



TIPS AND TRICKS FOR SUCCESSFUL TAVR WITH EDWARDS SAPIEN VALVE

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Disclosure Statement of Financial Interest

Within the past 12 months, I or my spouse/partner have had a financial Interest /arrangement or affiliation with the organization(s) listed below

Affiliation/Financial Relationship

Company

Grant/ Research Support:

Consulting Fees/Honoraria:

Edwards Lifesciences
(consultant & proctor)

Major Stock Shareholder/Equity Interest:

Royalty Income:

Ownership/Founder:

Salary:

Intellectual Property Rights:

Other Financial Benefit:

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View size: 598 x 598
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X: 494 px Y: 347 px Value: 138.00
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Aorta DR — Aorta DR
TAY
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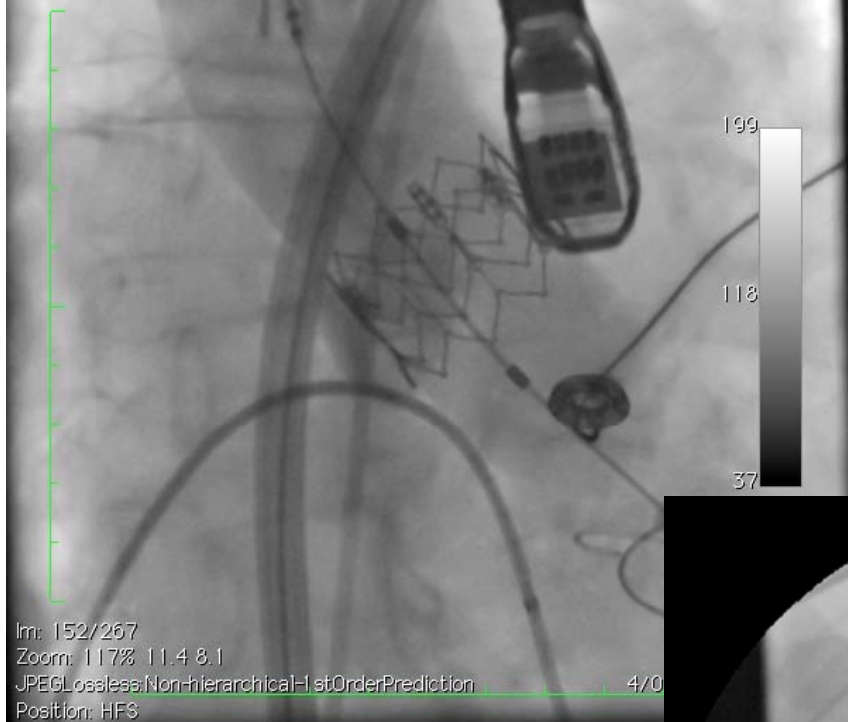
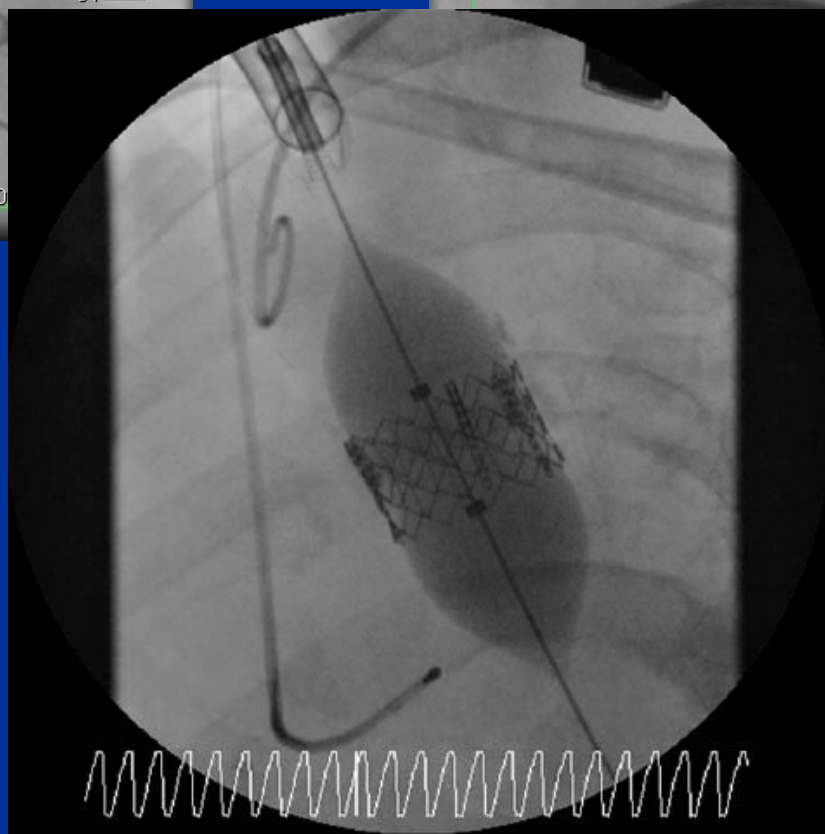
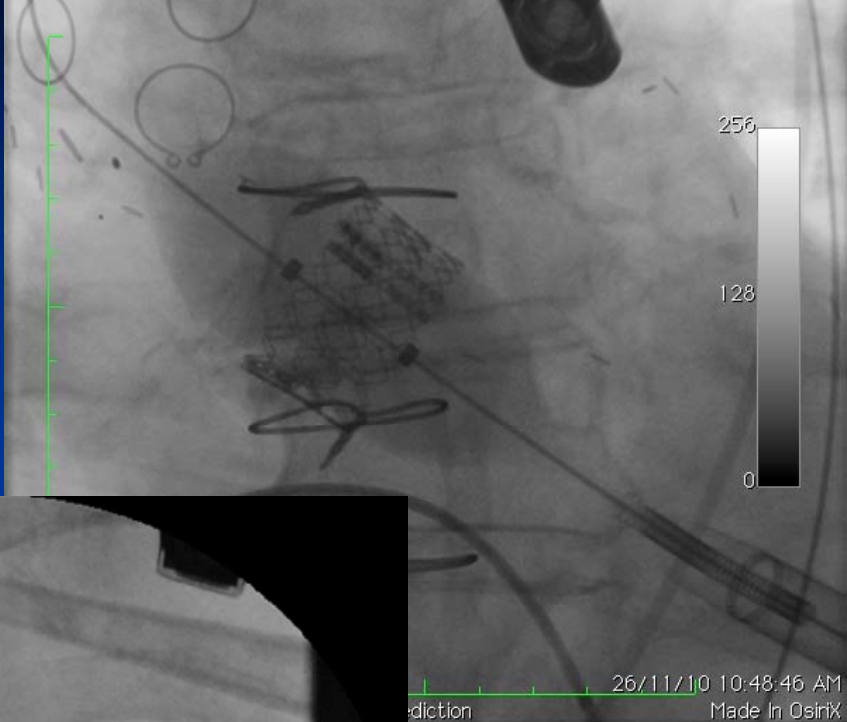


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Cardiac — Left Ventricle 15 fps
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Keys to Success

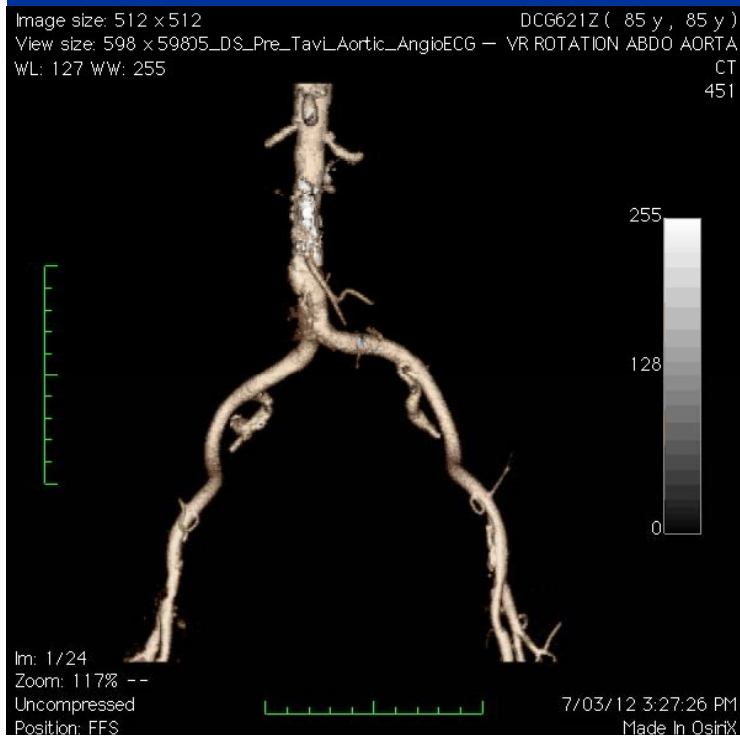
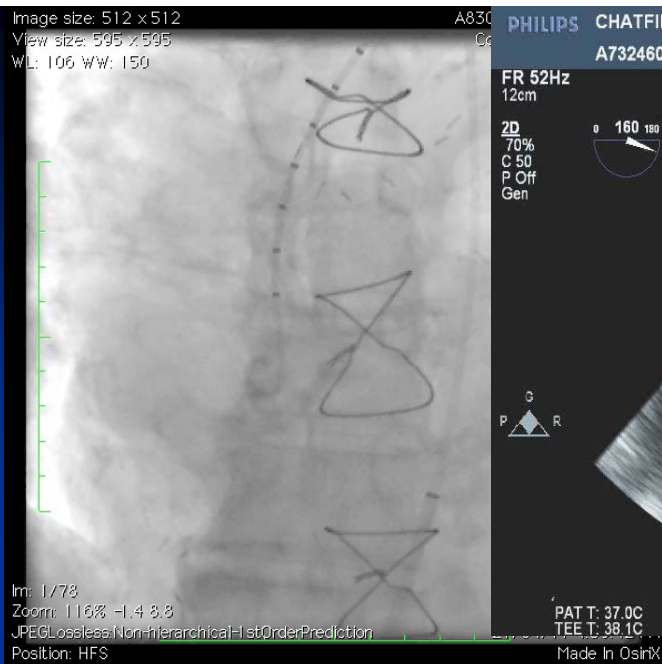
- PATIENT SELECTION
- PROCEDURAL DETAILS
- INTEGRATED MULTIDISCIPLINARY TEAM

