

# Hands-on Training with Operator

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Yonsei University College of Medicine**

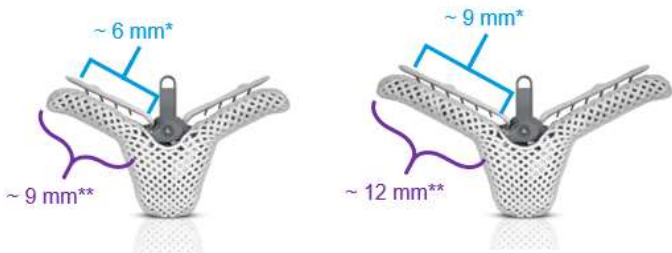
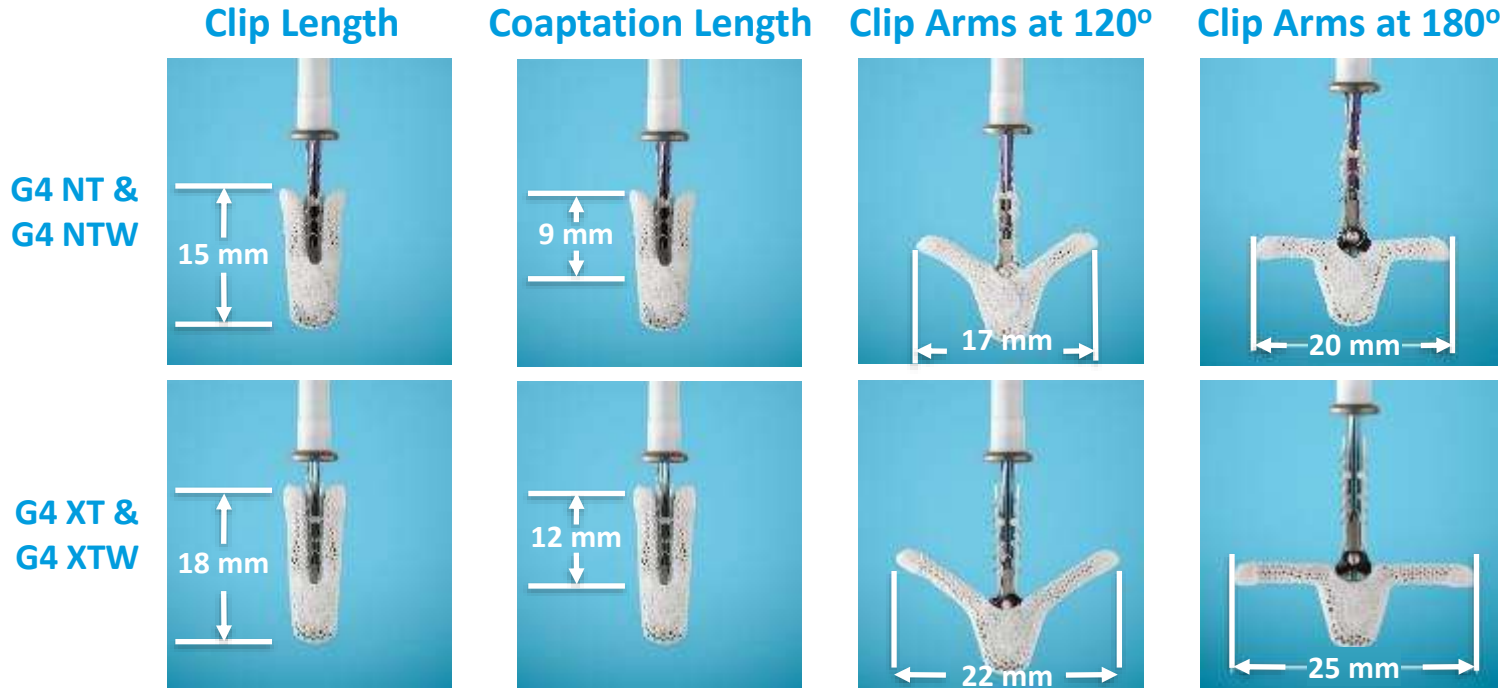
**10 min**

**August 11<sup>th</sup> 2022**

- **Relationships with commercial interests:**
- **Support/Consultant:** Amulet Proctor of Abbott
- **Speaker's Bureau:** Abbott

