

# Handling Most Challenging Patient in Difficult Situation in Cath Lab

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# Cath Lab & Heart Disease

- Interventional cardiology is a branch of cardiology that deals specifically with the catheter based treatment of heart disease
- A large number of procedures can be performed on the heart by catheterization.



# Most Common cases in HKSH CCIC

- Coronary Angiogram +/- Stenting (FFR, IVUS, OCT, Rotablation)
  - Electrophysiology Study +/- Ablation (with or without 3D mapping system)
  - Device Implantation (Pacemaker, CRT, Micra)
  - Structural Heart (LAAO, TAVI, Mitraclip)
  - Peripheral Angiogram +/- Stenting
  - Minor Procedure (Tilt table, Cardioversion, Loop Recorder)
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# Type of case

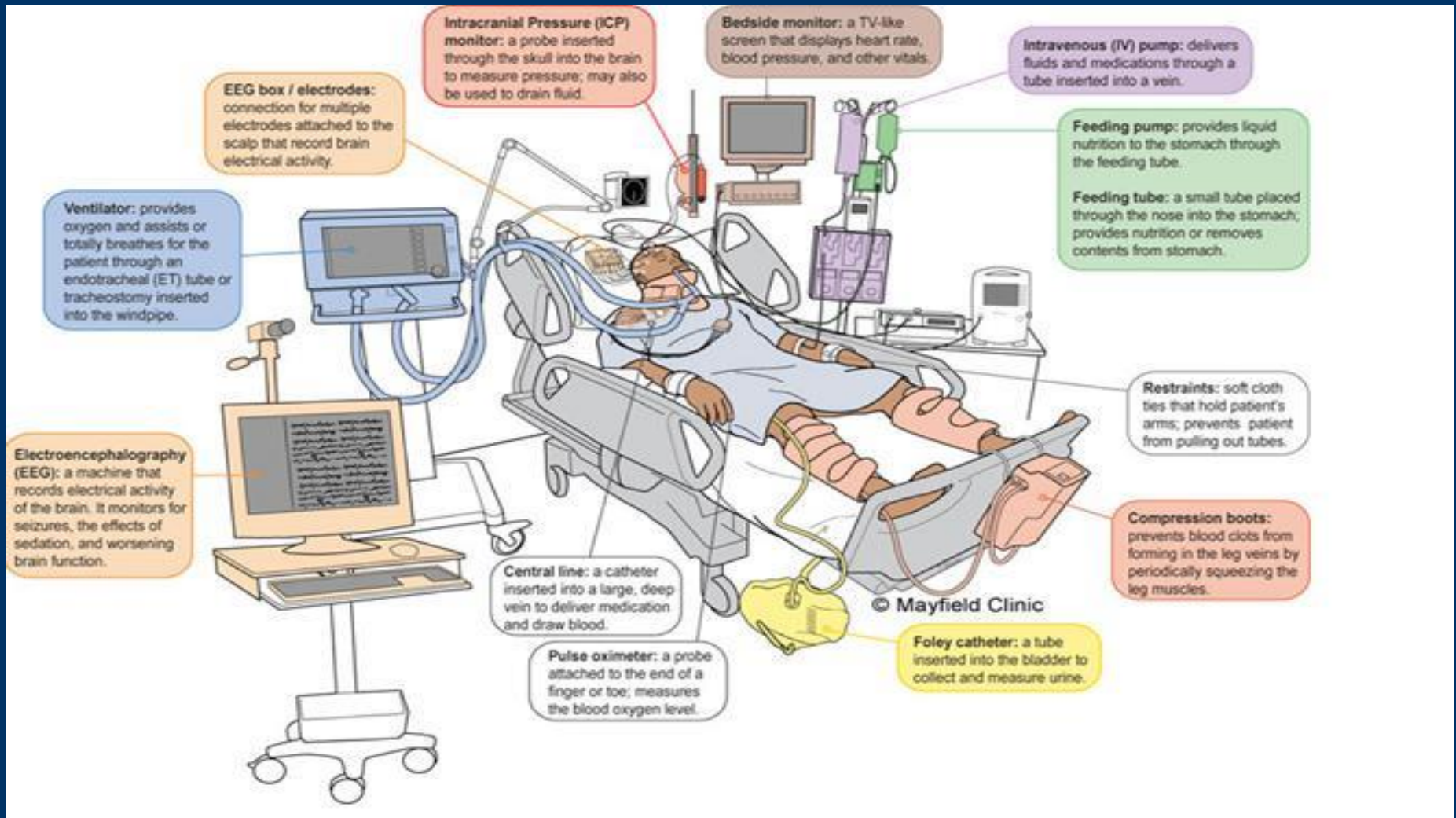
- Elective
- Emergency



Most Challenging Patient in  
Difficult Situation in Cath Lab?



# Most Challenging Patient= Complicated ?



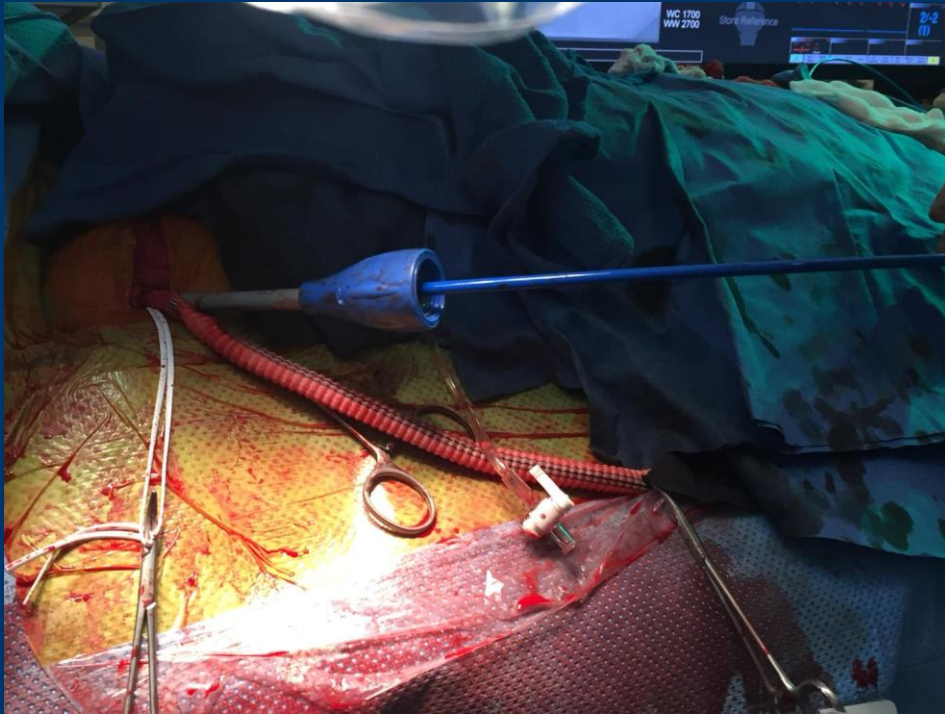


**TAVR in an 87-year-old patient with situ-invertus and coronary artery disease (previous stenting), bilateral carotid stenting, limited vascular access (calcified, tortuous common iliac artery with spontaneous dissection), horizontal aorta...**

