

The Role of imaging in Hybrid Intervention



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21st CARDIOVASCULAR SUMMIT
TCTAP 2016

No Disclosure



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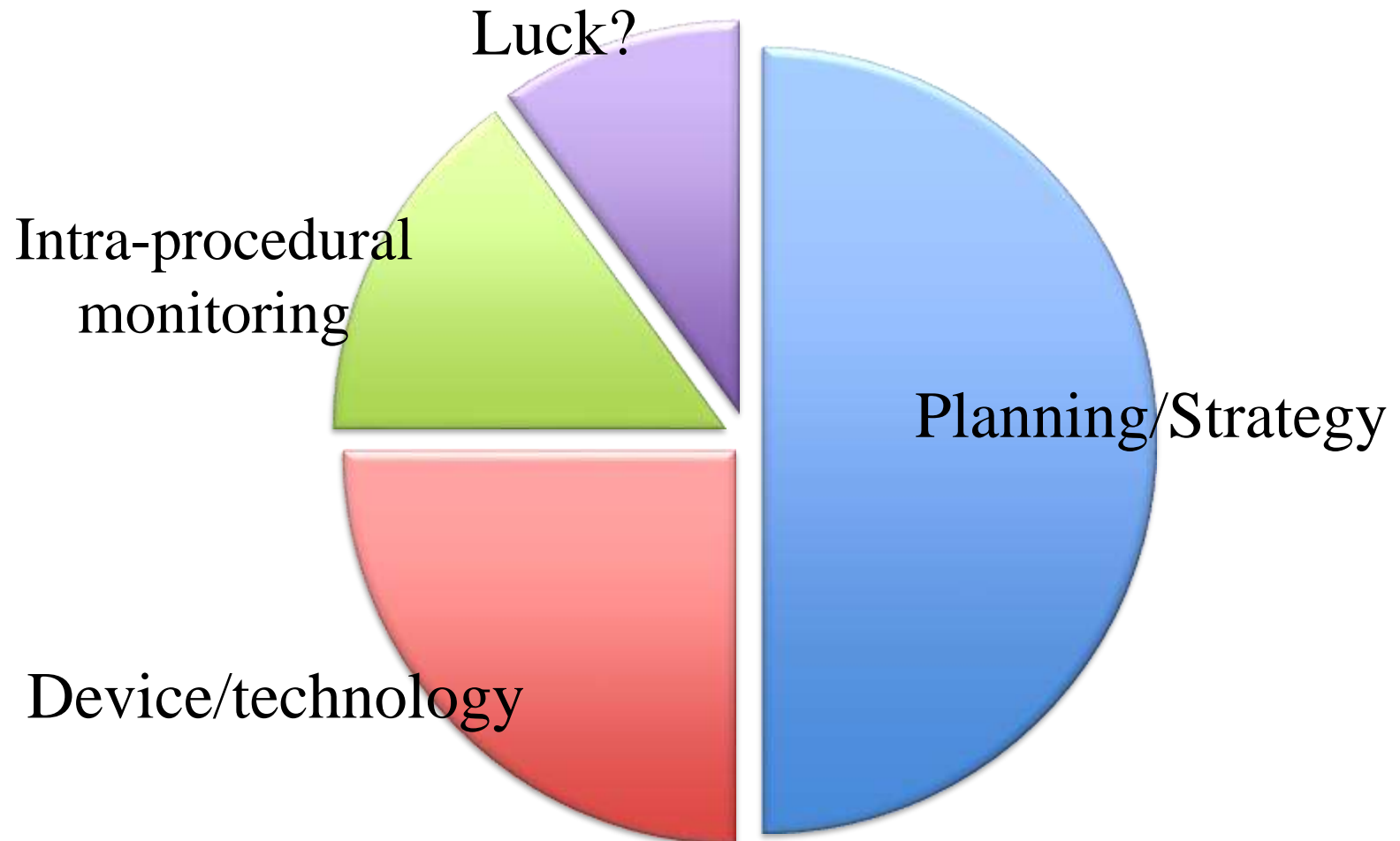
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Key to success in Hybrid intervention



Key to success in Hybrid intervention

Intra-procedural Monitoring

- On -procedural imaging
- Outcome measure by imaging

Planning/Strategy

- Pre-procedural imaging
- Rx Goal setting
- Strategy
- Simulation/Practice



The Role of imaging in Hybrid Intervention

Imaging is a Key !!



Preprocedural imaging for Hybrid CI

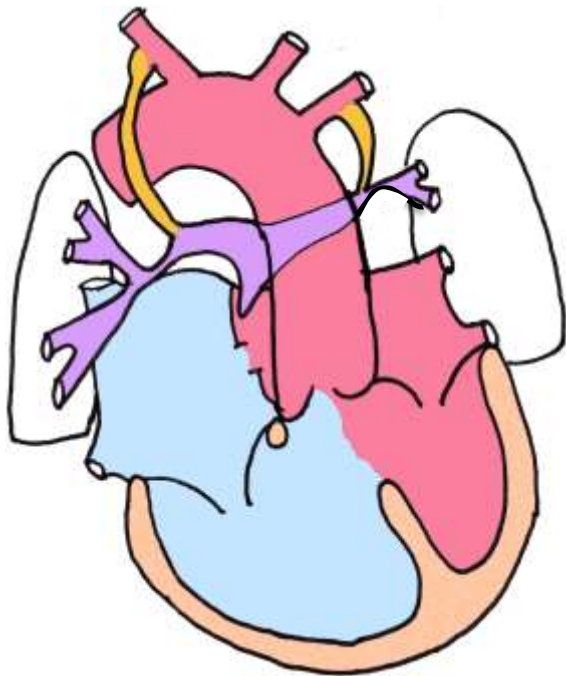
- Identify the lesion to be treated
- Guidance for approach
- Selection of treatment device
- Simulation
- Set “ Treatment Goal”
- Plan Strategy