Keys to Success

- PATIENT SELECTION
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- INTEGRATED TEAM MULTIDISCIPLINARY TEAM

PATIENT SELECTION

- Indication
 - Symptomatic severe aortic stenosis
 - High risk for surgical AVR
- Suitable anatomy – left ventricle, aortic root, aortic annulus, peripheral vessels
- Other high risk clinical features to be aware
 - Severe MR
 - Severe LVF
 - Irrevascularised CAD
 - Pulmonary hypertension

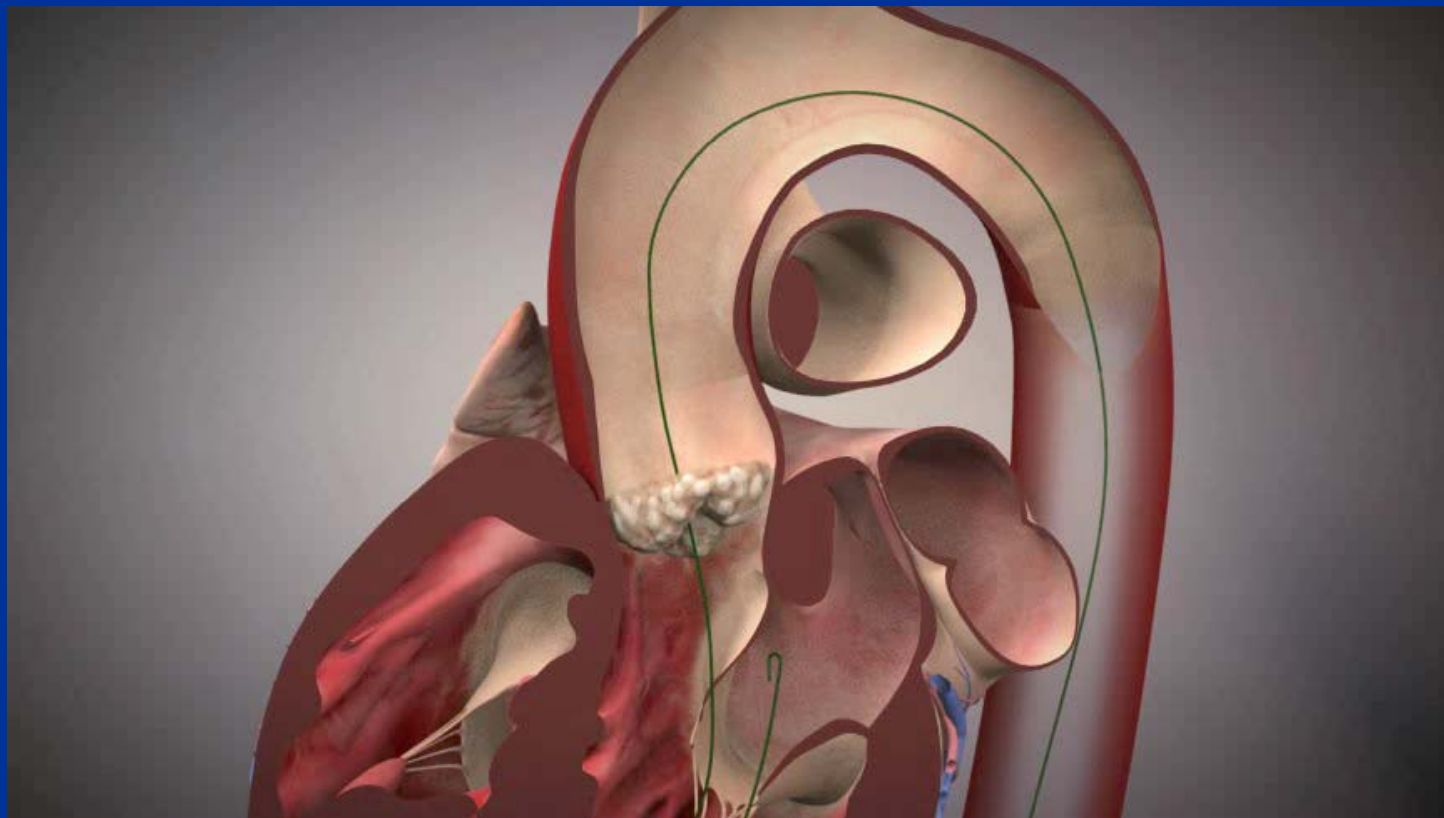
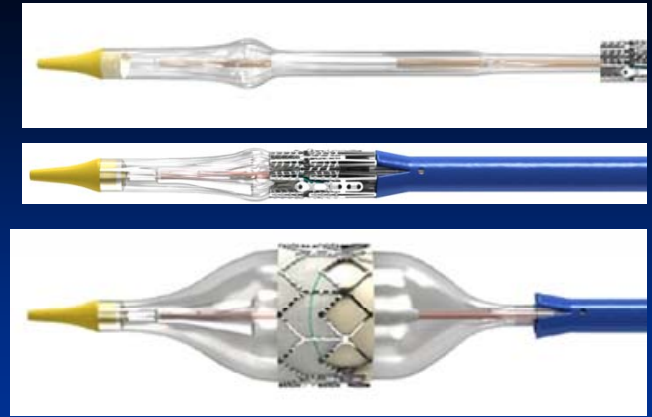
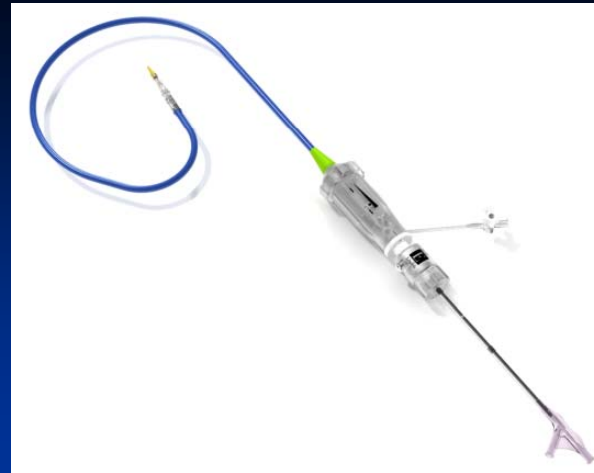
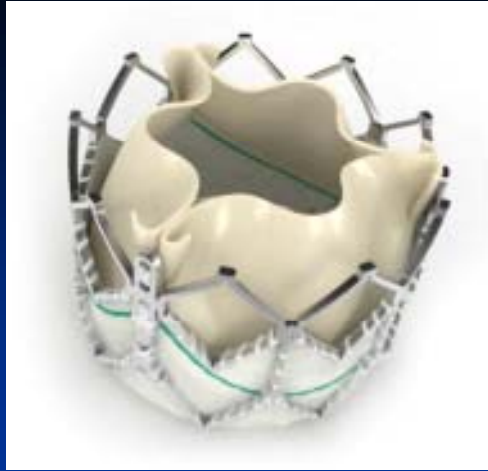


High Risk For Surgical AVR



3 Keys to Success

- PATIENT SELECTION
- **PROCEDURAL DETAILS**
- INTEGRATED TEAM APPROACH



TRANSFEMORAL TAVI PROCEDURAL STEPS

- Vascular access and insertion of large 18 / 19F sheath
- Insertion of pacing wire for rapid ventricular pacing
- Insertion of pigtail catheter for guiding aortography
- Cross aortic valve and insertion Amplatz Extra-stiff wire
- Balloon aortic valvuloplasty
- Insertion of valve assembly and NovaFlex, align valve, cross arch and aortic valve
- Valve positioning and deployment
- Removal of NovaFlex and balloon catheter
- Removal of large sheath and vascular closure