# MITRACLIP™ G4 DESIGN

## CLIP ARMS OVERVIEW

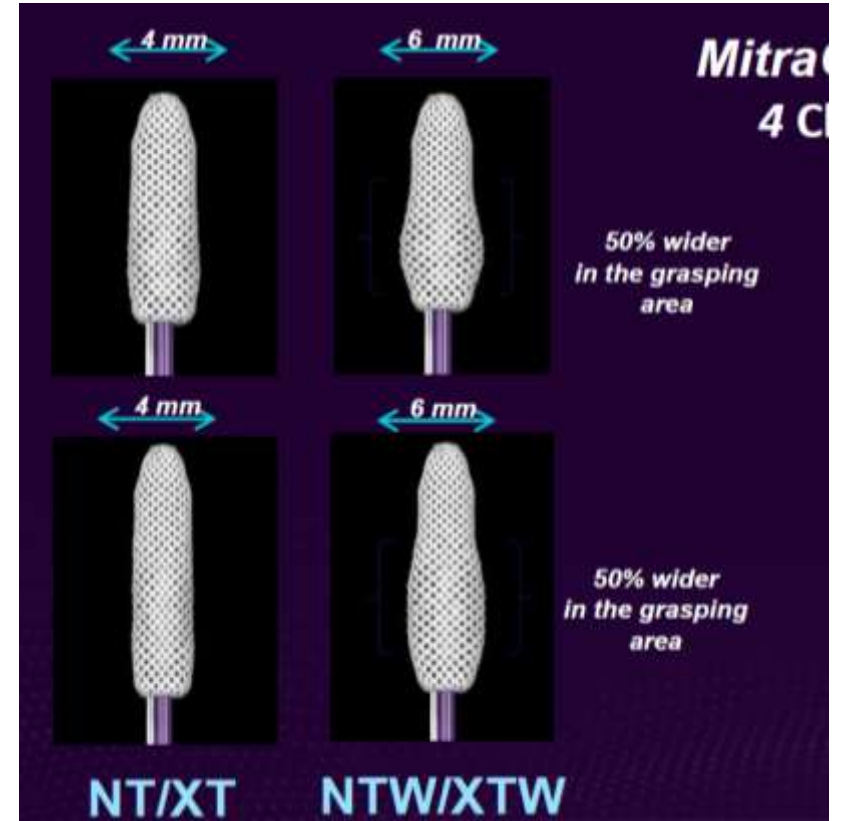


G4 NT & G4 NTW

G4 XT & G4 XTW

\* Leaflet insertion needed to engage all frictional elements

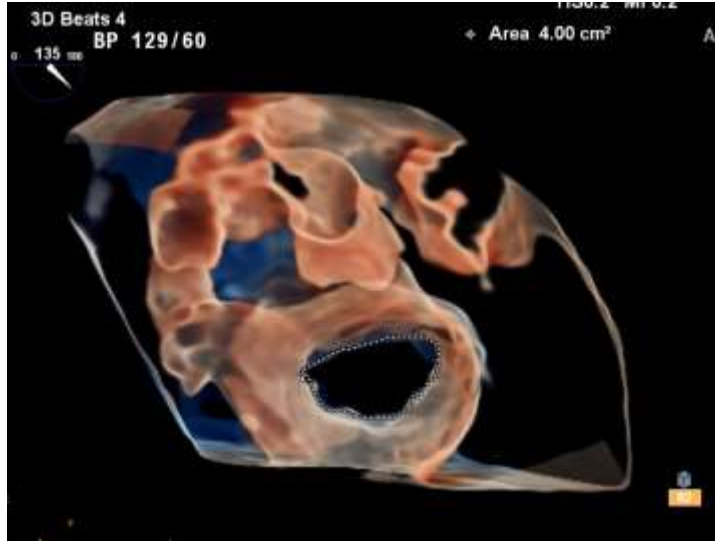
\*\* Clip Arm length



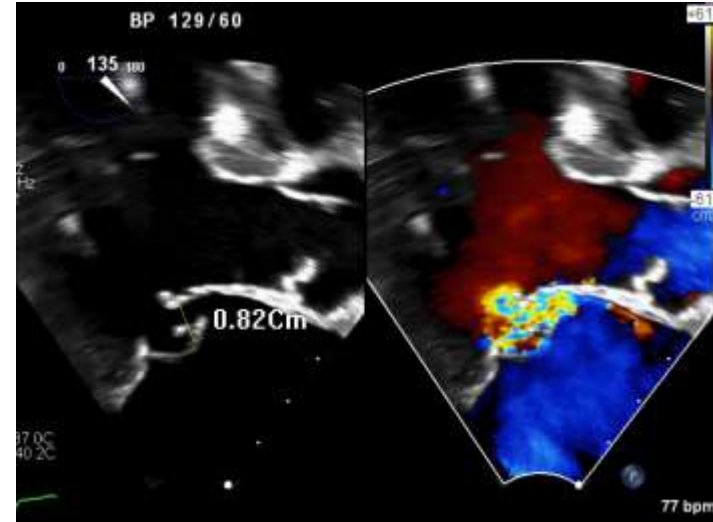
NT/XT

NTW/XTW

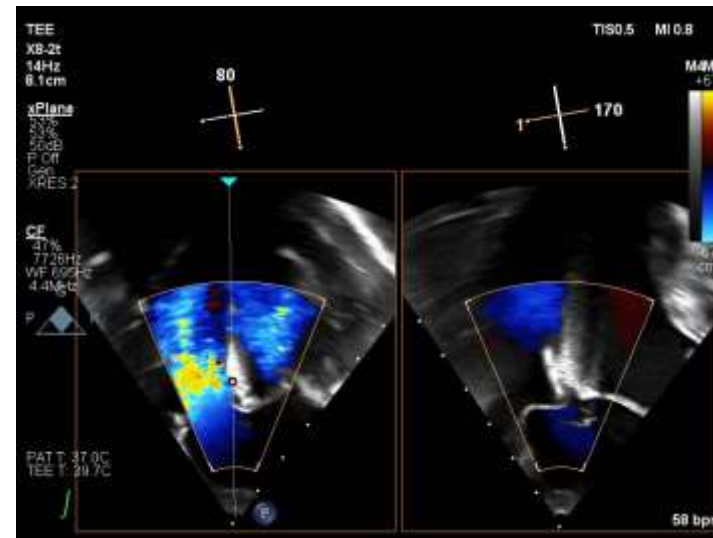
# Pre-procedure TEE – Case 1



**MVA: 4.0cm<sup>2</sup>**

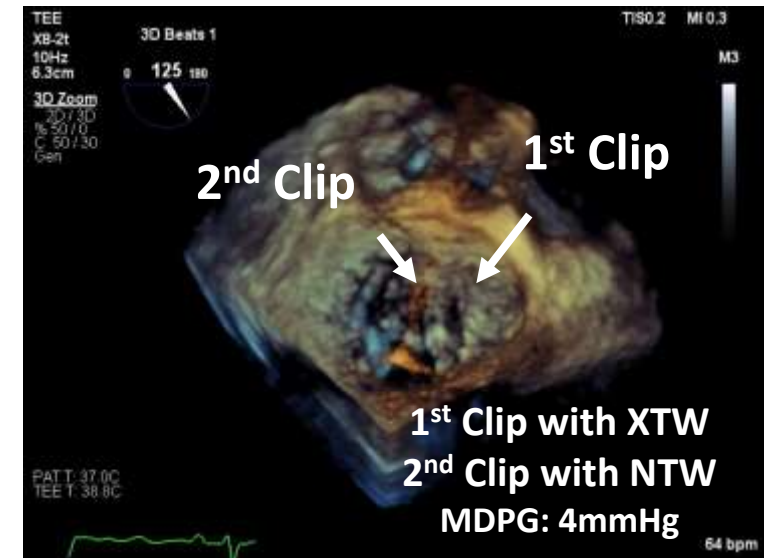
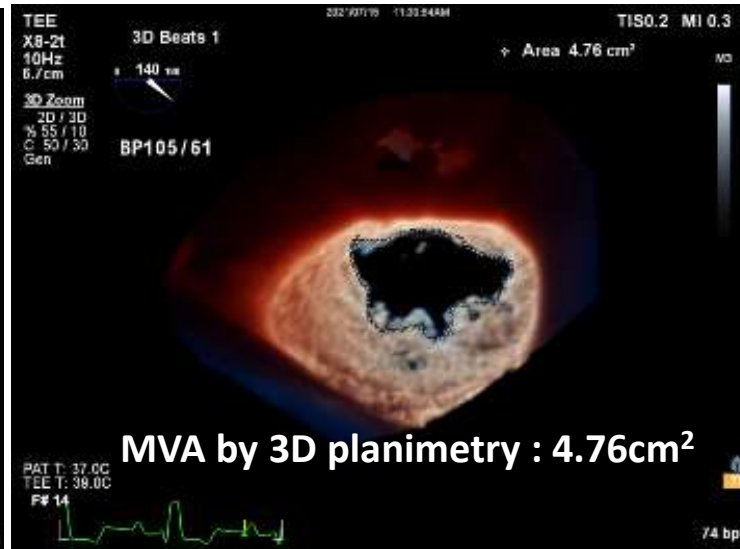
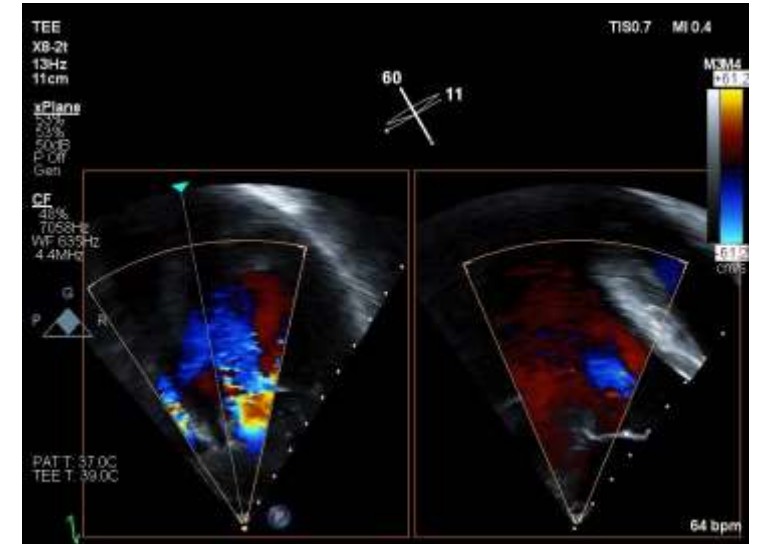
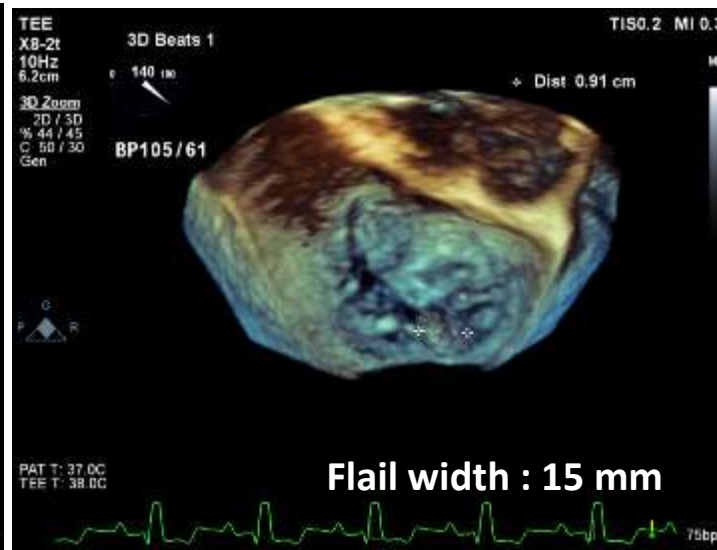