Pre-procedural imaging for Hybrid CI

Case1 12y Female

Dx: TOF, PA, MAPCA, post-UF, bilateral PPS, TR(IV)



Planning the strategy for Hybrid CI

Hybrid approach in non-Hybrid setting

1. **The lesion to be treated**
2. **Guidance for approach**
3. **Selection of Device**
4. **Rx Goal**

Distal PPS

**PTFTE(6mm) Graft to MPA
made by surgery as vascular
access**

**Stent (Palmaz) dilatation
In Cath lab**

Palliative Rastelli in OR

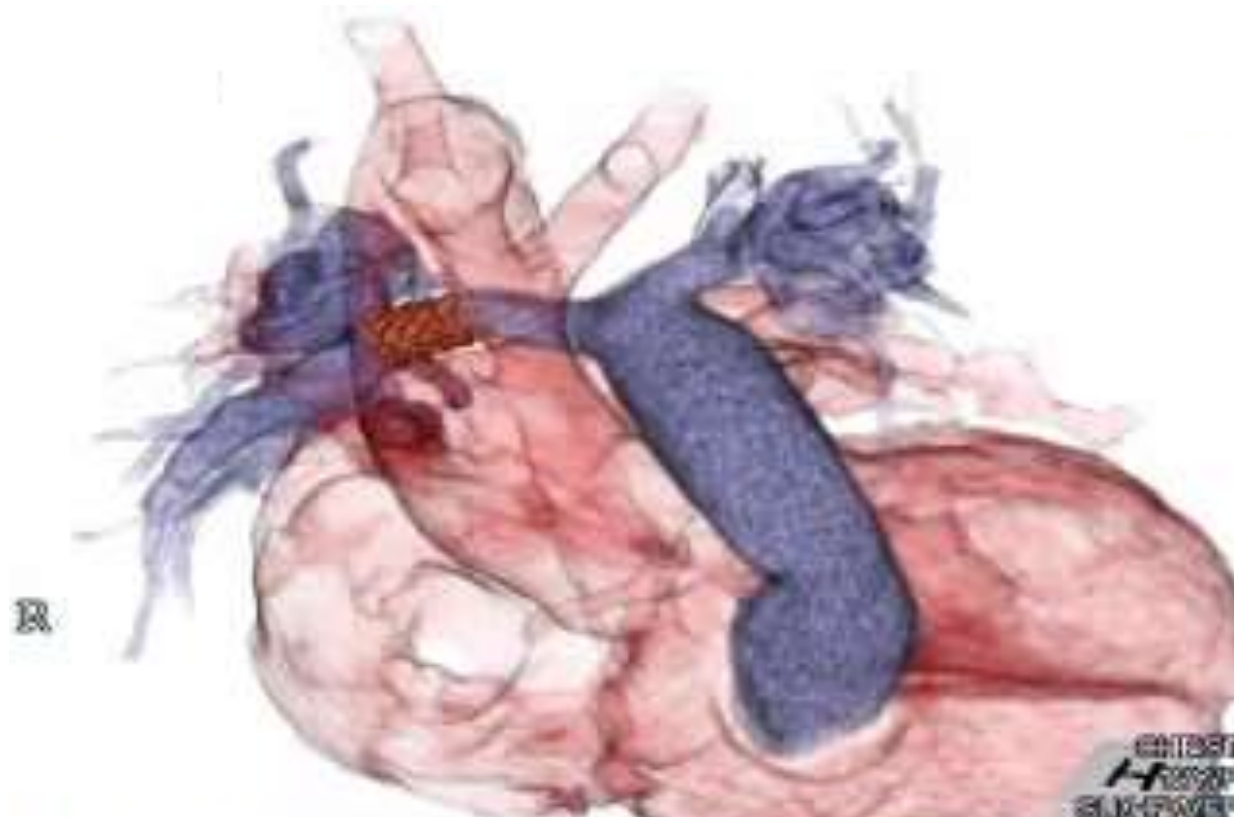


Hybrid Intervention in non-Hybrid suite



Hybrid Intervention in non-Hybrid suite

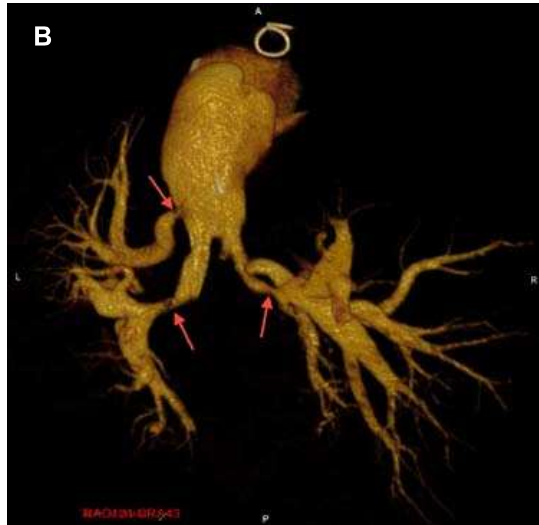
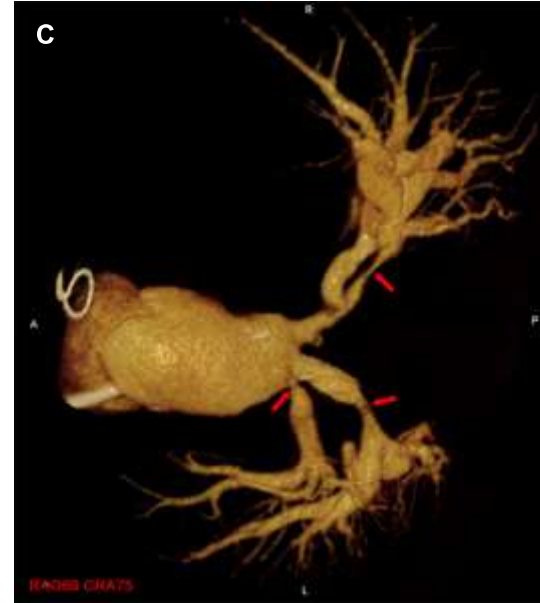
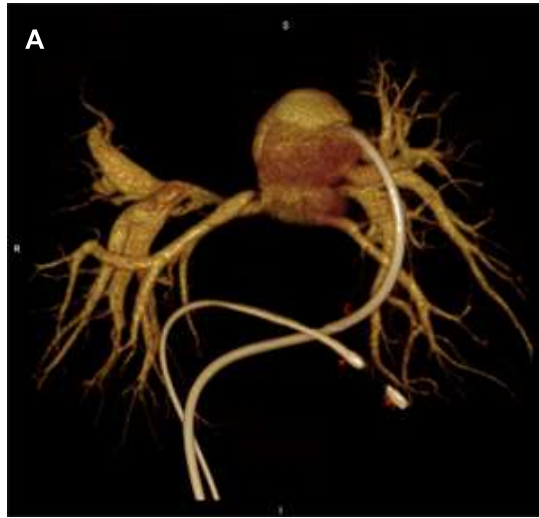
Post-operative CT



3D rotational angiography



3D rotational angiography



3D rotational angiography

Case of Post-Norwood (BT shunt)



The Role of imaging in Hybrid CI

- Pre-interventional assessment
- **Monitoring on hybrid intervention**
- Post-hybrid treatment assessment



