

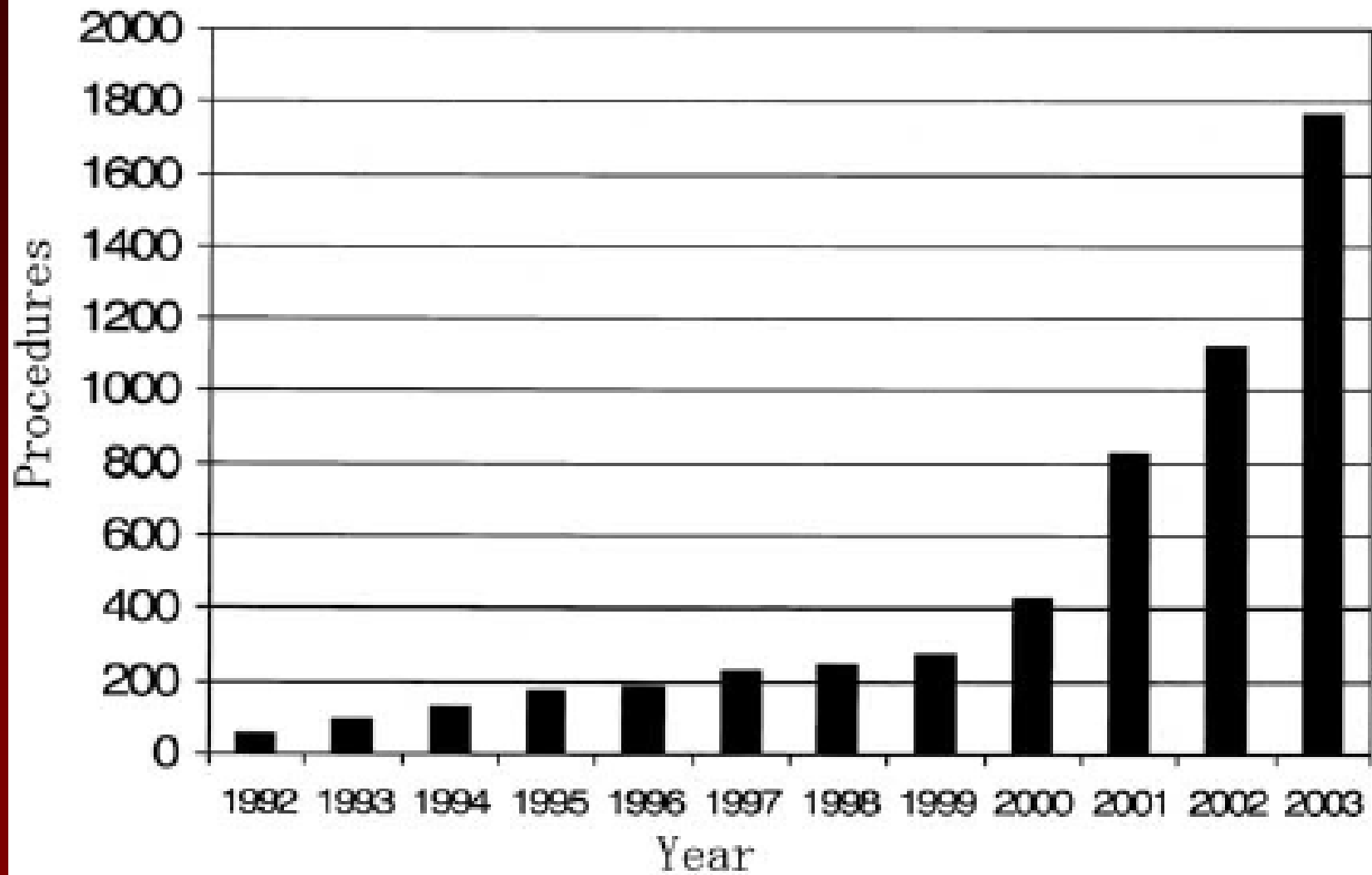
Puncturing The Septum: Resurgent Technique with Inherent Risk

Zoltan G. Turi, MD



Zoltan G. Turi, MD
Professor of Medicine
Robert Wood Johnson Medical School

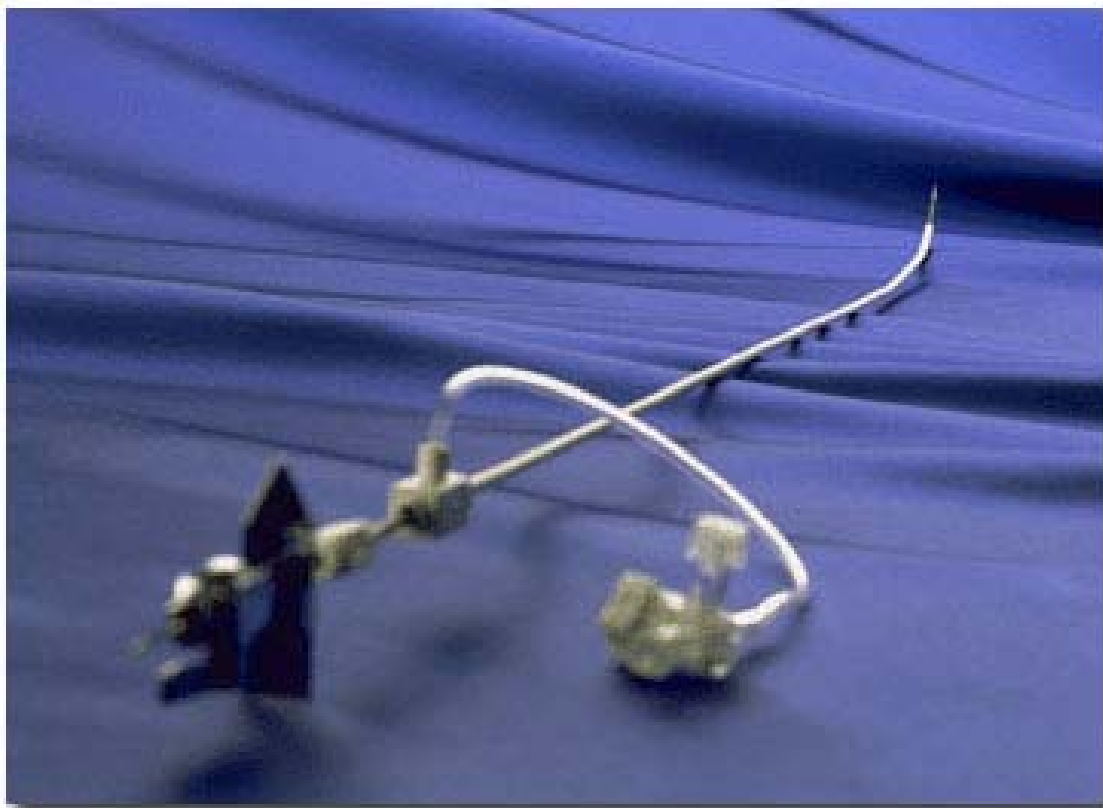
Scientific Advisory Board - Atritech



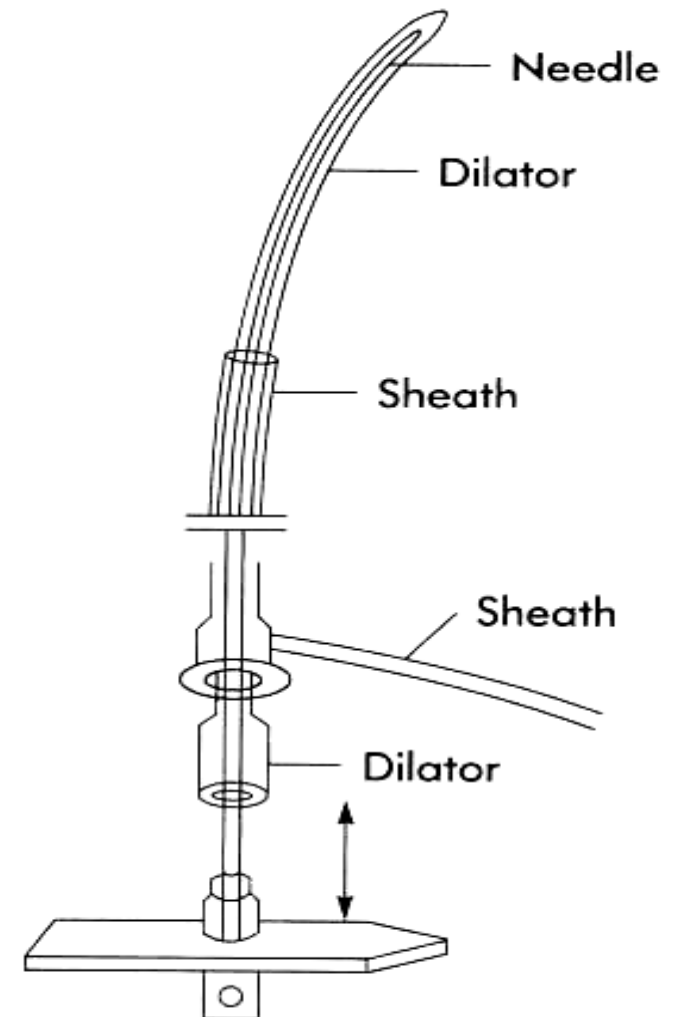
DePonti JACC 2006

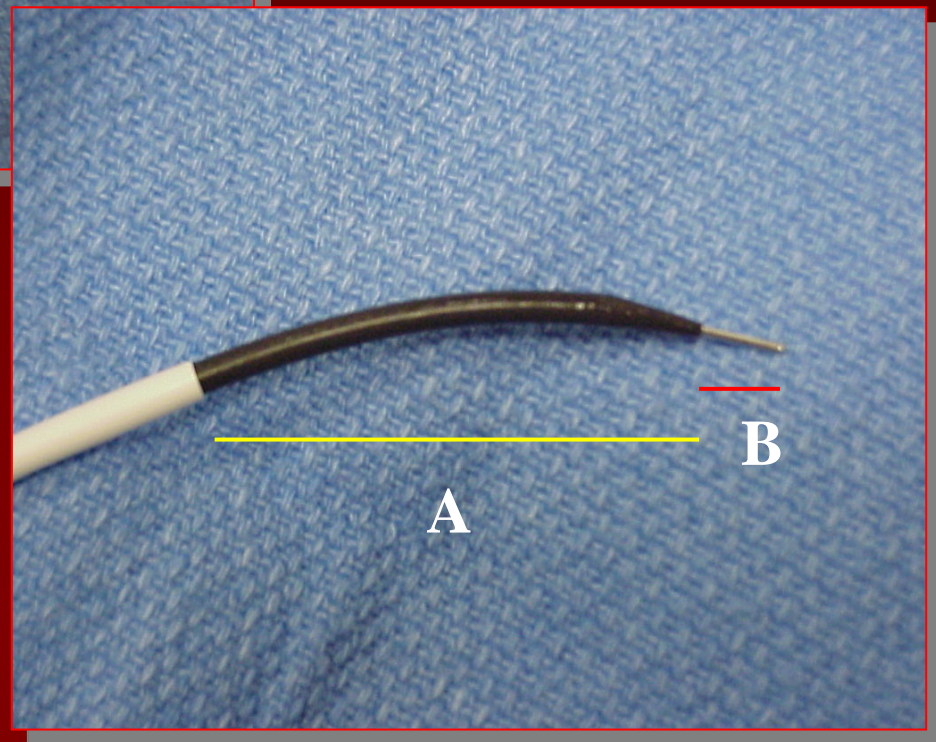
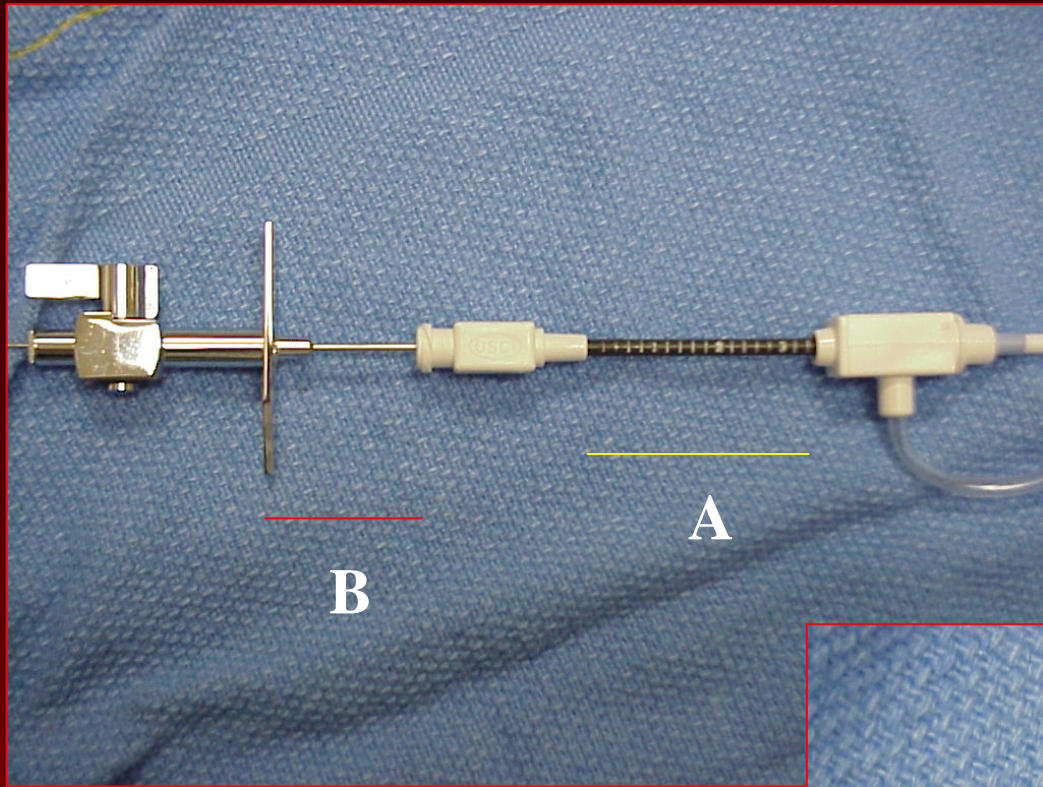
Left Atrial Access