**Multi-disciplinary approach in Hybrid OR:**

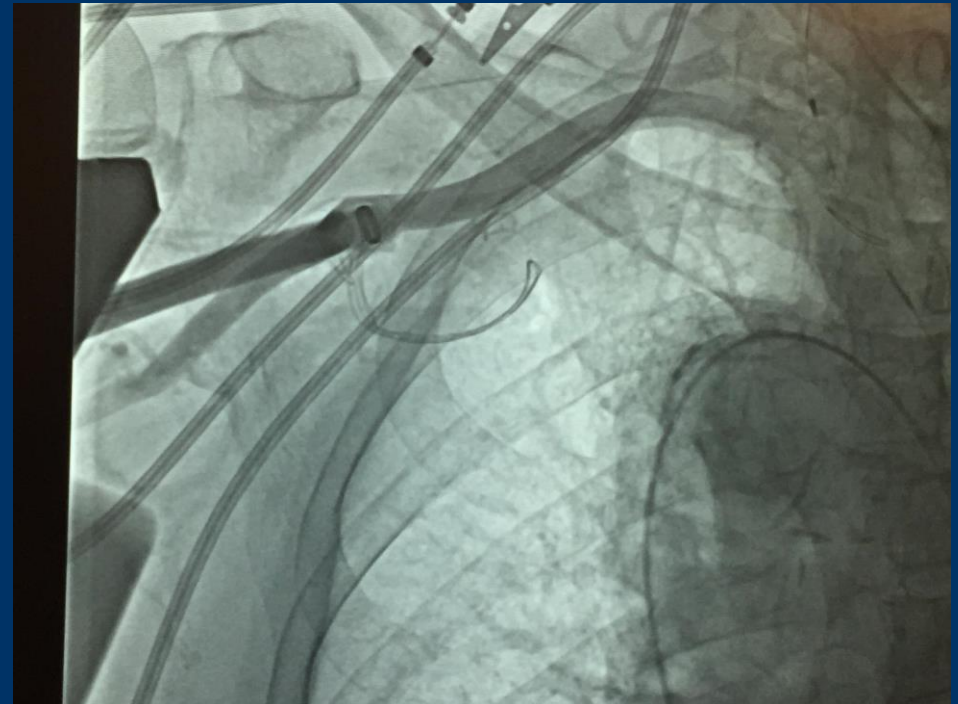
- Anaesthetist
- Interventional Cardiologists
- Cardiac Surgeon
- Vascular Surgeon
- Scrub nurses
- Cath Lab Nurses...





## Right subclavian approach:

- Vascular graft by Vascular surgeon
- Preserve right upper limb circulation during procedure