**Flail gap: 8.2mm, width: 12mm**

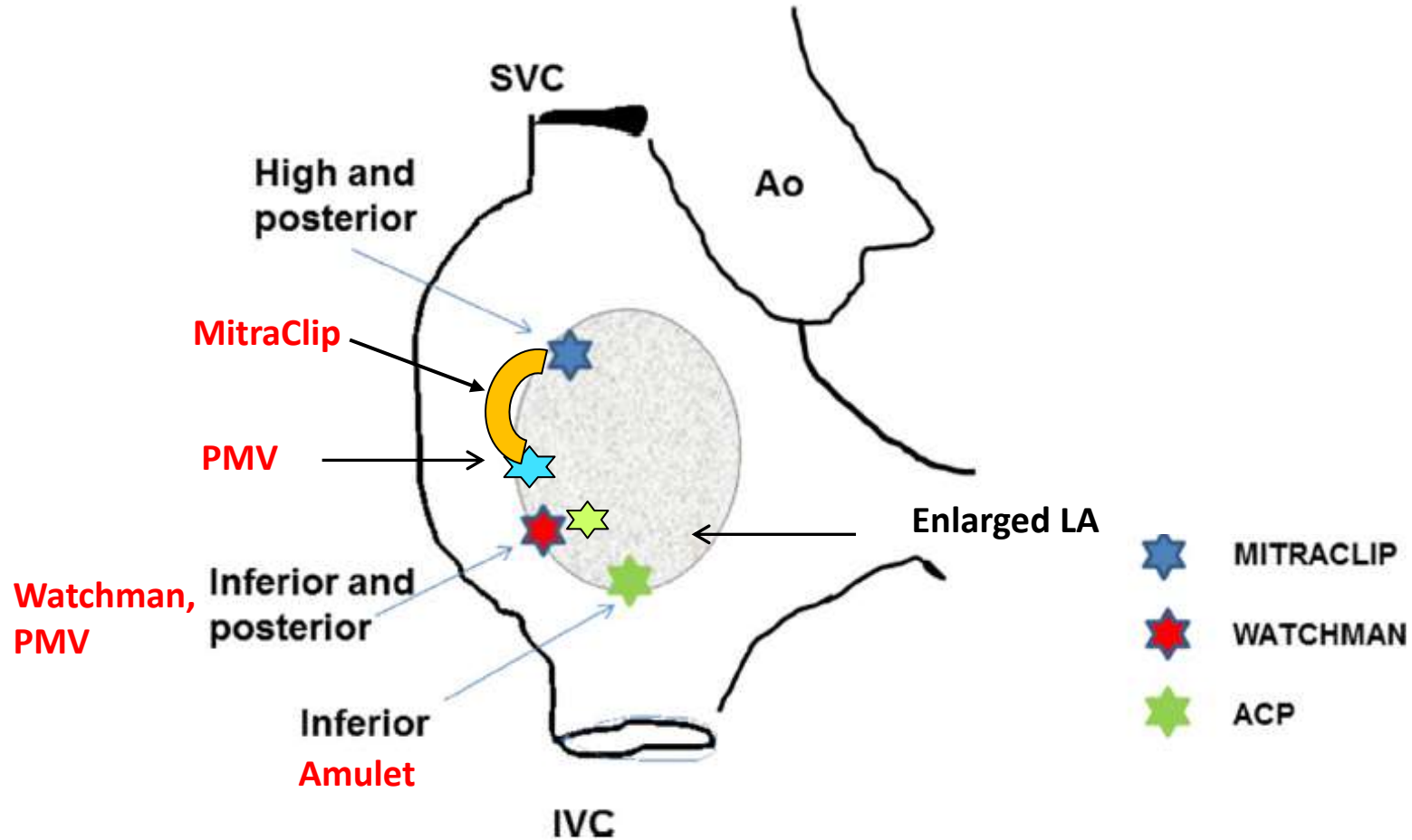


**NTW**

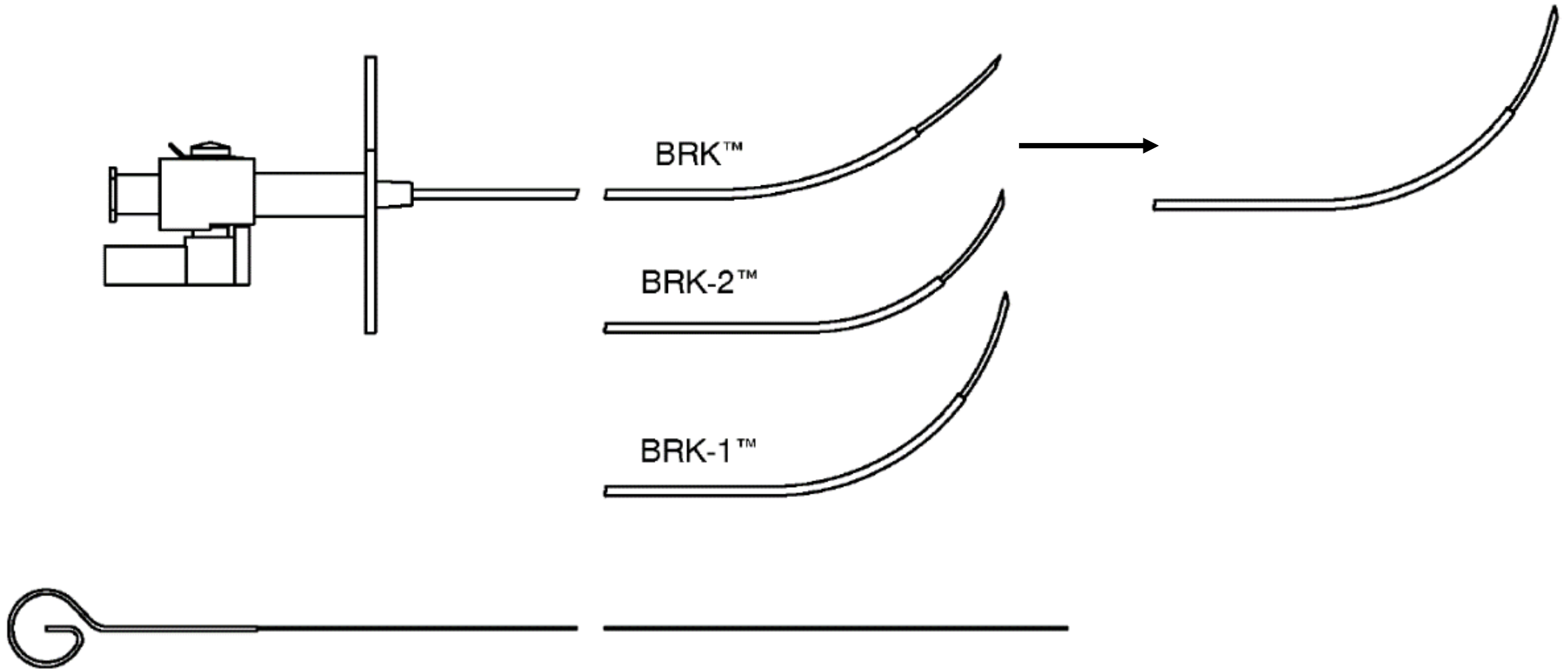
# Pre-procedure TEE – Case 2