Monitoring & Guidance on Hybrid CI

- Identify the lesion to be treated
- Guide for approach
- Positioning of device
- Monitoring for intervention
- Evaluate the outcome
- Avoiding the complications
- Set up end point of intervention



The Role of imaging in Hybrid Intervention

Check points of imaging on monitoring Hybrid CI

- Visibility
- Operability
- Accuracy
- No disturbance of surgical filed
- Radiation (Angio.CT)
- Magnetic filed (MRI)



The Role of imaging in Hybrid CI

Echo guidance for Hybrid CI

Case 1y4m , 3.6Kg

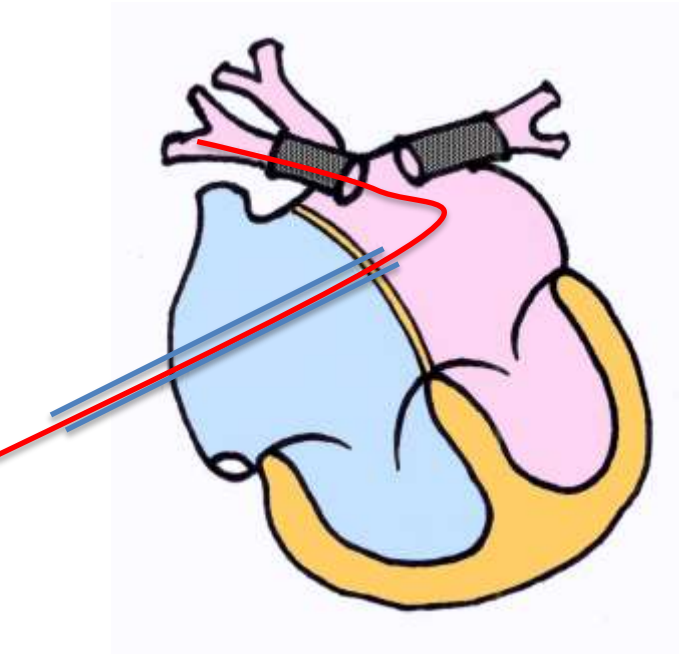
Dx:

1. TAPVC(III+Ia), post-repair,
2. Repeated PVO, PV stenting
3. Closed IAS
4. ELBW with Russel-Silver syndrome



Echo guidance for Hybrid CI

Rx: Re-dilate and Stent-in-stent for PV stent by direct puncture from RA through IAS



Room: Cath. Lab

Approach: right anterior thoracotomy

Procedure:

Pursring suture for RA puncture

Puncture from RA through IAS to LA (#20 surflo)

Needle tip confirmed by contrast echo.