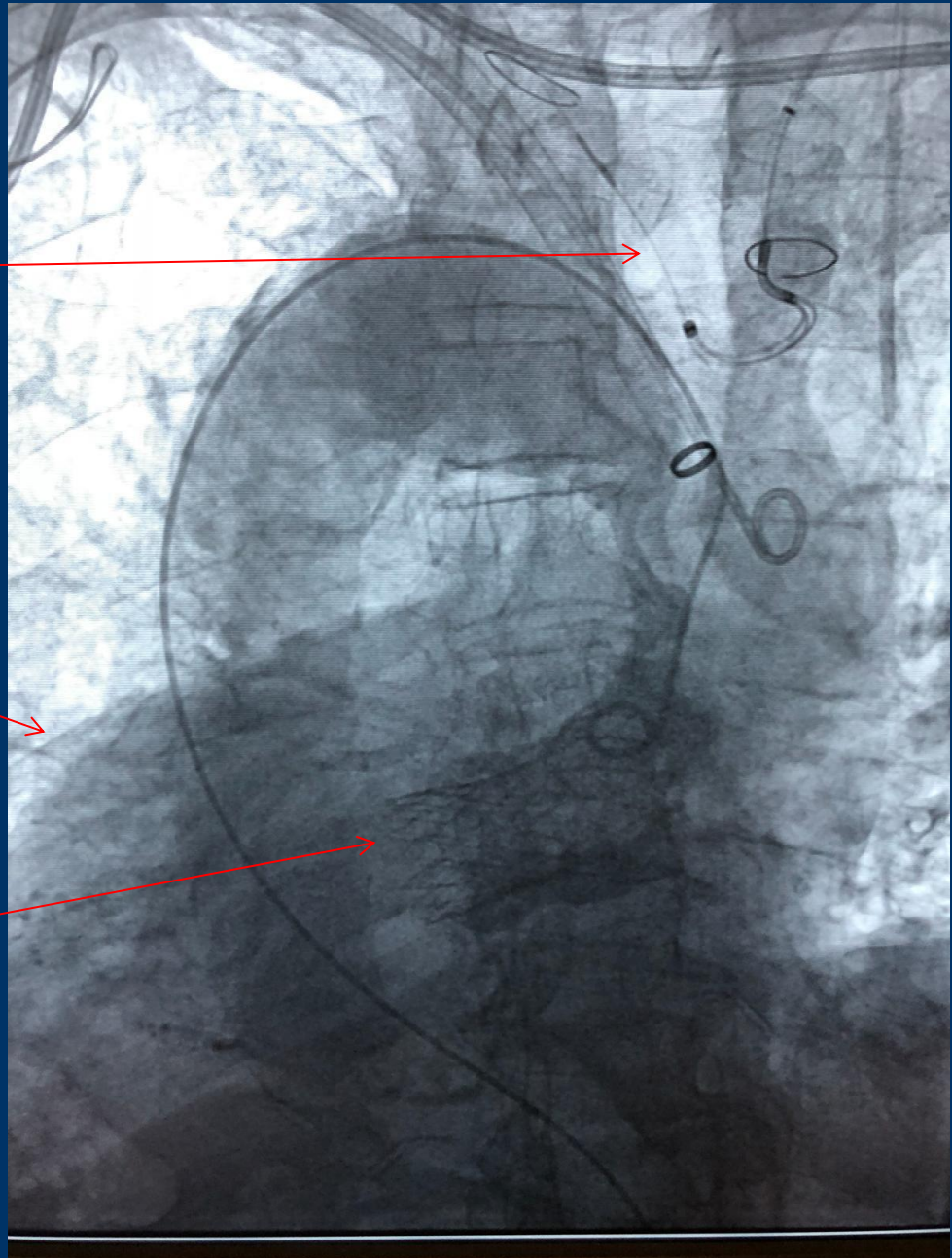


SENTINEL cerebral  
protection device via  
left radial artery

Dextrocardia

Evolut Pro TAVR

Good pre-procedure planning,  
communication and preparation

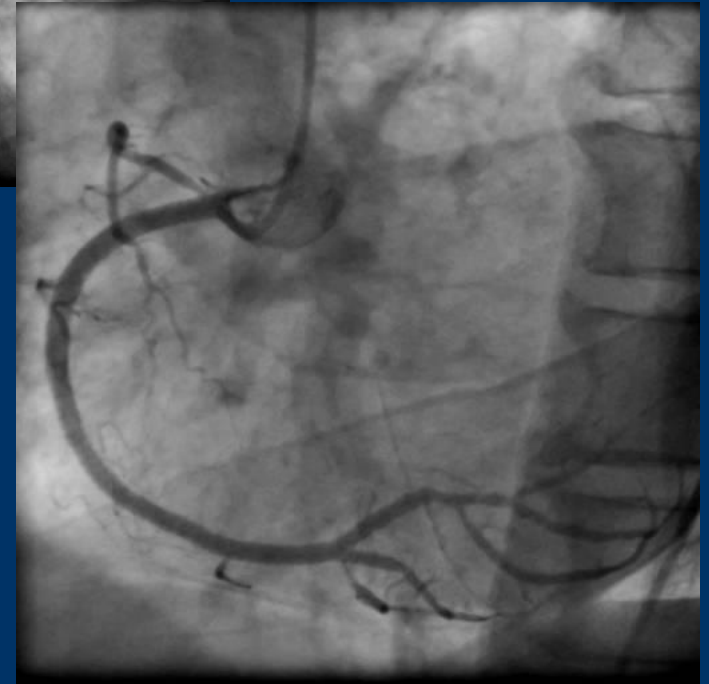
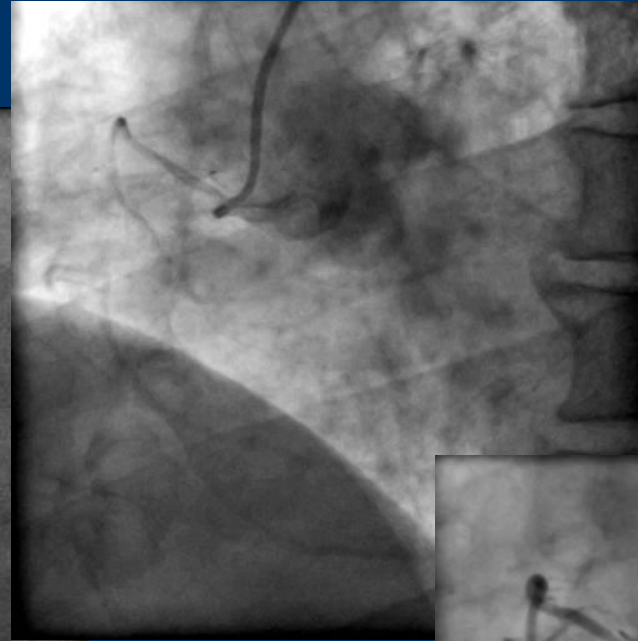