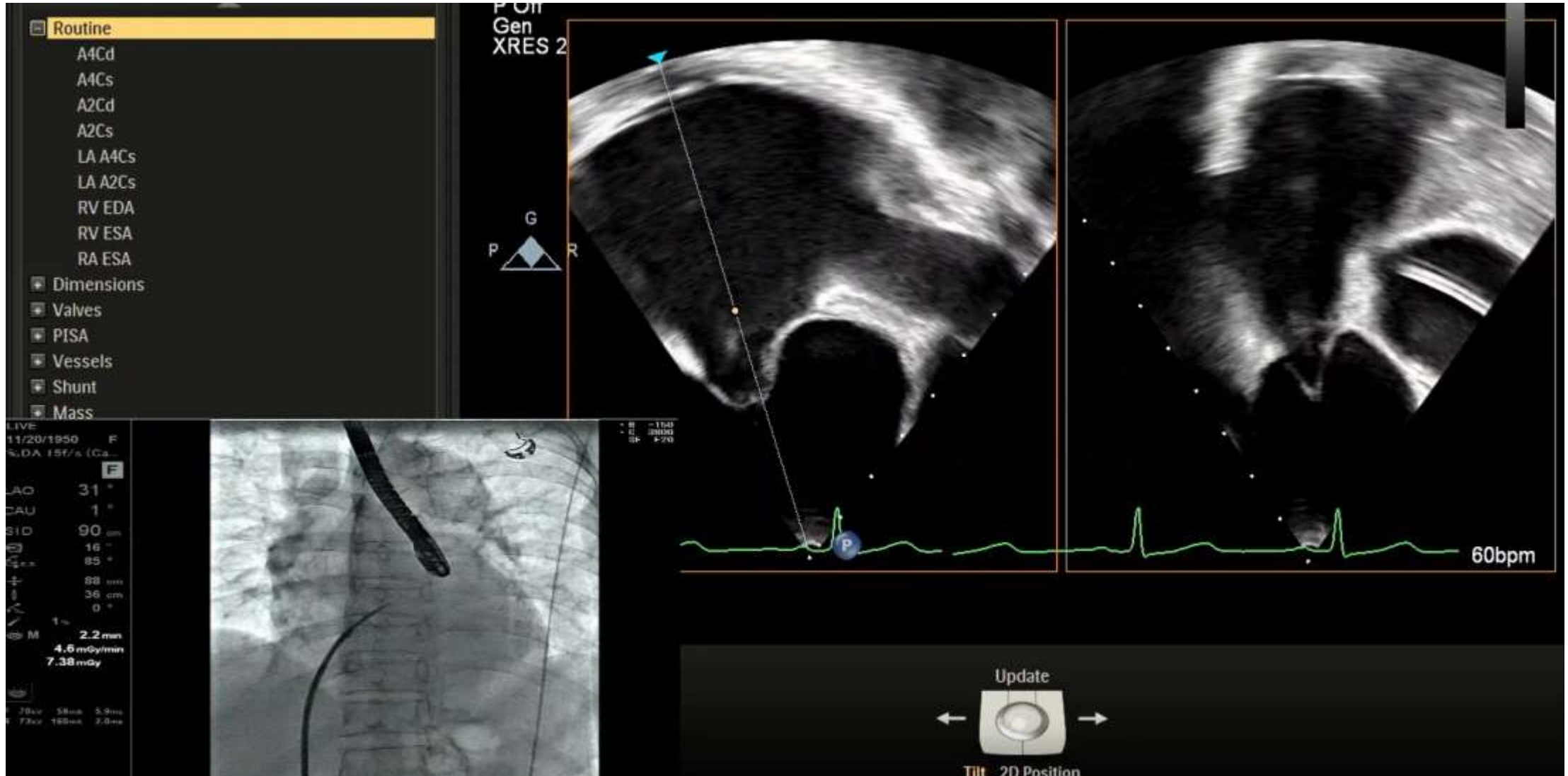
# Target Puncture Sites



# Brockenbrough Transseptal Needles

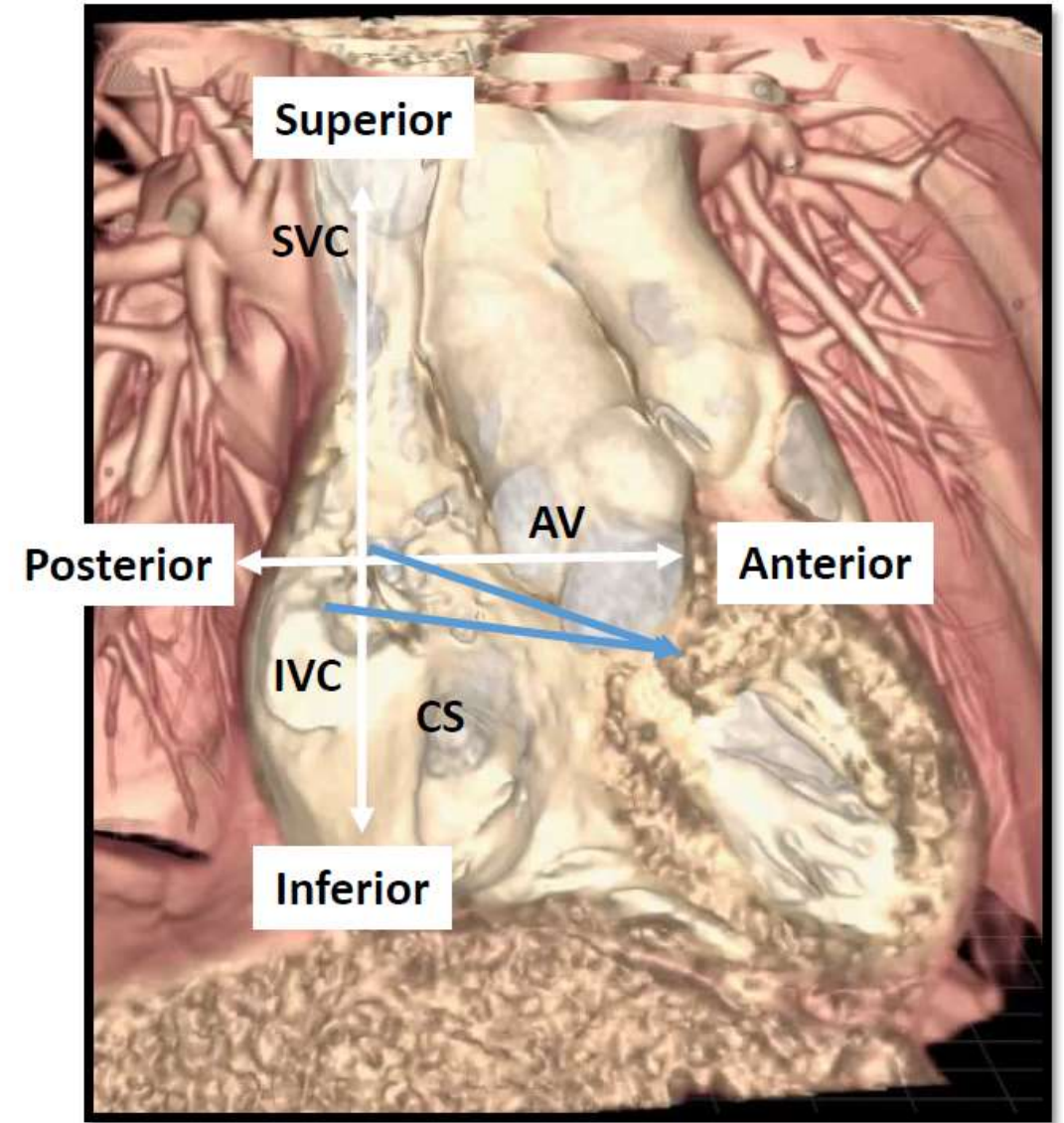
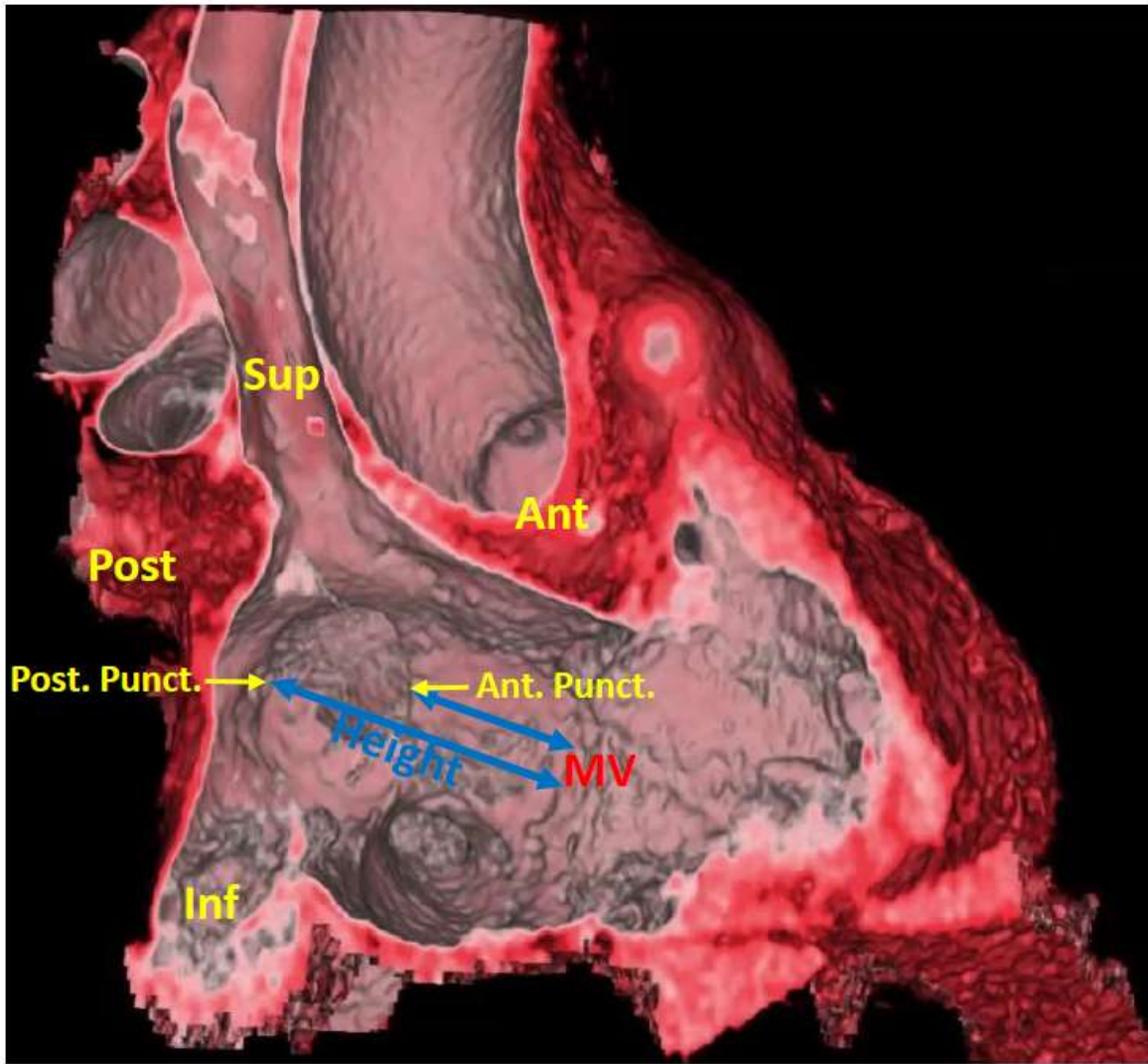