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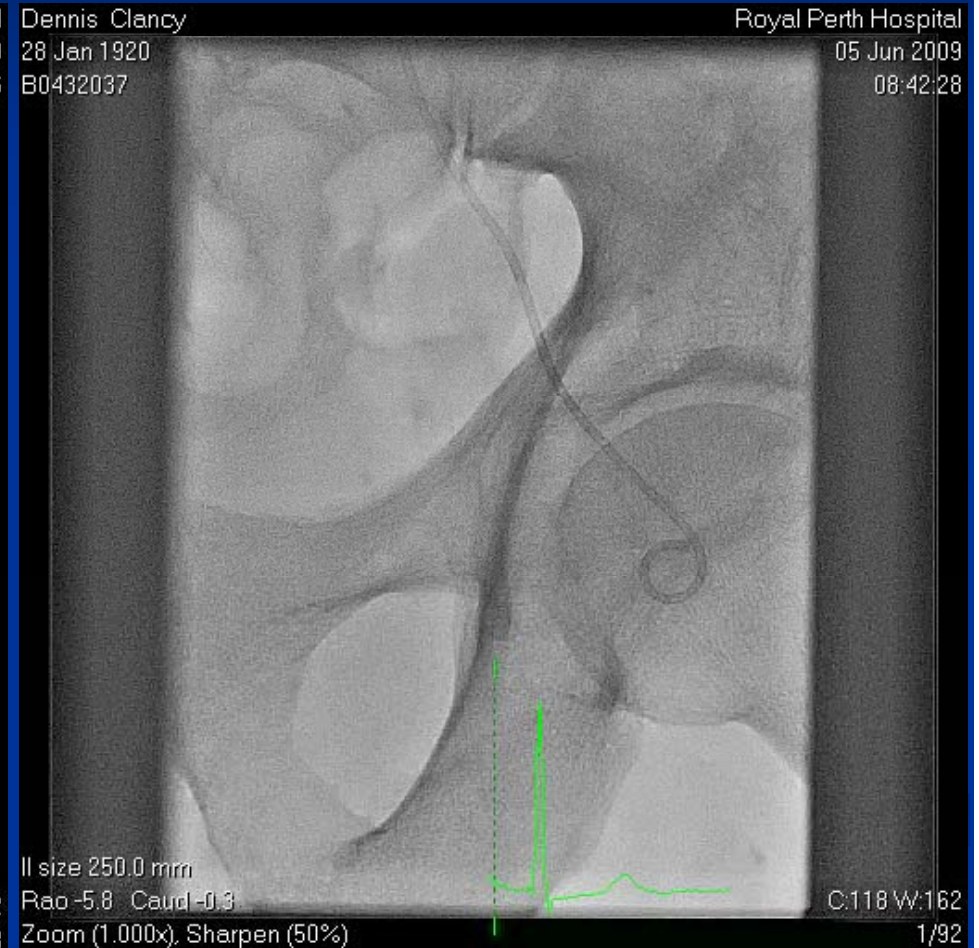
Common Femoral Artery Puncture

- It is vital to puncture at the anterior wall of the common femoral artery of the side for large sheath
- Ideally avoid calcified plaques (seen on fluroscopy)
- Options
 - Ultrasound guidance
 - Puncture of contralateral side first, then guide arterial puncture of side selected for large sheath by
 - Antegrade angiography
 - Cross-over pigtail

Common Femoral Artery Puncture



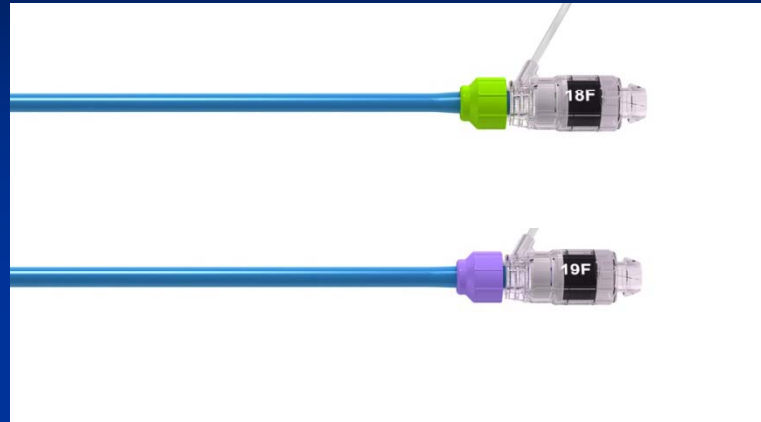
Contralateral antegrade AG



Cross-over pigtail marking CFA

NovaFlex Introducer Sheath Set

Hydrophilic coating
designed for easy insertion



Tri-seal valve
technology designed
for hemostasis

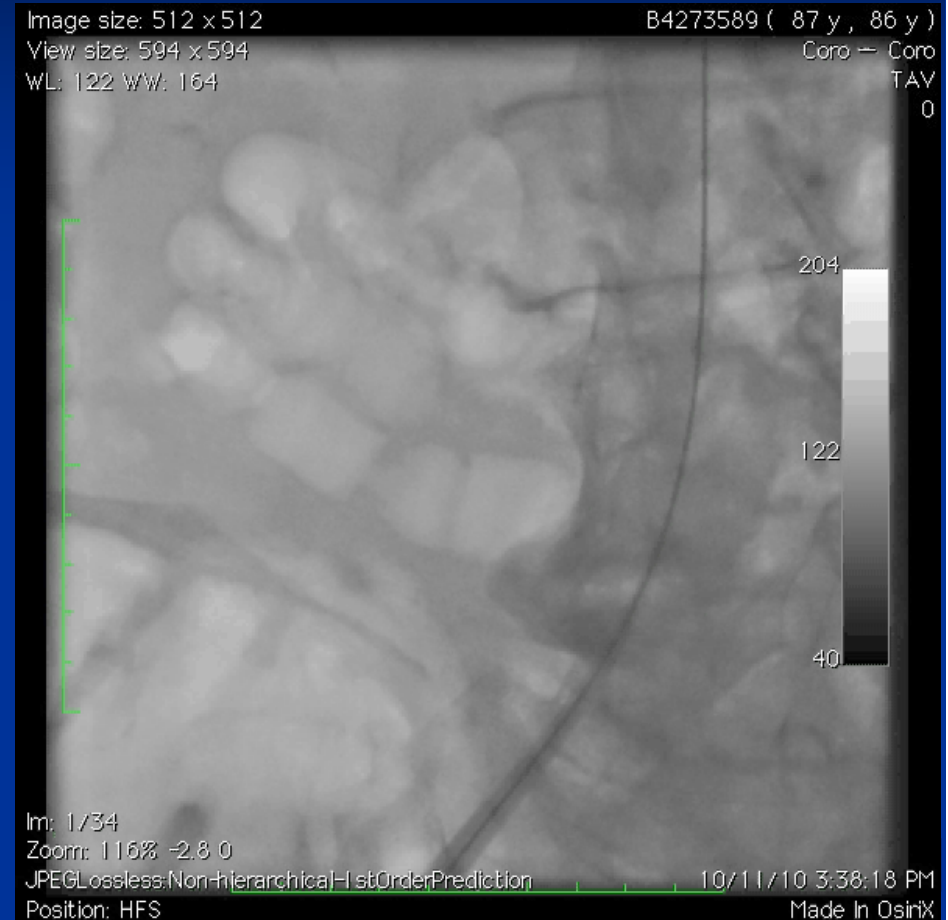
4 stepped dilators for arterial expansion



