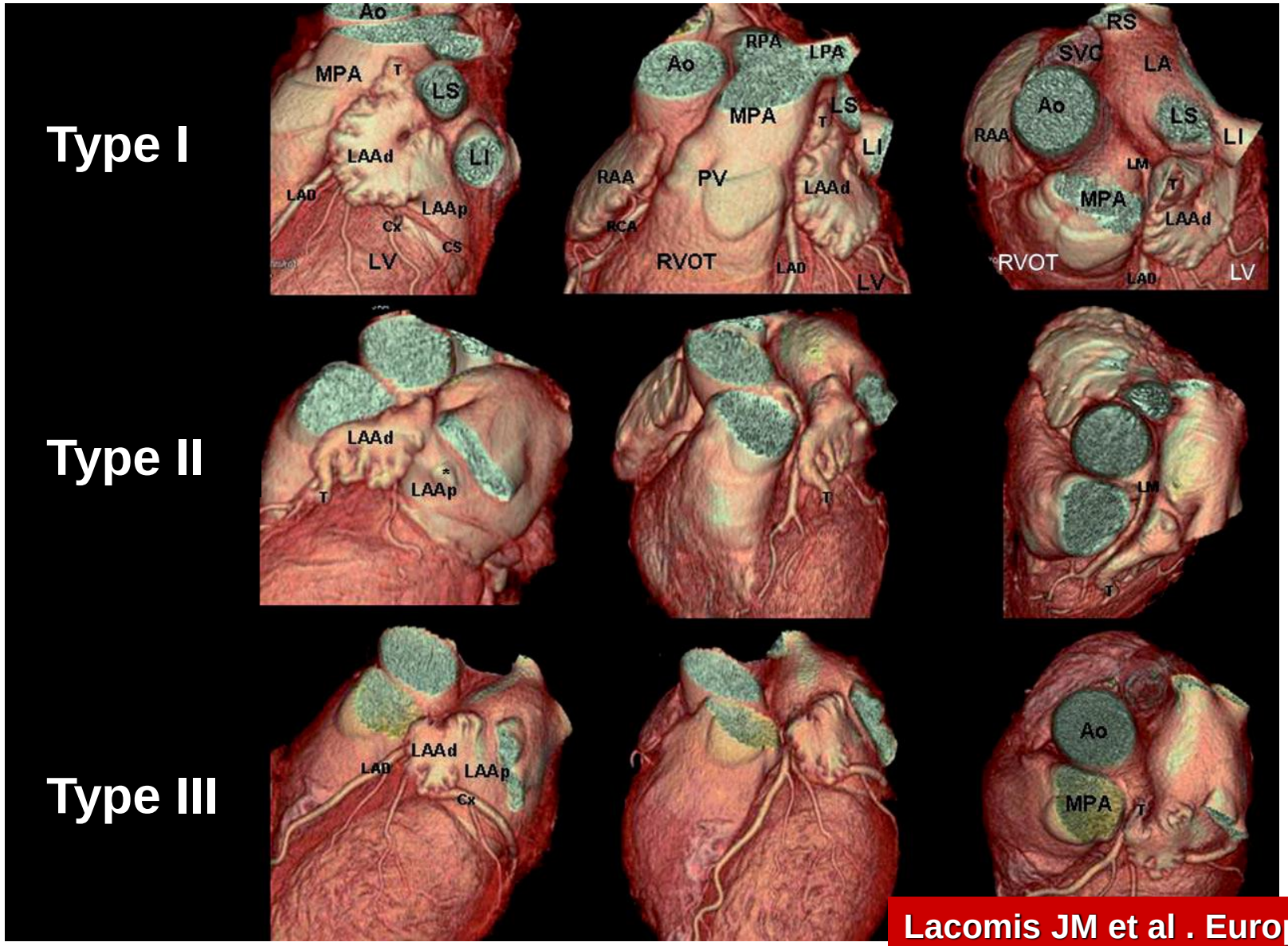




Imaging studies of the LAA



Imaging studies of the LAA



quirónsalud

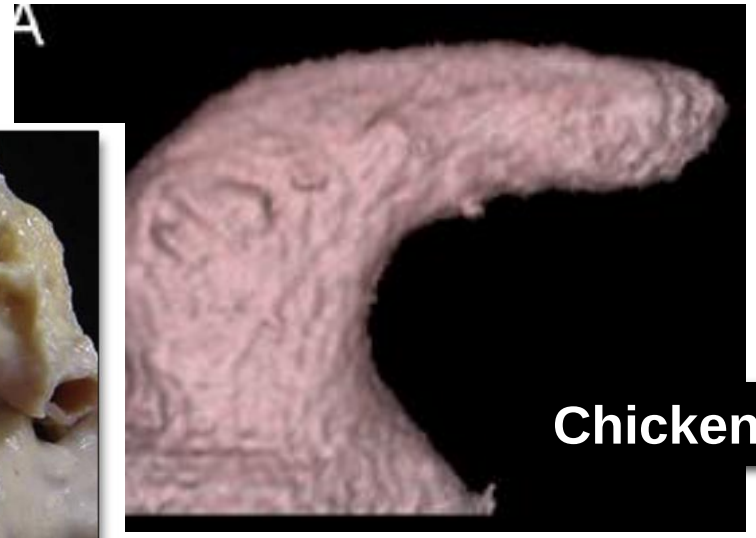
Lacomis JM et al . Europace 2007;9:1134-1140

LAA morphology & risk of stroke

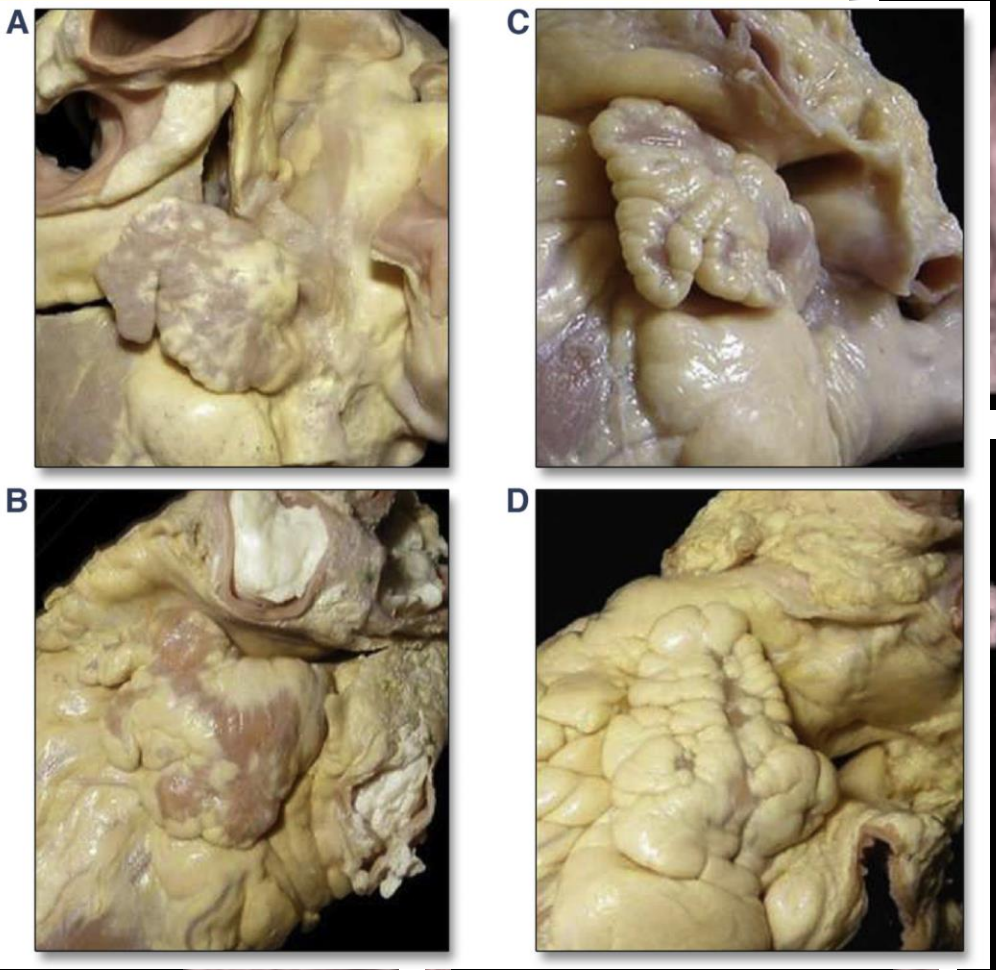
Does the Left Atrial Appendage Morphology Correlate With the Patients With Atria

Results From a Multicen

Biase LD et al. J Am Coll C

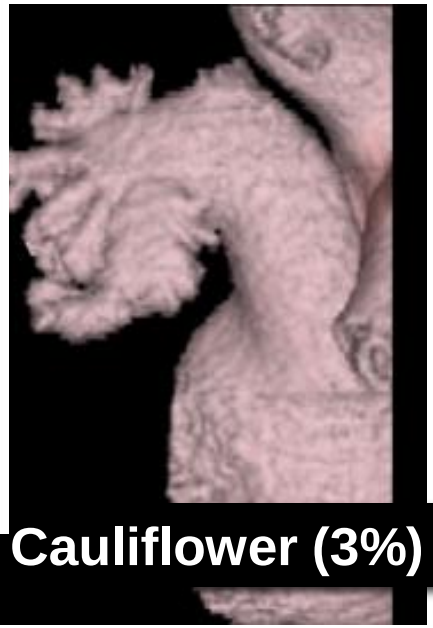


Chicken (48%)



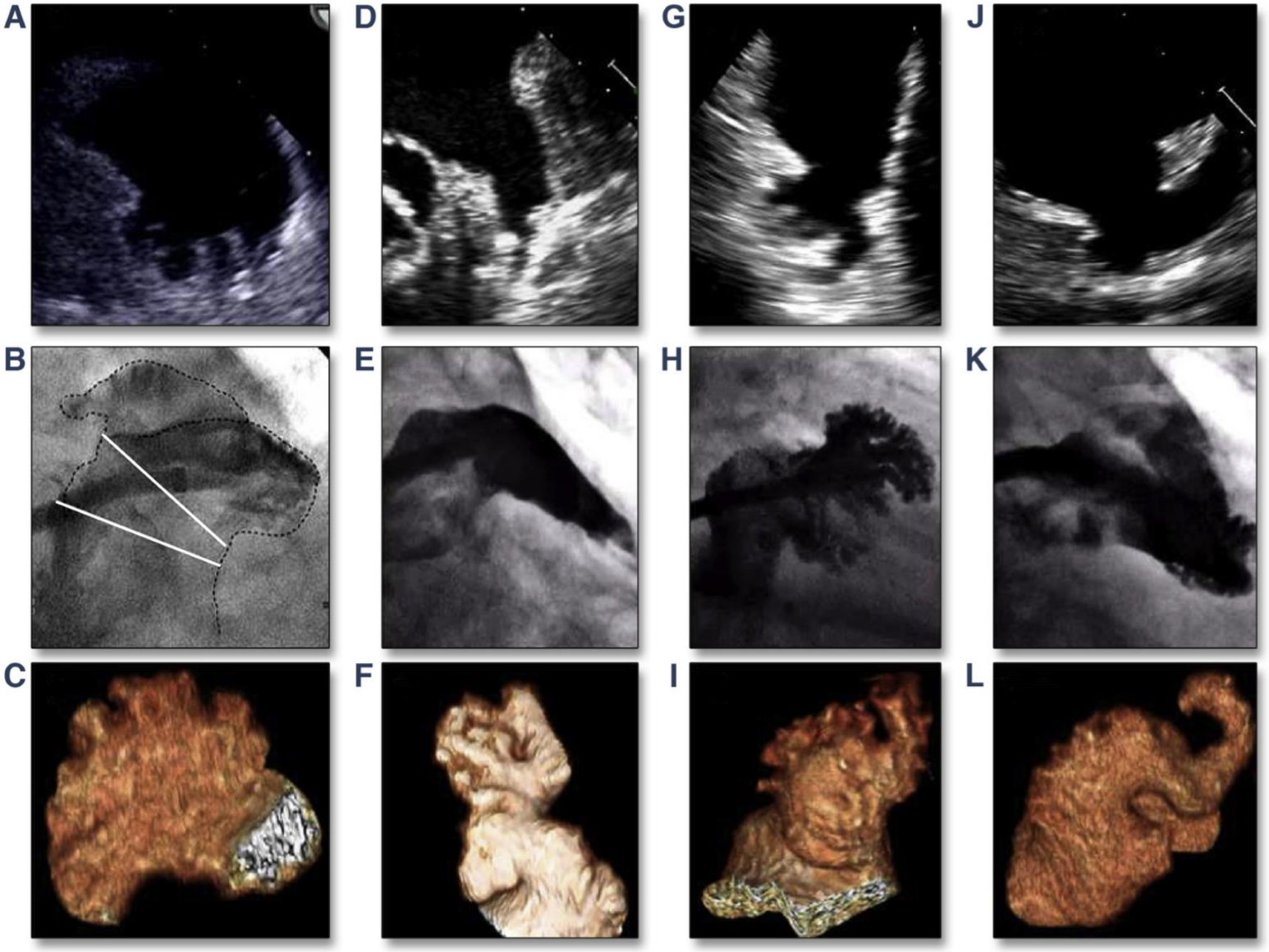
Cactus (30%)

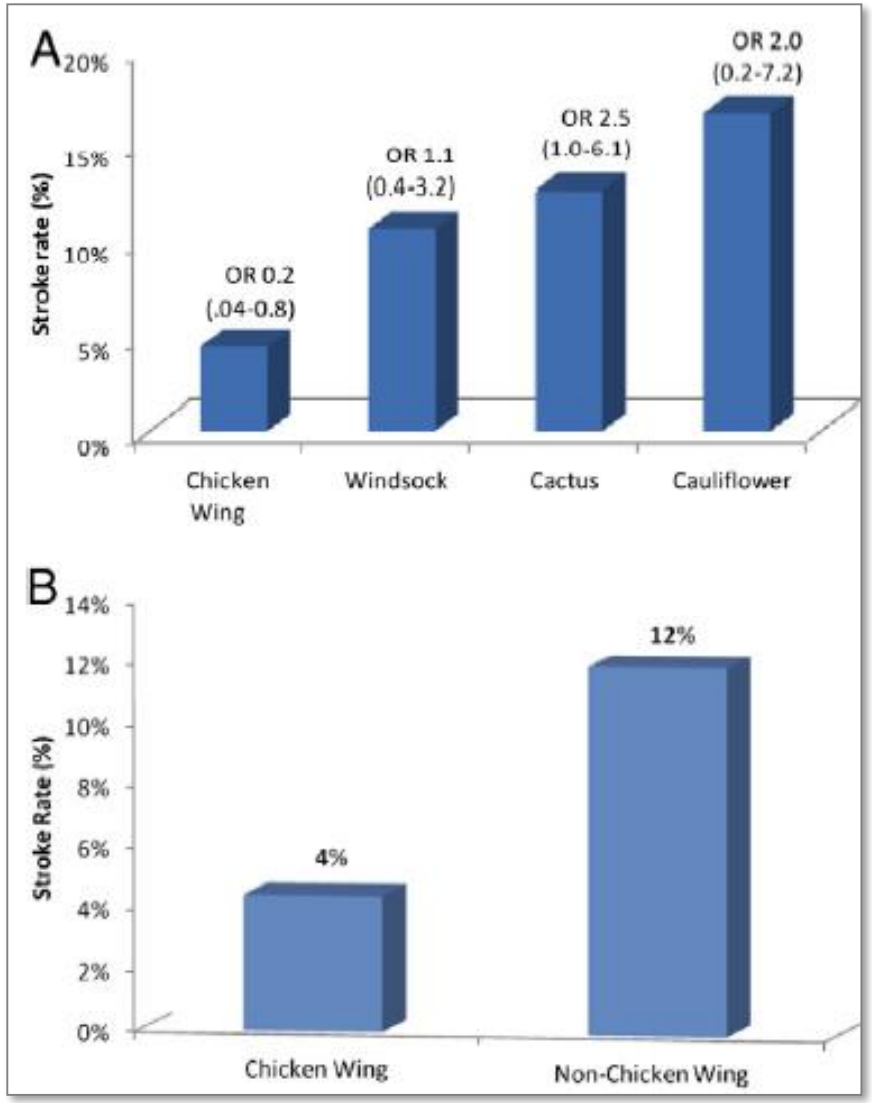
Winsock (19%)