# Septal Puncture





# “Height” From the MV Doesn’t Always Mean “More Superior”

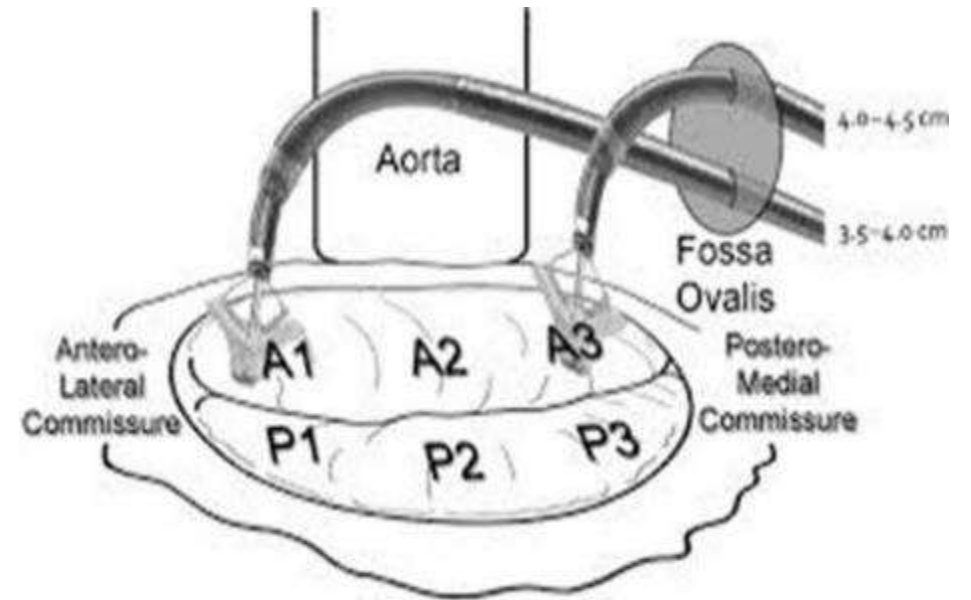


Courtesy slide of Dr. Amar Krishnaswamy

# Optimal Puncture Site

Consideration: *Etiology and site of MR*

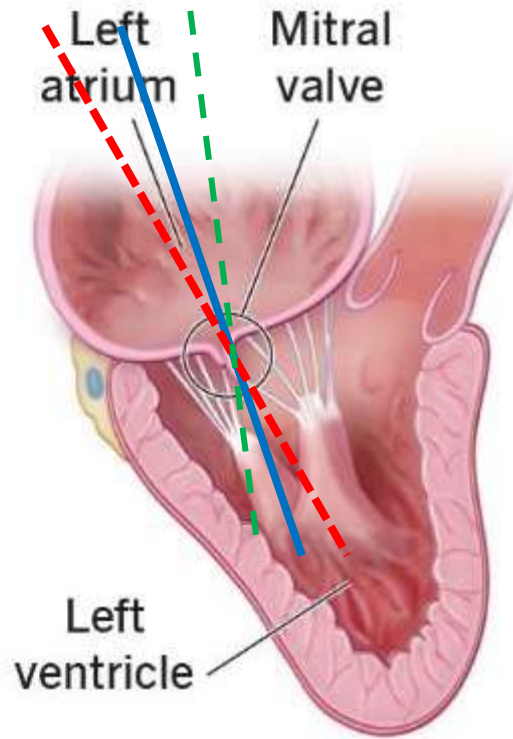
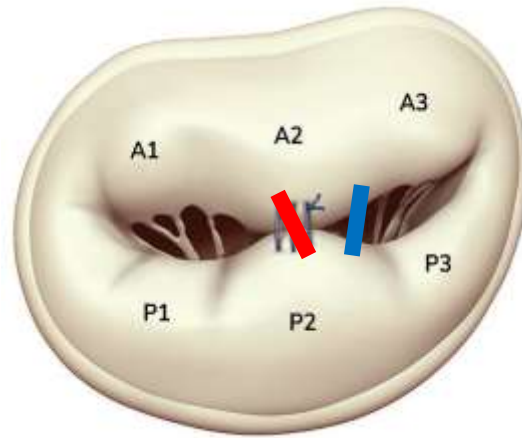
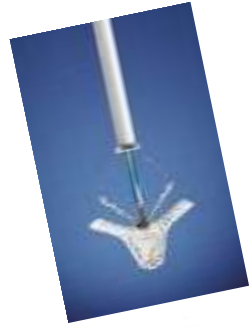
- TSP must be performed in the **mid-posterior part** of the fossa ovalis and at a sufficient distance (height) from the mitral valve
- **Primary MR**, the TSP height should be **4.5–5 cm above the mitral annulus** to allow the capture of prolapsed valves.
- **Secondary MR**, the puncture site must be lower, approximately **4.0-4.5 cm above the annular plane** in order to be able to advance the catheter more deeply into the LA because of valve tethering.



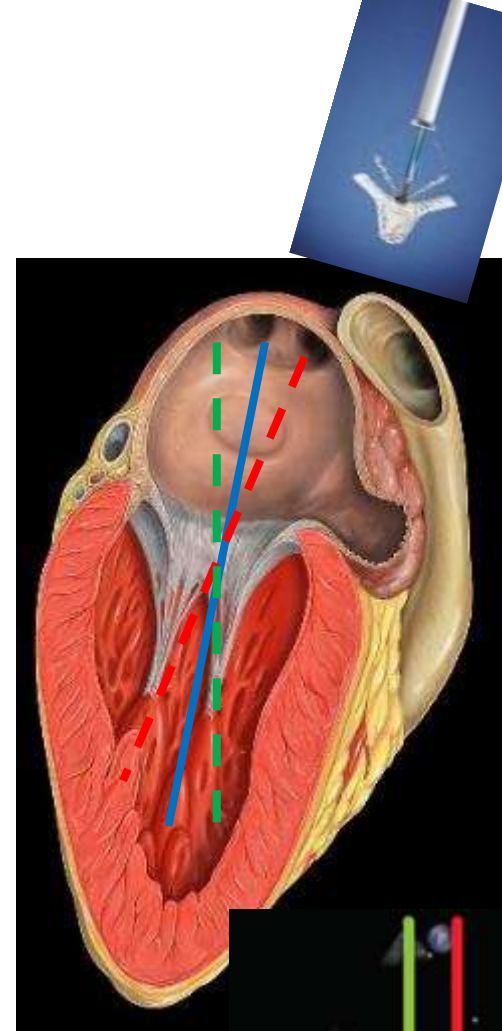
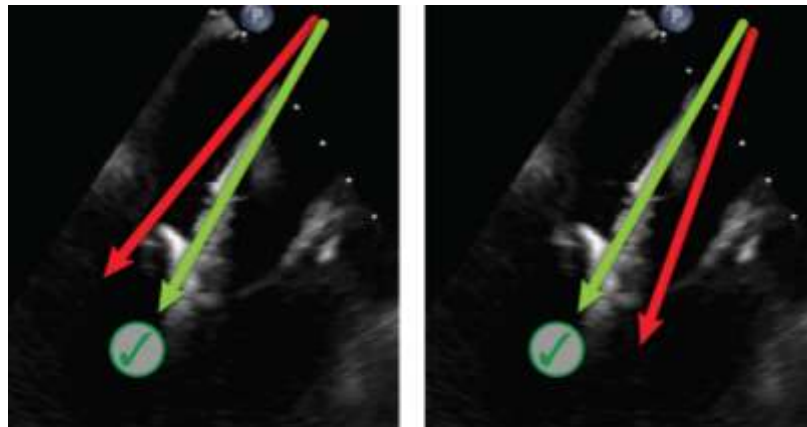
Atrial MR - **4.5–5 cm above the mitral annulus**

Medial site needs a greater height than lateral site.