Hydrophilic coating and tapered distal segment for
smooth arterial dilation

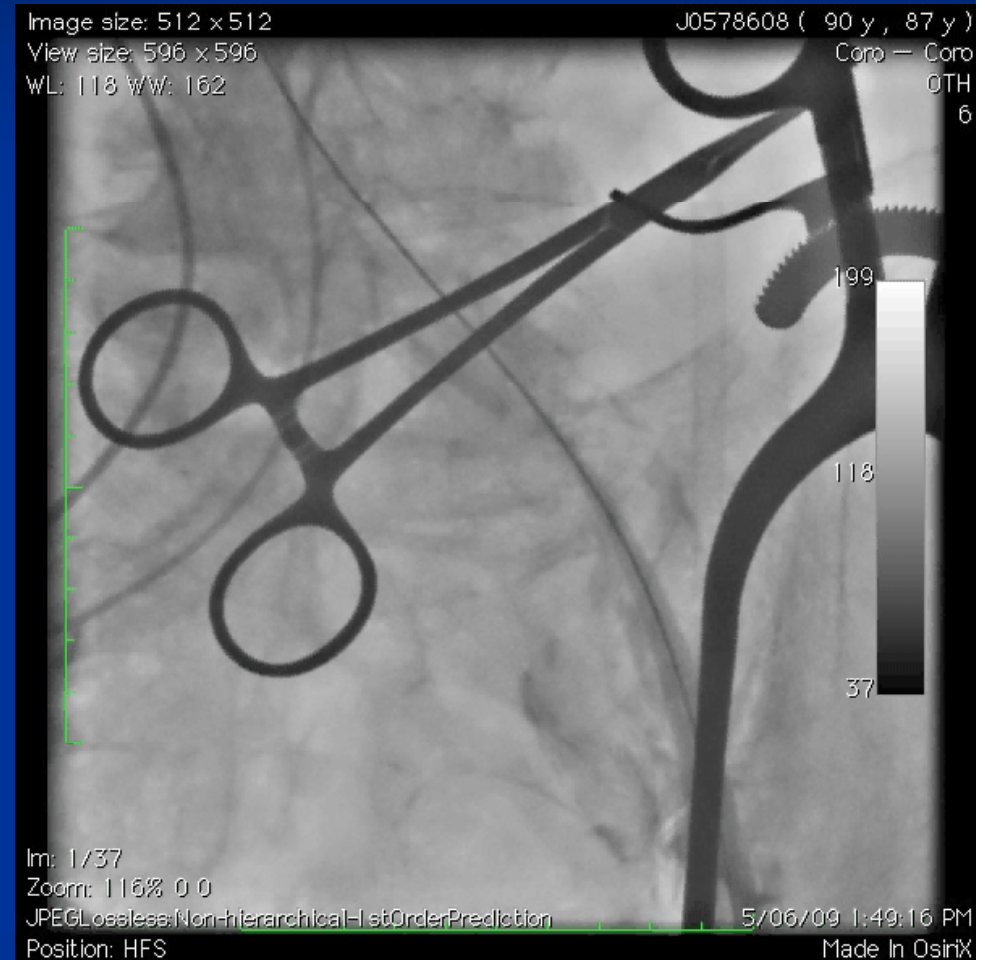
Large Sheath Insertion

- Fluoroscopy all large dilators and sheath insertion
- Over stiff wire
- Pass smaller dilators
 - Pass at least one dilator past aortic bifurcation or areas of smallest diameter
- Rotate dilators & sheath when inserting
 - Exception E-sheath
- Know position of final sheath tip



Large Sheath Insertion Issues

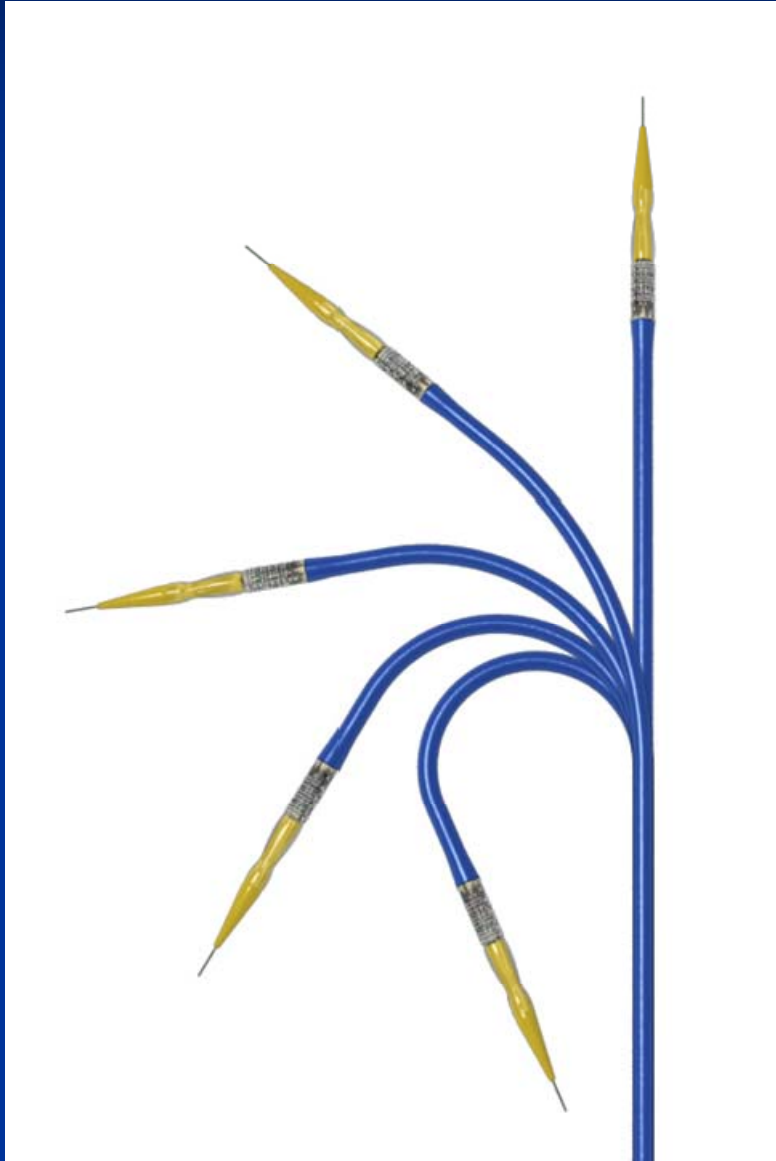
- Do not force sheath
- Watch movement of vessel calcium on fluroscopy
- Watch BP
- If vascular complications or rupture
 - Occlusion balloon
 - Insert dilator to tamponade



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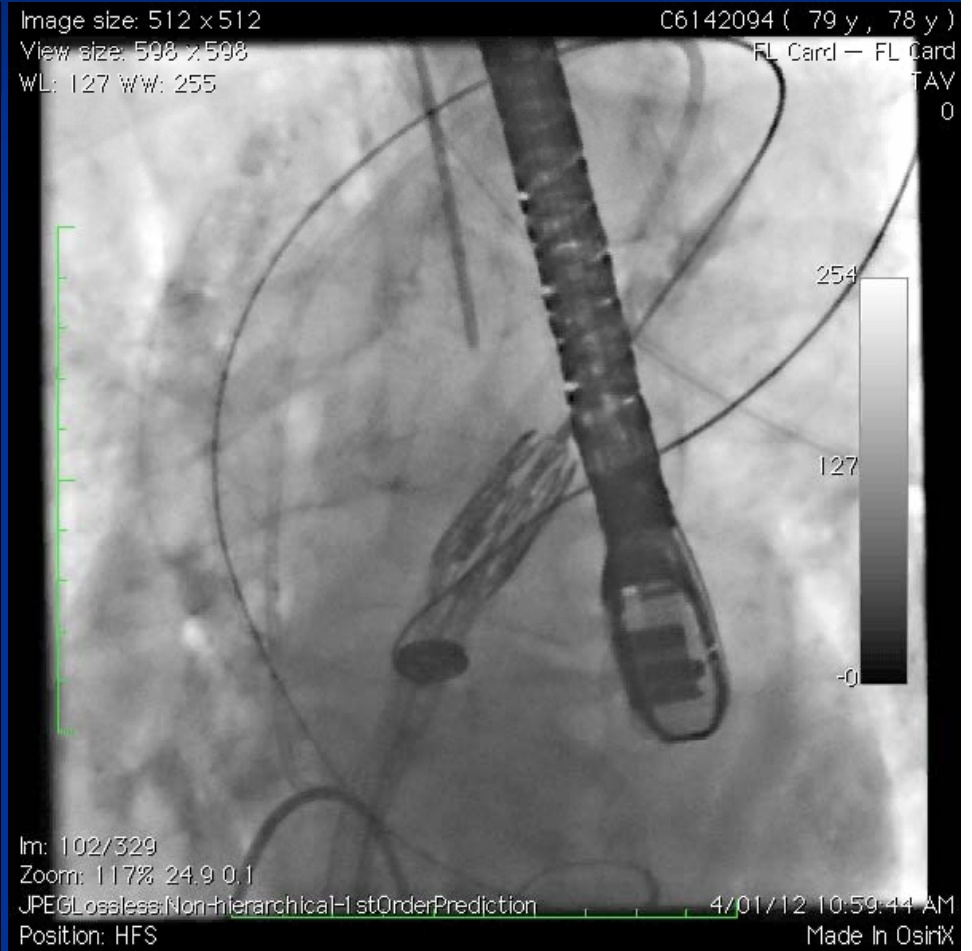
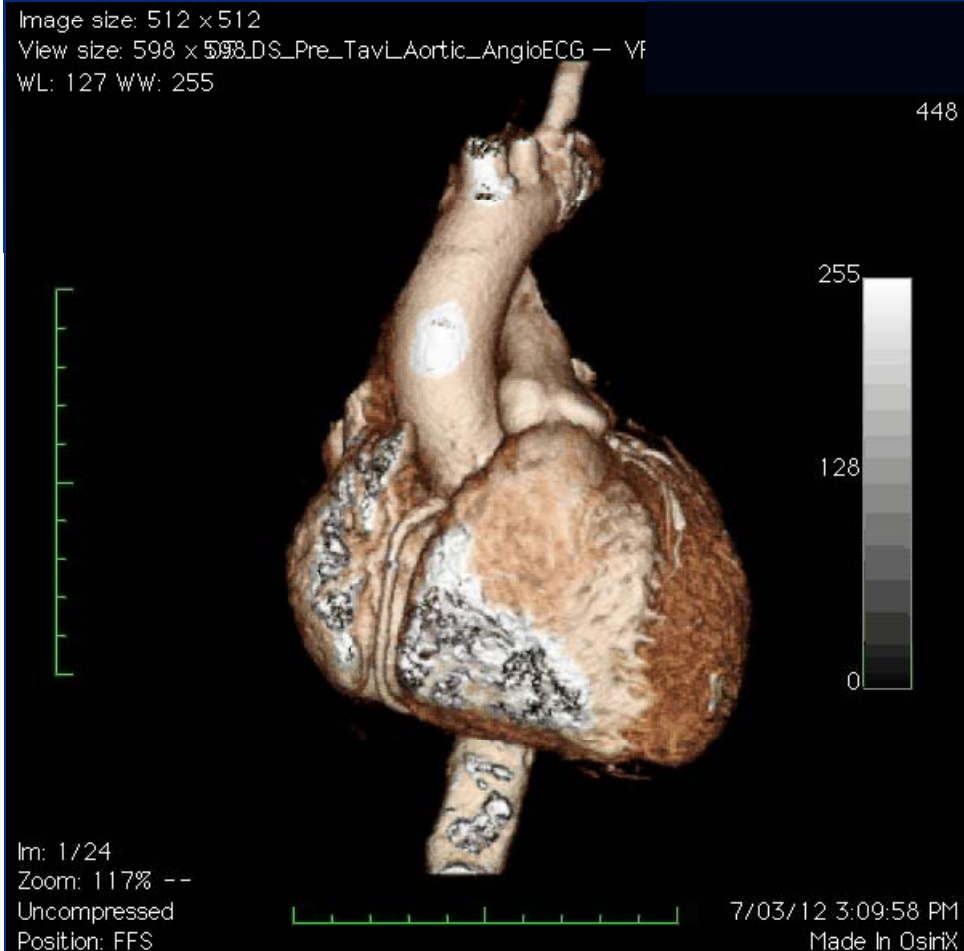
Crossing Arch