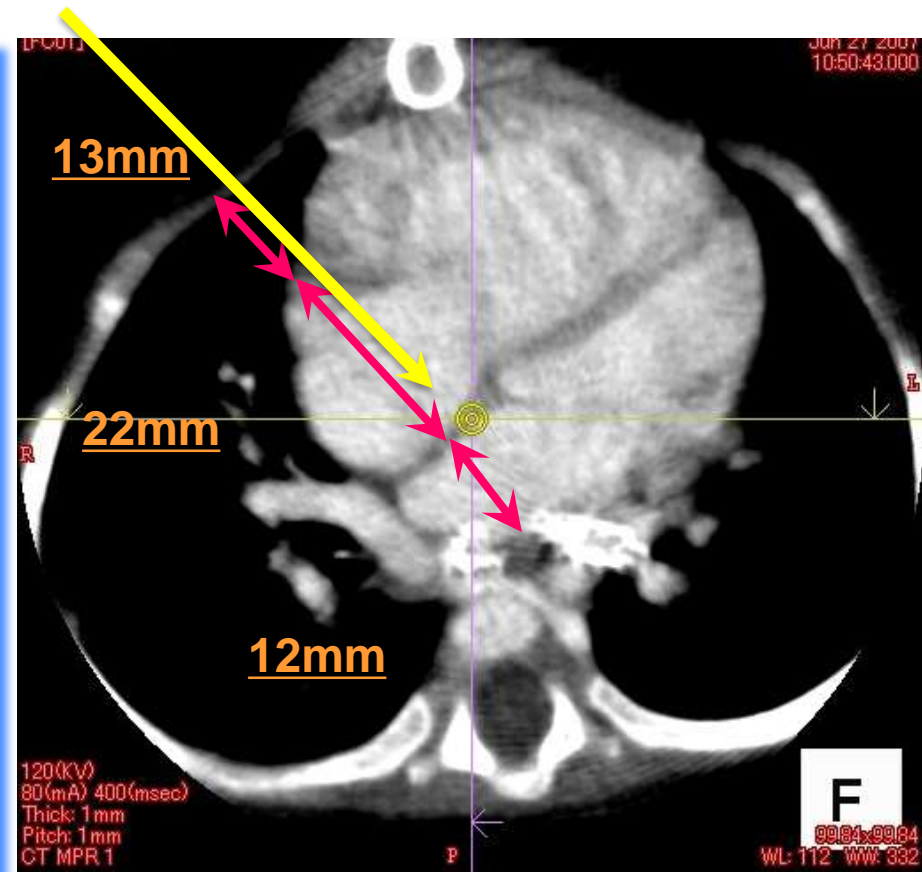
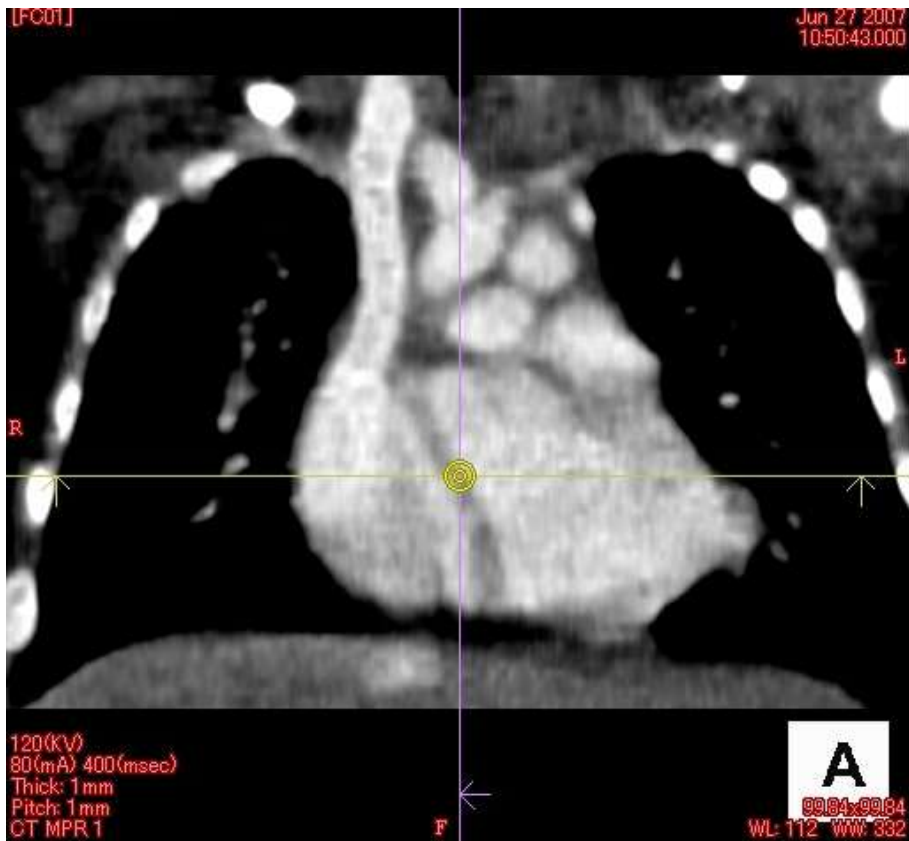
5F sheath along 0.025" GW inserted to LA