- Ablation of left sided pathways
- Mitral valvuloplasty
- Percutaneous cardiac assist
- Left atrial appendage closure
- Percutaneous aortic valvuloplasty
- Percutaneous aortic valve replacement
- Percutaneous mitral valve repair
- True left atrial pressure
- Left ventricular pressure required; AoV not crossable retrograde



1958 Cope
1958 Brockenbrough, Ross, Braunwald
1979 Mullins

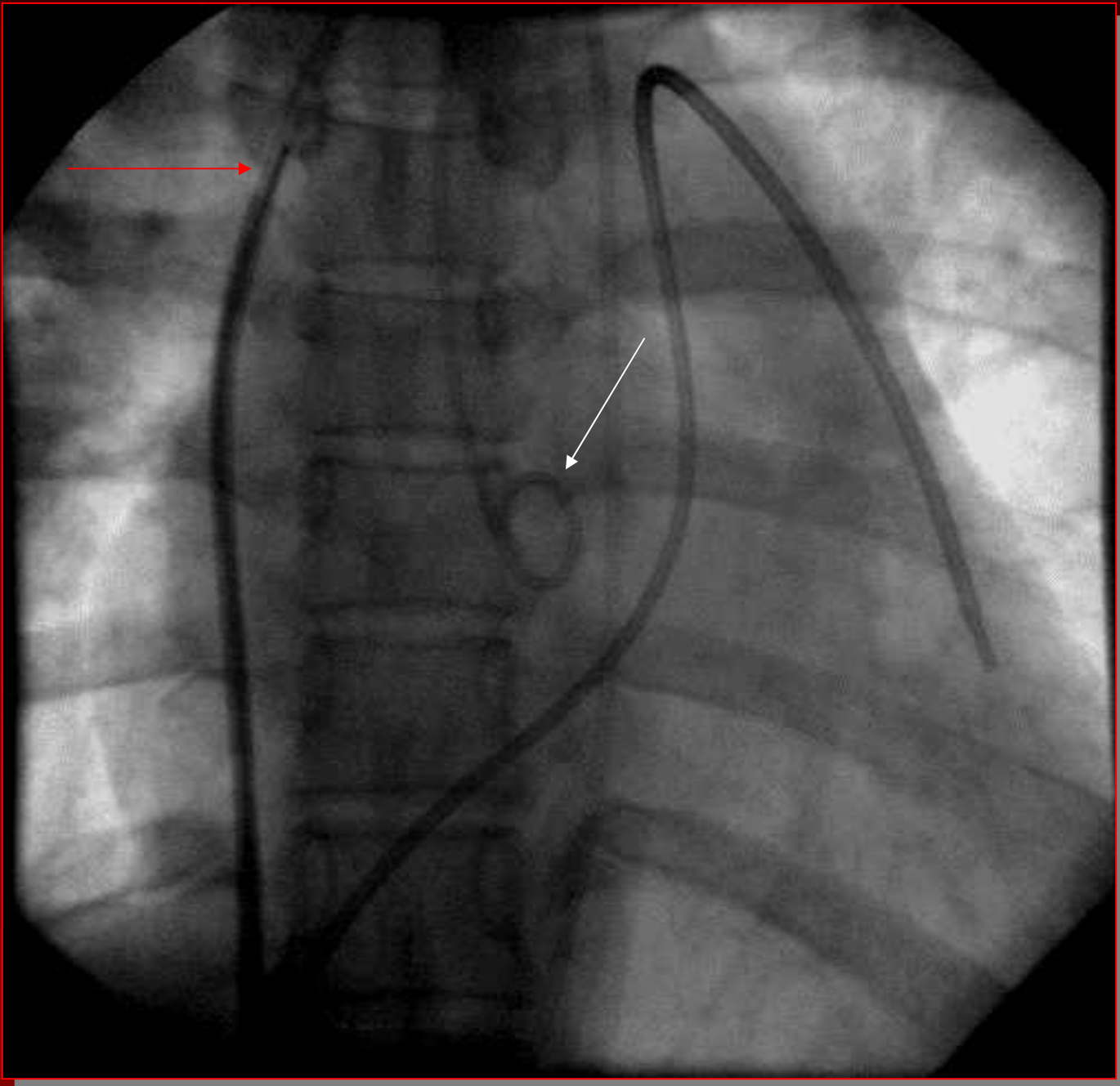




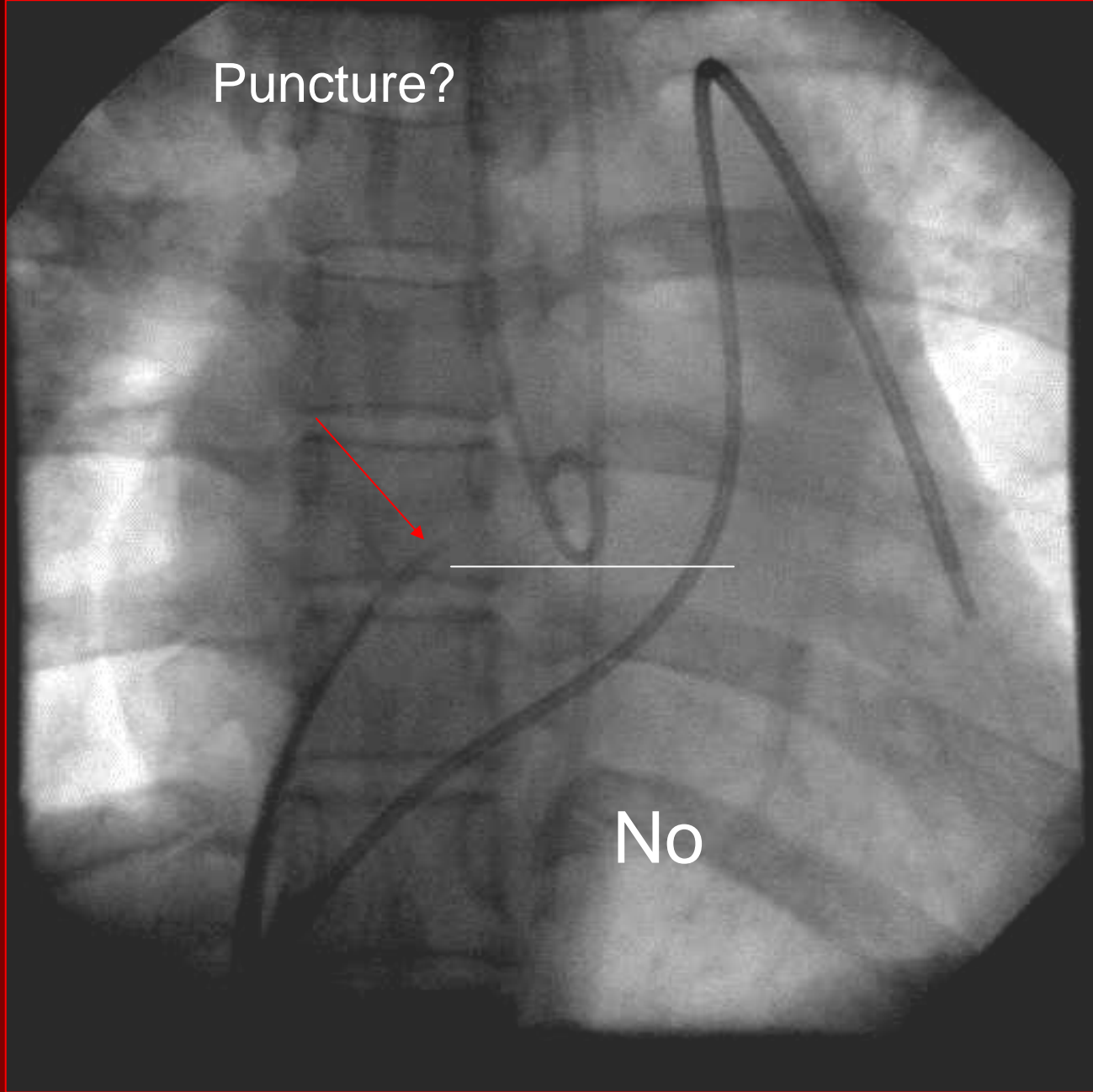
Advancing to the SVC

Lossy compression - not intended for diagnosis

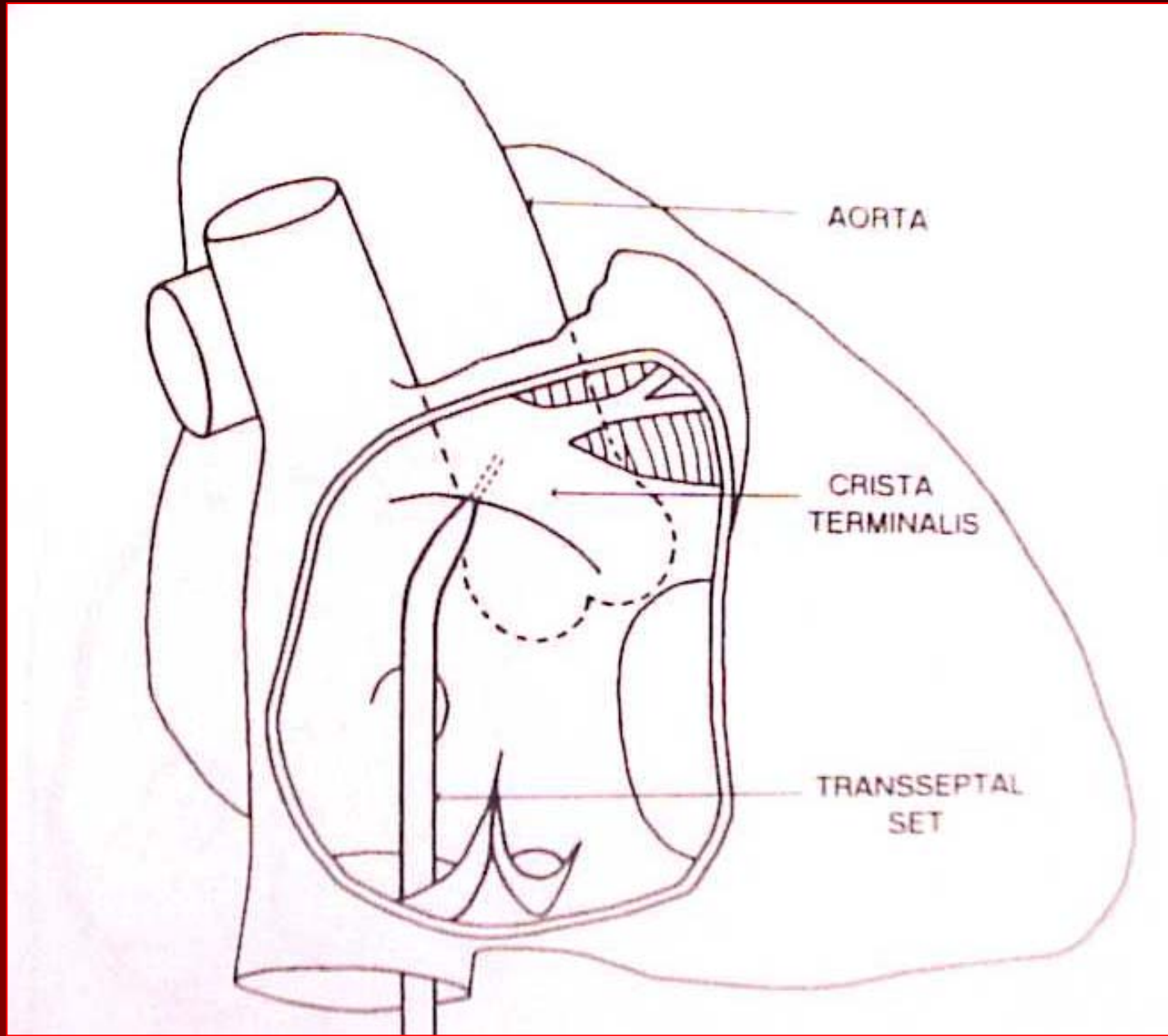


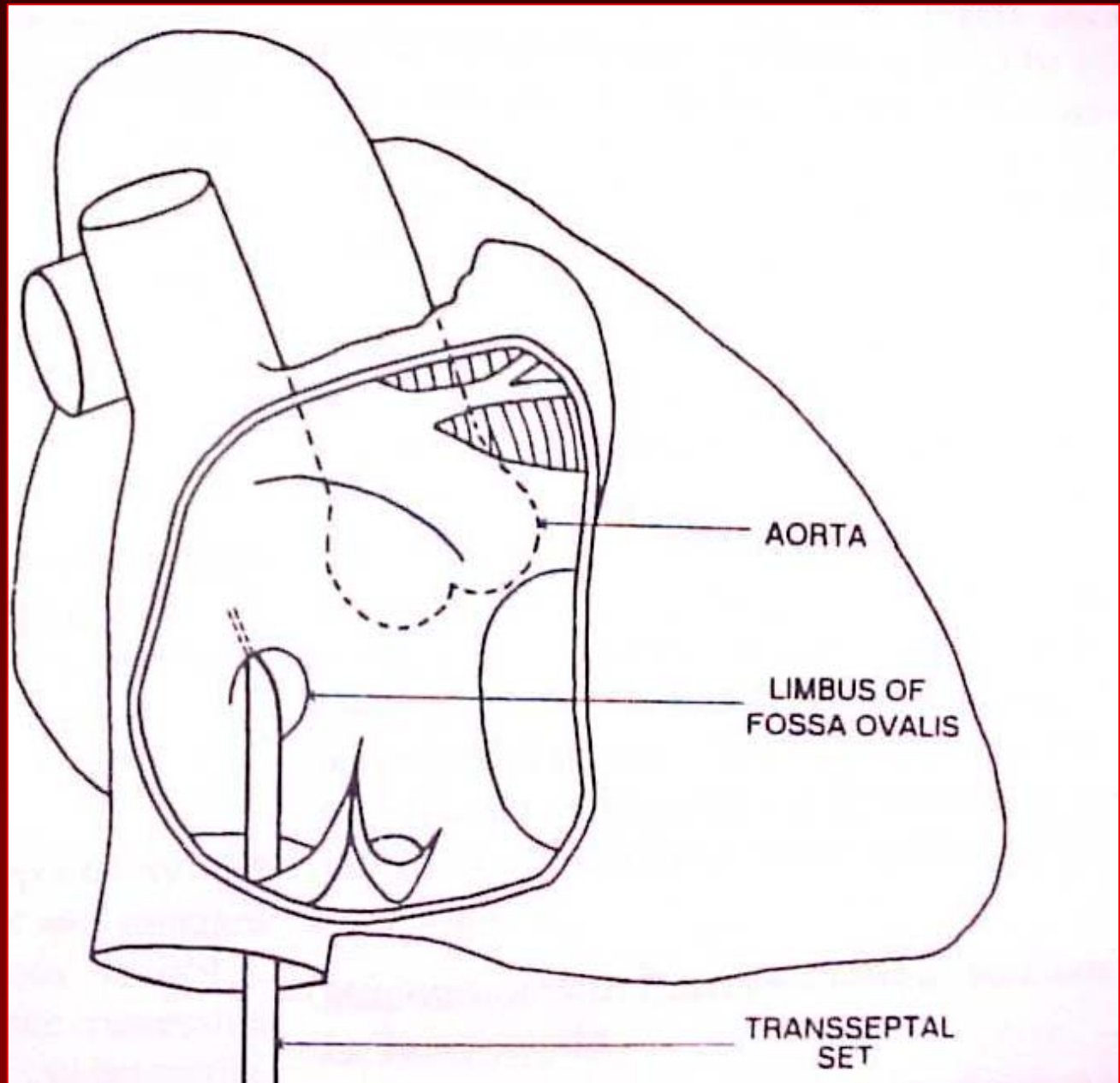


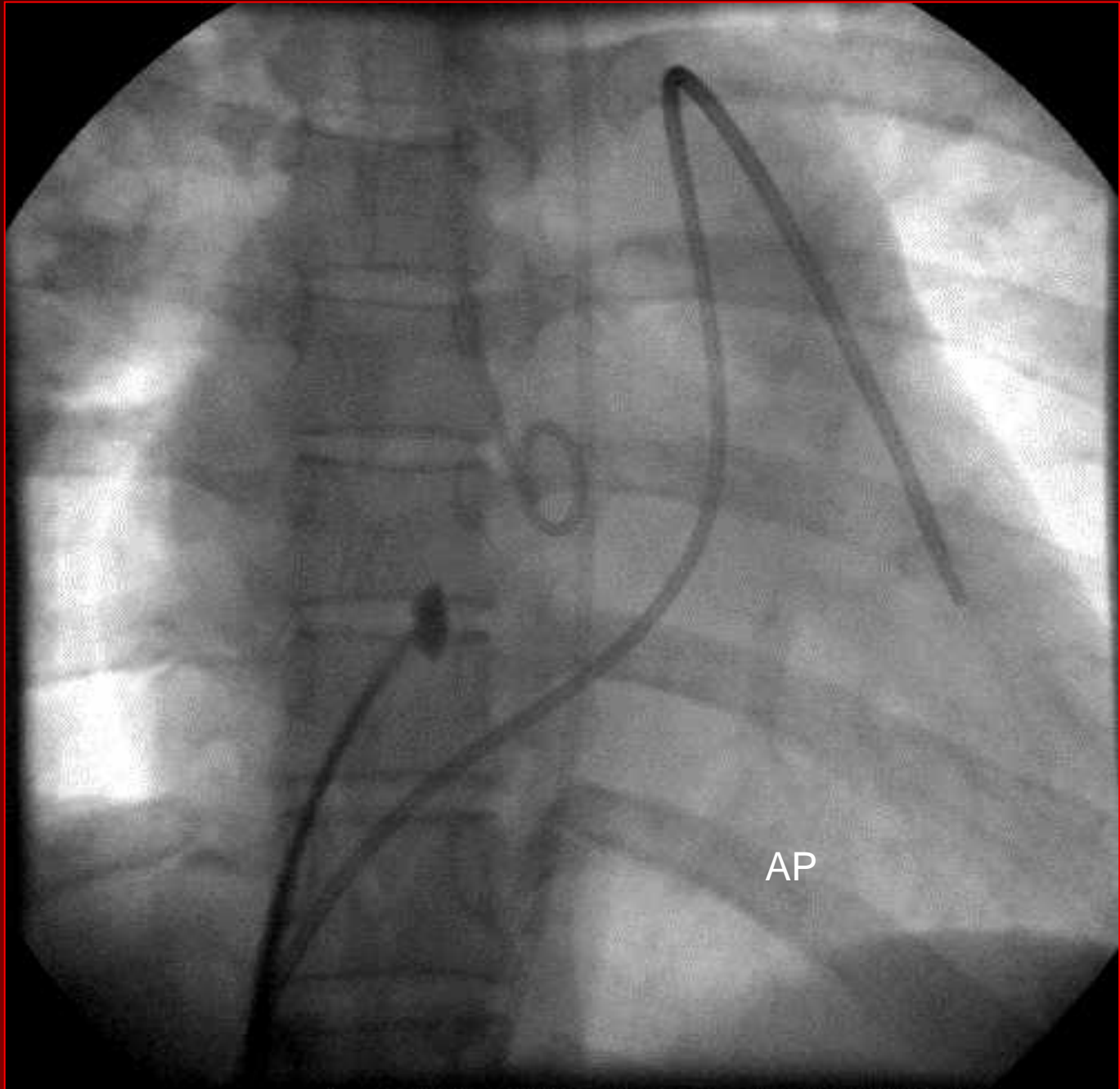
Puncture?