- Rotate flex wheel and fully flex by the time THV reach arch
- In resistance or unfolded aorta – Ensure maximal flexion and tension on wire

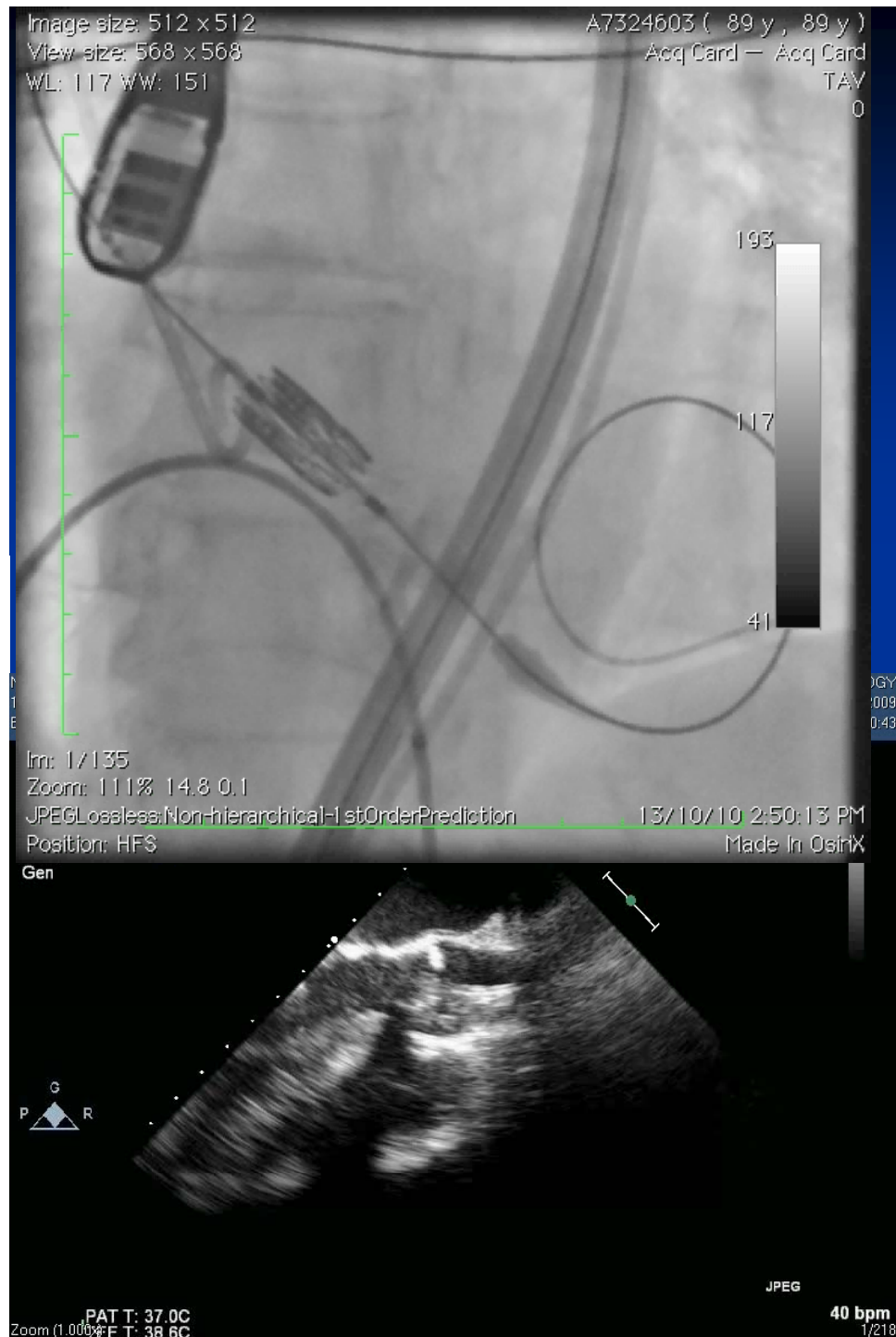
NovaFlex to Cross Unfolded Aorta

Maximal Flexion and Tension on Wire



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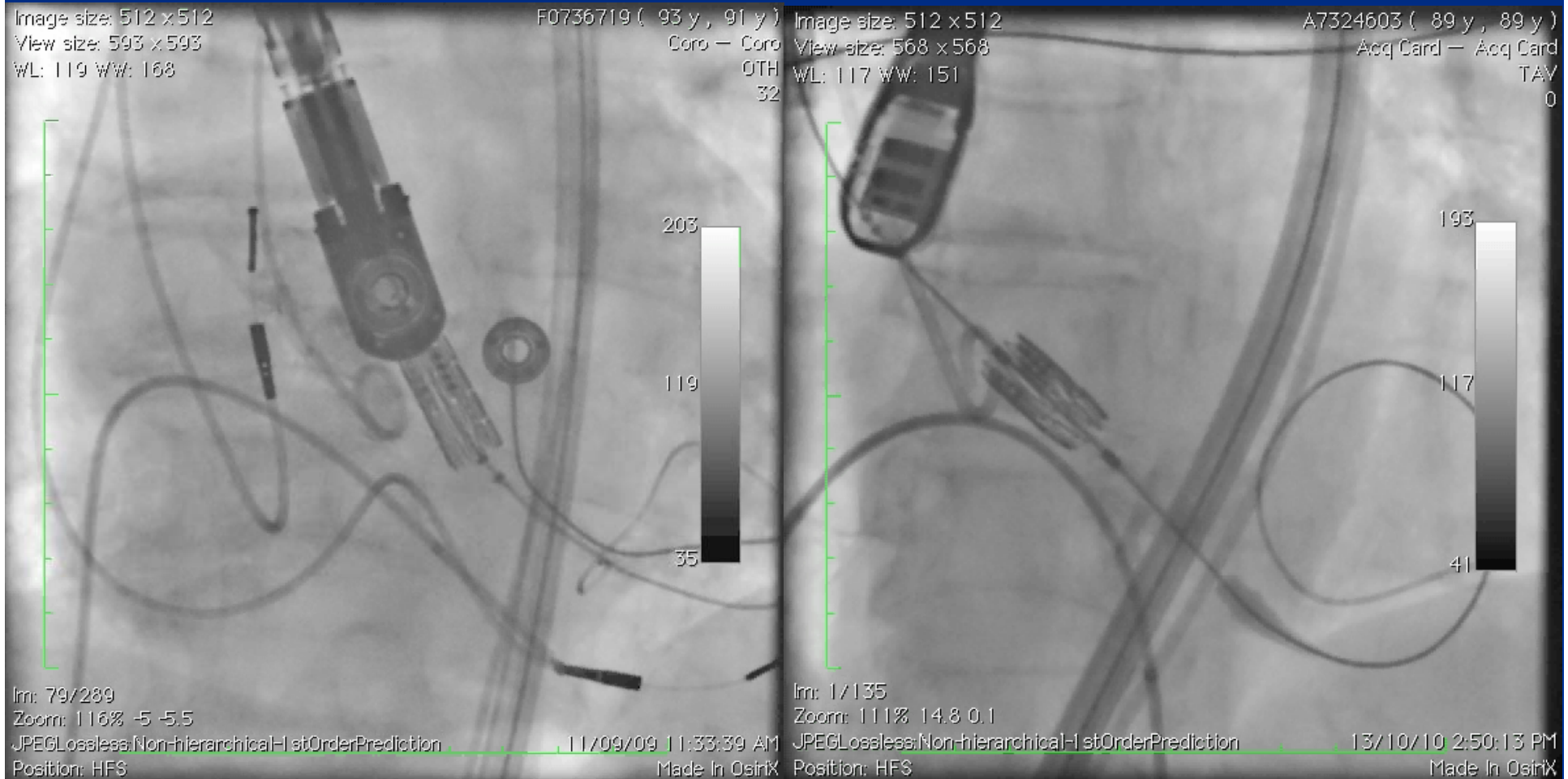