Cauliflower (3%)

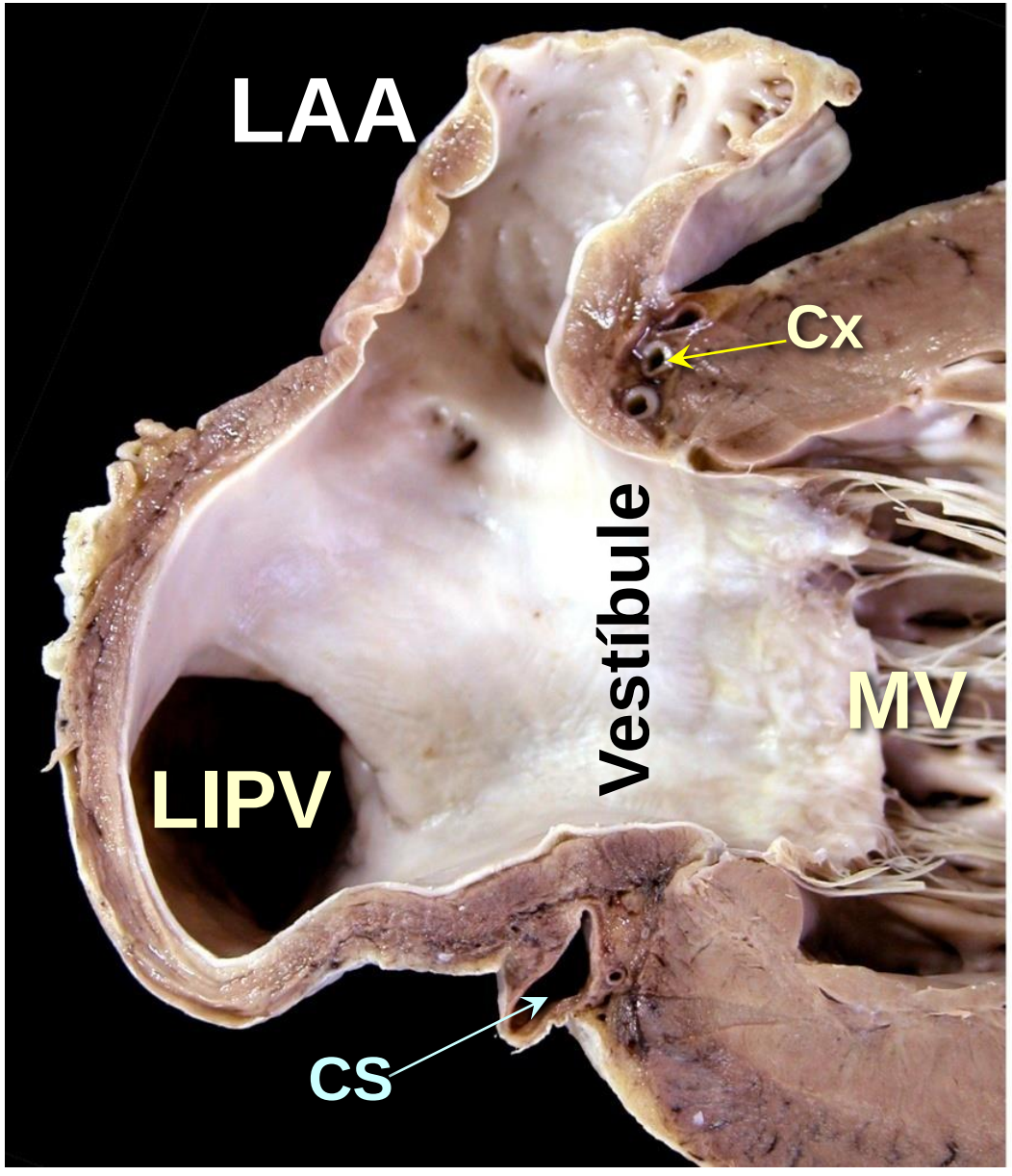
LAA morphology & risk of stroke

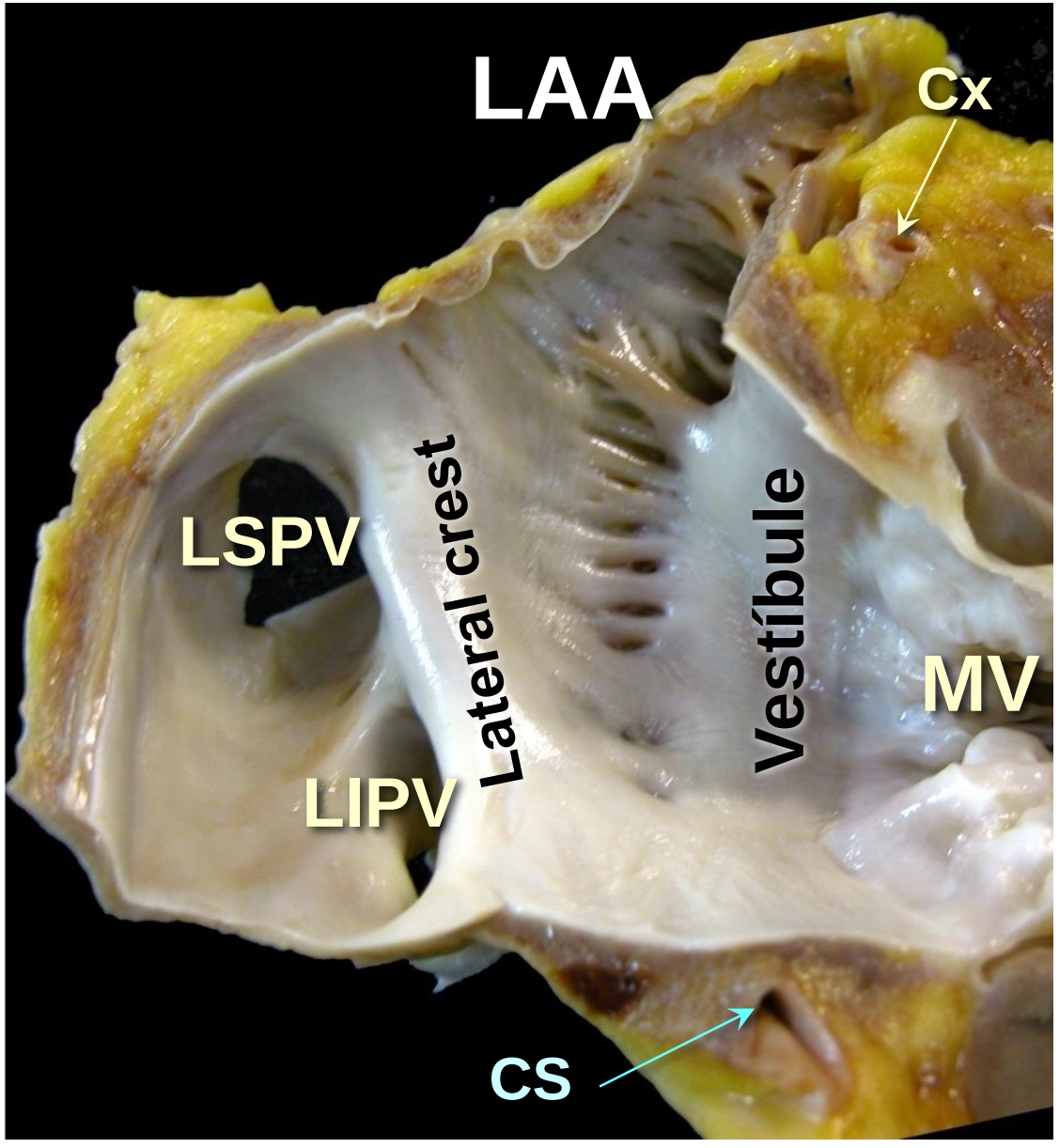




Biase LD et al. J Am Coll Cardiol 2012;60:531-8

LAA occlusion: anatomic determinant

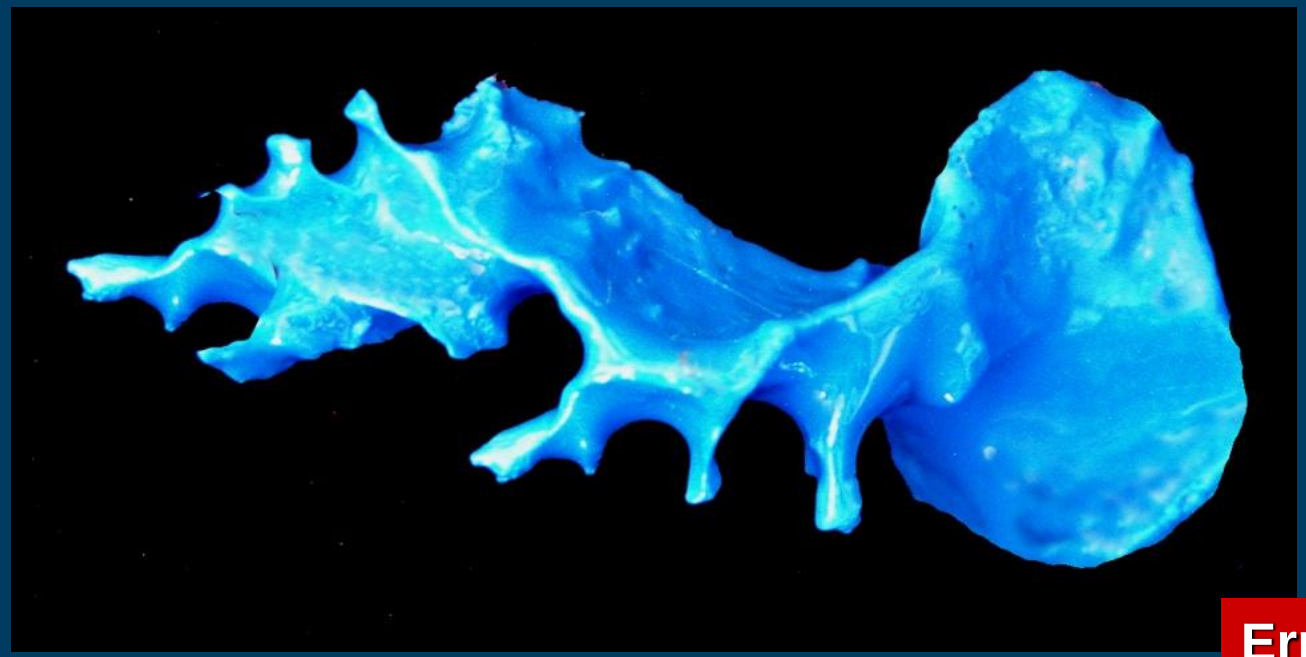


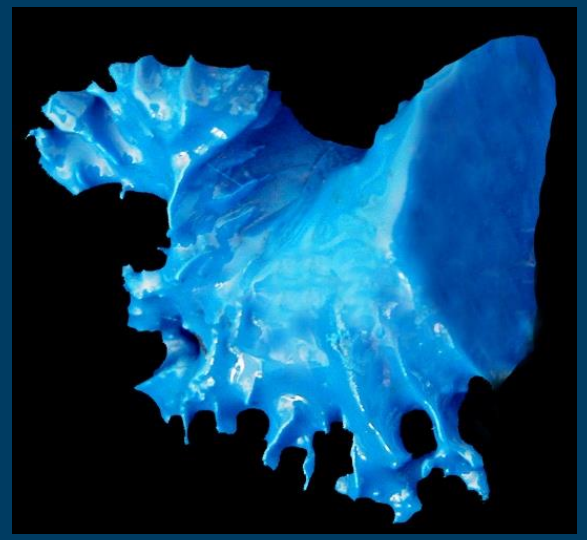


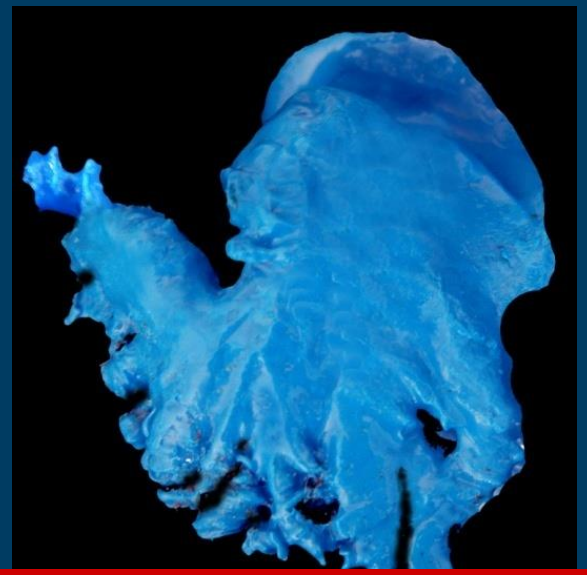
LAA: anatomic examination

LAA volume 0,7 - 19,2 ml
LAA orifice diameter 5 -27 mm
LAA length 16 -51 mm

220 postmortem specimens



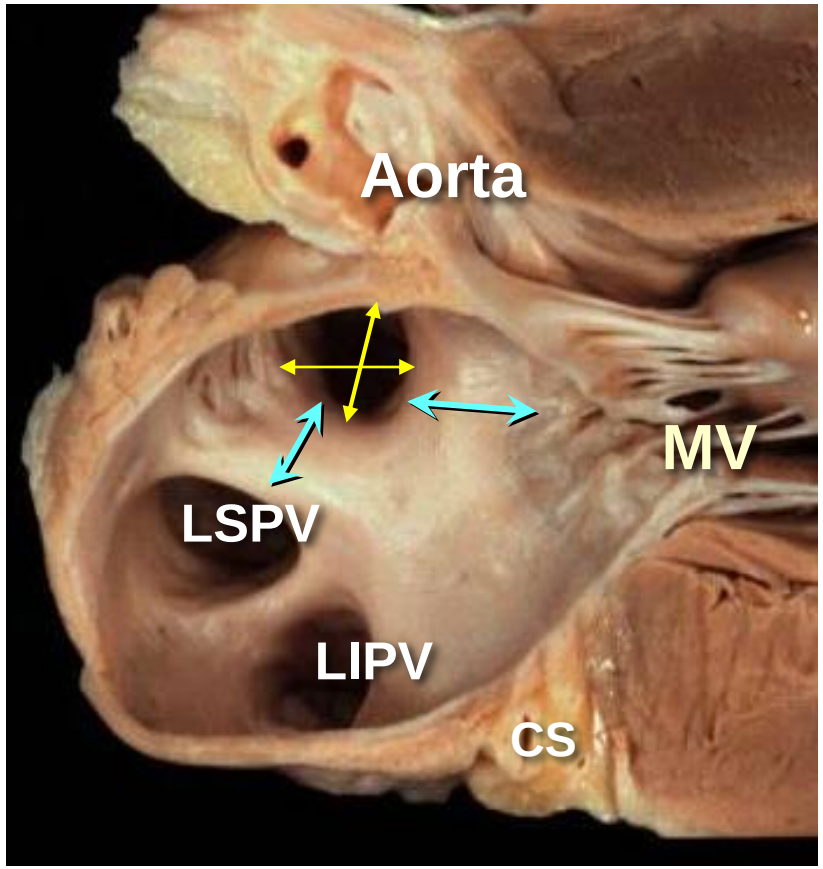


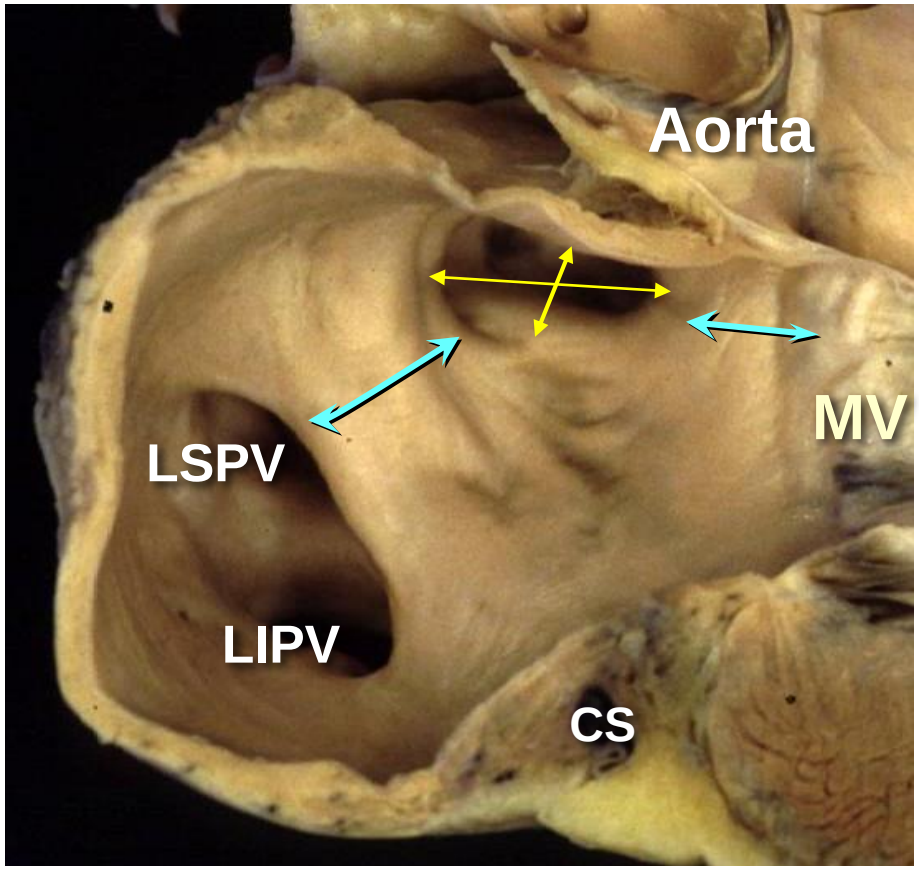