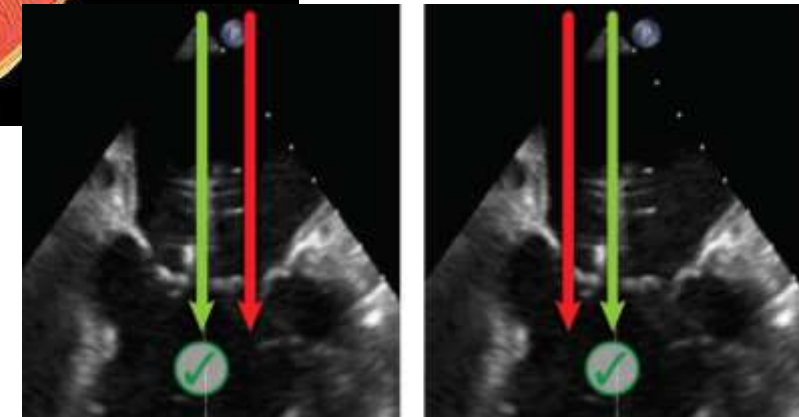
# Trajectory



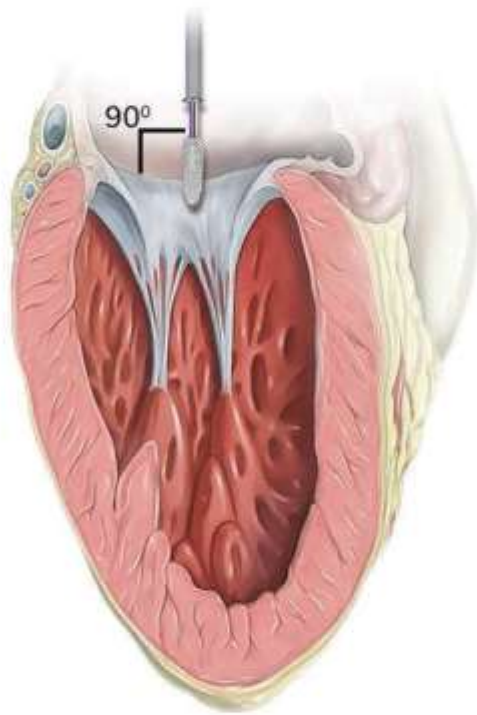
**Anterior and Posterior Trajectory**



**Medial and Lateral Trajectory**

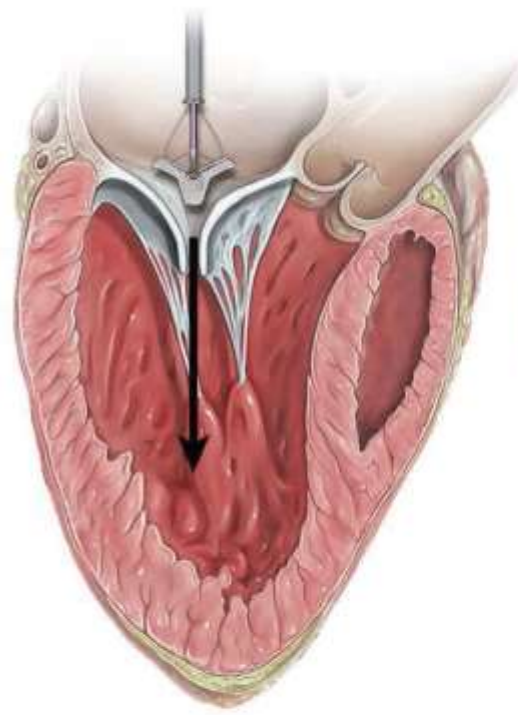


## BICOMM VIEW

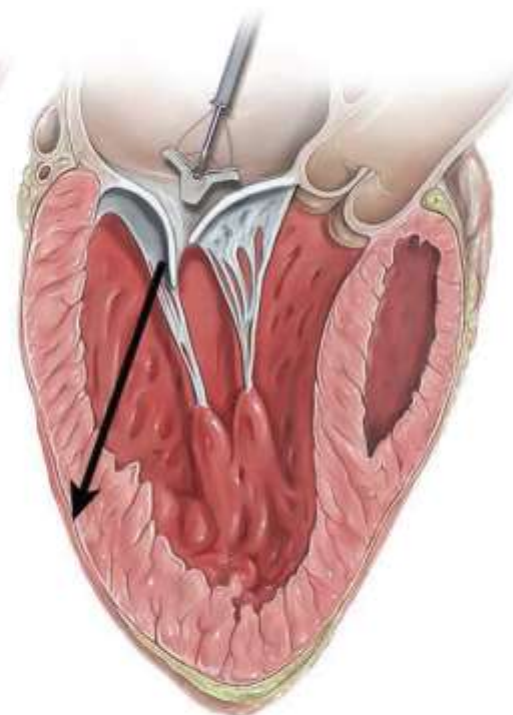


Clips should be orthogonal to mitral annular plane

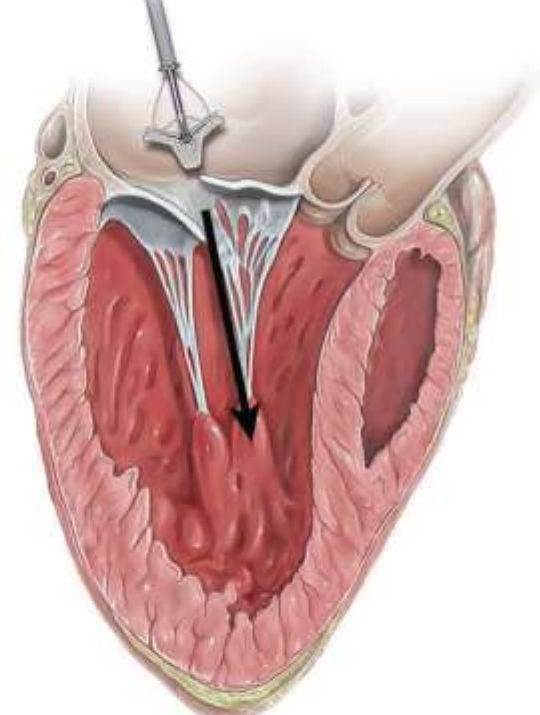
## LVOT VIEW



Symmetric tethering



Asymmetric tethering

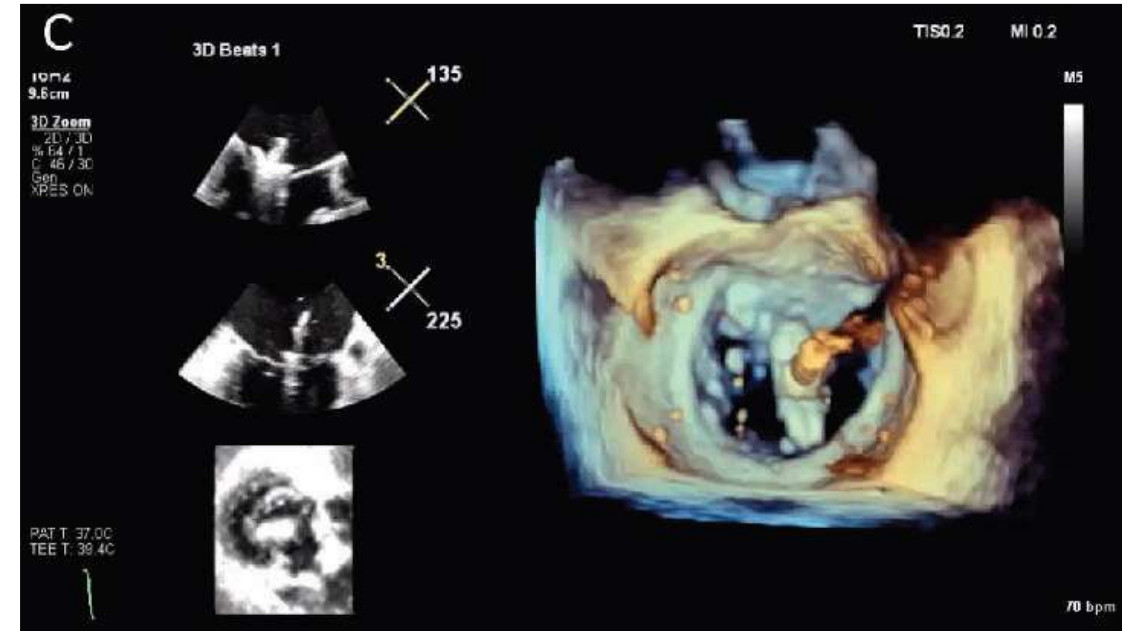
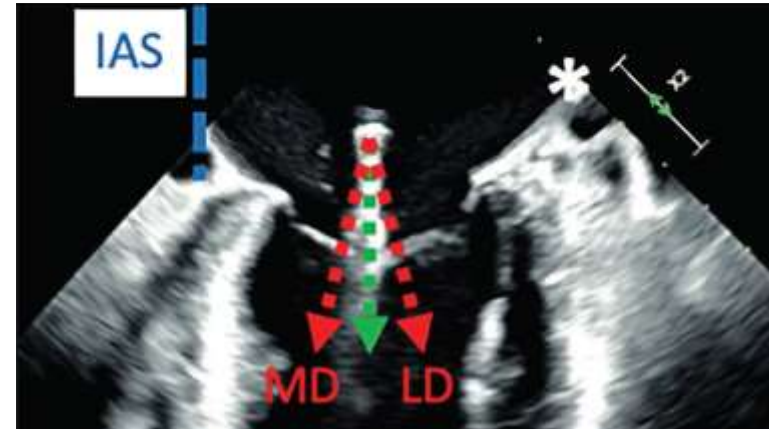
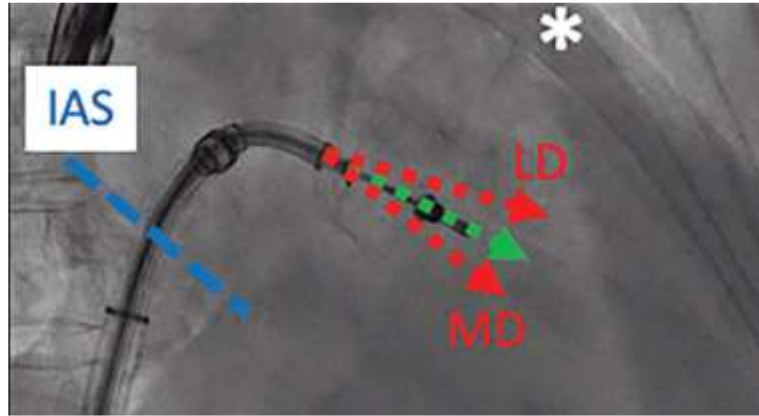