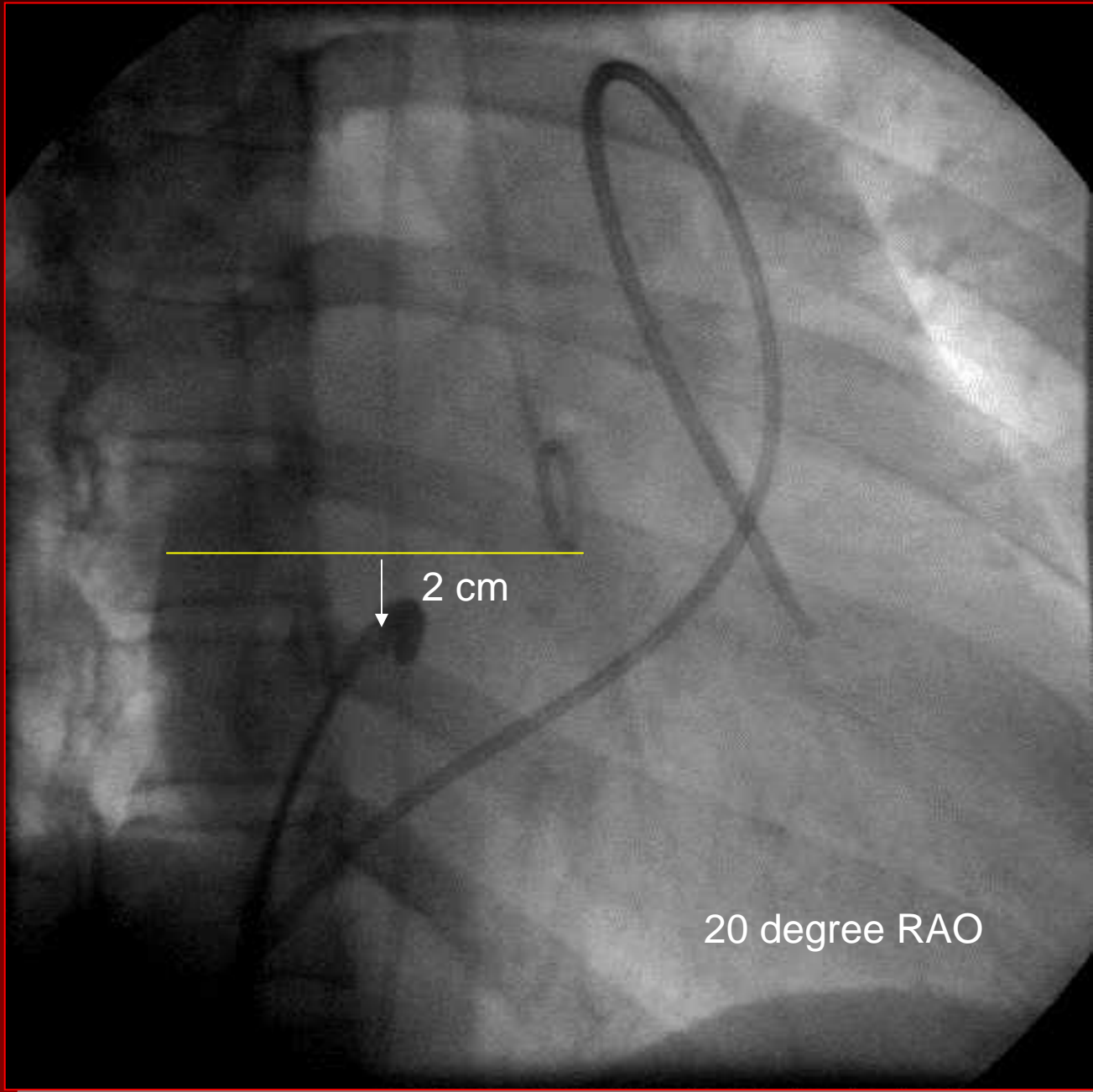
No



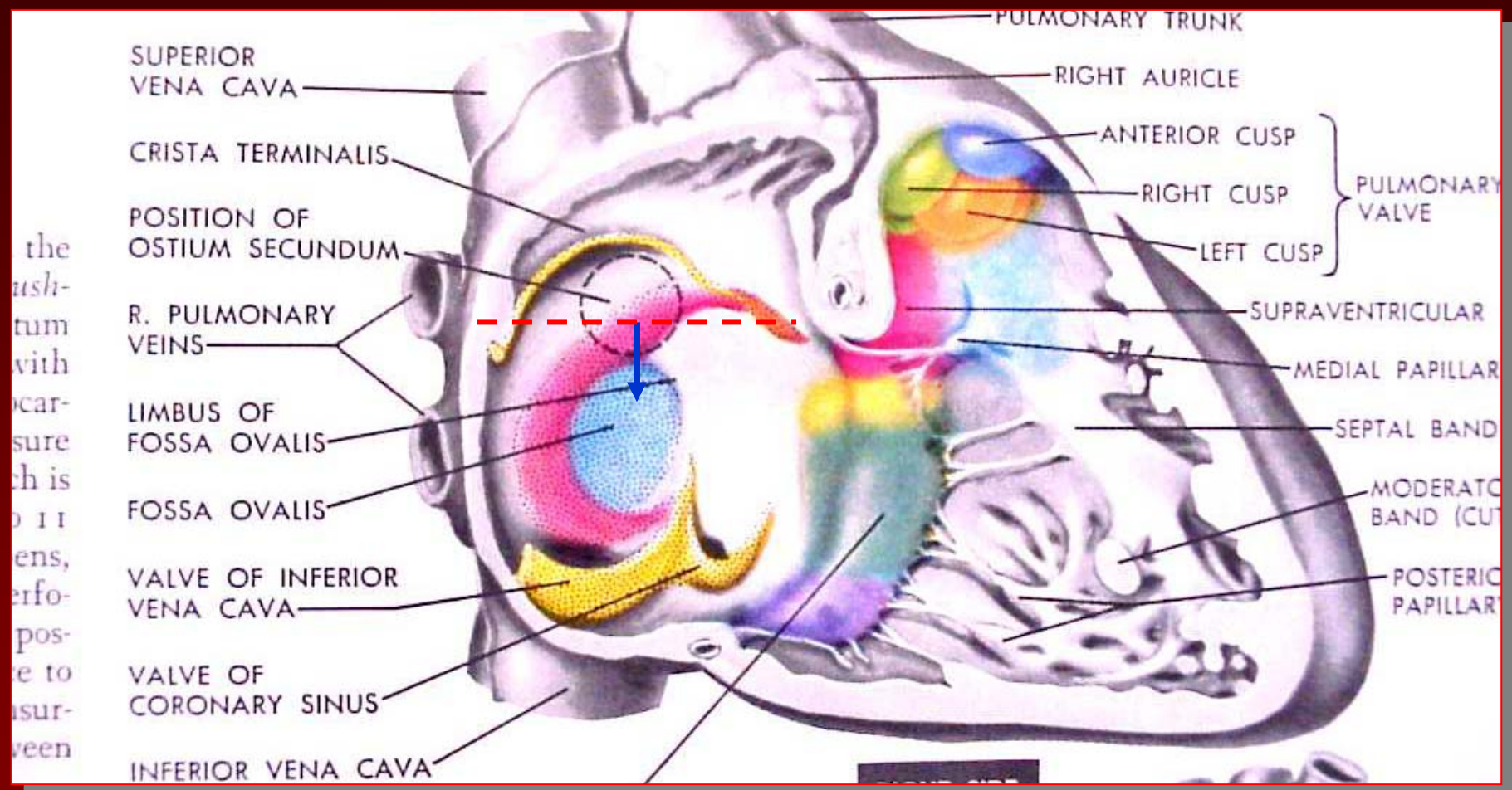




AP

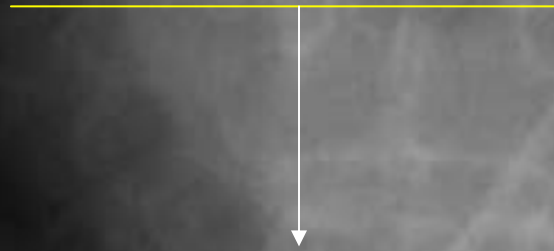


20 degree RAO



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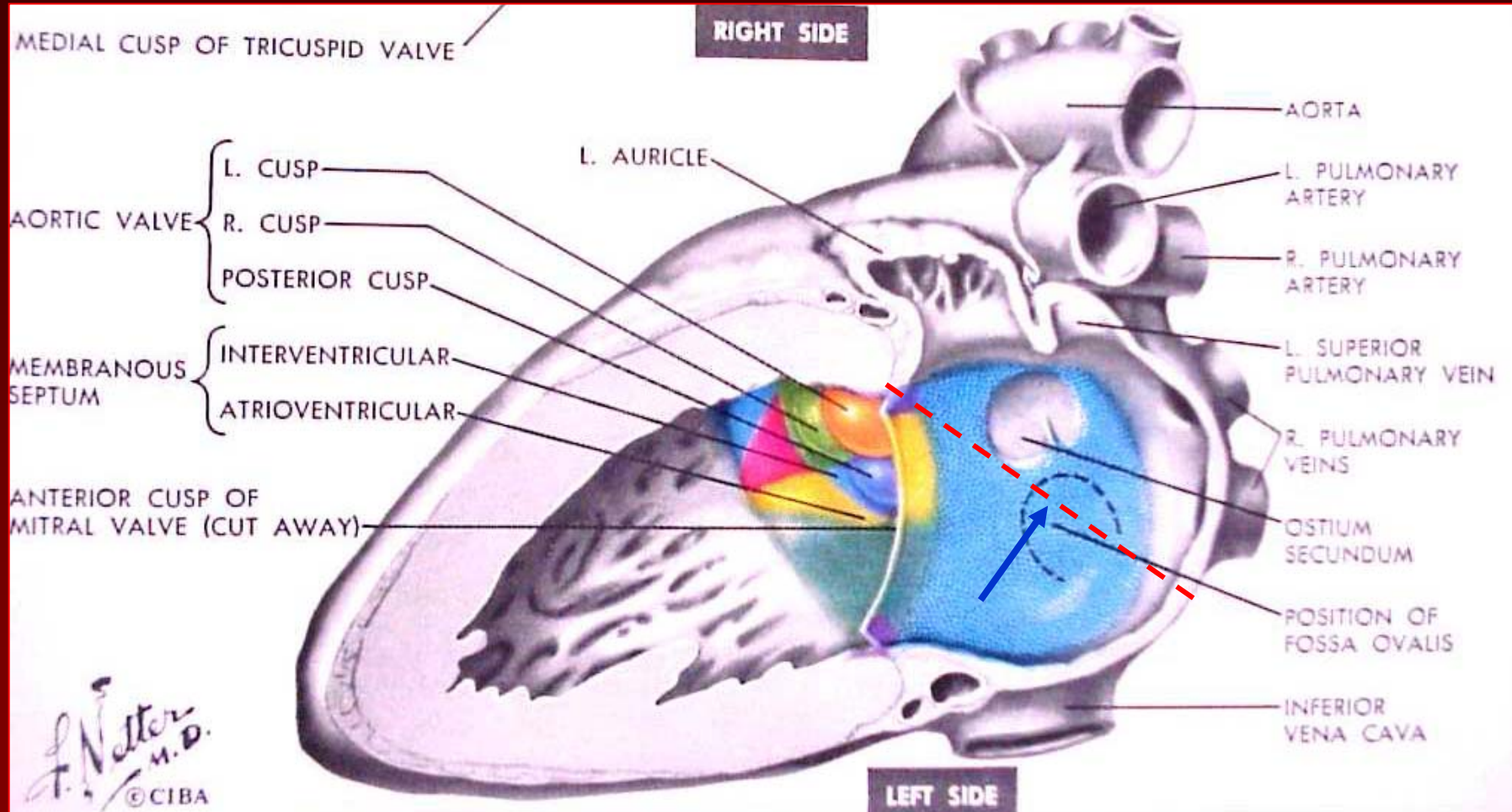
Puncture?

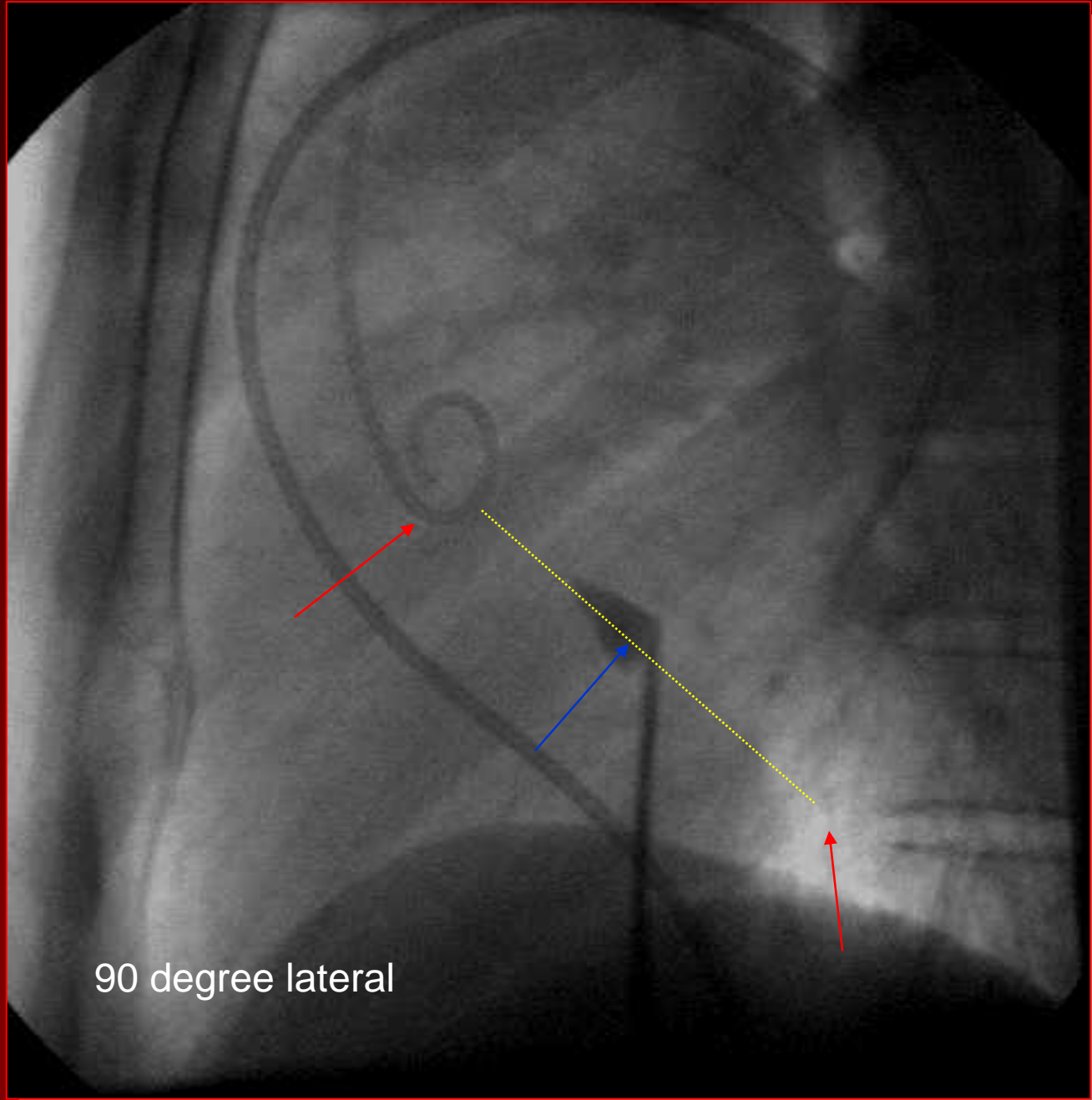


No



90° lateral

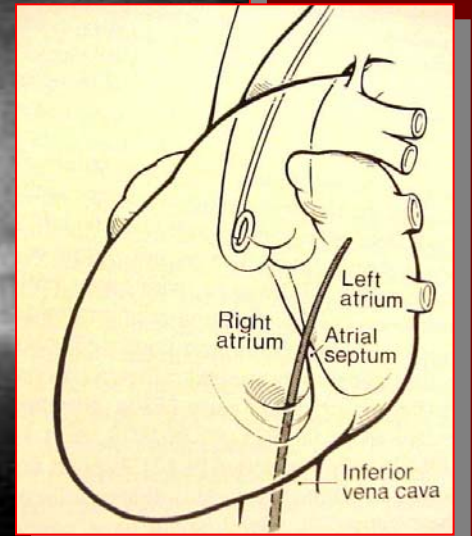
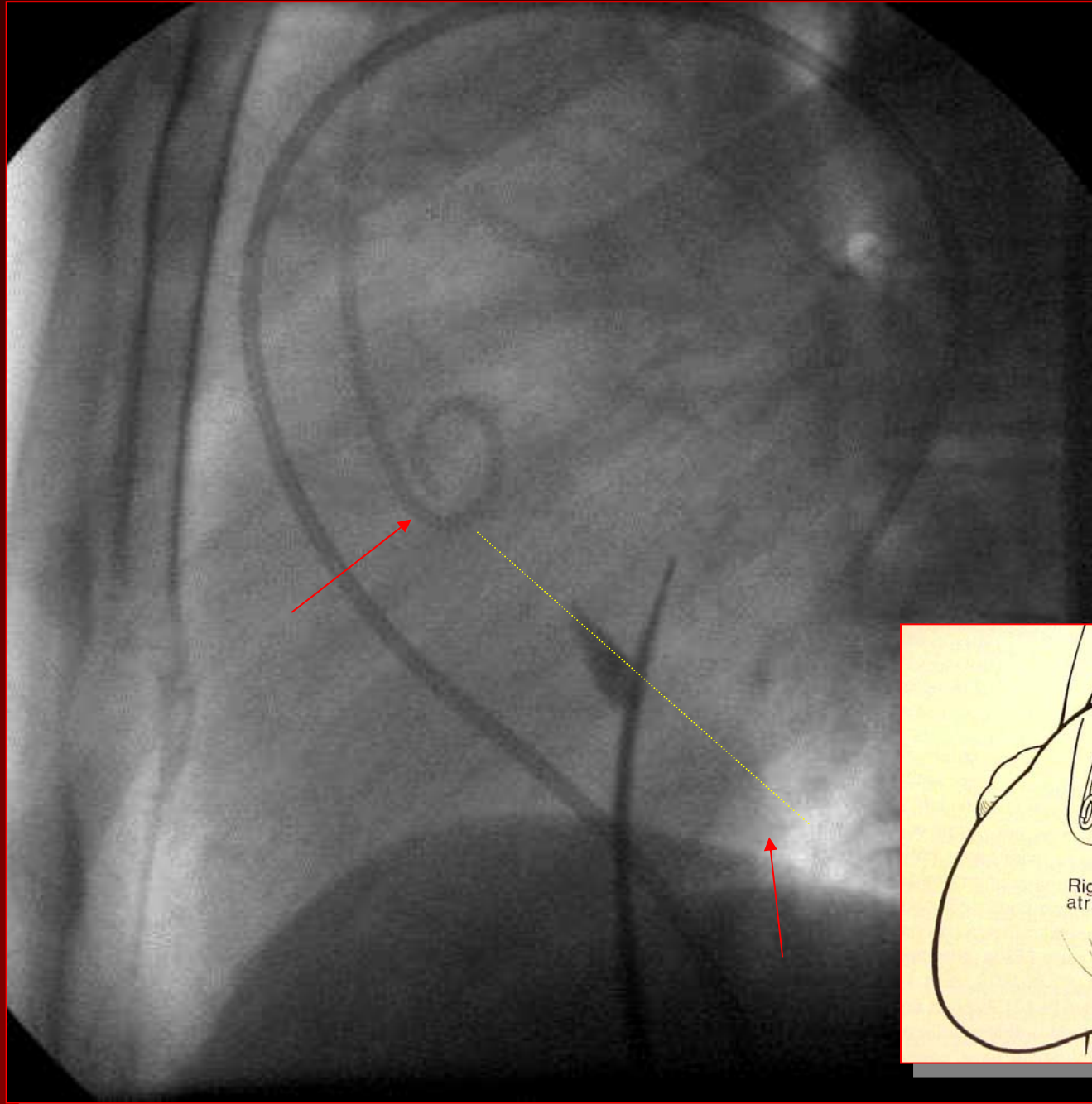