Ernst et al. Anat Rec 1995;242:553-5561

Ostium of the LA appendage

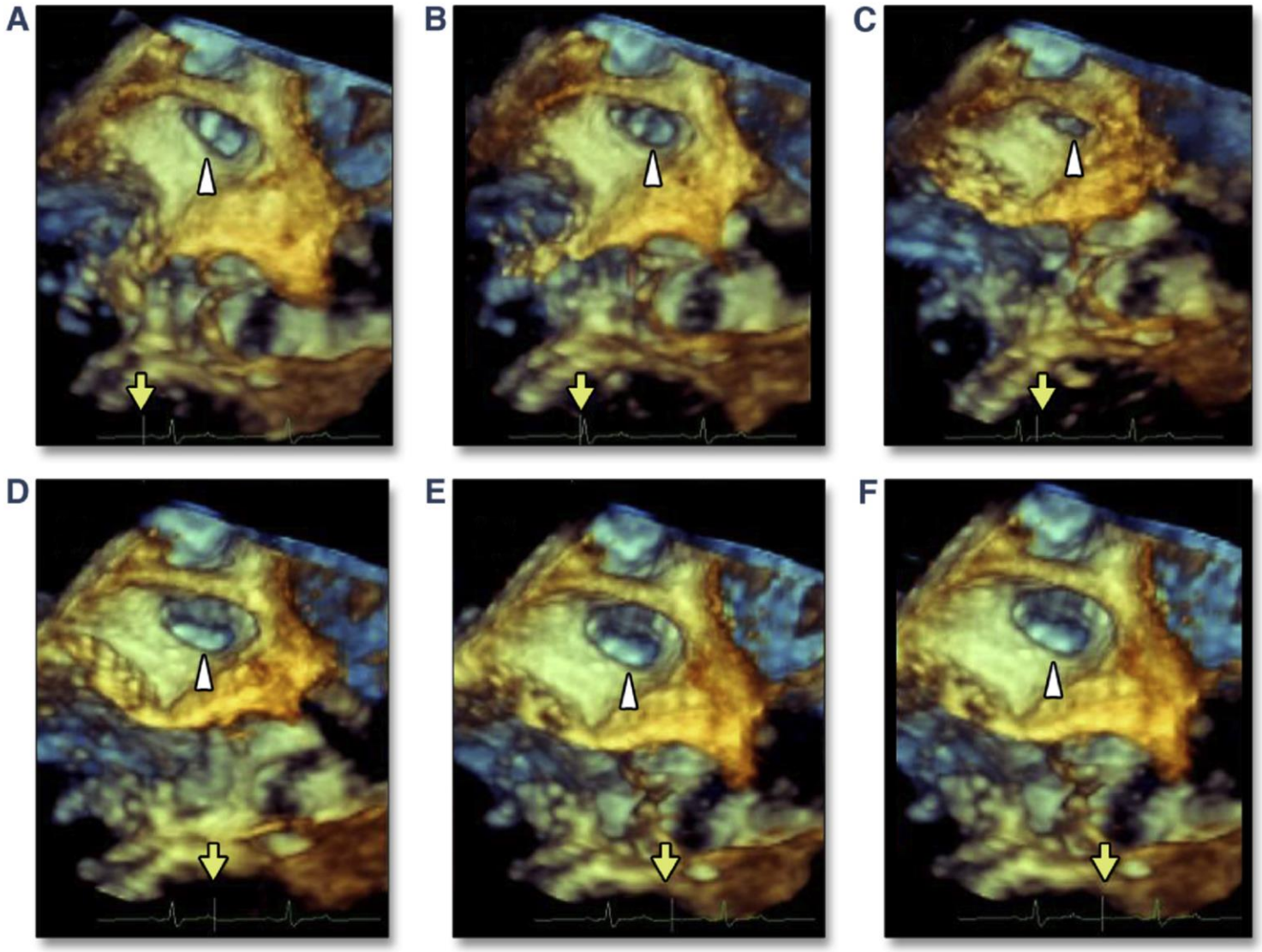
LAA occlusion: anatomic determinant





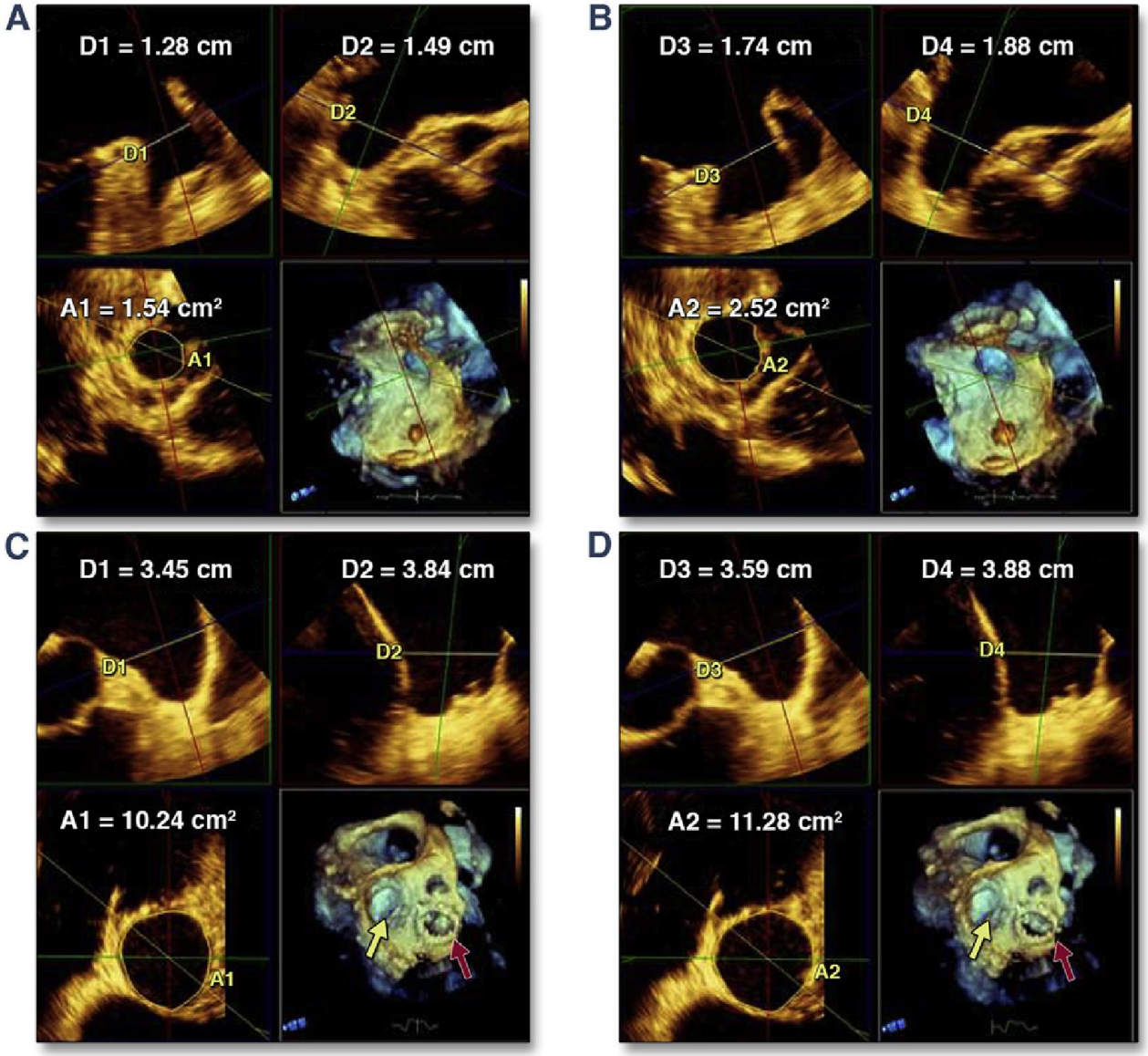
LAA os diameter (larger)	17,4 ± 4 mm	(10-24,1 mm)
LAA os diameter (shorter)	11 ± 4,2 mm	(5,2-19,5 mm)
Distance LAA & LSPV	12 ± 4,1 mm	(5,8–23,7 mm)
Vestibule length	10,7 ± 2,4 mm	(4,7–14,4 mm)

Distance LPN – LAA orifice



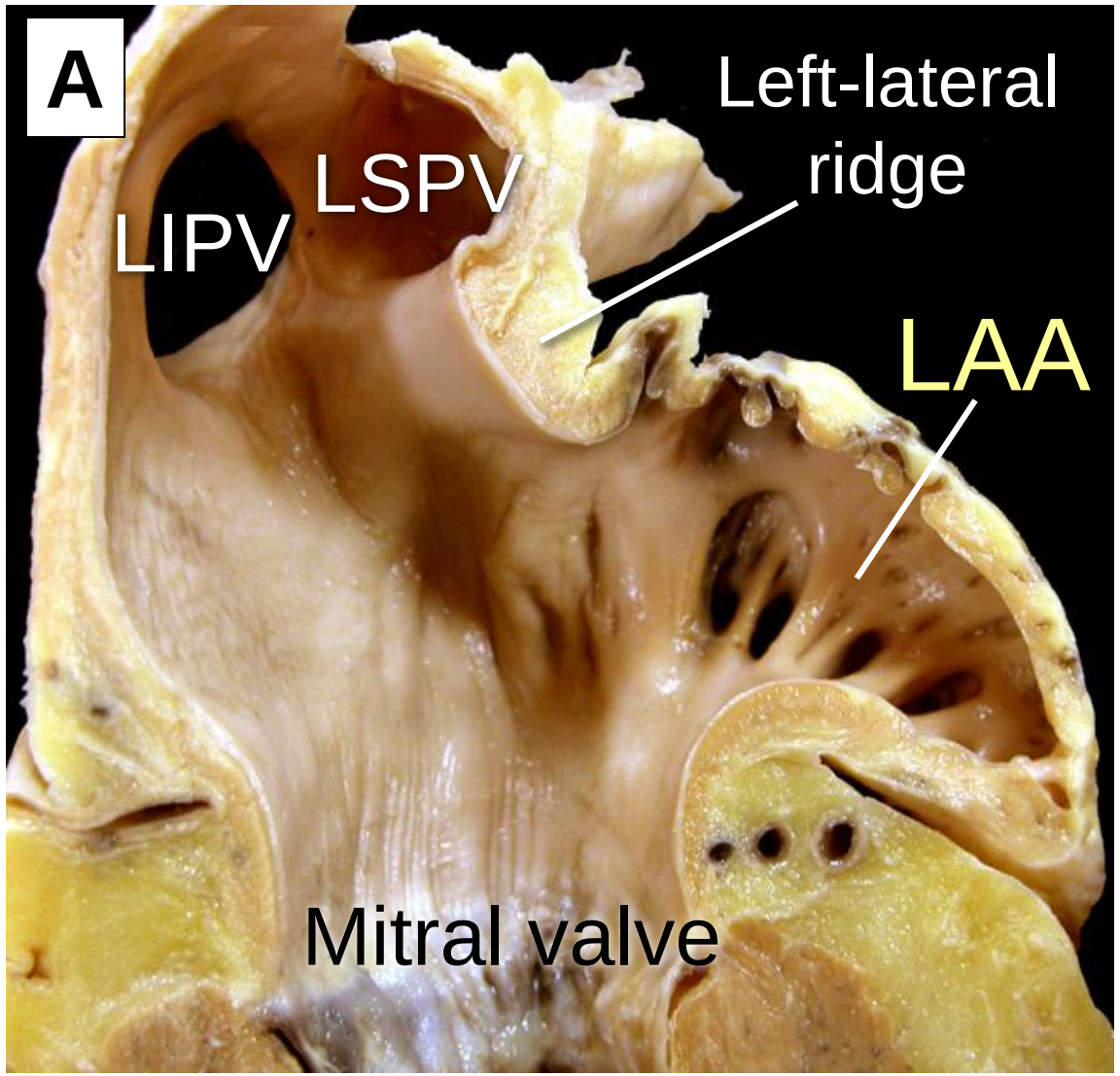
Change in size of the LAA during the cardiac cycle in a patient in sinus rythm