Implant new stent in old PV stent by GW guide



Echo guidance for Hybrid CI

Set the position and puncture direction by pre-procedural CT



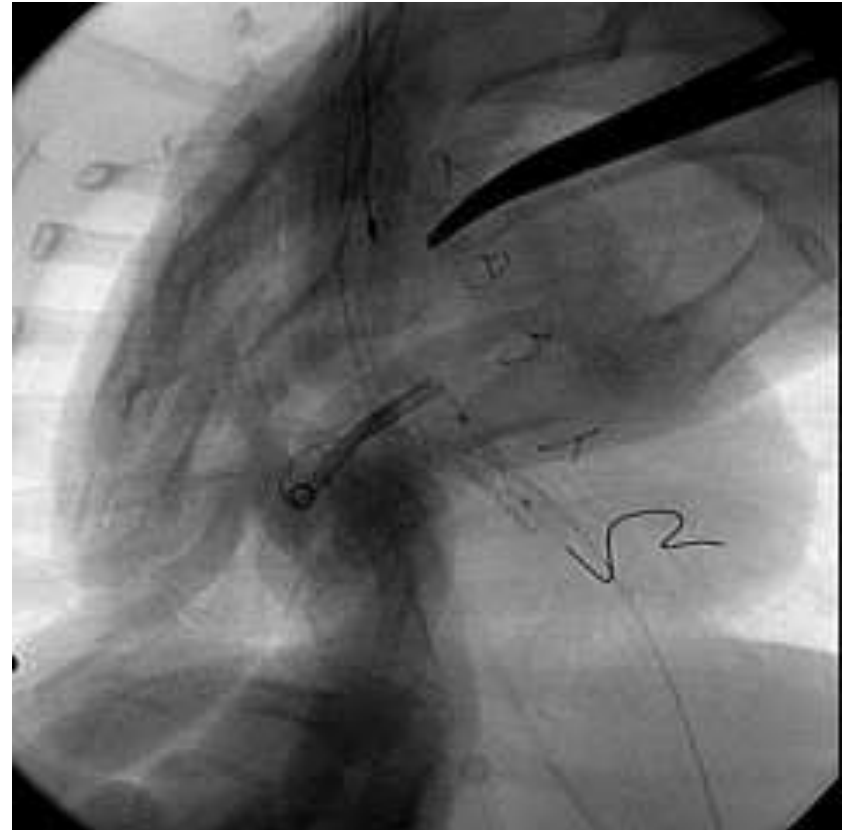
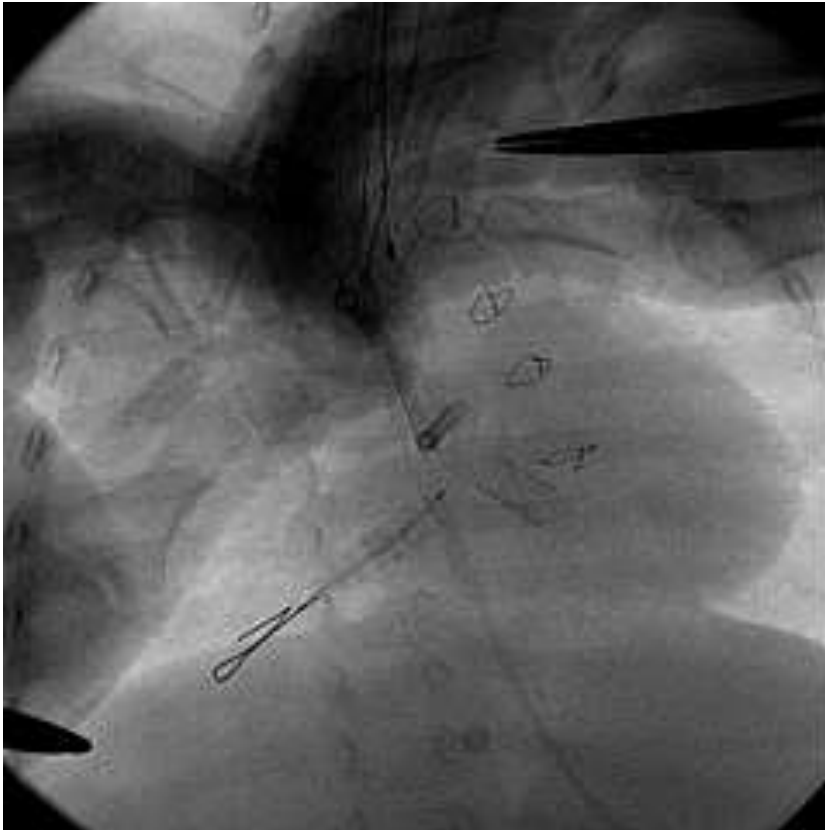
3D Echo guidance for Hybrid CI



3D Echo guidance for Hybrid CI

RPV stenting (Liberte 4mm)

LPV stenting (Liberte 4mm)