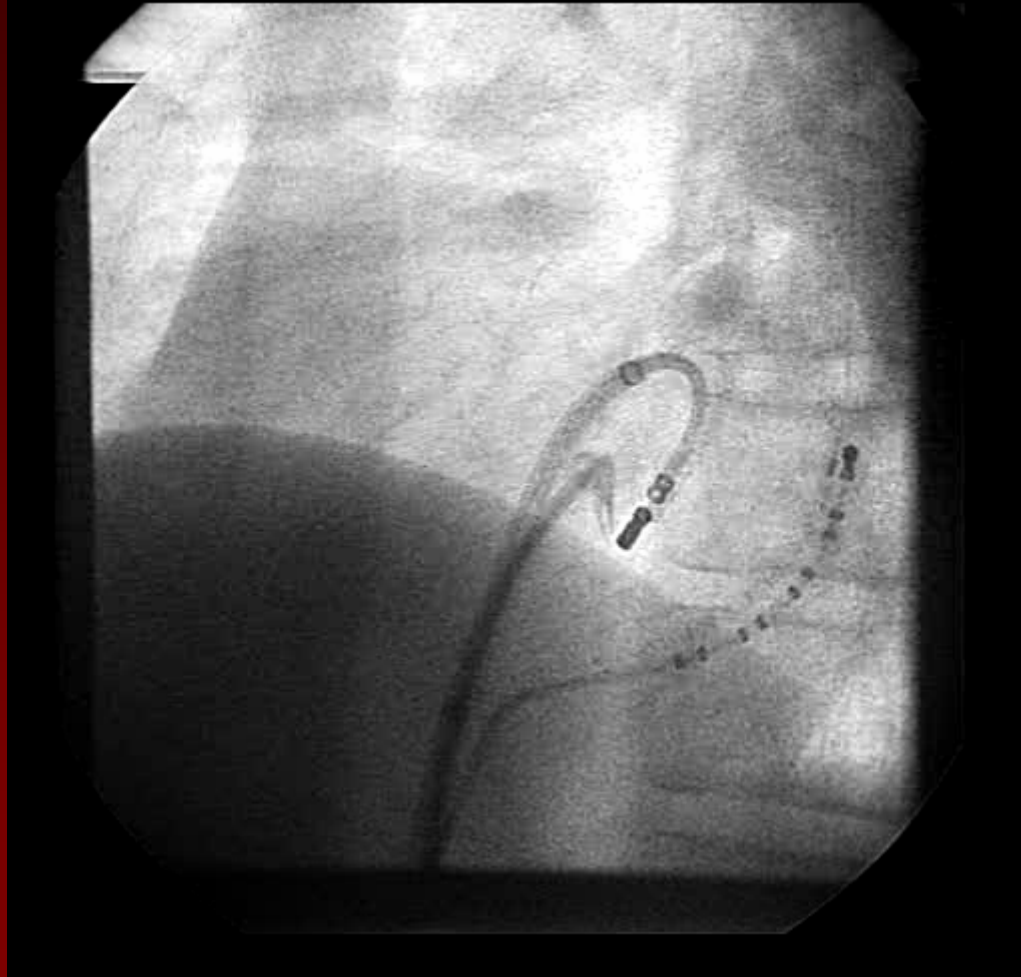
90 degree lateral

Step by step

- Holding sheath carefully immobile in one hand plunge needle with other hand



Lossy compression - not intended for diagnosis



STOP

- Check needle pressure
- Check oxygen saturation
- Inject dye

[40]
[200]

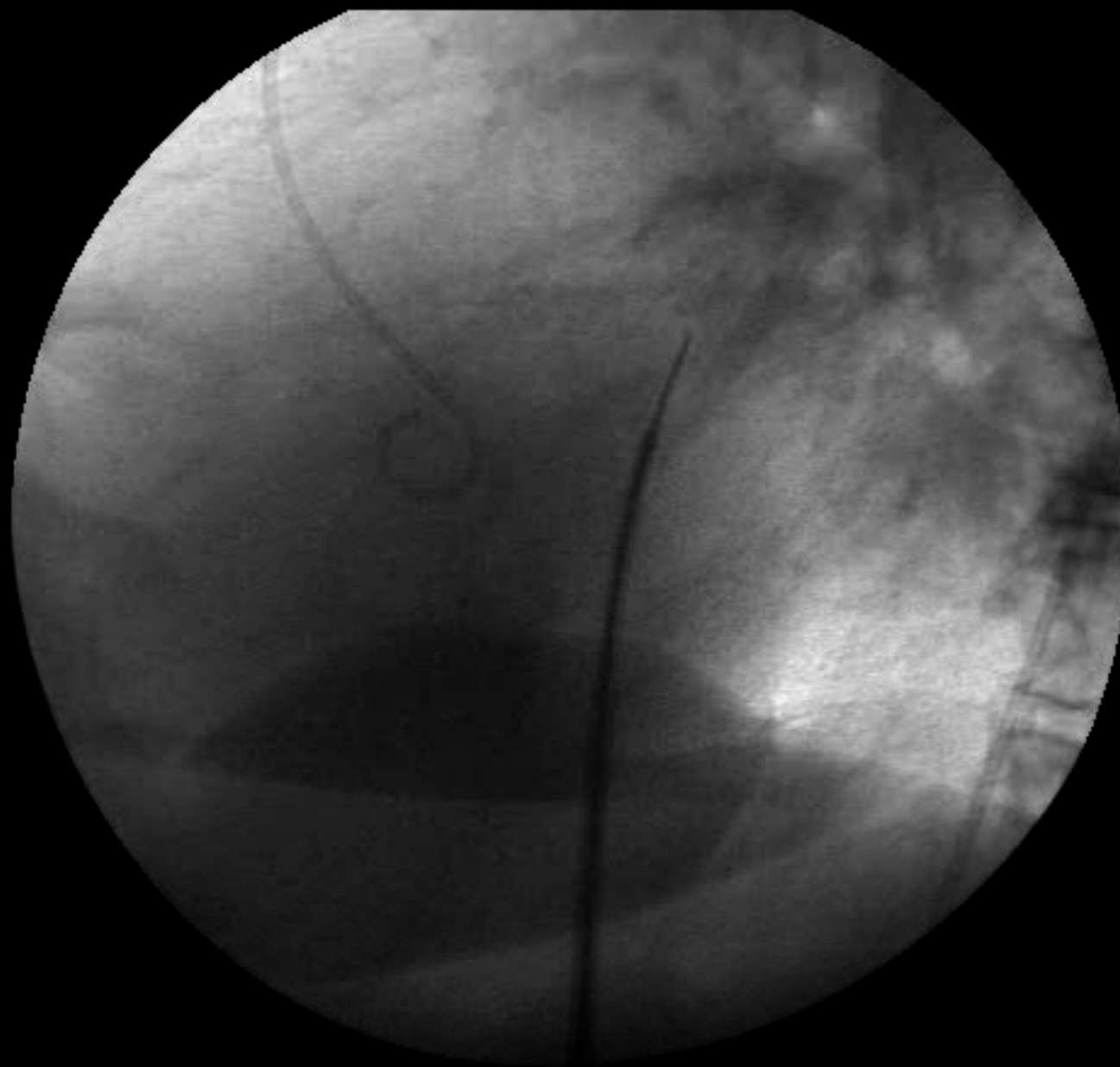
LA [40]
AO [200]

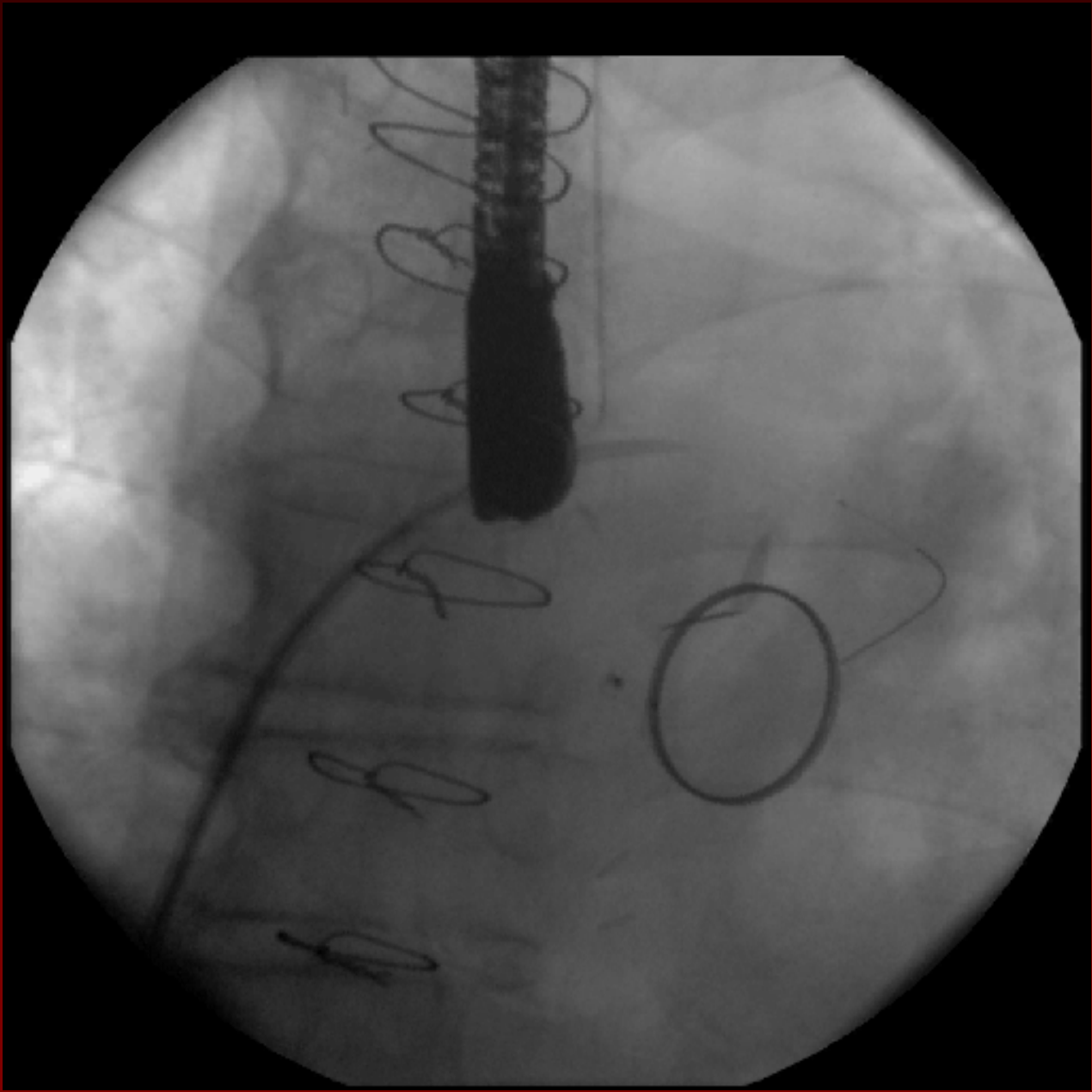
LALA [40]