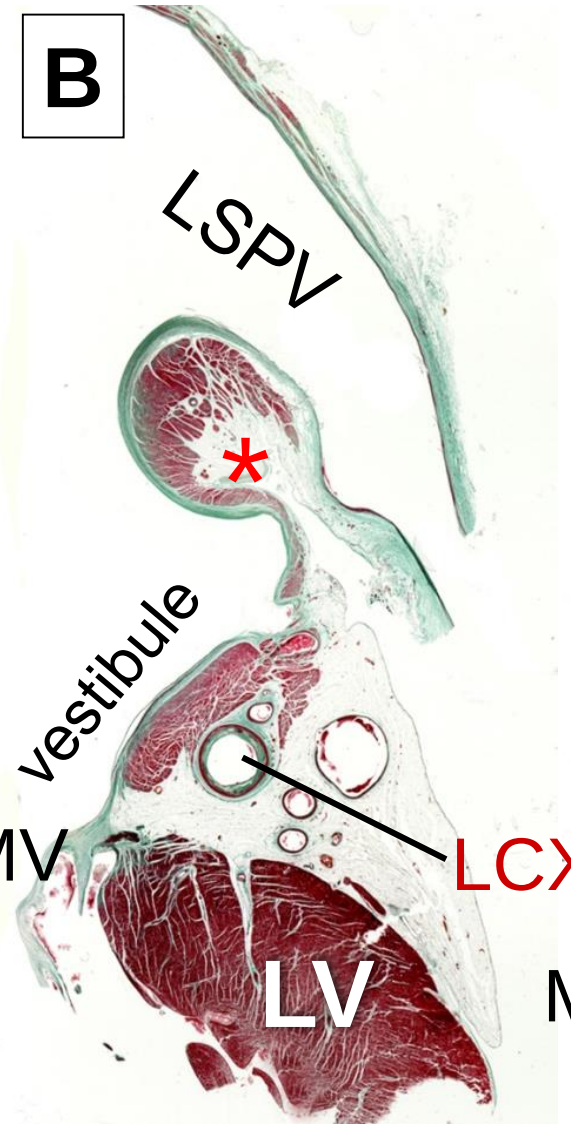
Ostium of the LA appendage

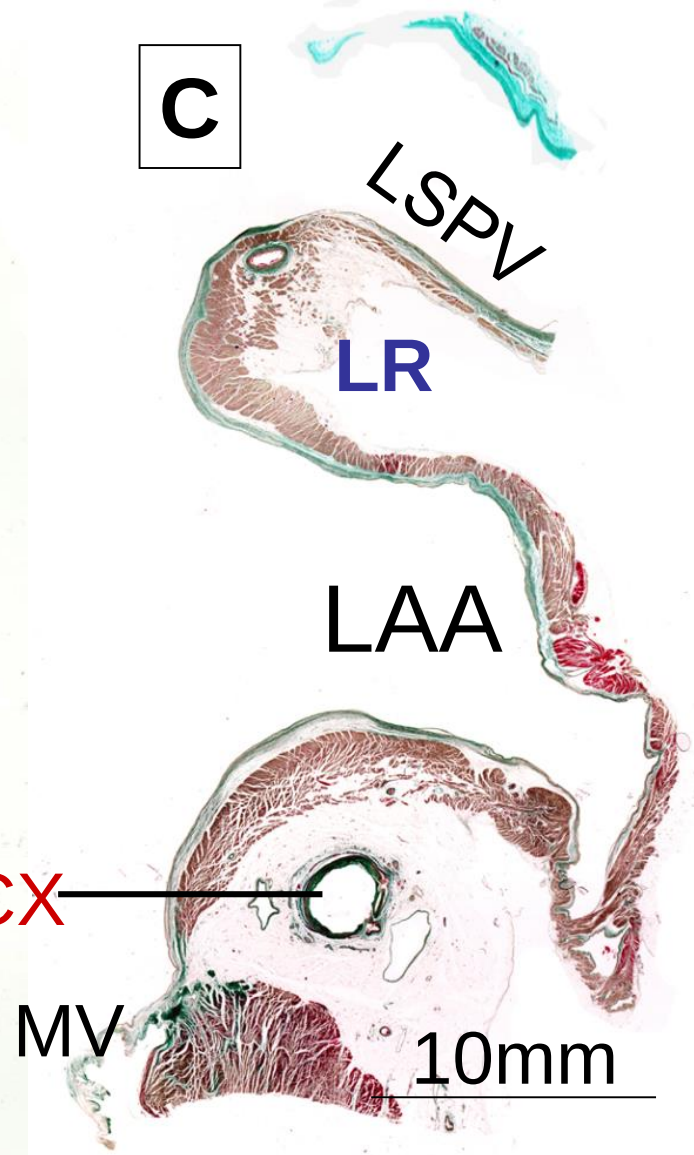


Change in **size** of the LAA during the **cardiac cycle**

Left lateral ridge of the LA





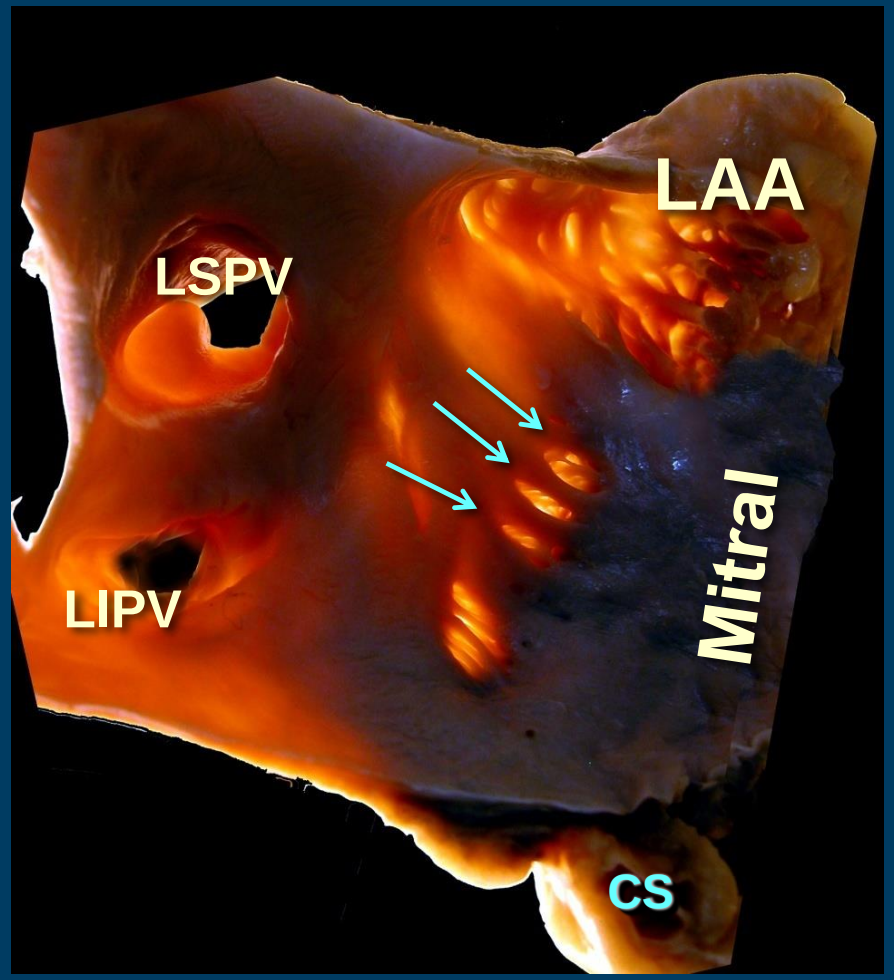


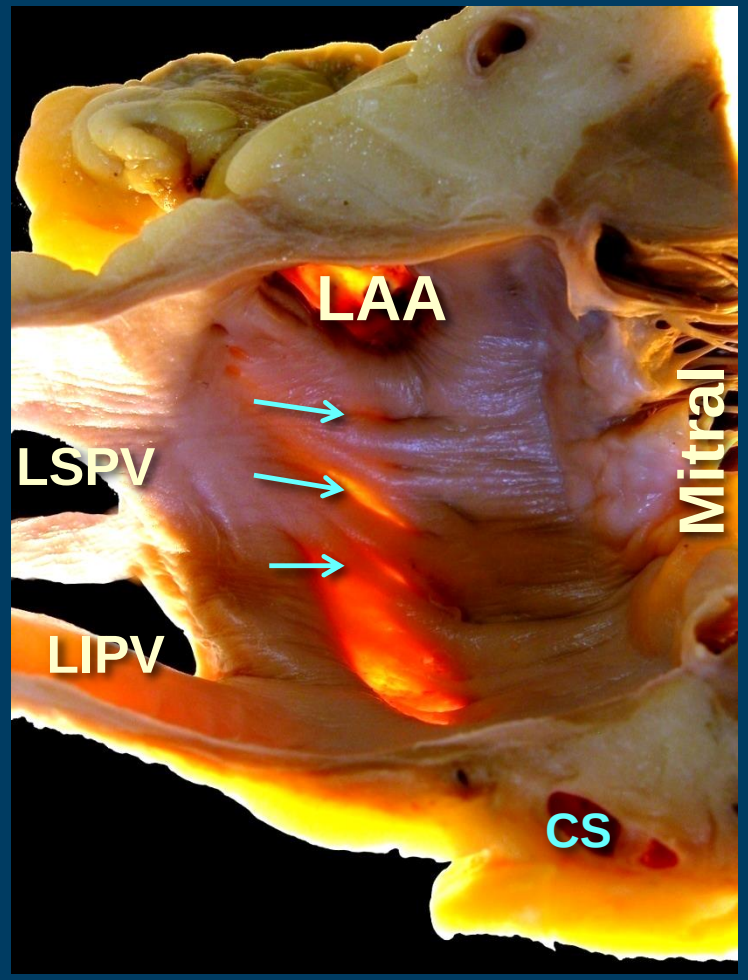
The pectinate muscles

Extra-appendicular pectinate muscles

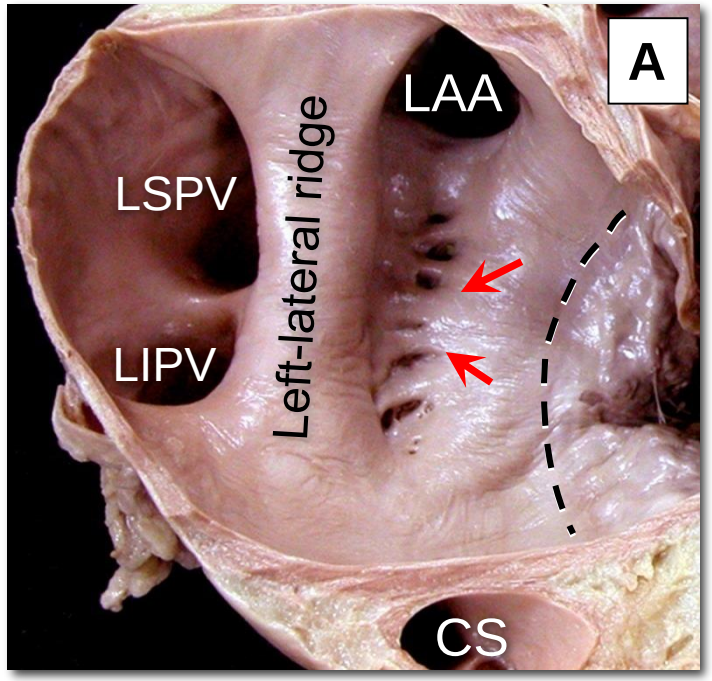
Width
3.6 mm (0.5–10.3)

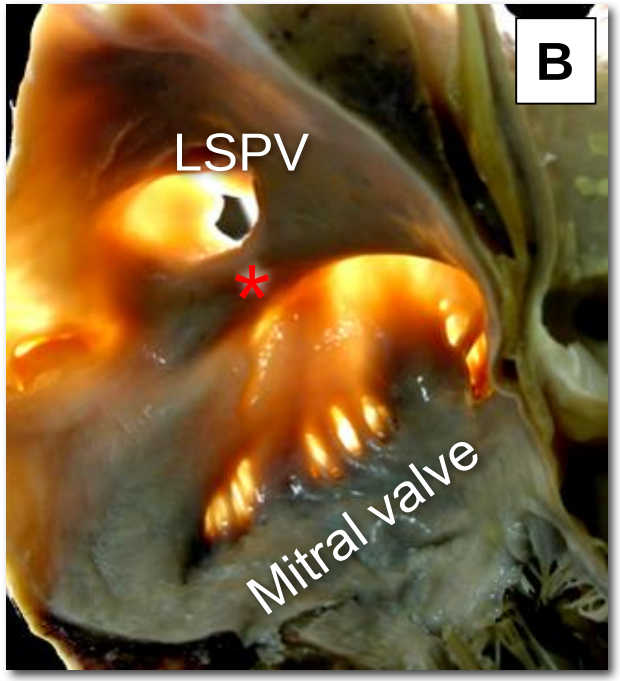
Thickness
1 mm (0.4–1.5)