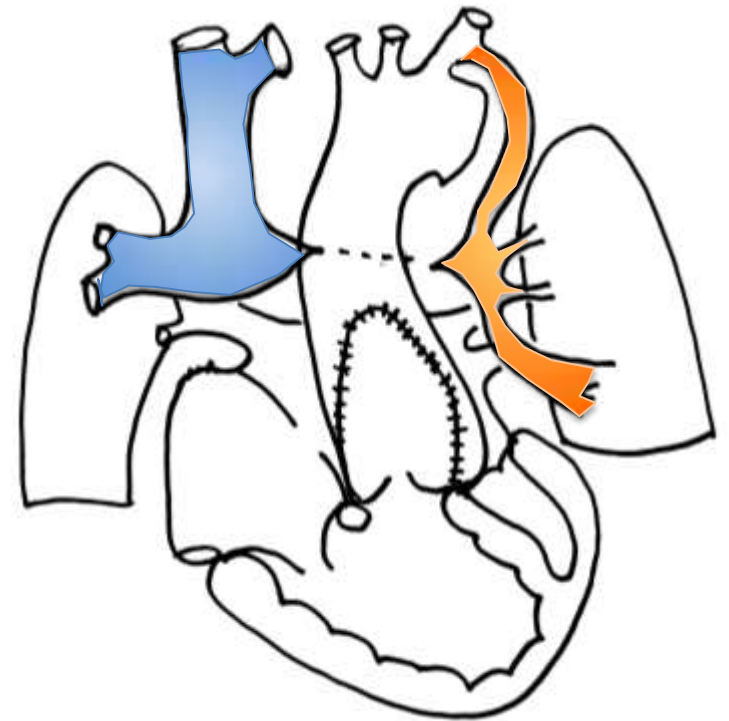
The Role of imaging in Hybrid CI

Intra-procedural monitoring

Case 3y8m , 7 Kg

Dx:

1. HLHS, p-Norwood+BDG
2. LPA total occlusion
3. LPA rehabilitation by Left BT

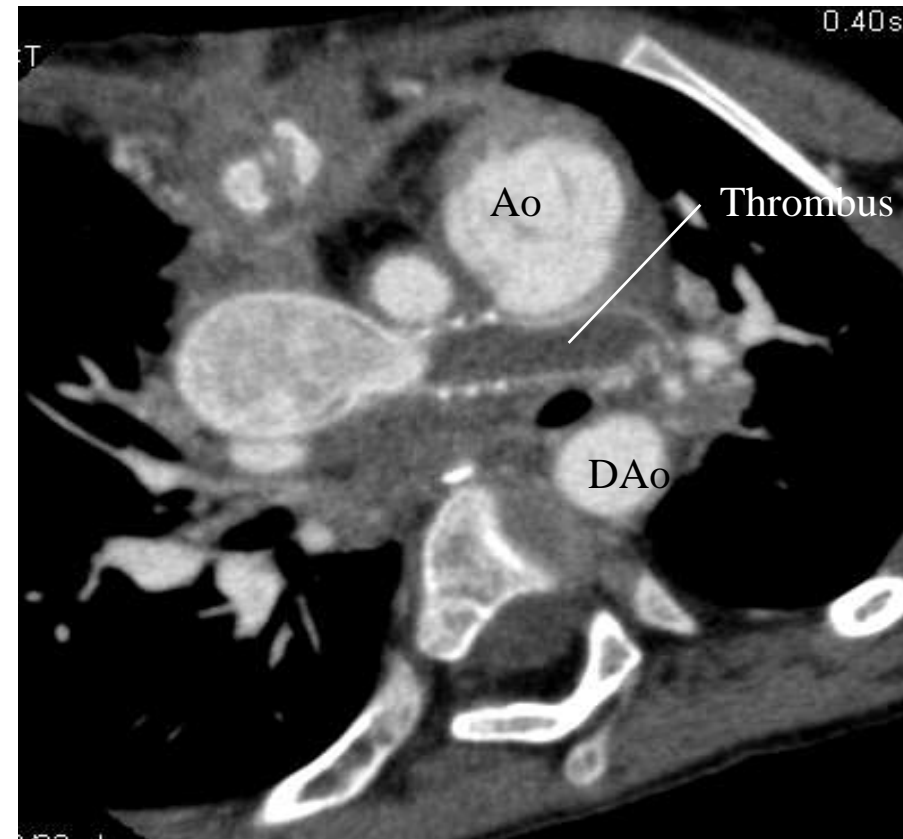


Case : HLHS, p-BDG, LPA occlusion

Simultaneous Angio

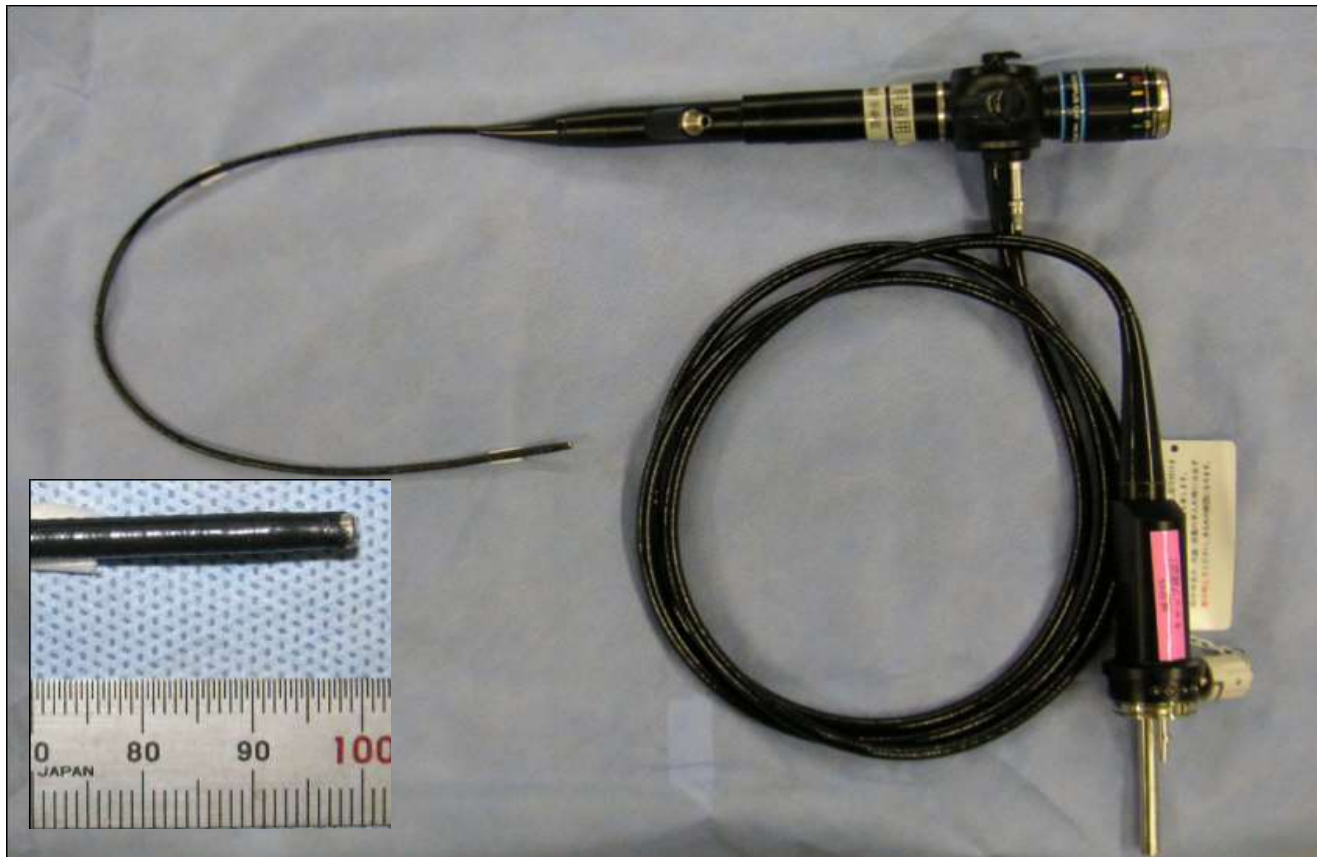


Enhanced CT

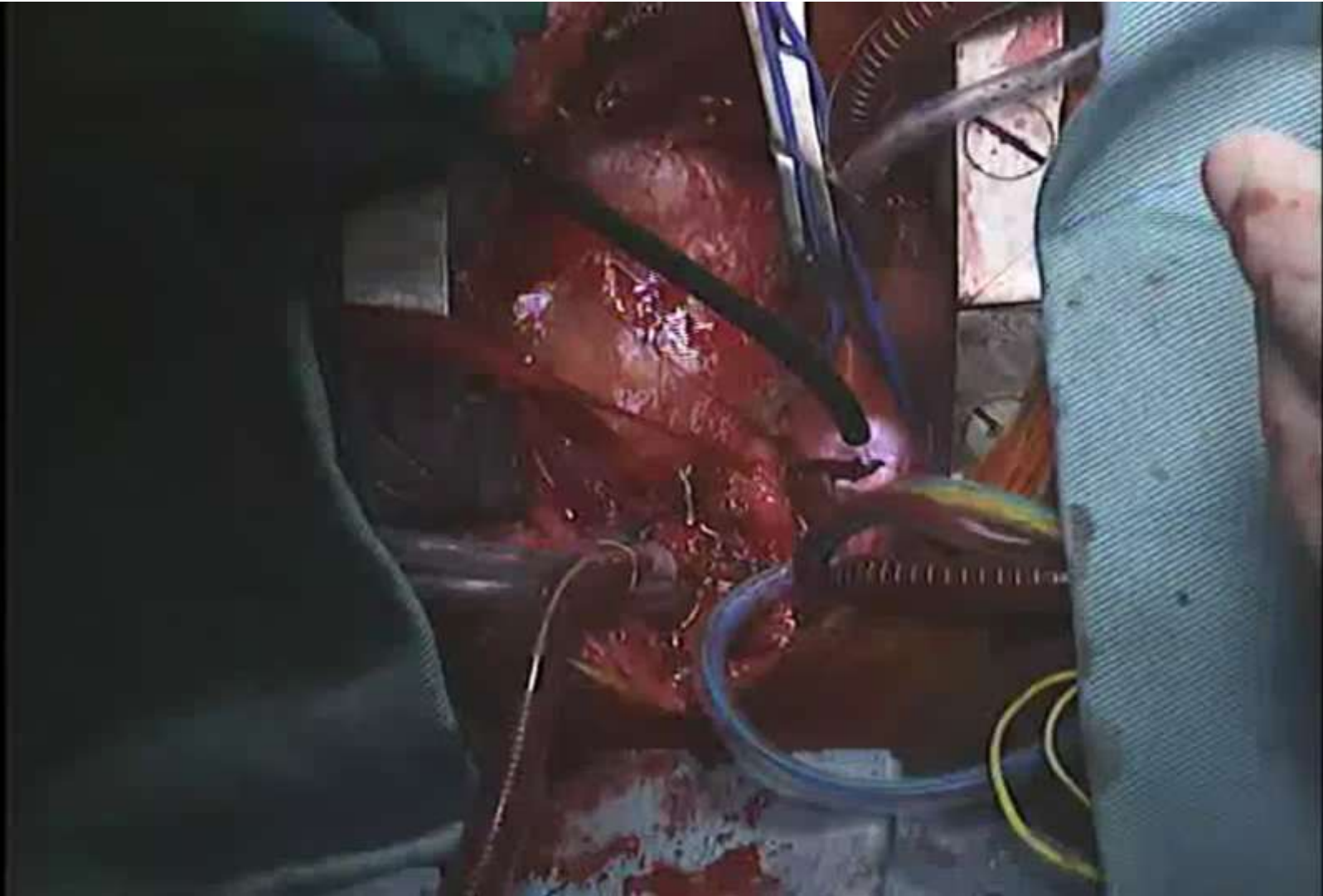


Direct visualization of the lesion by Cholangioscope

Cholangioscope



Direct Visualization of target lesion



Post-Hybrid Rx of LPA stent & TCPC



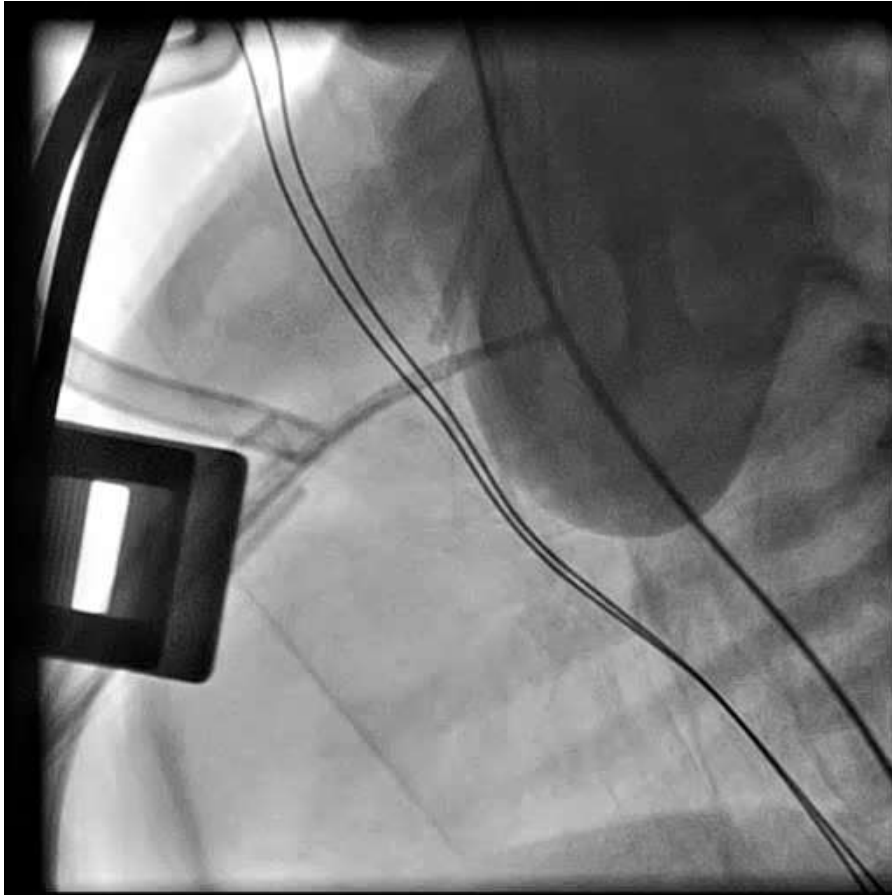
The Role of imaging in Hybrid Intervention

New Radioluscent Sternum retractor for Hybrid CI

No obstacle for angiography & hybrid CI using X-ray



Radioluscent sternum/rib retractor for Hybrid CI



Courtesy of Professor Toshiki Kobayashi,
Saitama Medical university, International Medical Center

Conclusion

- ✓ The imaging plays an important role on Hybrid catheter intervention:
 - Pre-procedural assessment
 - Plan for treatment strategy
 - Simulation
 - Intra-procedural monitoring
 - Evaluation of outcome
 - Complication control
- ✓ Need to renovate the devices for intra-procedural imaging



Thank you for your attention

경청 해 대단히 감사합니다