Lossy compression - not intended for diagnosis





Odd waveforms

- Damped
- Aortic pressure
- Near zero pressure
- LV pressure

Complications

- Tamponade 0.5 -4 %
- Embolic events: air/clot
 - Ischemia, MI, TIA/stroke
~ 1%
- Mortality 0.1 - 1%
- Arrhythmias
- Vagal stimulation
- Transient ST elevation

Factors Influencing Complication Rates

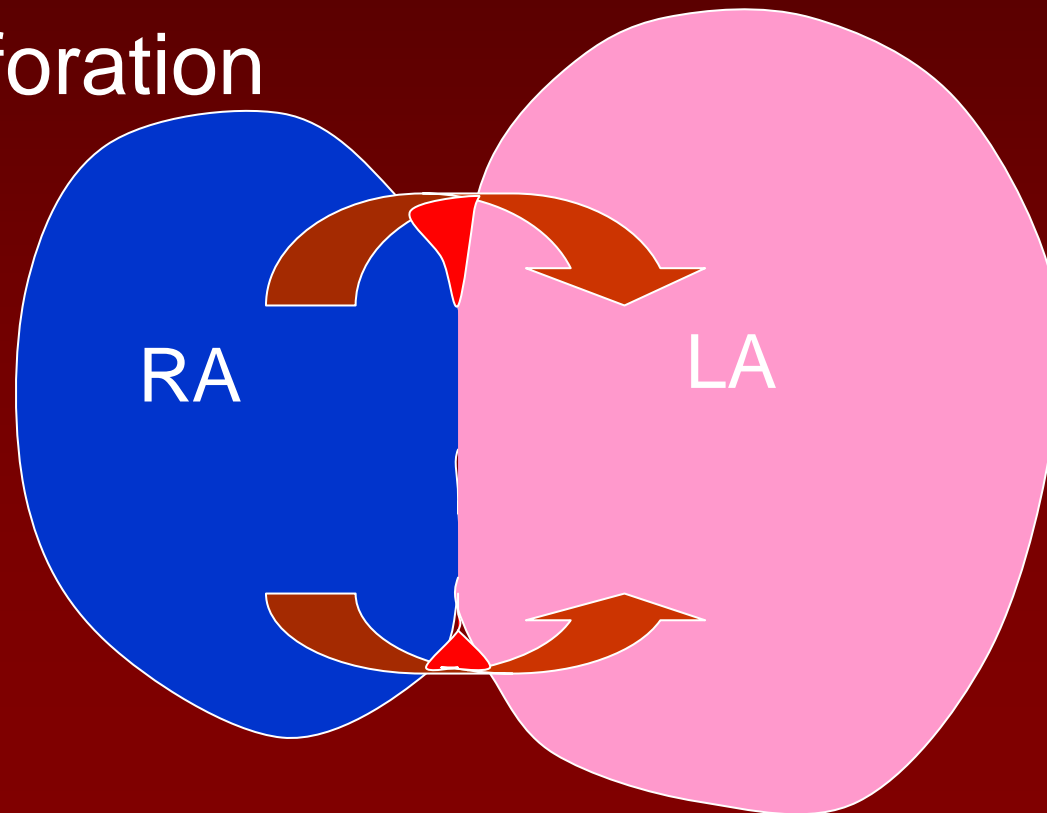
- Diagnostic versus interventional
 - Diagnostic – 1.3% (Roelke CCD 1994)
 - Interventions - 3.8% (Liu AHJ 2006) **heparin**
- Level of anticoagulation
 - Ablations, mitral valve interventions, LAA occlusion
- Sheath size
- Use of echo guidance
- Most important
 - **Operator learning curve**

Be on the Hemodynamic Alert

- Bradycardia
- Hypotension
- Call for echo but don't wait
 - Check fluoro for straightening and immobility of left heart border
 - Intervene immediately

Errant Punctures

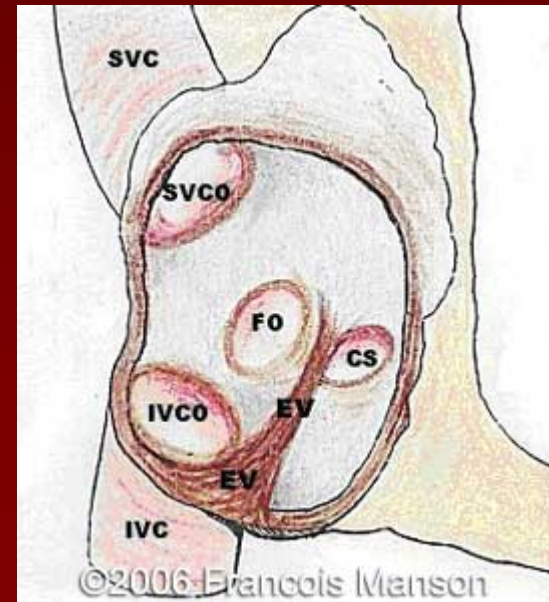
- Free wall – right and left atrium
- Pulmonary vein → hemothorax
- Aorta – sometimes benign
- Stitch perforation



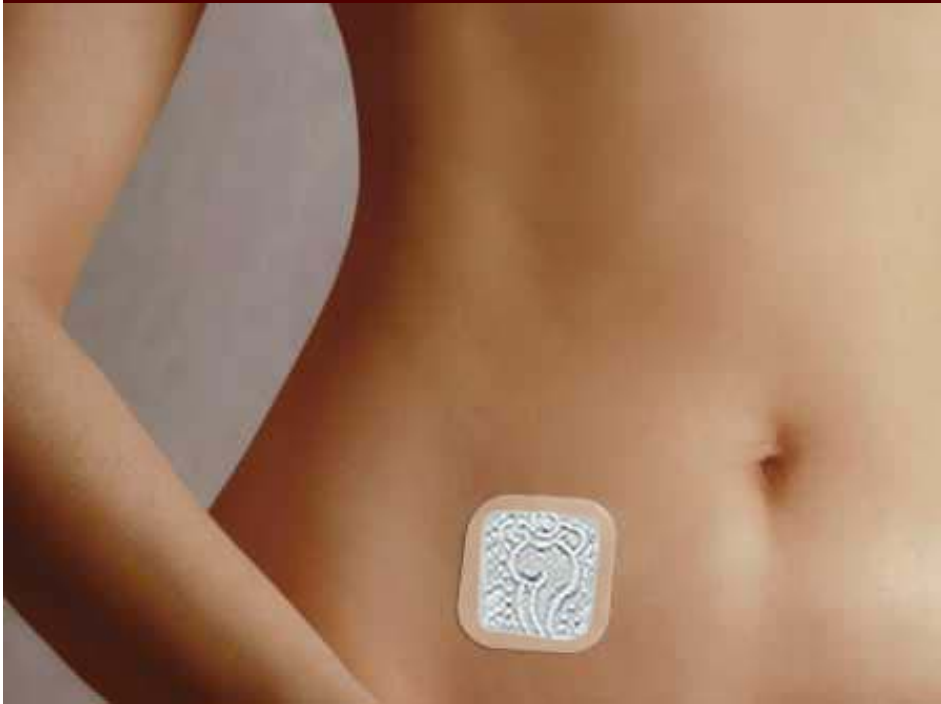
Predisposing Factors to Bad Sticks

- Severe kyphoscoliosis
- Giant left atrium
- Prominent Eustachian Valve
- Anatomic variations