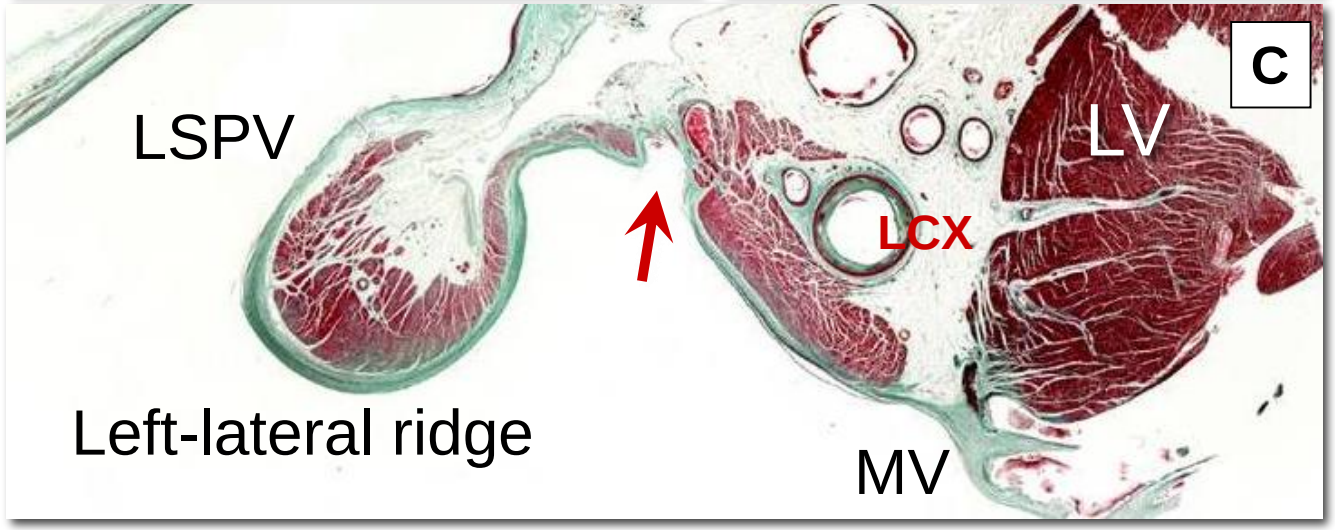




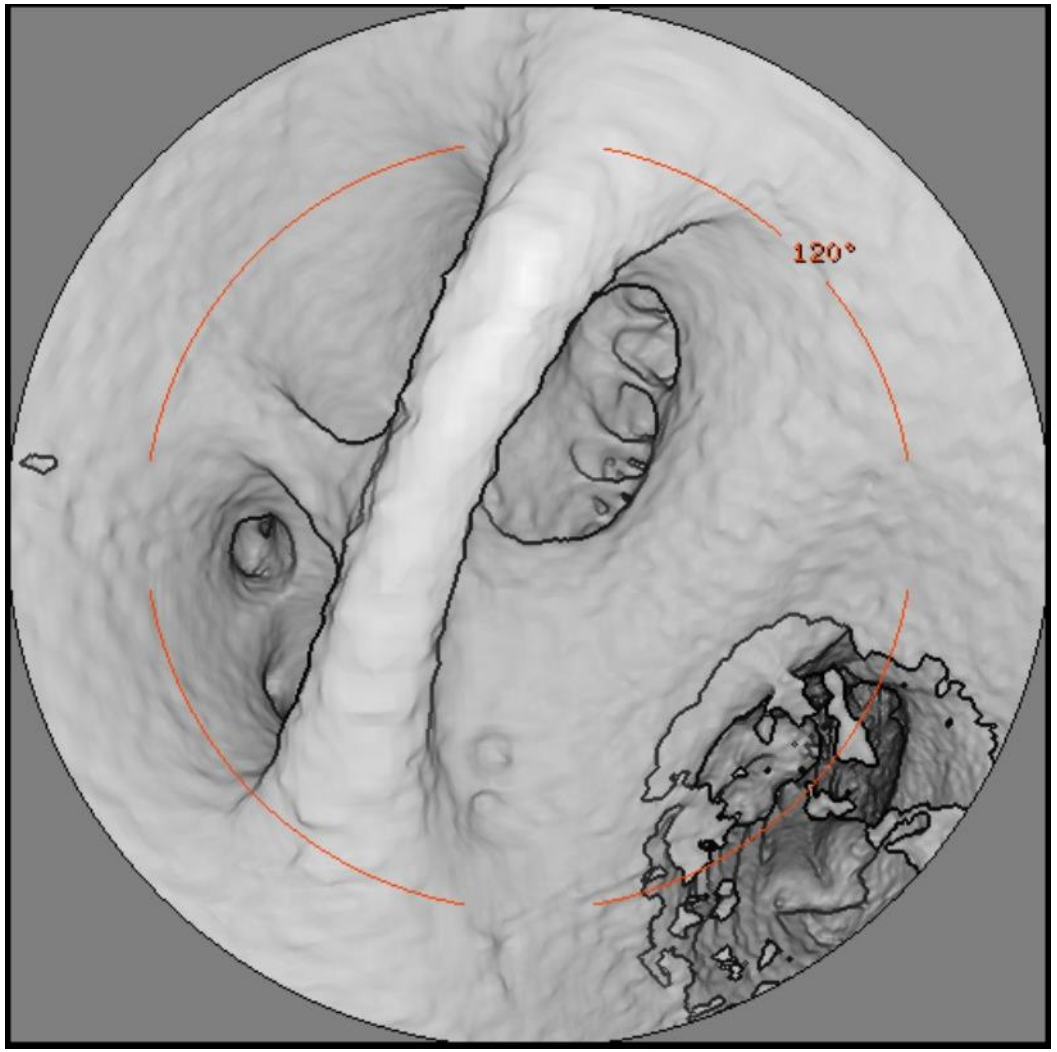
Extra-appendicular pectinate muscles



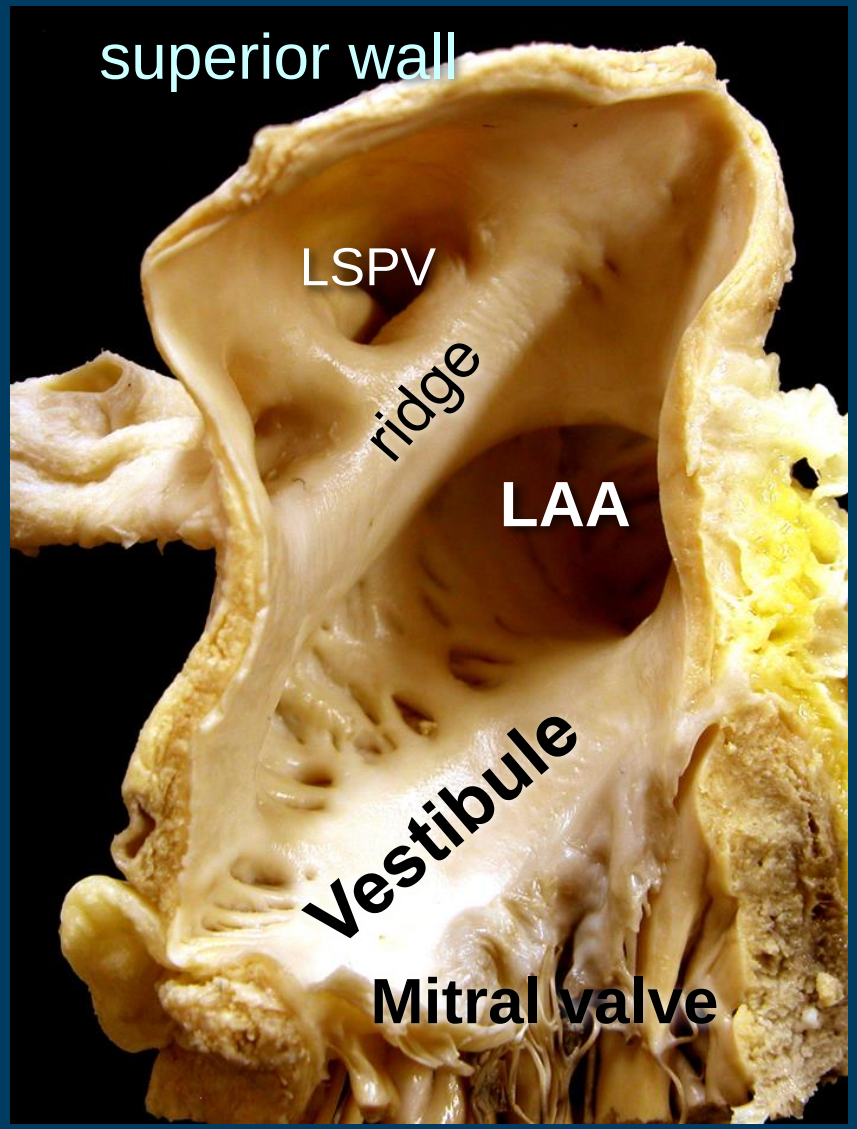


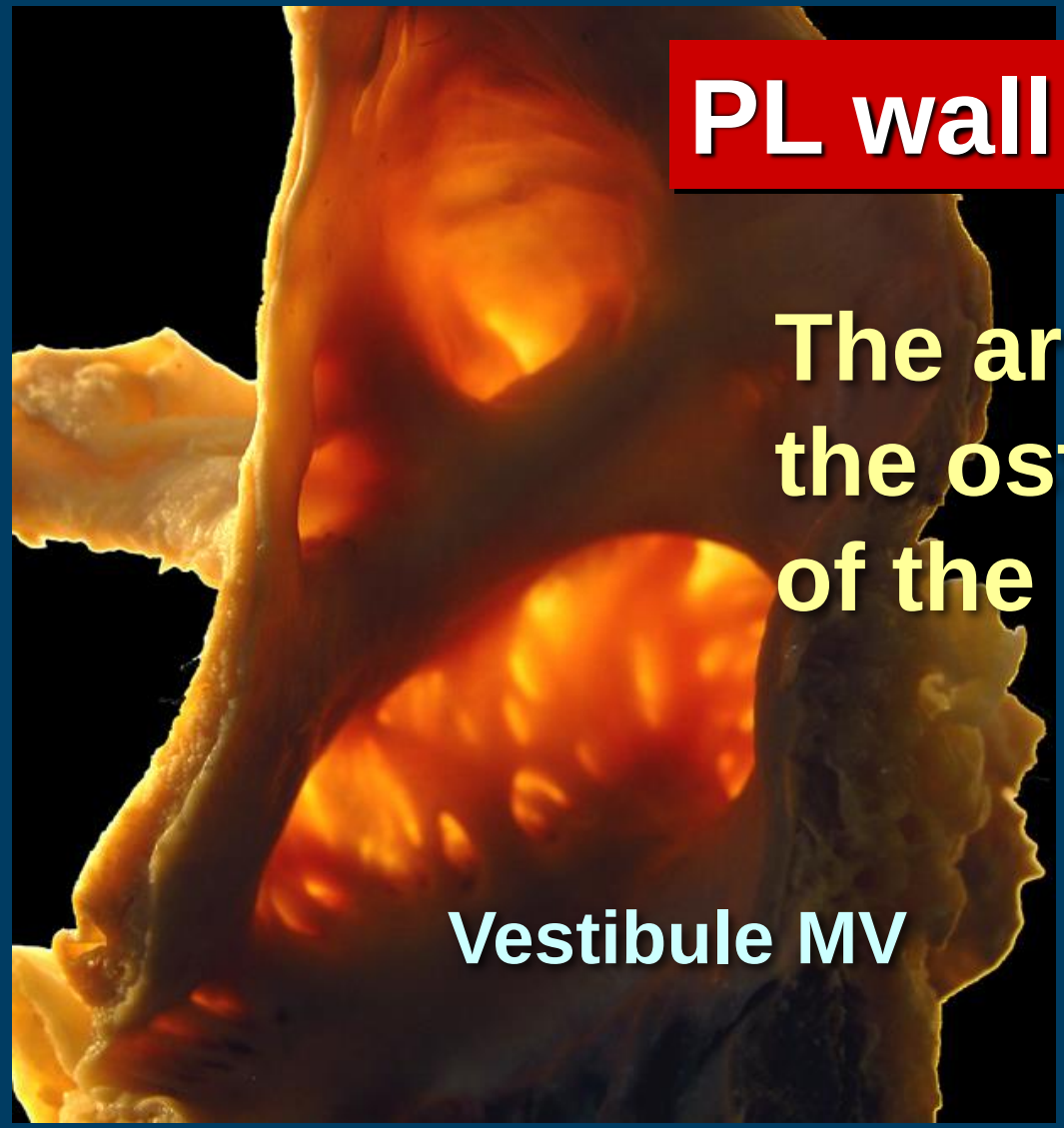


28% of hearts



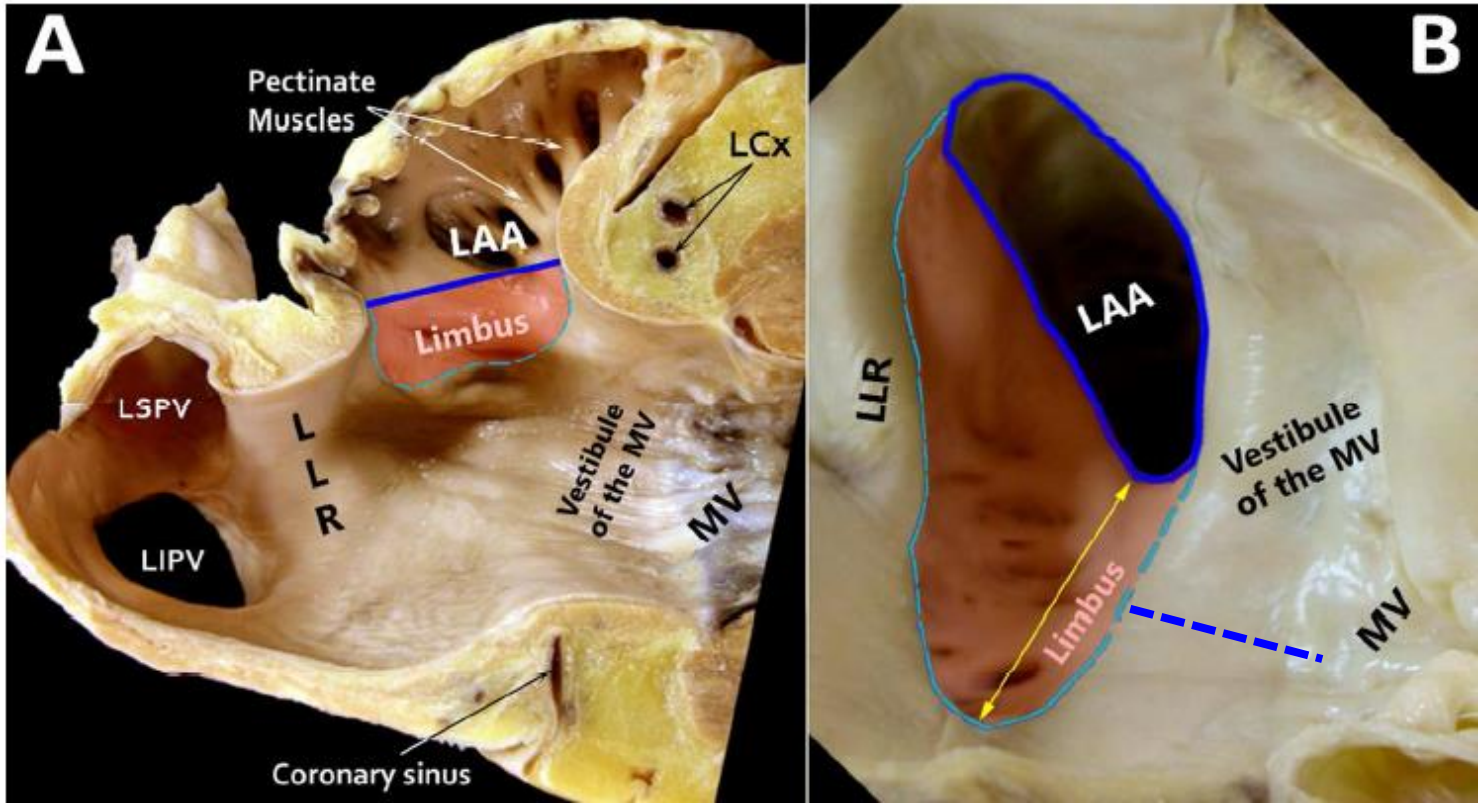
The limbus of the LAA





quirónsalud

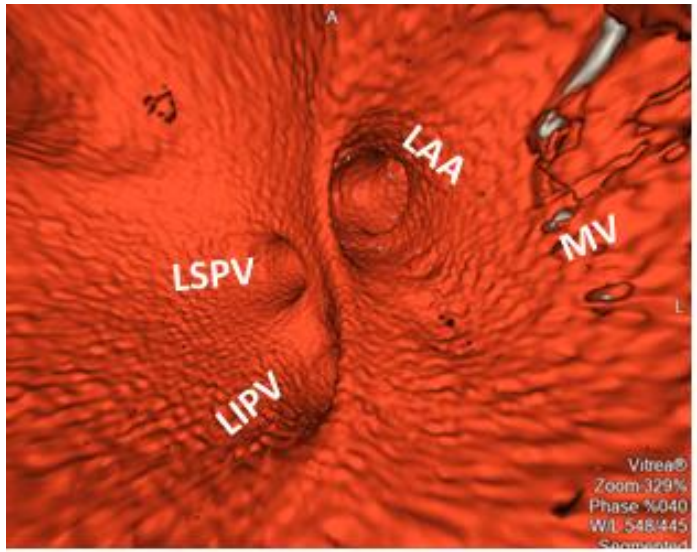
Endocardial anatomic determinant

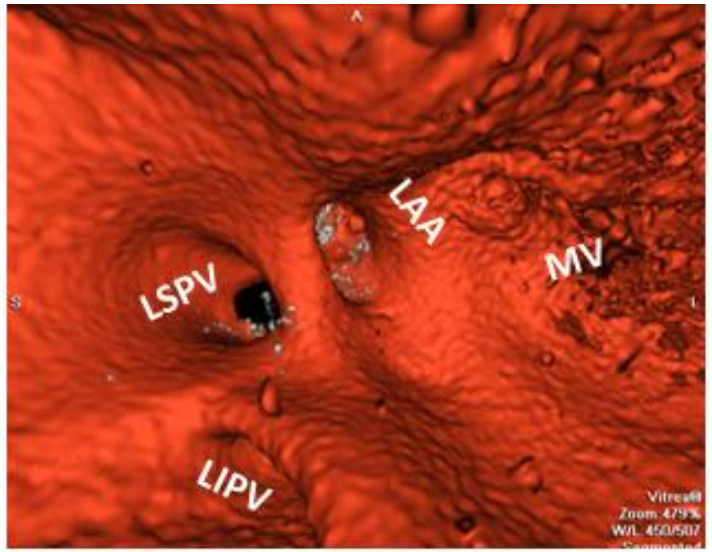


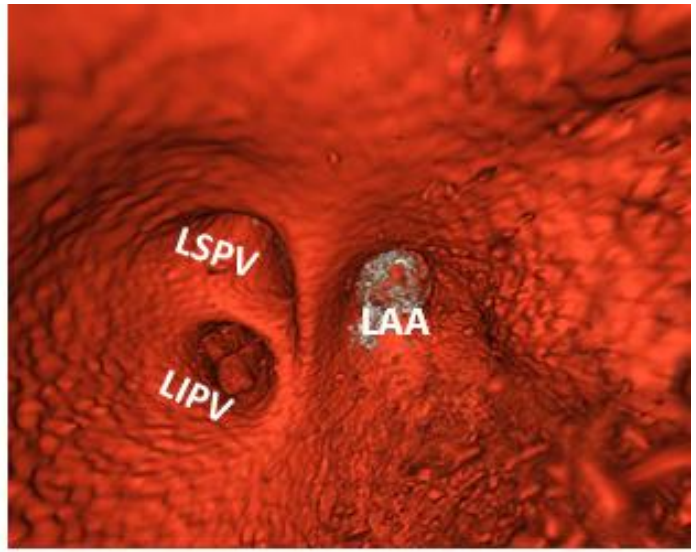
Limbus of the LAA (shaded area) between the left lateral ridge and the vestibule of the mitral valve