Positioning and Deployment

- Under aortography & TEE
- Valve deployment projection
- Position - 50-60% ventricular
- Take your time but watch hemodynamics
- Useful to do aortogram while burst rapid pacing prior to deployment
- Hold inflation 3 sec

NovaFlex System

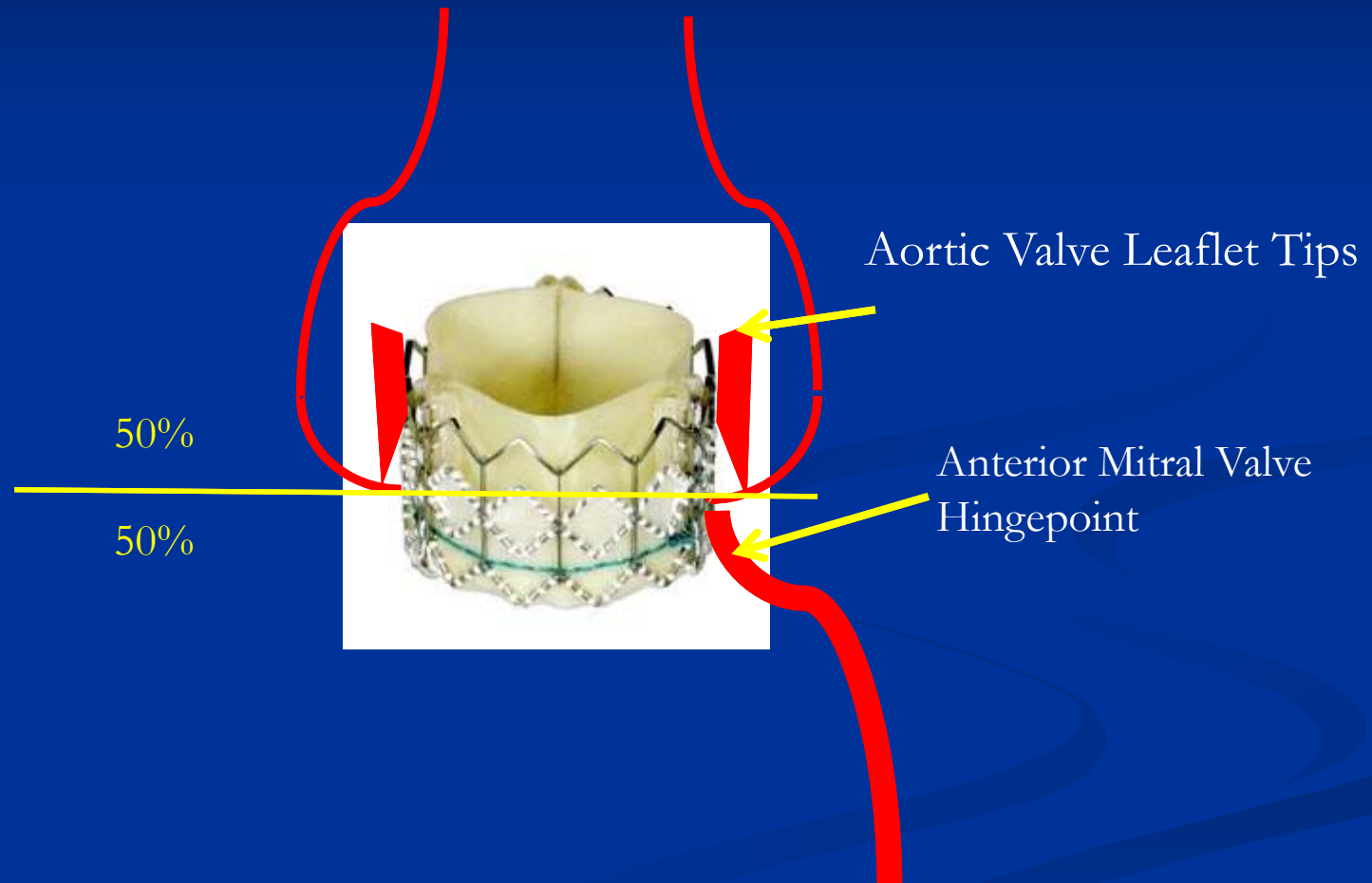
- Easier to achieve co-axial alignment
- Does not move much during valve deployment