Eustachian valve

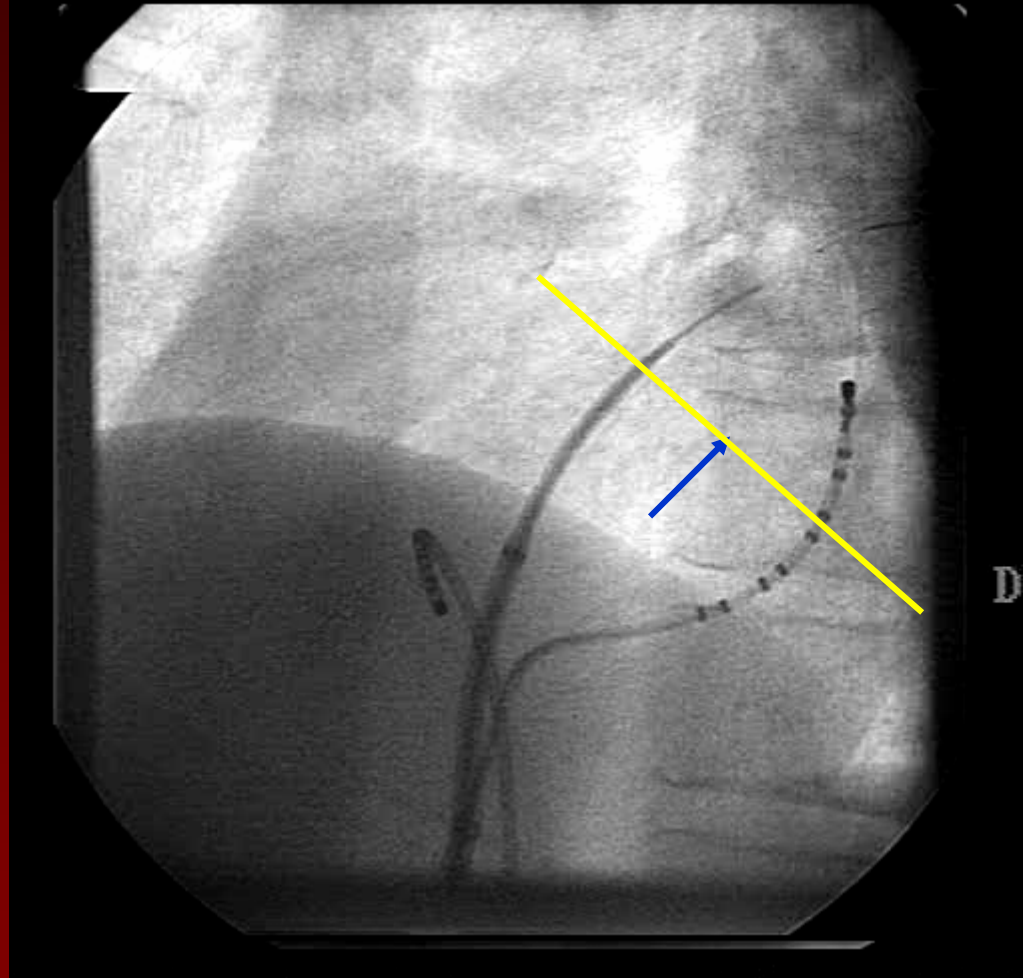


Not All Fossa Are The Same

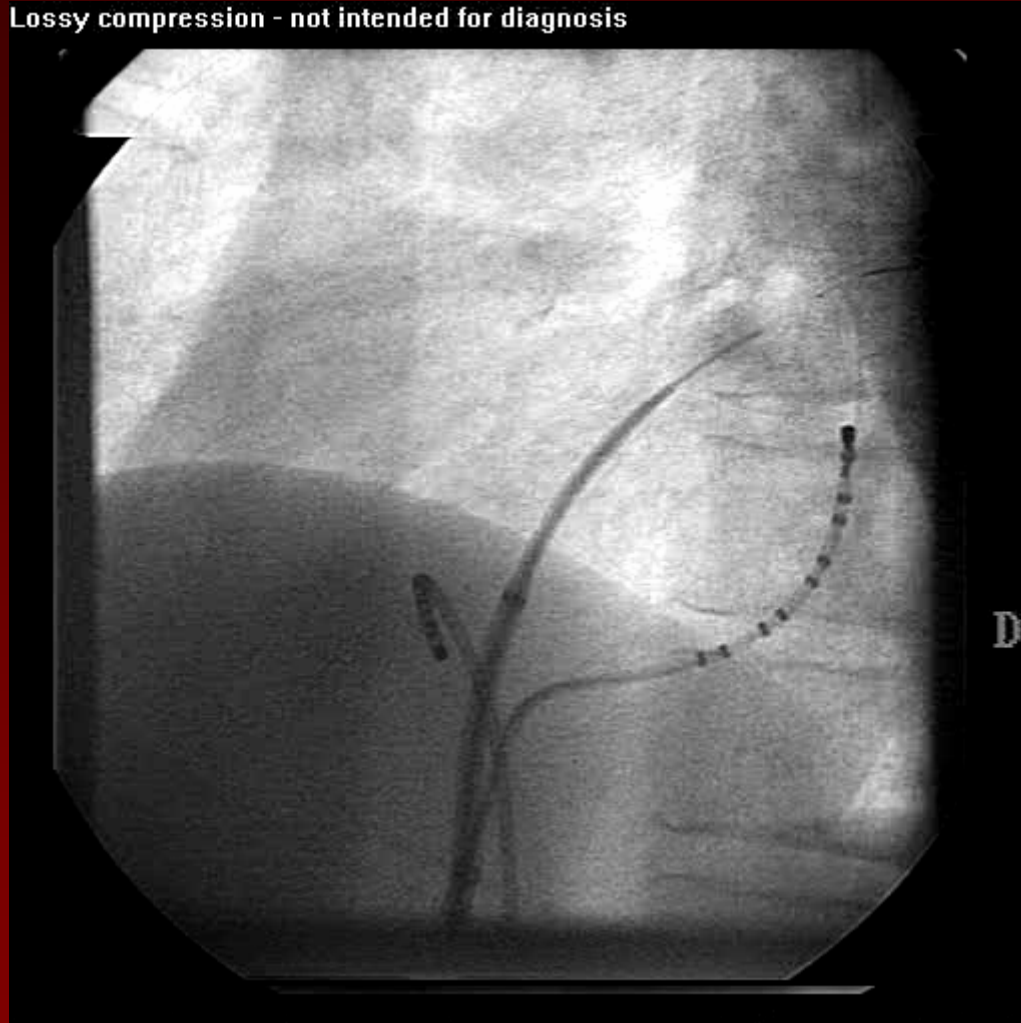


May not be where you expect it to be

Lossy compression - not intended for diagnosis



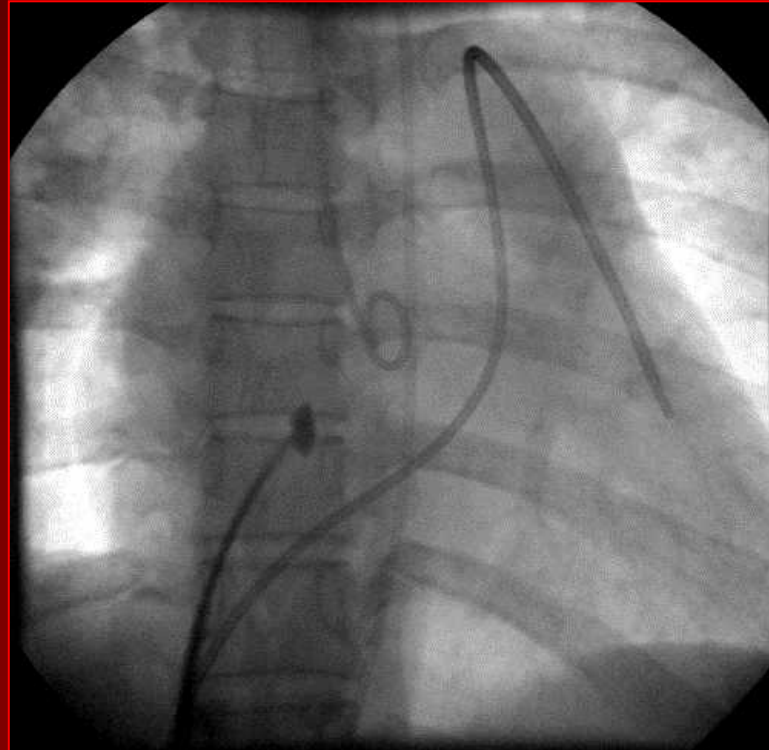
Lossy compression - not intended for diagnosis