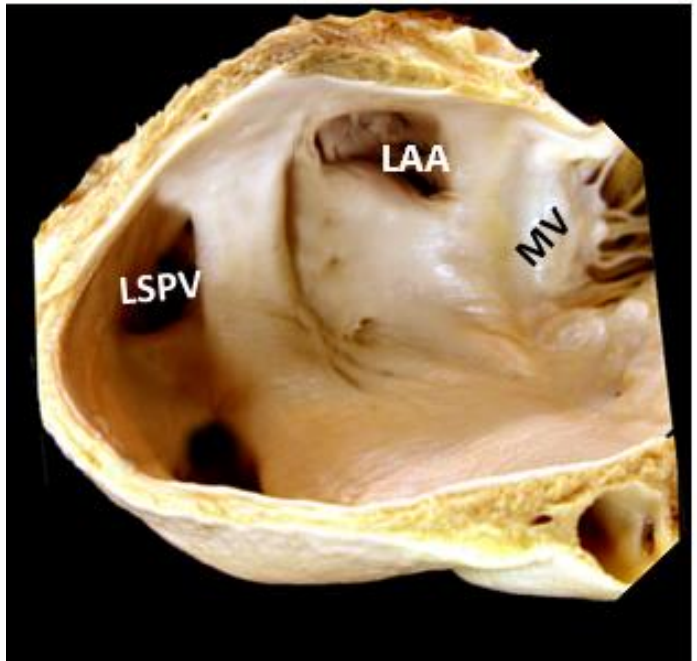
López Minguez J & Sánchez-Quintana D

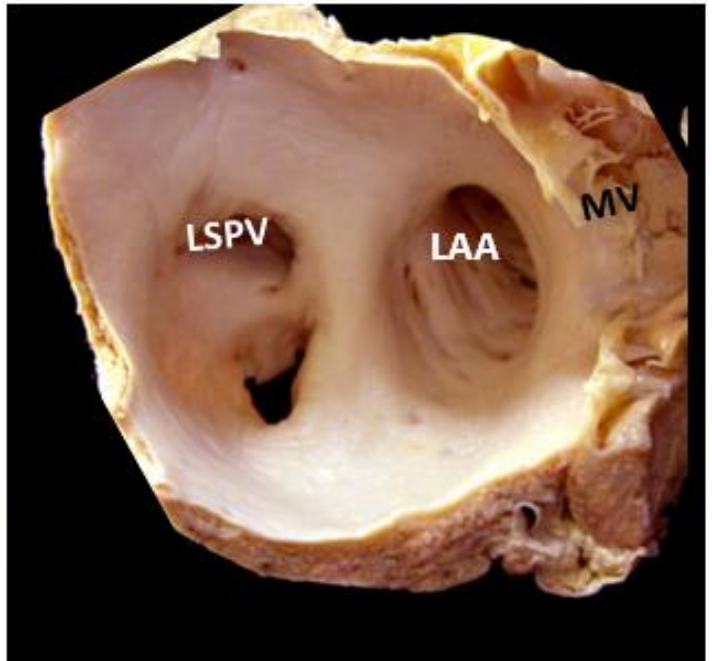
LPVs and LA appendage

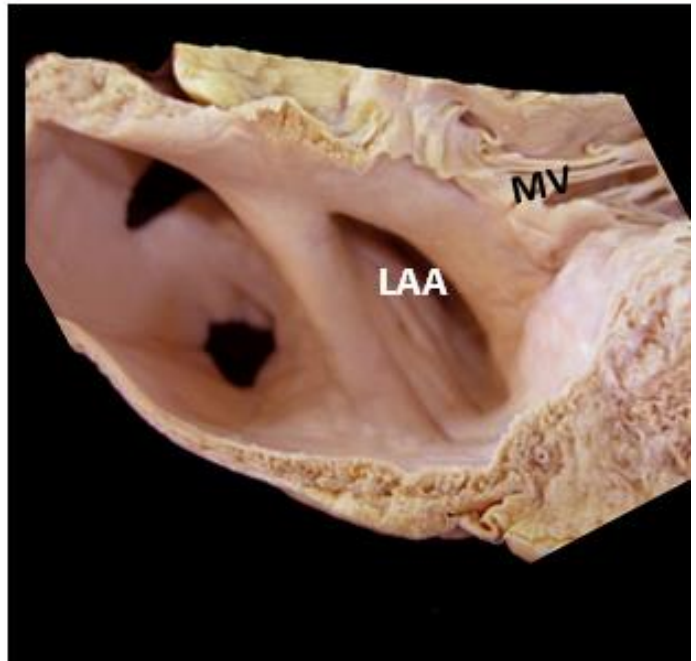


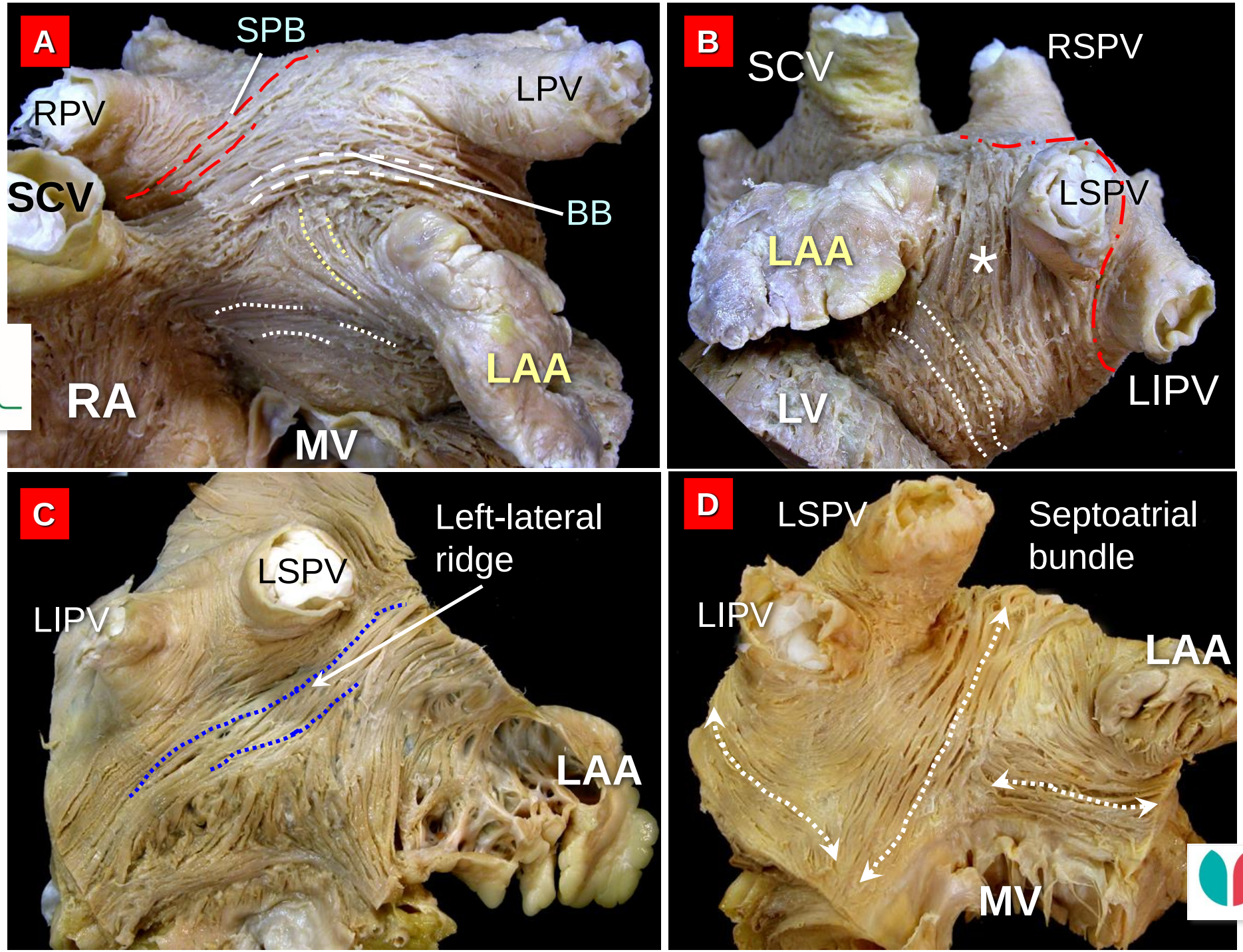




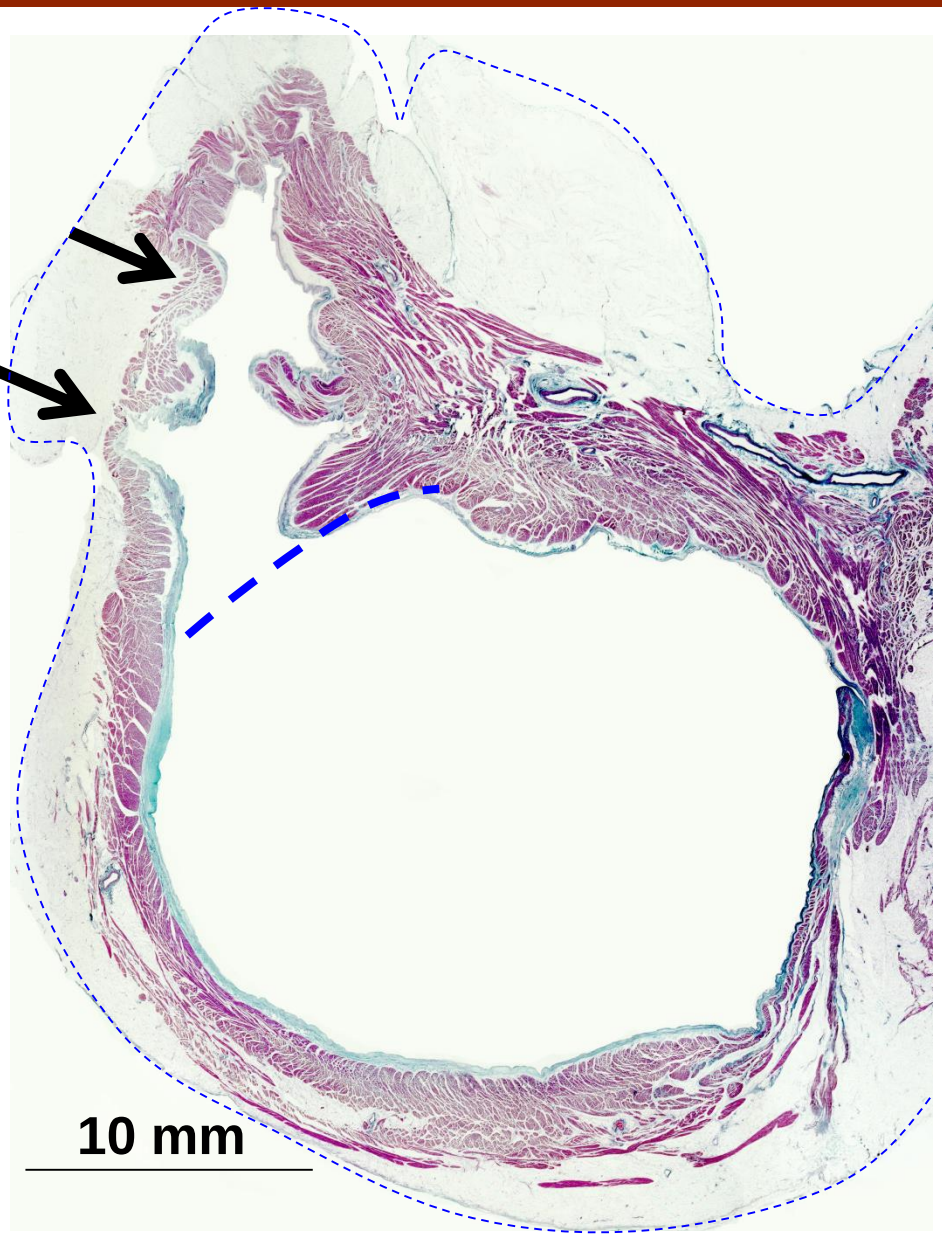


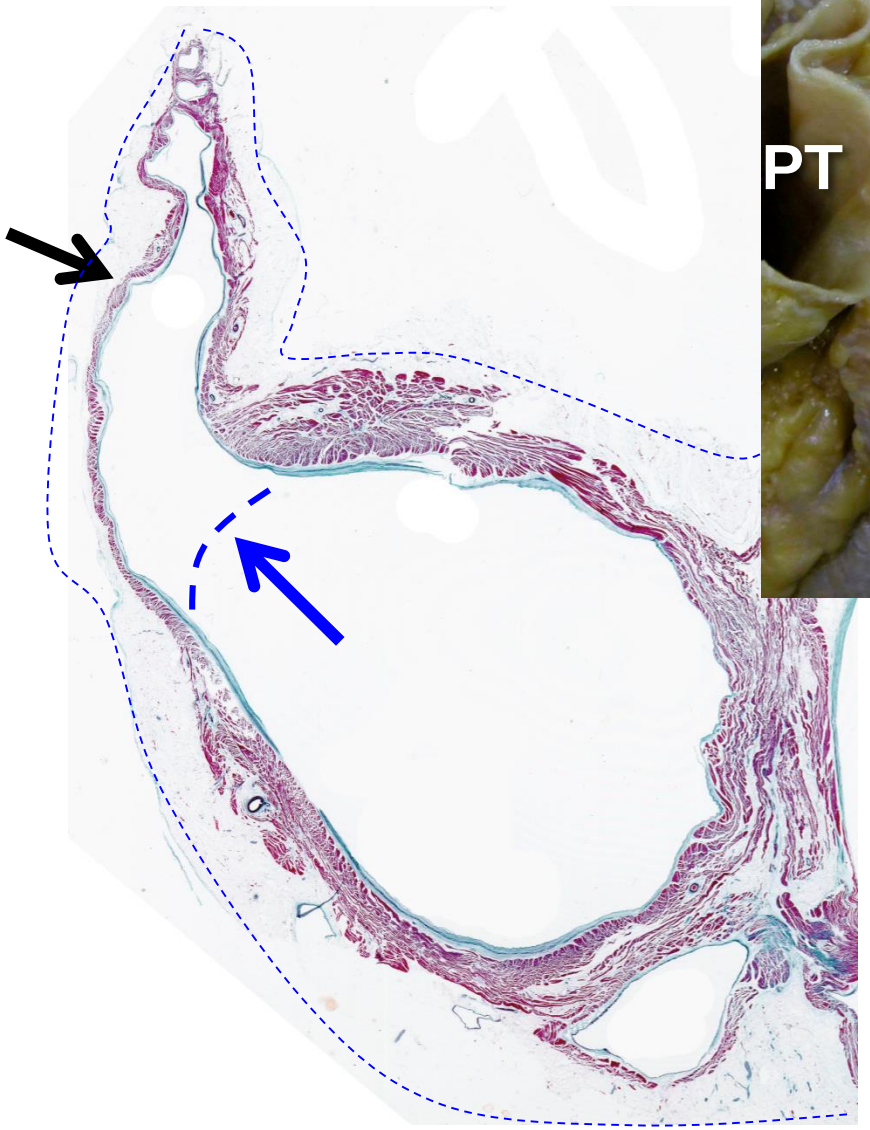


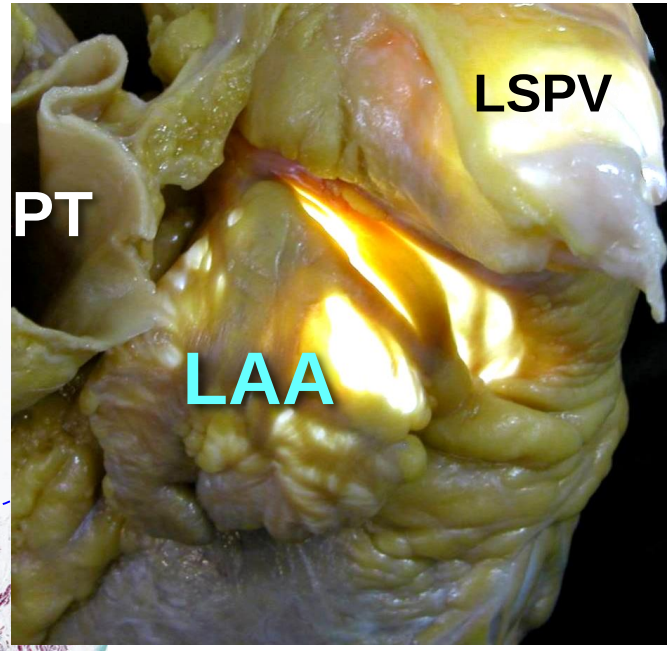



A
SPB
RPV
LPV
SCV
BB
LAA
RA
MV
B
SCV
RSPV
LSPV
LAA
*
LIPV
LV
C
Left-lateral ridge
LSPV
LIPV
LAA
D
LSPV
Septoatrial bundle
LIPV
LAA
MV

The wall of the LA appendage







Myocardial thickness

Determinants of the LAA

Left atrial appendage

Morphological variants: LAA apex directed behind the pulmonary trunk (exclusion criteria for LARIAT)

Ostial diameters / circumference: 17-31mm (Watchman) and 12.6-28.5mm (ACP)

LAA length: LAA width >40 mm (LARIAT), should excced the maximal ostial diameter (Watchman)