RF 1

NF

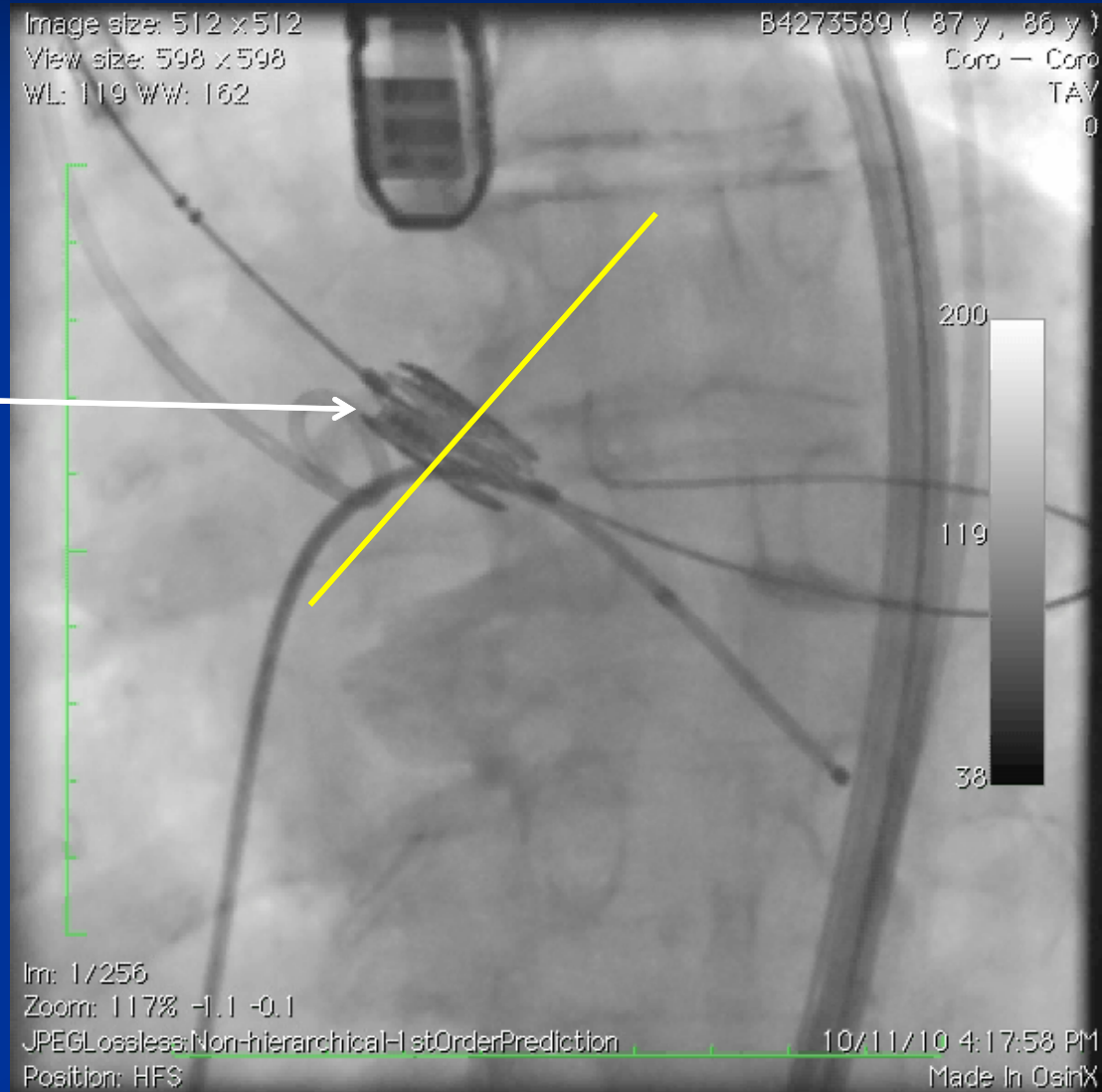
Ideal Final Position



Not always possible to satisfy all these

Using Leaflet Tip Ca to Help Positioning

Calcium of
Leaflet Tip



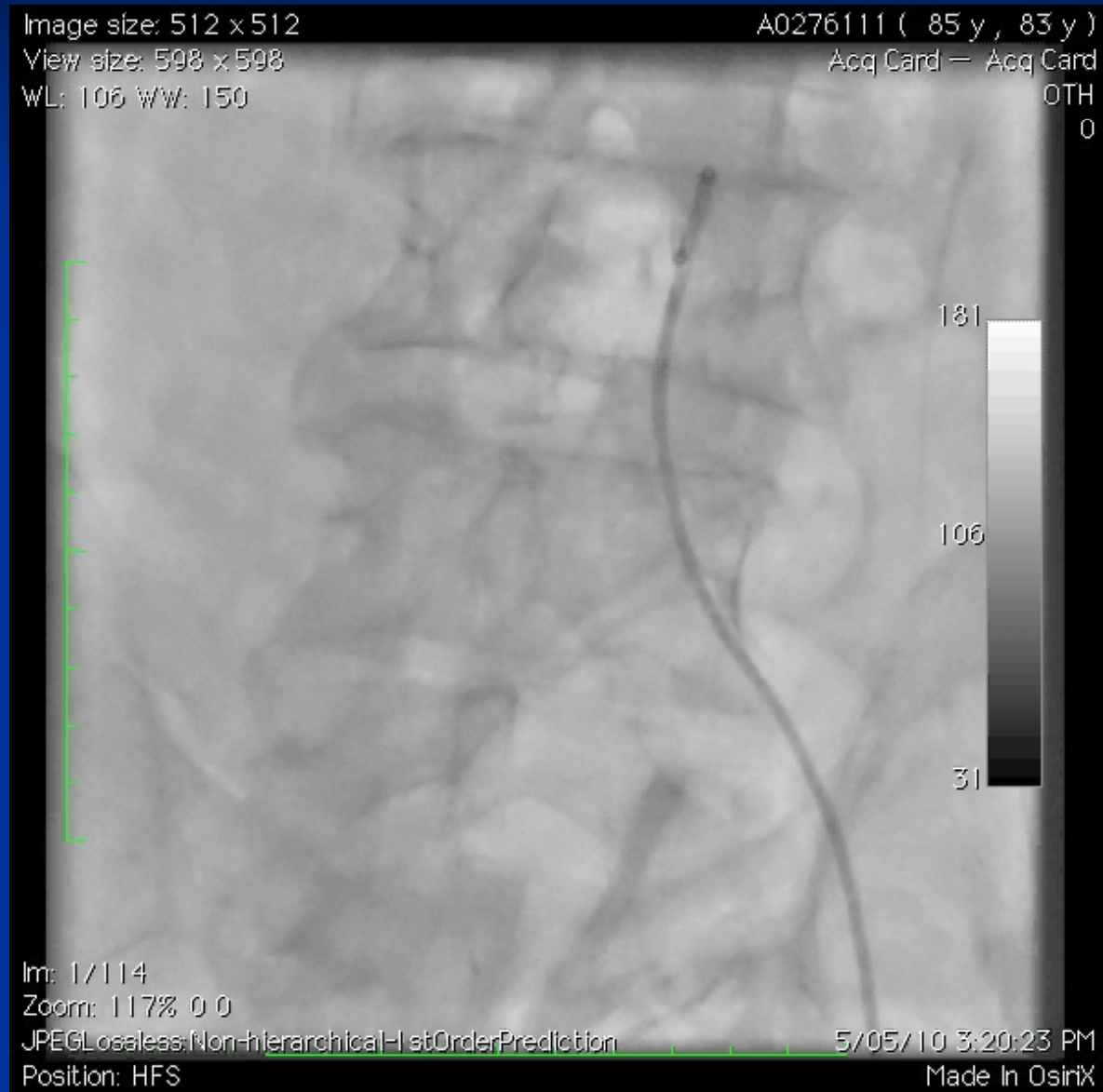
TRANSFEMORAL TAVI PROCEDURAL STEPS

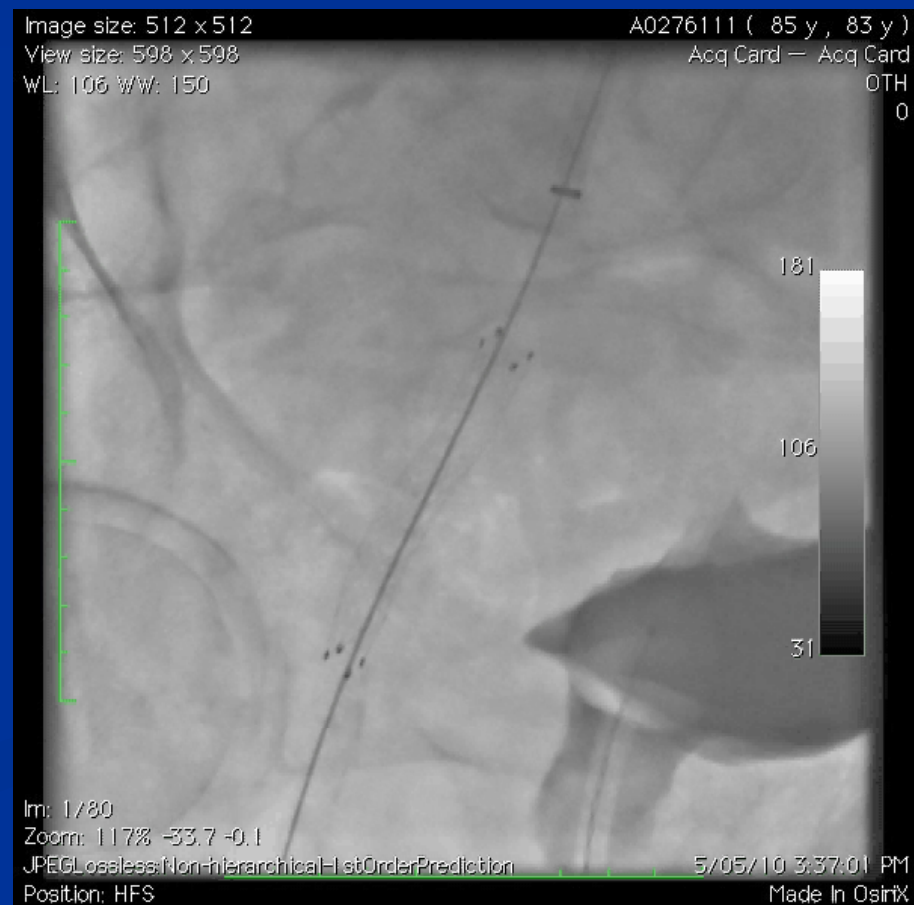
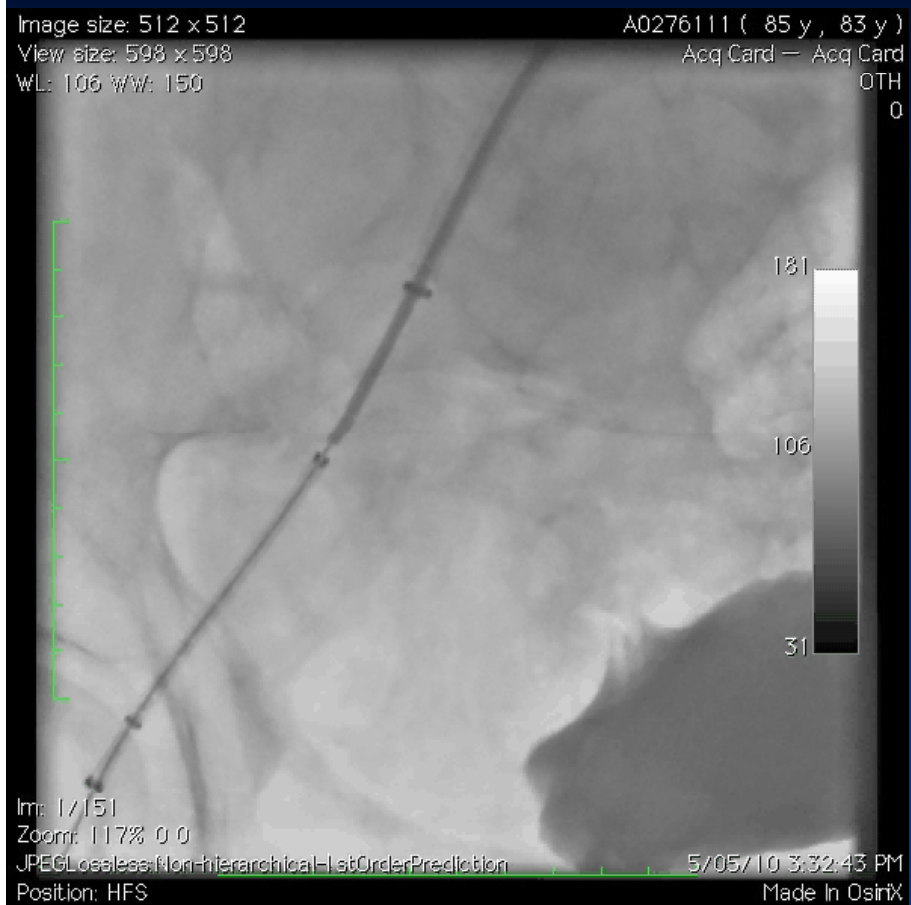
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Removal Of Large Sheath

- Aim for short dwell time
 - ie. Remove sheath as soon as valve function verified
- Contrast injection during sheath removal
 - Contralateral catheter / pigtail
 - Pre-emptive cross-over sheath with balloon inflation
- Leave guidewire in-place until haemostasis secured if preclosure
- Watch BP during sheath removal
- Ready large dilator or occlusion balloon to tamponade any perforation

Abrupt hypotension post-large sheath removal





Be Prepared for All Emergencies

Preferably with pre-defined & discussed protocol....

- What to do when BP falls
 - Peripheral perforation
 - Pre-closure fail
 - Coronary occlusion
 - Severe AR
 - Embolised valve
 - Valve malposition
-
- Bail out equipment list... And know where to find them...