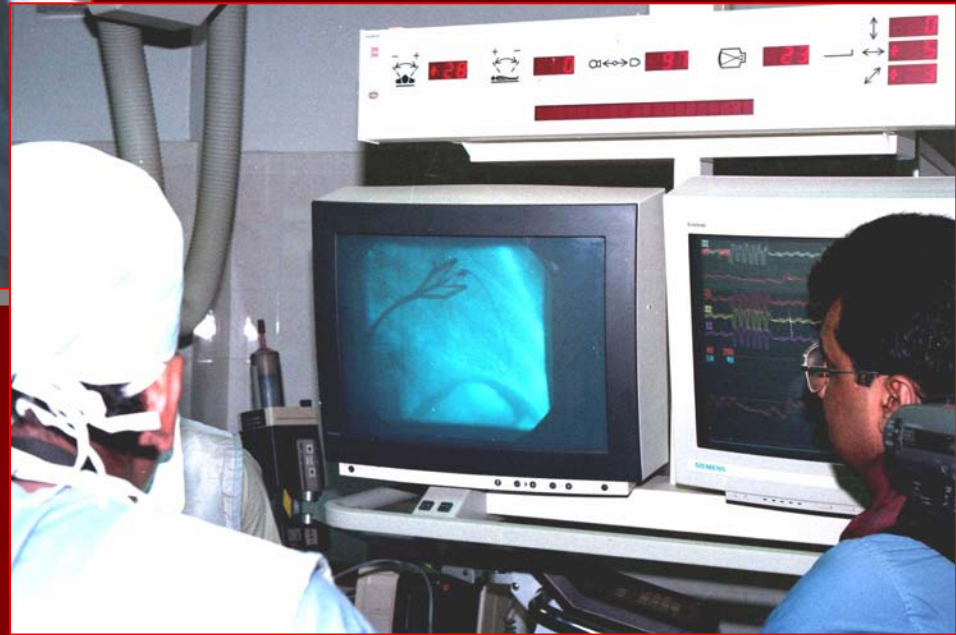
Cheng J Cardiovasc Electrophys 6 2007

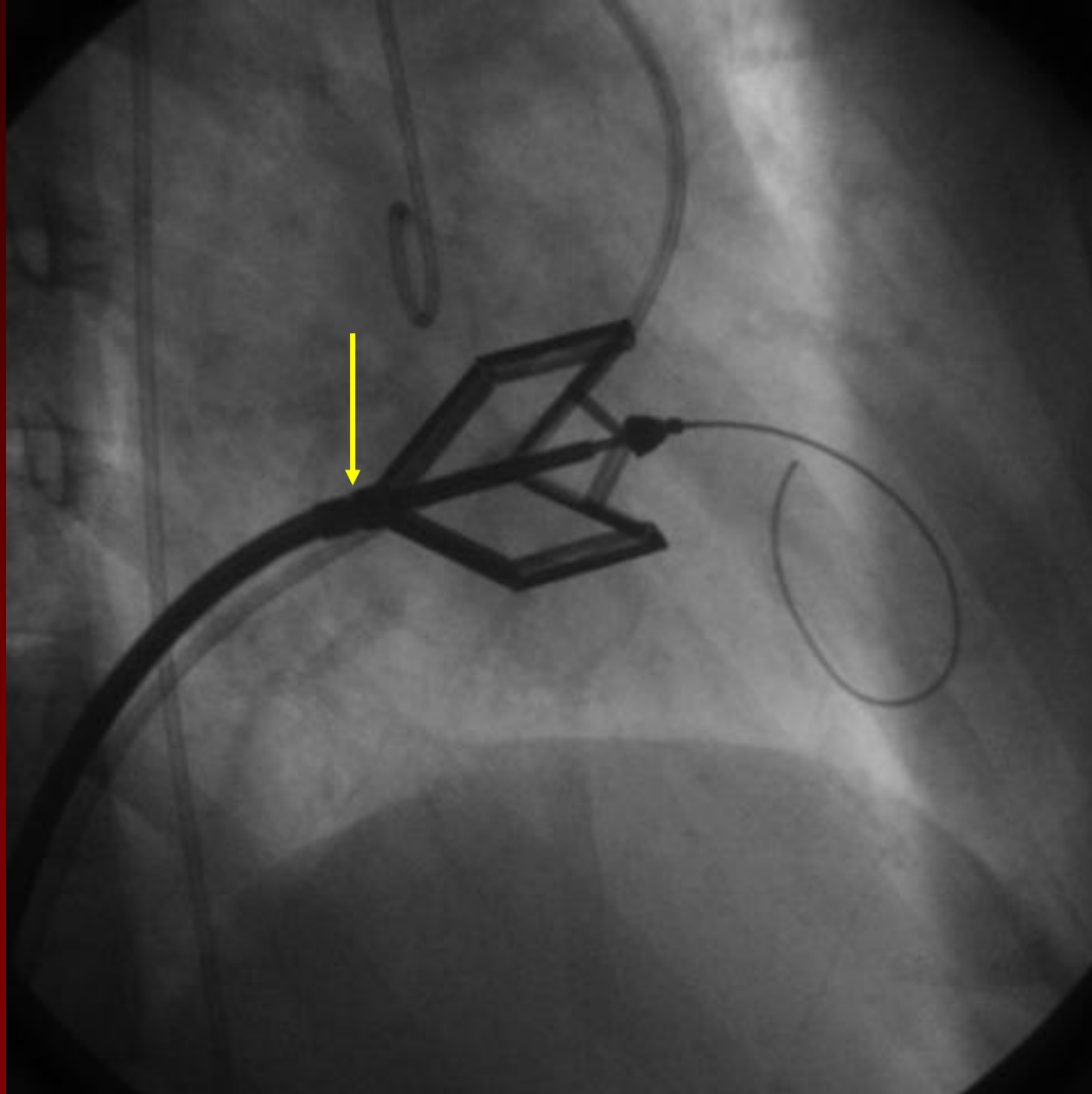
Low puncture

- Shortens distance to mitral valve
- Eliminates need to manipulate



Metal Commissurotomy

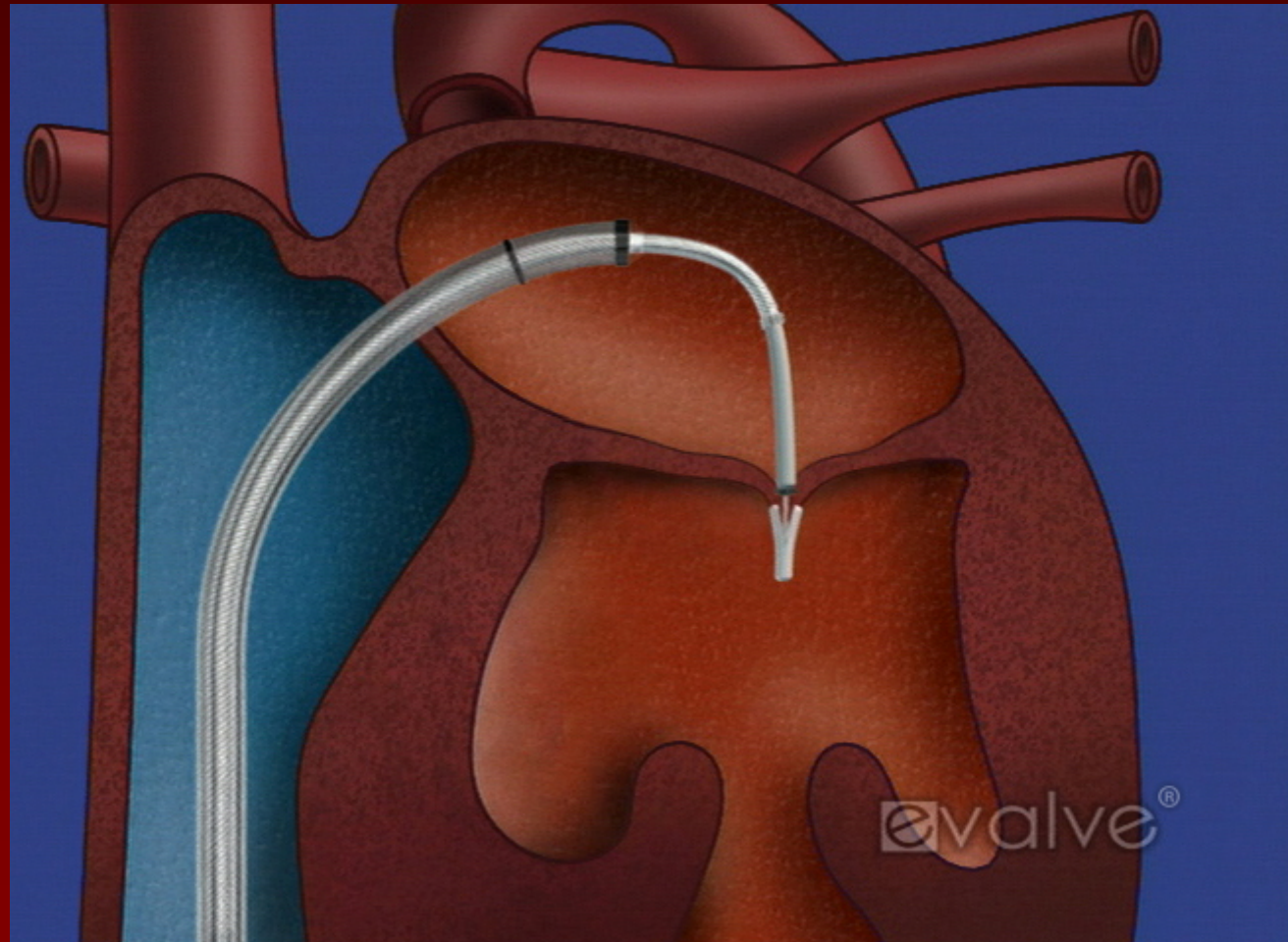




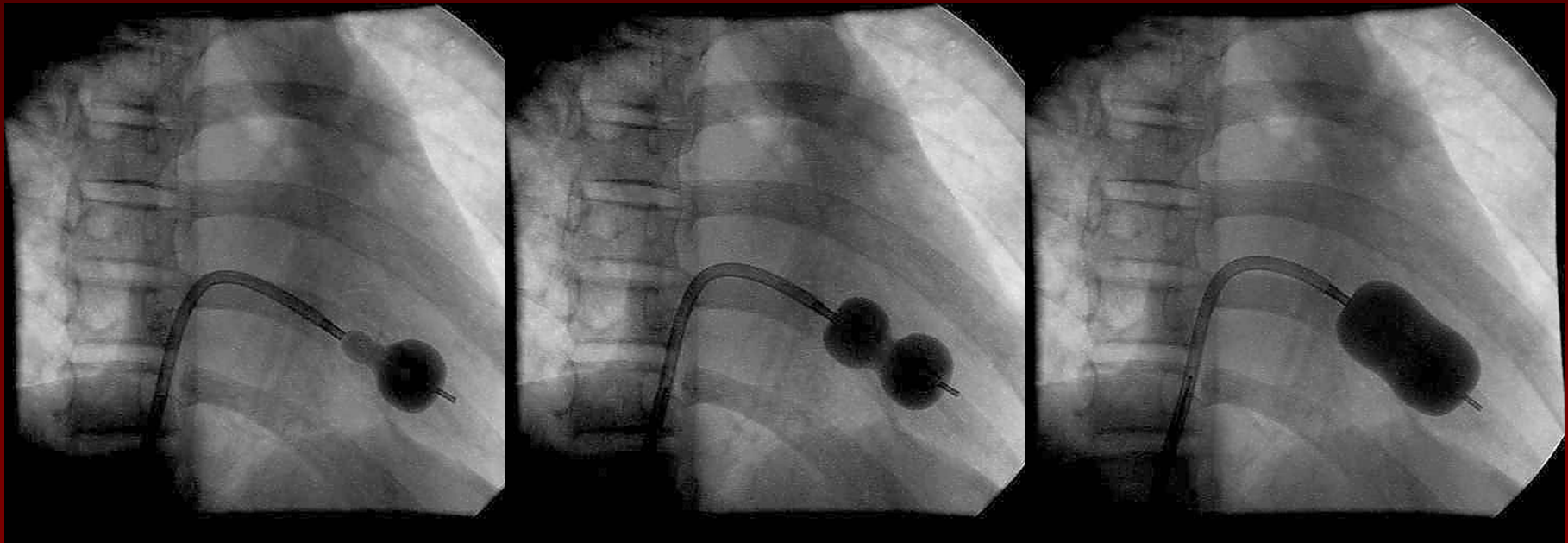
High Puncture

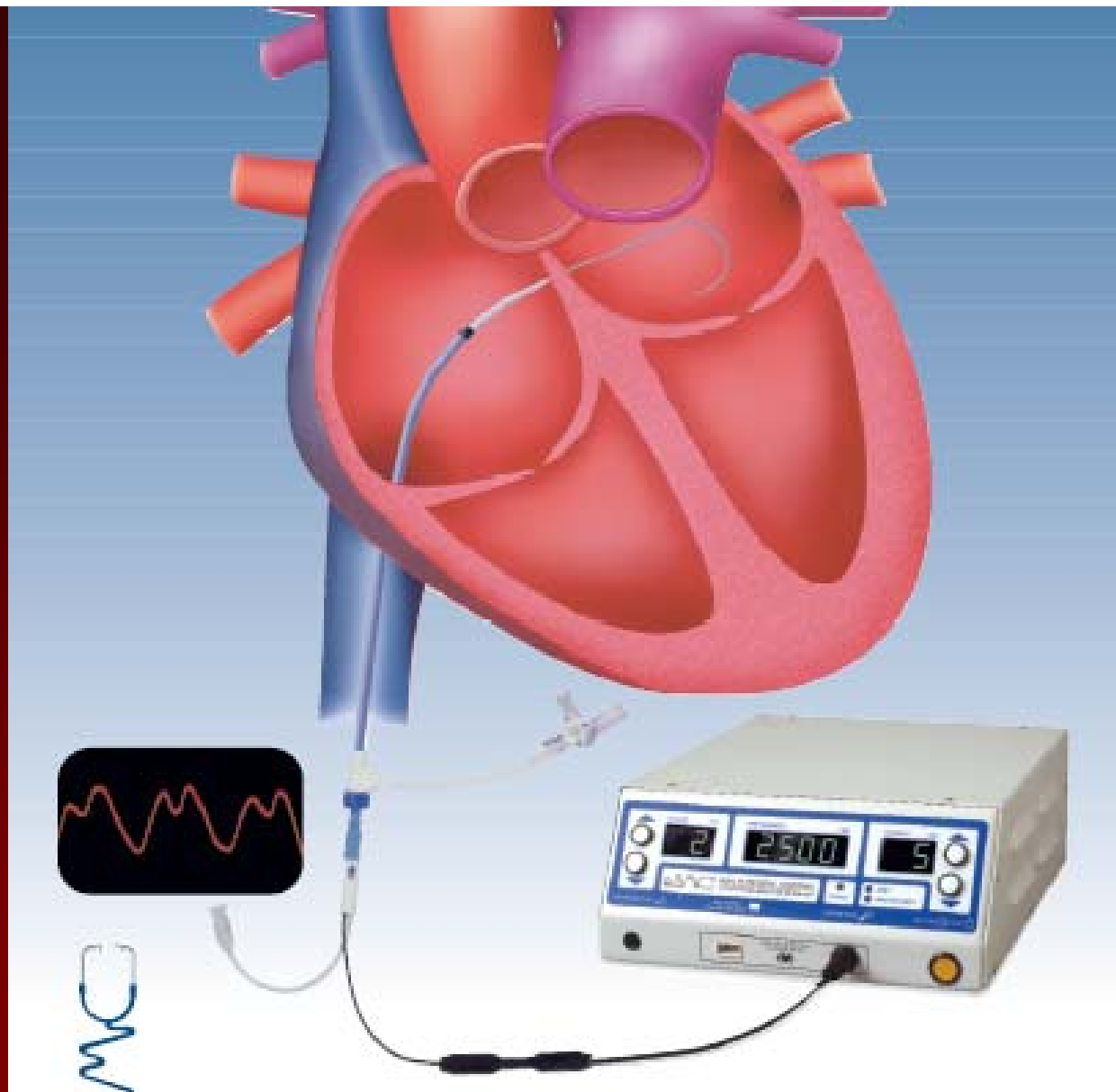
- Need to orient perpendicular to valve
- Need room to manipulate devices
- Need to have coaxial entry into left atrial appendage

Percutaneous Mitral Valve Repair



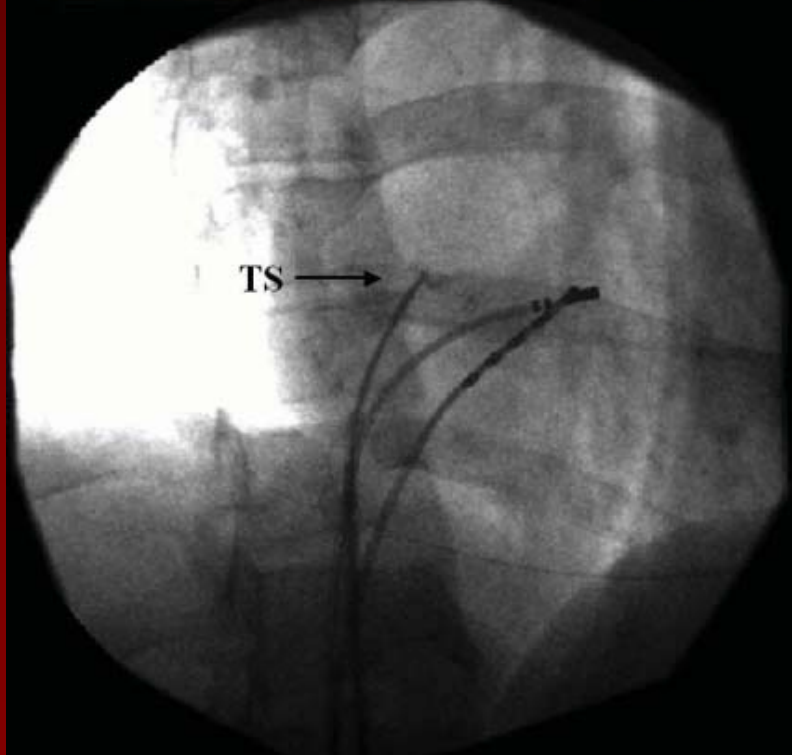
Neither High nor Low