LAA angulation: for all devices, less able to be angled especial concern for the Watchman

Maximal length of dominant lobe: for all devices

Multilobular LAA: multilobed LAA oriented in different planes > 40 mm (exclusion criteria for LARIAT)

Distance from the ostium to the first bend of the LAA: landing zone that exceeds the maximal ostial diameter for the Watchman, landing zone ≥ 10 mm for the ACP

Trabeculations (pectinate muscle): should not be mistaken with thrombus

Myocardial thickness: thinner posterior wall and risk of cardiac perforation for all devices

Extra-appendicular trabeculations: risk of cardiac perforation and periprosthetic leaks

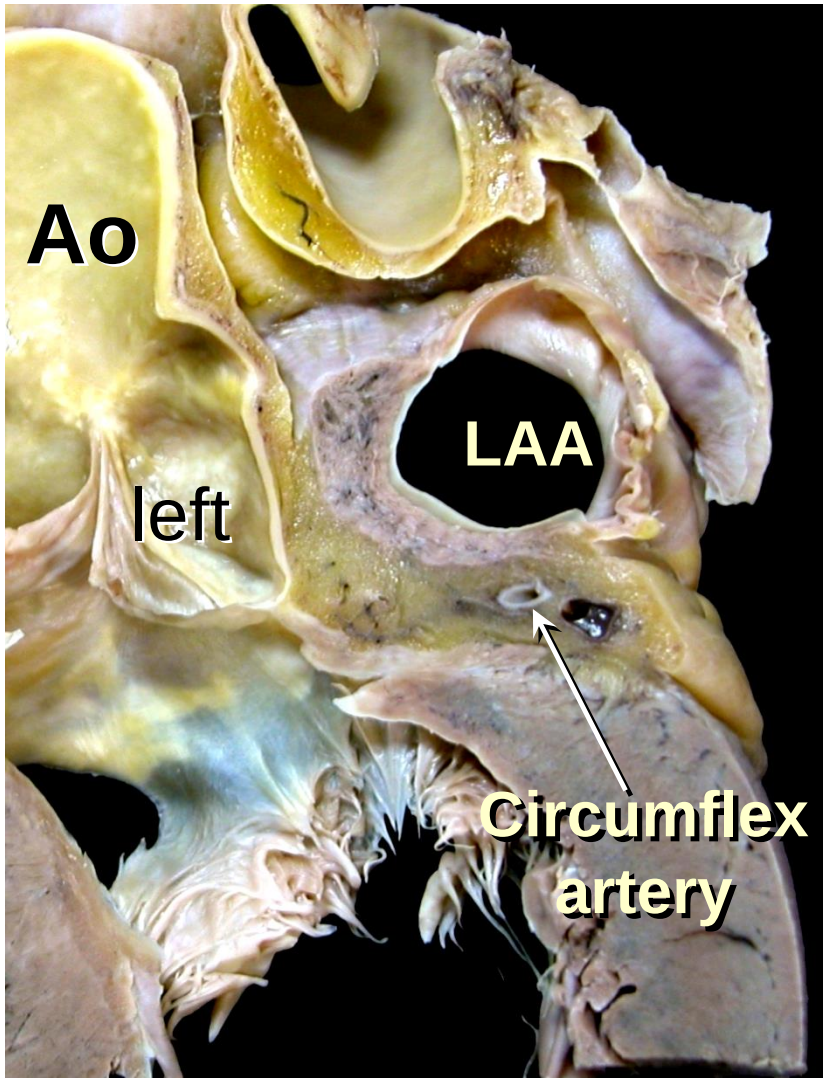
Ostial diameters of LSPV

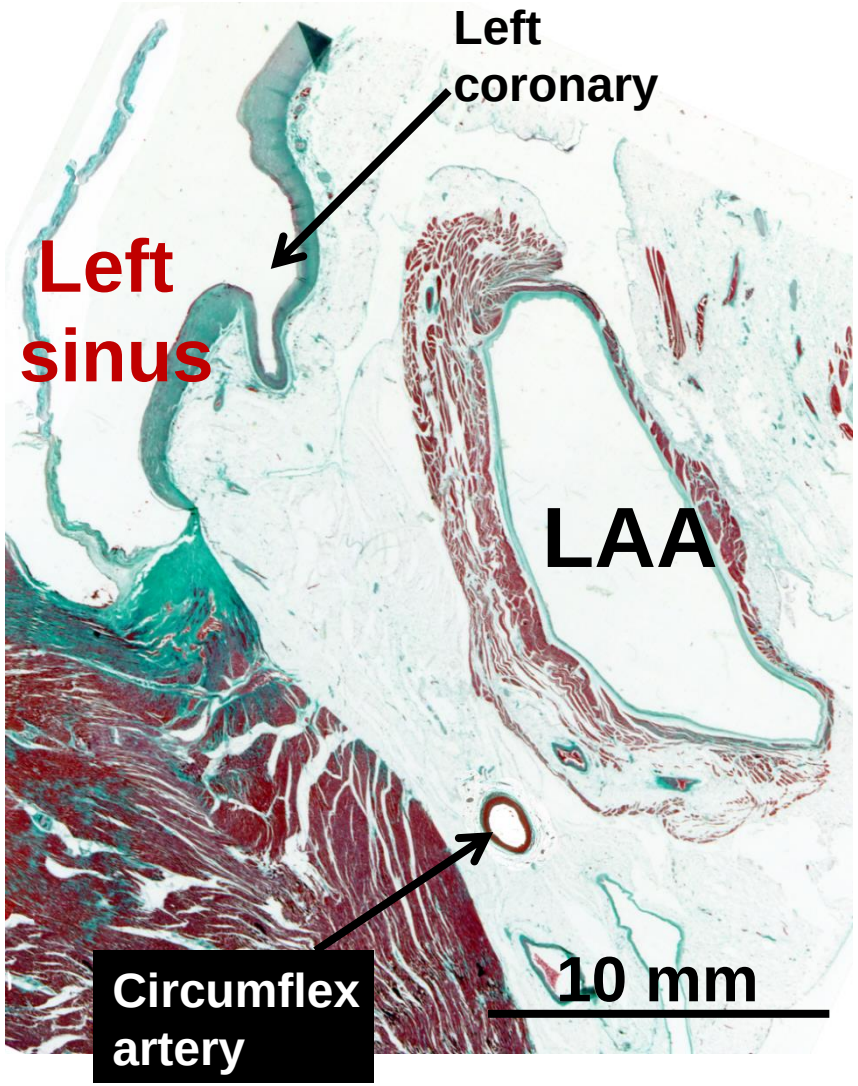
Relation LSPV and LAA orifices: usually at the same level

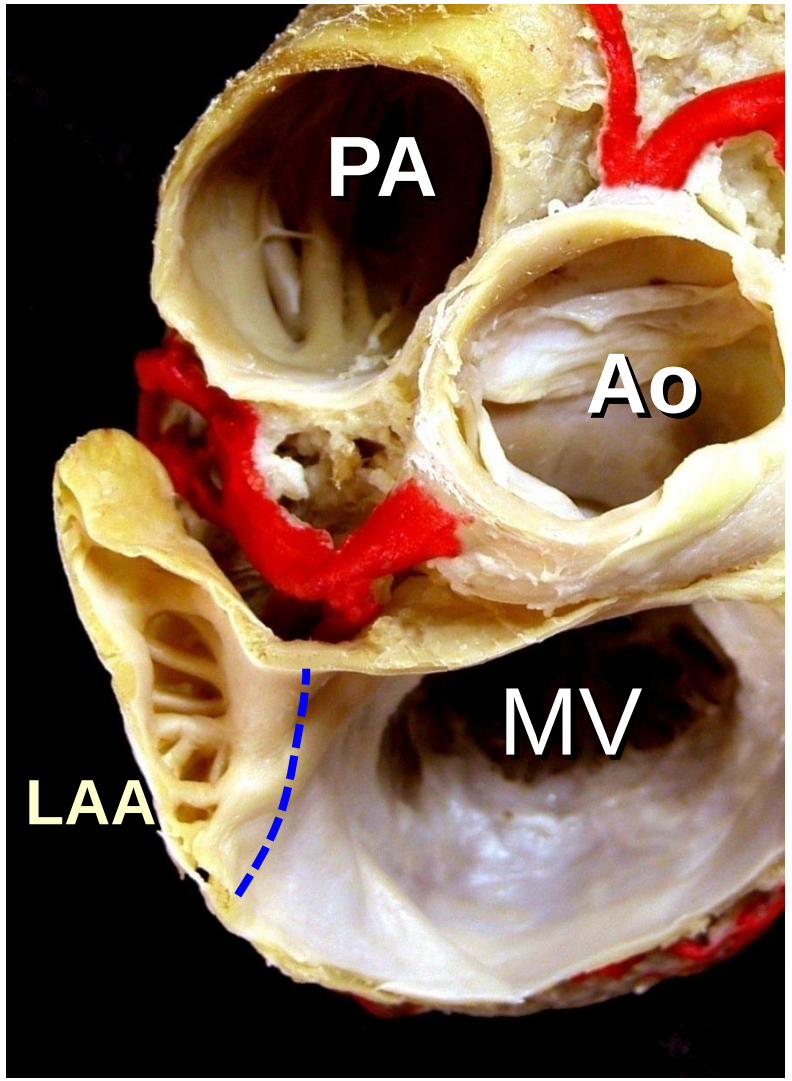
Lateral ridge orientation and width: poor definition of the orifice limits in ellipsoid LAA