Hypotension

Emergency Treatment

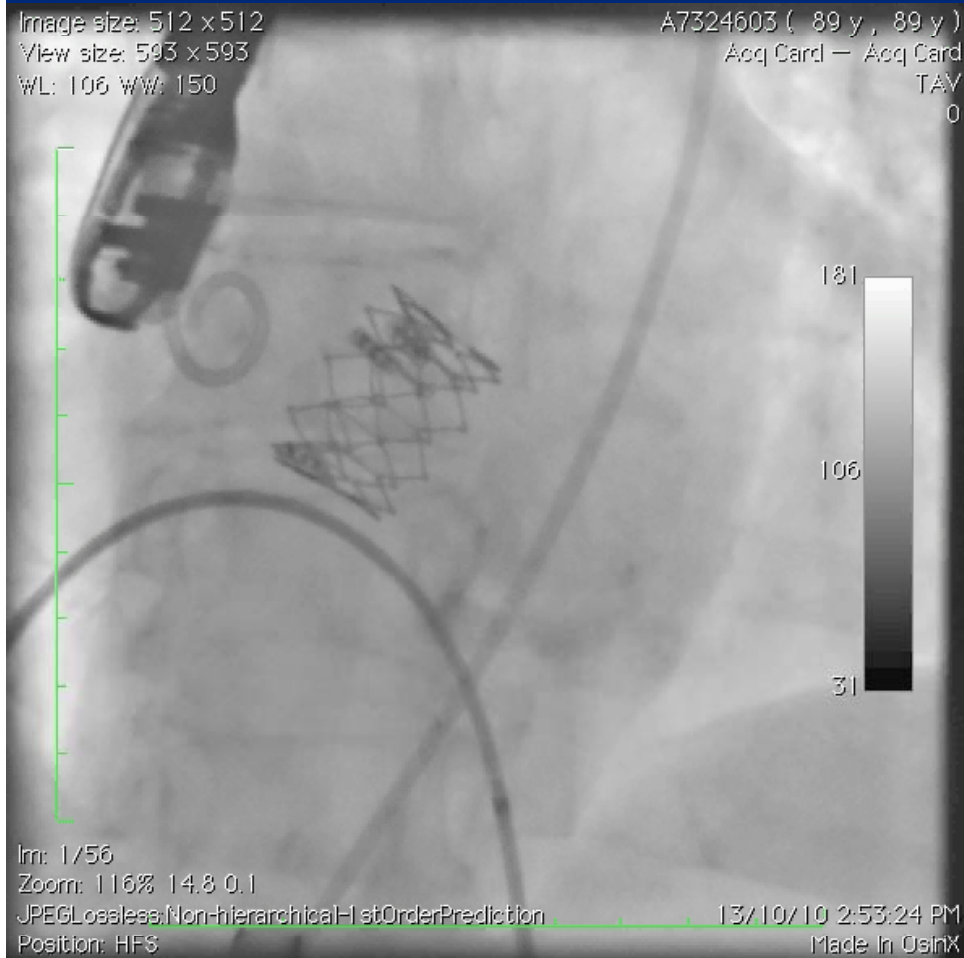
- Pressors +/- fluid
- Consider early cardiopulmonary bypass if not responsive
- Confirm diagnosis depending on circumstance & context

Hypotension

Consider circumstances

- At sheath insertion / removal
 - Peripheral perforation
 - → Early angiography
- After stiff wire passage to LV
 - Severe MR; Tamponade
 - → Echo
- Post-BAV
 - Severe AR; Tamponade
 - → Echo, Aortogram
- Post-THV deployment
 - Severe AR (valvular / paravalvular); Coronary occlusion; Tamponade
 - → Echo & Aortogram, then coronary angiogram

Hypotension post-TAVI



- Post-TF TAVI
- Heparin reversed with protamine
- 18Fr Sheath removed successfully & hemostasis confirmed

10 minutes post sheath removal

- Severe hypotension
- CVP ↑↑↑

Image size: 512 x 512

View size: 587 x 587

WL: 106 W/W: 150

A7324603 (89 y , 89 y)

Acq Card — Acq Card

CCT

0



Zoom: 115% Angle: 0

Im: 1/9

JPEGLossless:Non-hierarchical-1stOrderPrediction

13/10/10 3:40:56 PM

Position: HFS

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3. ANGIO 2

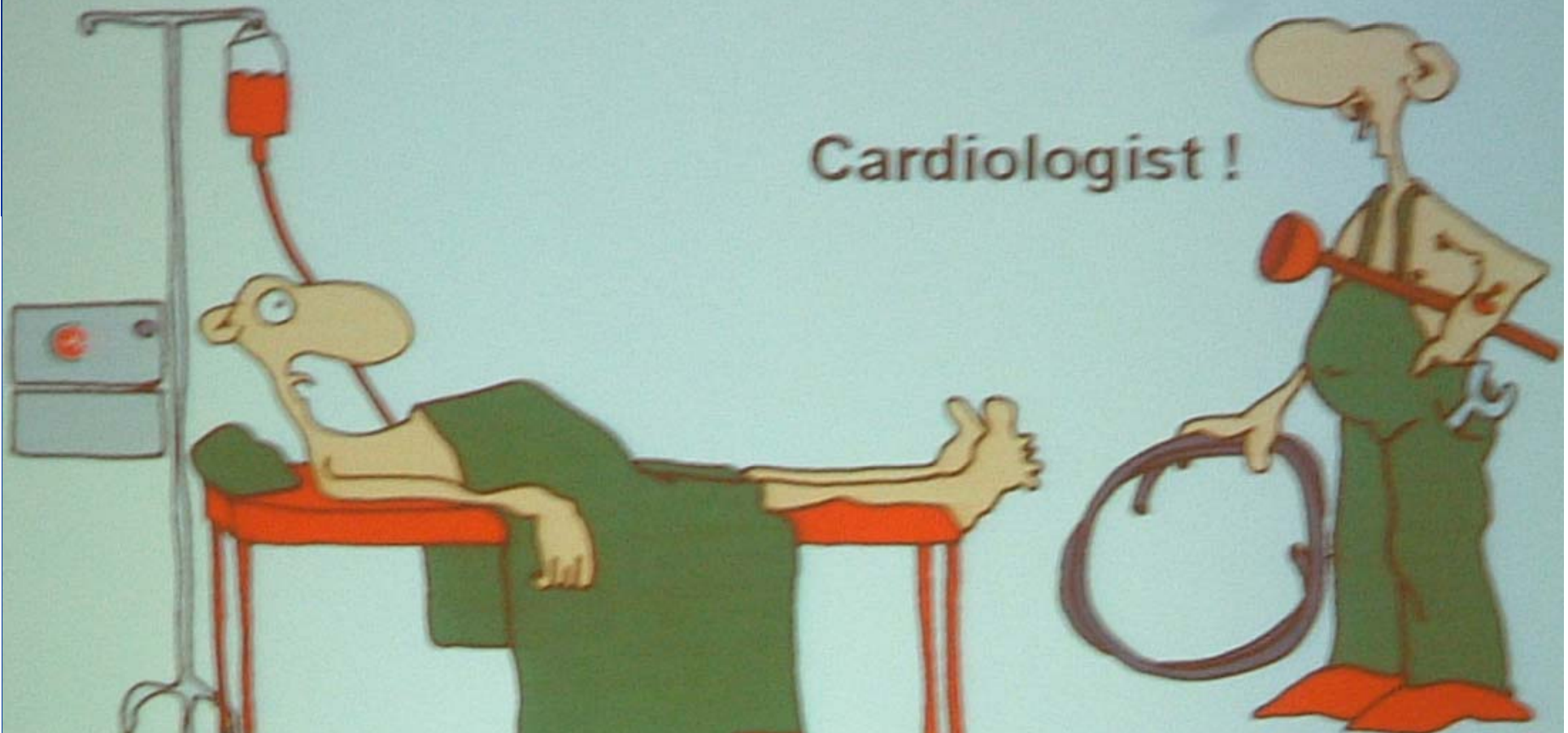


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TEAM**

Are you the guy for the valve job?

Cardiologist !



Geriatrician

Cardiac Imaging

Nephrologist

Interventional cardiology

Cardiac surgery

Cardiac cathlab

TAVR Program

Intensivist

Vascular Surgery

Program Co-ordinator

Cardiac Anesthetist

Hybrid OR

Wards – ICU / CCU /
Cardiac / CTS ward



Conclusion

- TAVR is a unique procedure...
- Low volume (~60-100/yr in “expert centers”)
- Highly challenging procedure (despite *minimally invasive*)
 - Crucial part of procedure over in short time
 - No / Minimal options for “re-do”
 - Multiple operators & support staff must act in co-ordinated manner
- High risk patient subset – minimal reserve for errors

Keys To Success In A TAVR Program

- Proper patient selection
- Attention to technical details
 - Do the same steps all the time
 - Diligent monitoring of patient – from start (puncture or cut) to finish (sheath removed and closed)...
 - Develop action plans for disasters
 - Be prepared to handle the unexpected
 - Same operators / procedural support staff
- Well trained and experienced multidisciplinary team
 - Supports procedure
 - Supports pre-TAVI and post-TAVI care