Anterior leaflet prolapse



Transcatheter Edge-to-Edge Repair. Textbook of SCAI

# Trajectory and Perpendicularity – Clip orientation



Transcatheter Edge-to-Edge Repair. Textbook of SCAI

# MitraClip Device Component Movement

	ANTERIOR	POSTERIOR	MEDIAL	LATERAL	LOSE HEIGHT ABOVE VALVE	GAIN HEIGHT ABOVE VALVE
<b>Steerable Guide Catheter (SGC)</b>						
Plus (+)		++	+		+	
Minus (-)	++			+		+
Clockwise rotation		++				+
Counter-clockwise rotation	++				+	
<b>Clip Delivery system (CDS)</b>						
Medial (M)			+++		+	
Lateral (L)				+++		+
Posterior (P)		+	+		+	
Anterior (A)	+			+		+
<b>Stabilizer</b>						
Push In (L)				+		
Pull out (M)			+			

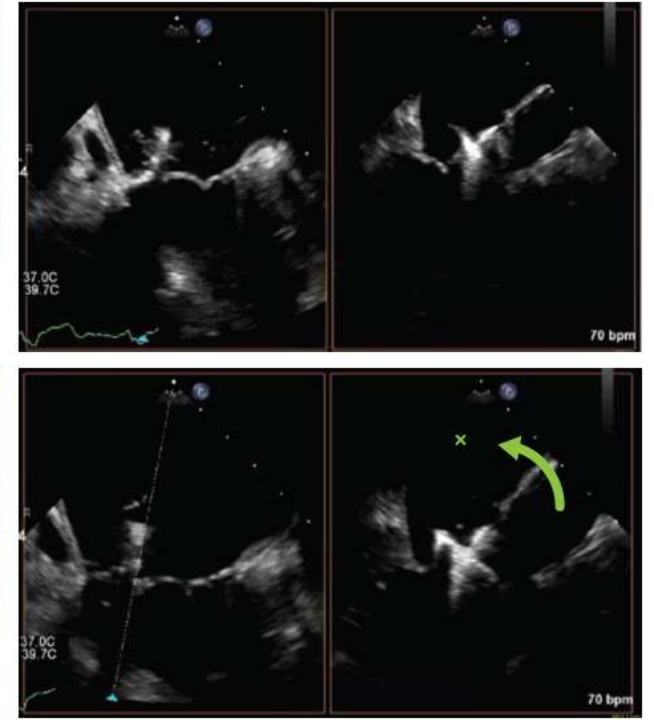
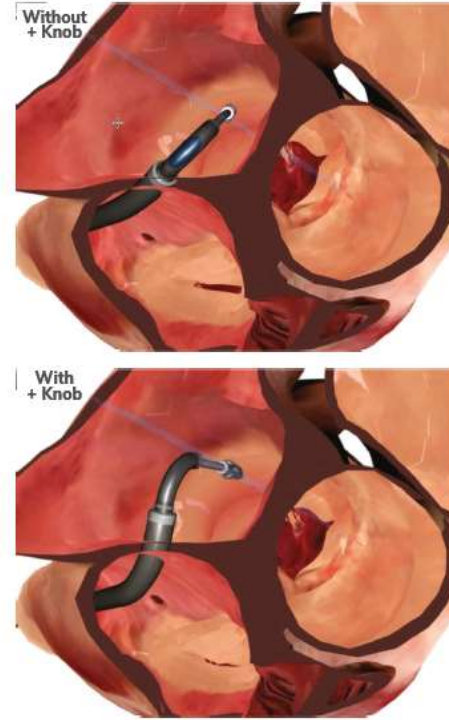
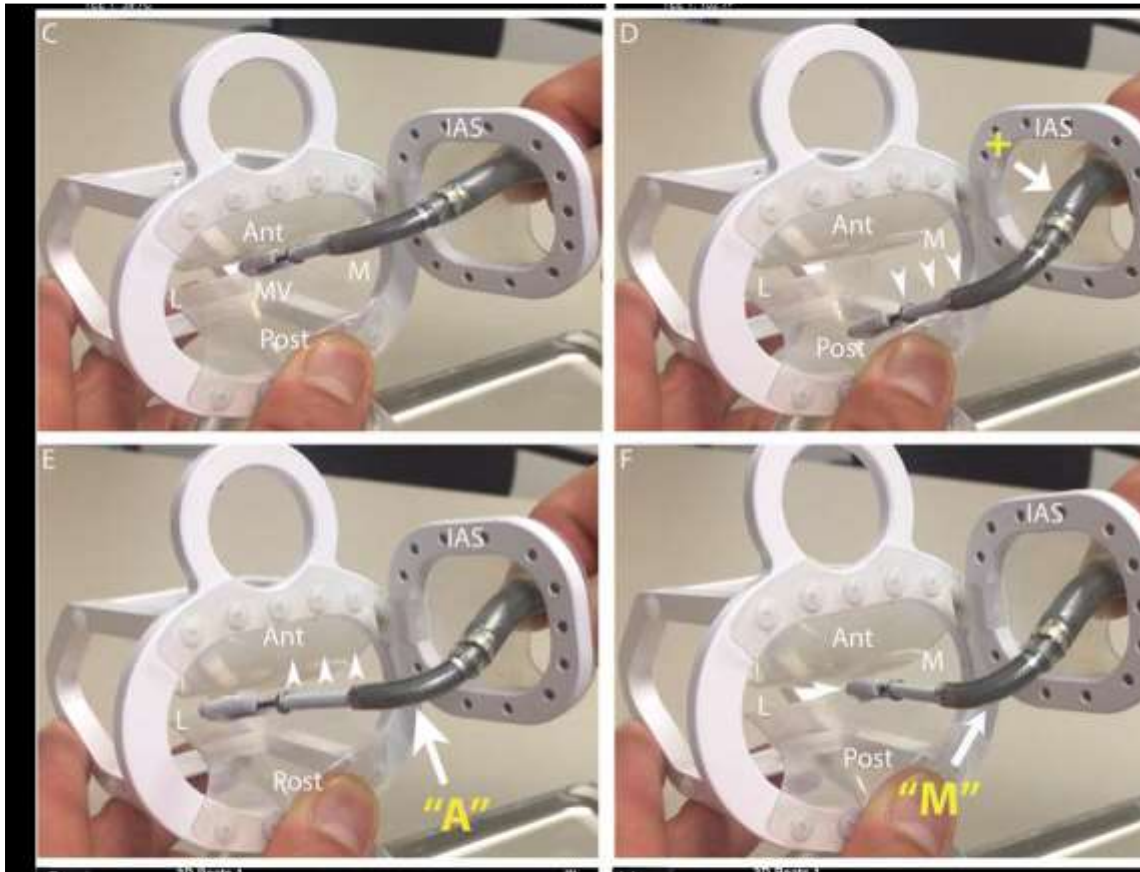
It is important to note that the movements of the steerable sleeve are only predominant in their direction, and are not pure in any single path.