Thrombus: contraindication for ablation

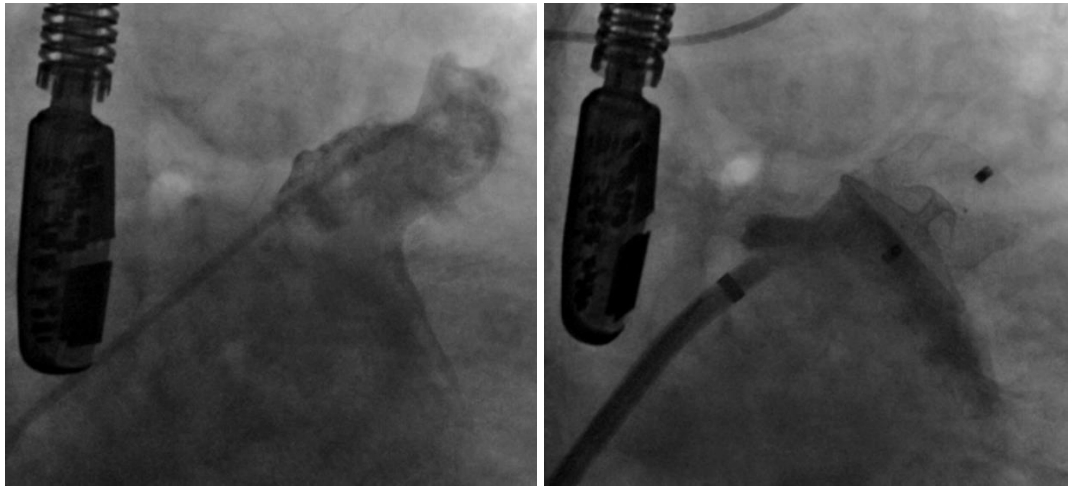
The LAA & CX artery

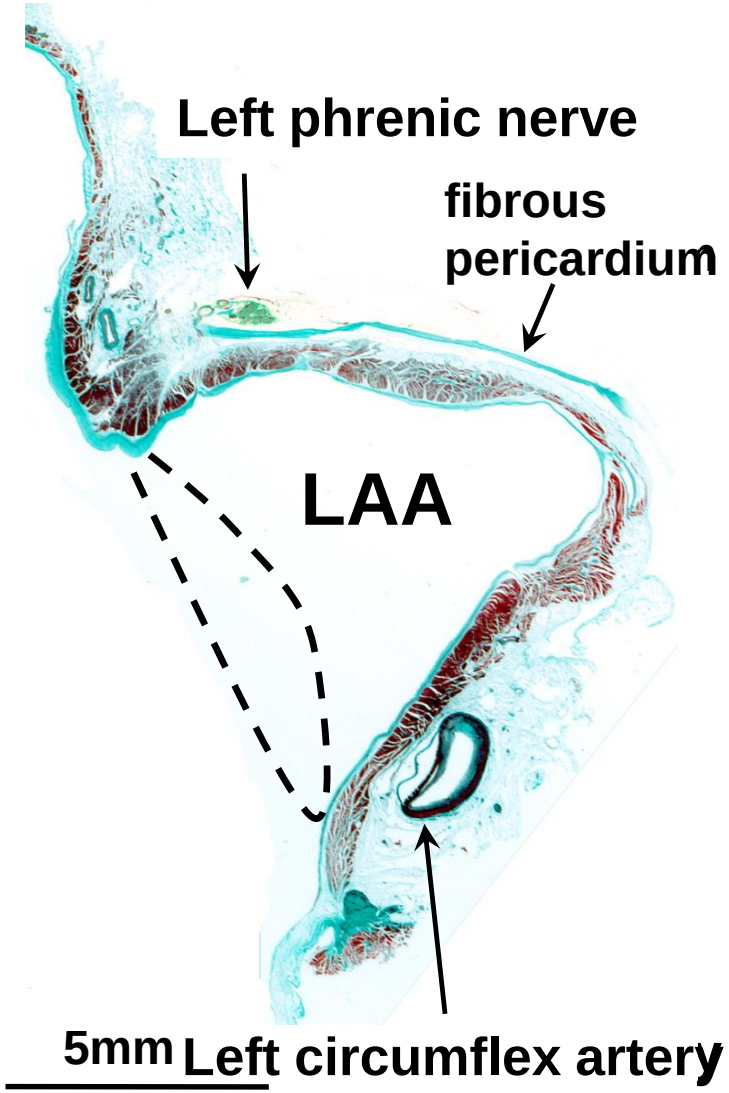






The LAA & CX artery



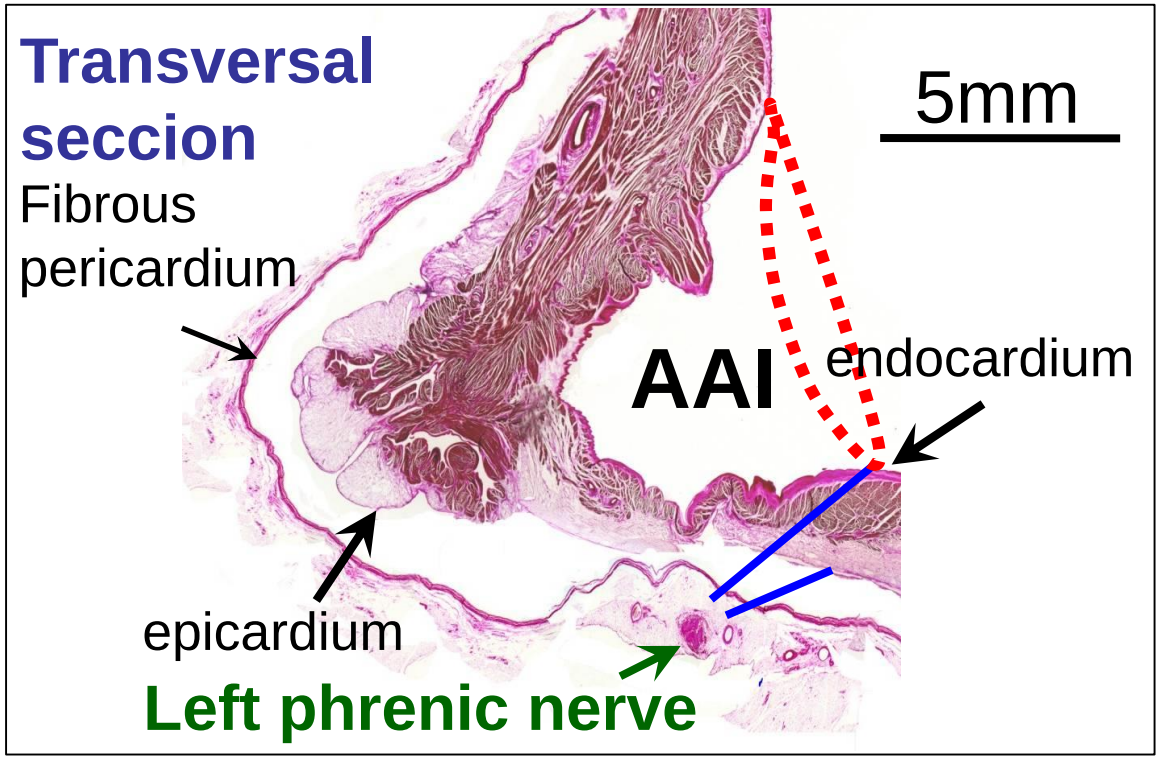


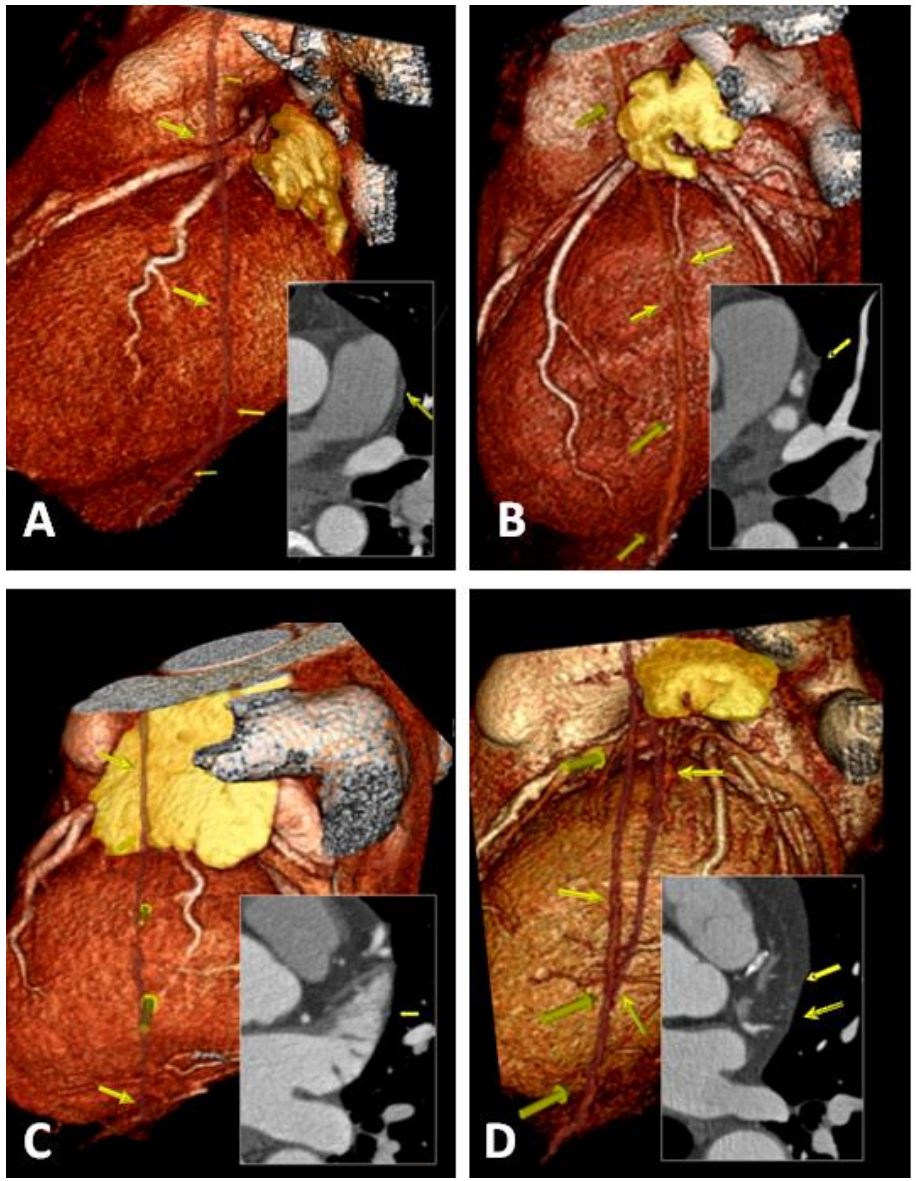
Mean distance Cx & LAA

2,5±1mm

(range 0,5 - 3.8 mm)

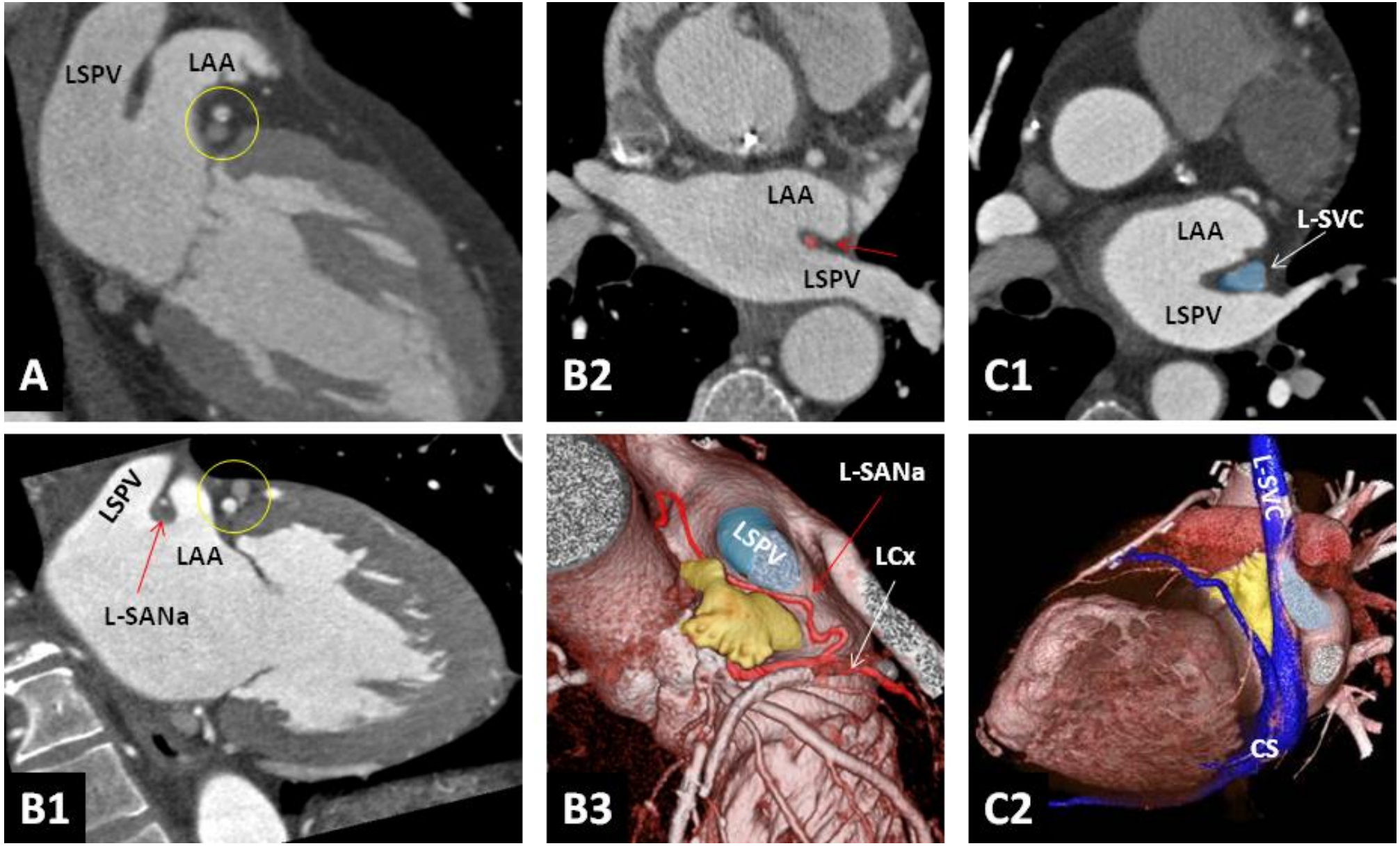
Distance LPN – LAA orifice





mm	LPN- LAA (Endocardium)	LPN-LAA (Epicardium)
Mean±SD	8.3±3.5	4.5±1.5
Range	2.5 to 14.5	1.5 to 6.8

Extra-appendicular determinants

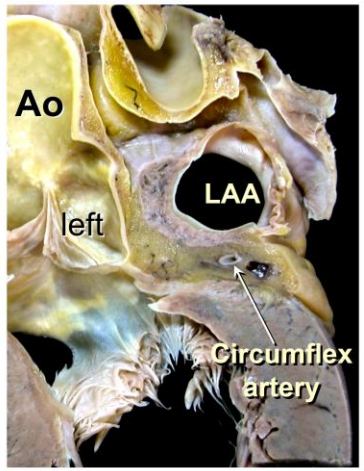


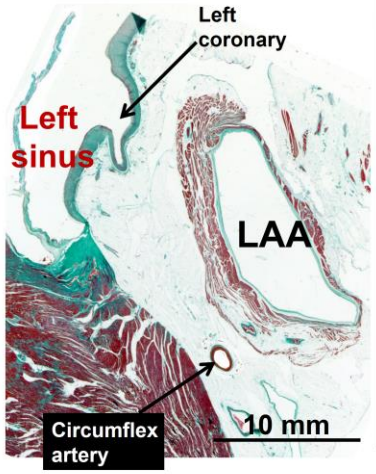
Extra-appendicular determinants

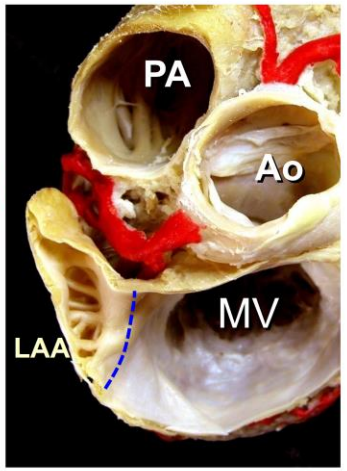
Neighboring structures

- **Left circumflex artery:** risk for artery compression between the anchoring lobe and the disc for the ACP
- **Left SAN artery**
- **Great cardiac vein and obtuse marginal vein**
- **Persistent left superior vena cava**
- **Post CABG venous grafts**
- **Pericardial adhesions:** of especial concern for the LARIAT
- **Left phrenic nerve:** of especial concern for the LARIAT

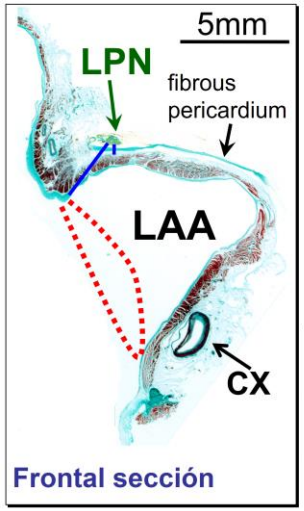
The LAA & CX artery

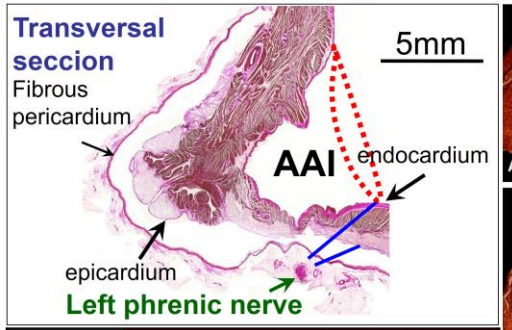






Distance LPN – LAA orifice





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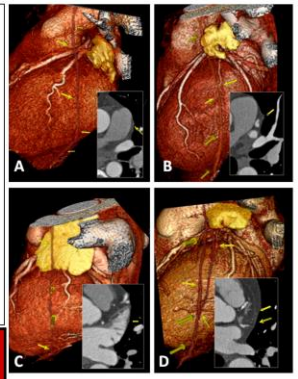

quirónsalud