TORONTO TRANSEPTAL PERFORATION CATHETER

- Uses radiofrequency energy to create a controlled transeptal perforation.
- Rounded, atraumatic tip design reduces risk of inadvertent mechanical perforation.
- Curved distal shaft safely advances into the left side of the heart.



Graham Europace 2007

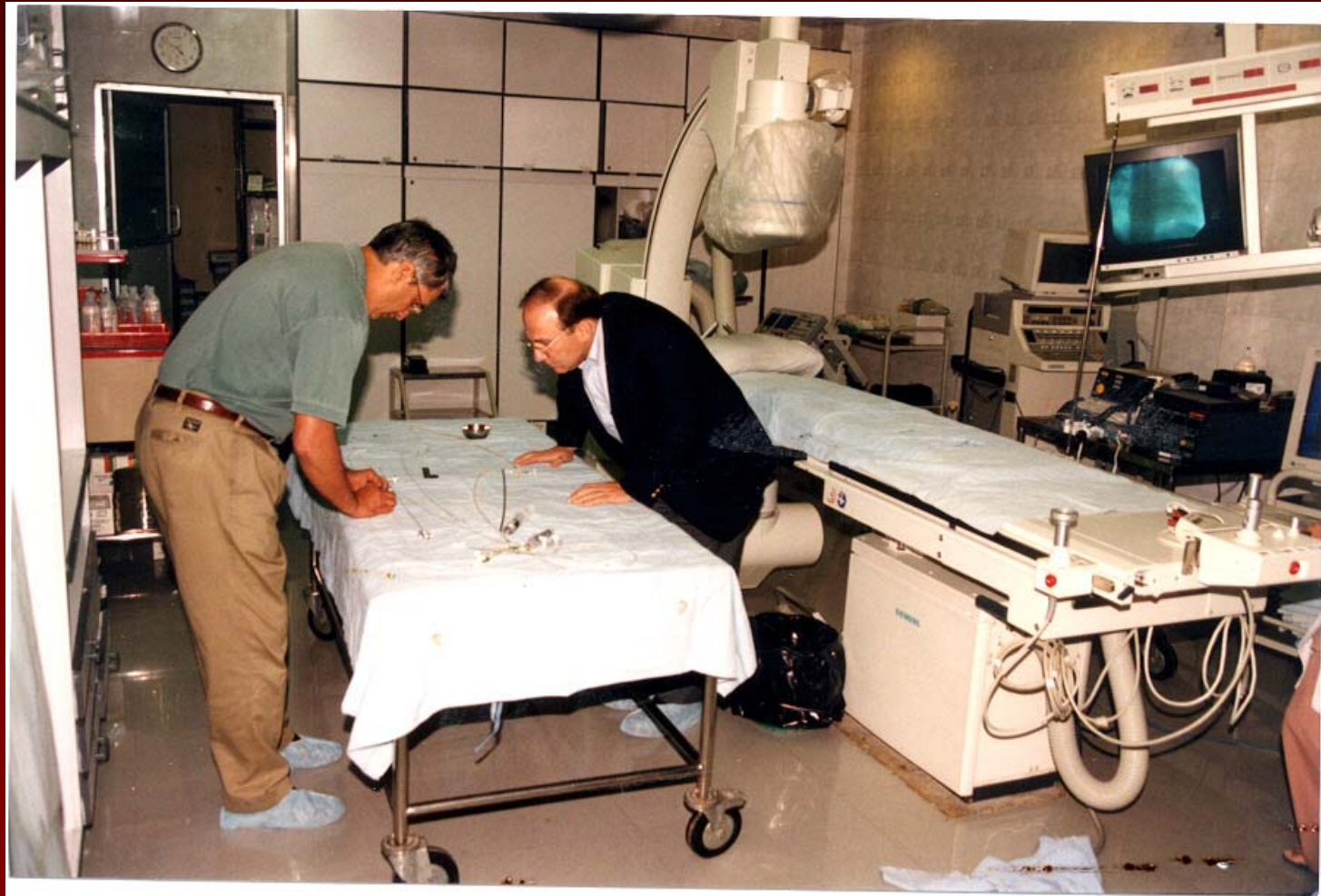
How Do You Become Competent?

Schoonmaker FW, Vijay NK, Jantz RD. Left atrial and ventricular transseptal catheterization review: losing skills. Cathet Cardiovasc Diagn 1987;13:233-8.

Simulators



Go Where Diseases Requiring Transseptal are Prevalent





Stay Sharp