Transcatheter Edge-to-Edge Repair. Textbook of SCAI



# Clinical Situations

## Anterior Transseptal Puncture or "Aorta Hugger"

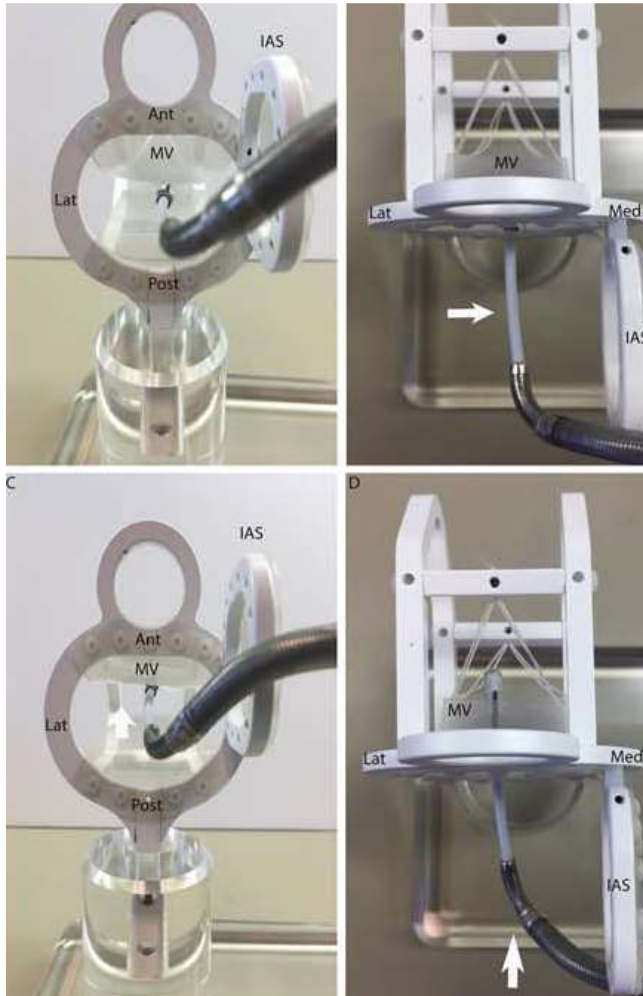


addition of "M" on the "M" knob or withdrawal of the SGC

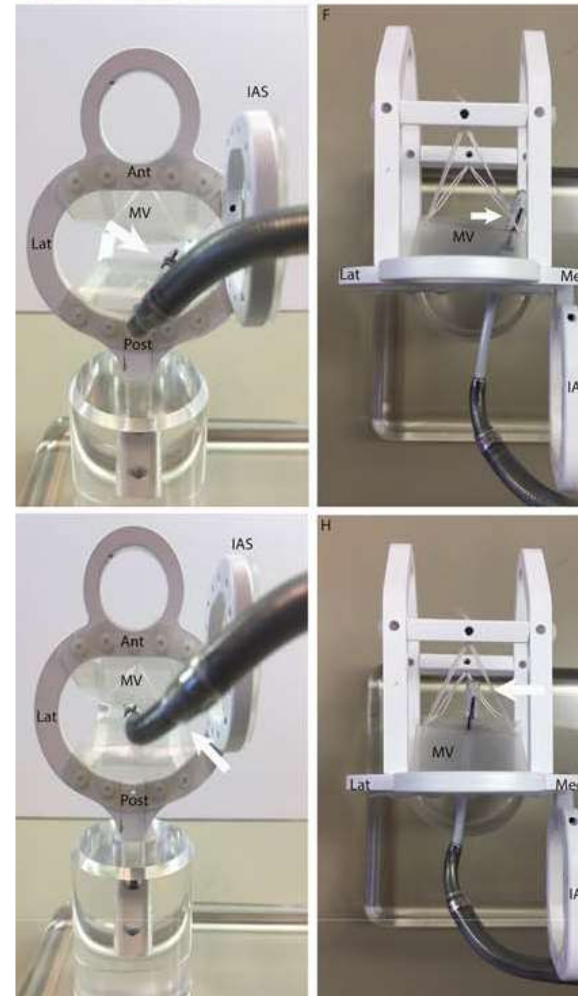
Sorajja P, et al. CCI 2017  
Transcatheter Edge-to-Edge Repair. Textbook of SCAI

# Clinical Situations

## Transseptal height is too High



**SGC is rotated counter-clockwise (anteriorly)**



application of “P” on the “A/P” knob to steer the **CDS posterior to the mitral valve.**

releasing the “M” knob or **advancing the SGC superiorly** may be required to **move laterally**

Sorajja P, et al. CCI 2017



# Clinical Situations

## Transseptal height is too Low

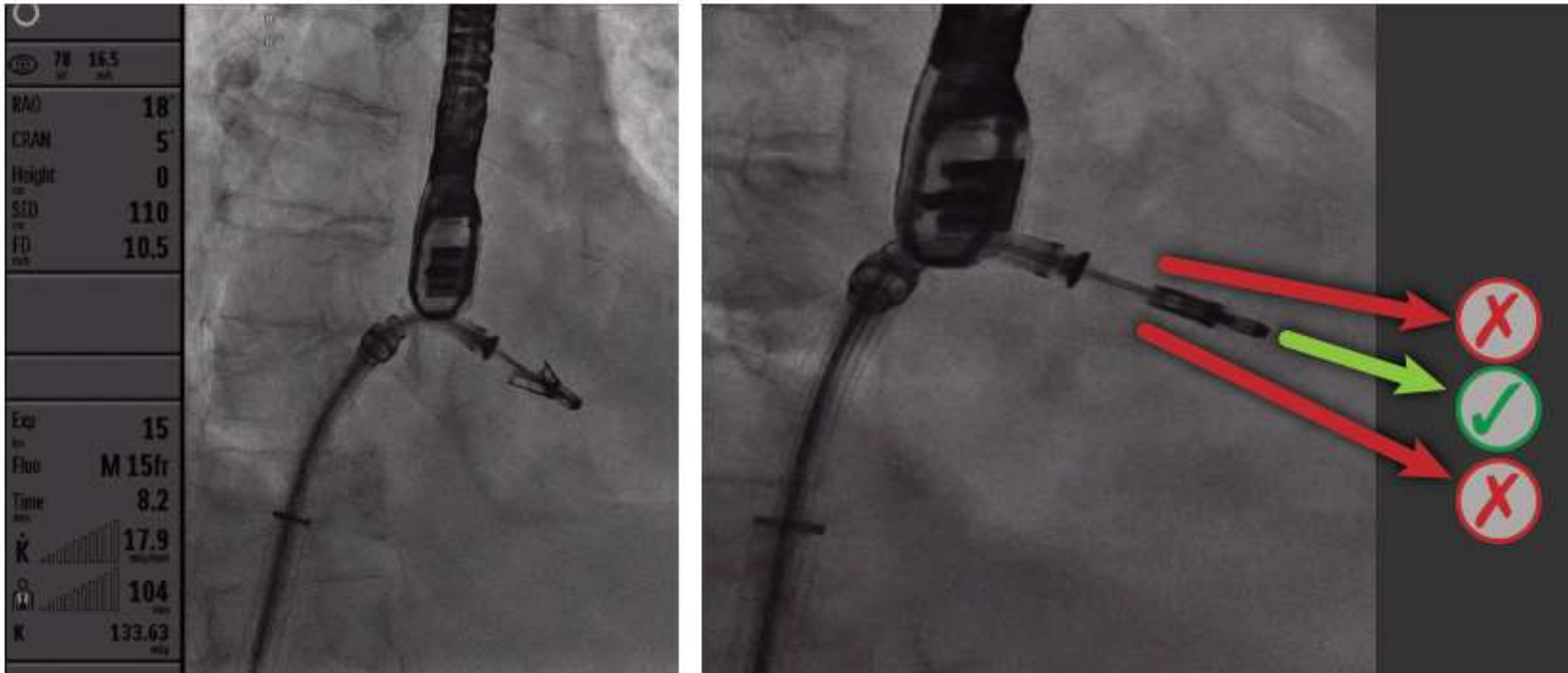
SGC is rotated **clockwise (posteriorly)**, with anterior correction of the SS by applying **“A” on the “A/P” knob**. As the turning toward **“A”** also moves the system laterally, application of the **“M” or withdrawal of the SGC** to move medial may be required.

## Chordal Entrapment

Aiming for an *adequate height during the transseptal puncture, avoidance of sleeve deflections of more than 90 degrees* (careful use of the M knob), and maintaining the MitraClip in the LA, above the leaflets until ready to grasp. Once the operator has advanced the MitraClip into the LV, past the mitral valve leaflets, only *minimal device manipulations* should be performed in **LV**

1. Invert a Clip
2. Rising and/or lowering of the grippers
3. Reverse ordered maneuvers
4. Converted to a surgical procedure
5. If not surgical candidate, may need to be placed within the chordal apparatus

Sorajja P, et al. CCI 2017



**Figure 10. Removing Parallax and Using M Knob for Optimal Entry Trajectory**

(Left image) Clip with arms open but parallax not removed. The fluoroscopic angle is changed to superimpose the clip arms (removing parallax) and then the clip is advanced under TEE and fluoroscopy into the LV. (Right image) Correcting from the red arrow trajectories to an optimal fluoroscopic entry trajectory (green arrow) can be achieved by adding or removing M knob.<sup>1</sup>

# MitraClip procedure