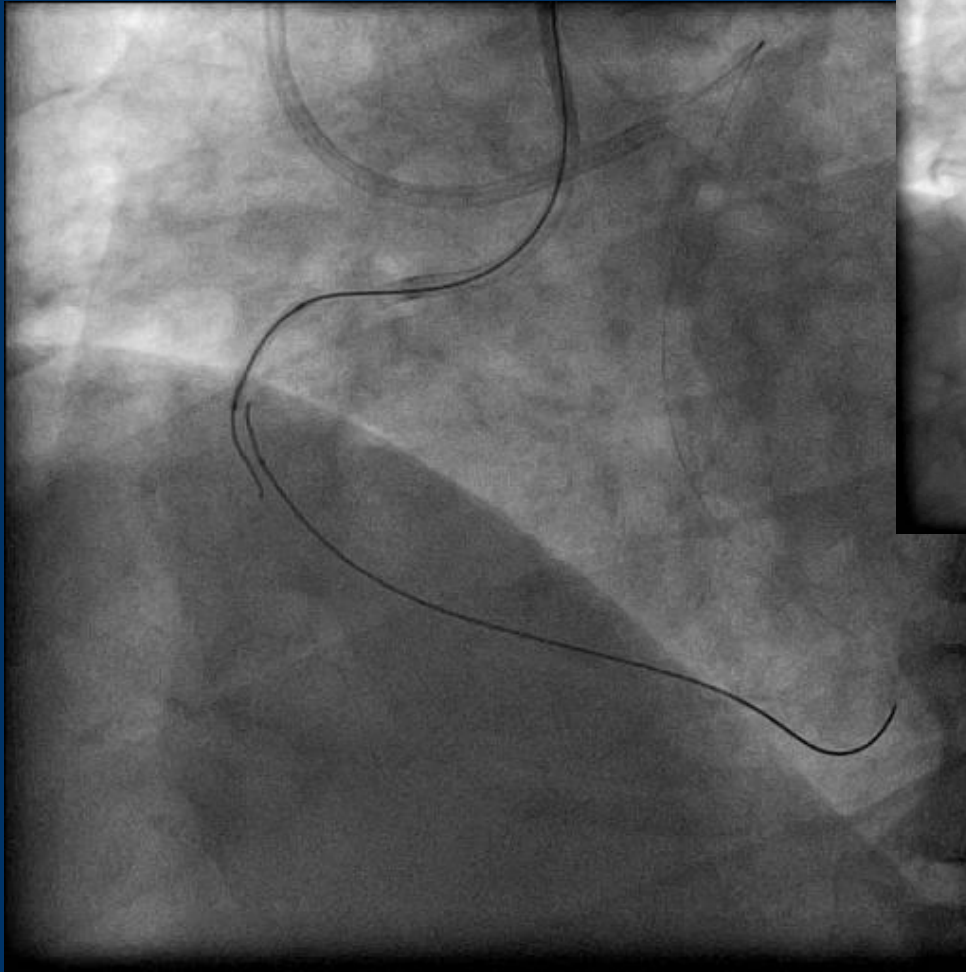


*Total Occlusion case= challenging?*



## Chronic Total Occlusion (CTO): retrograde approach

Anticipation of prolonged procedure time, availability of CTO guidewires, microcatheters, biplane, bilateral contrast injections...

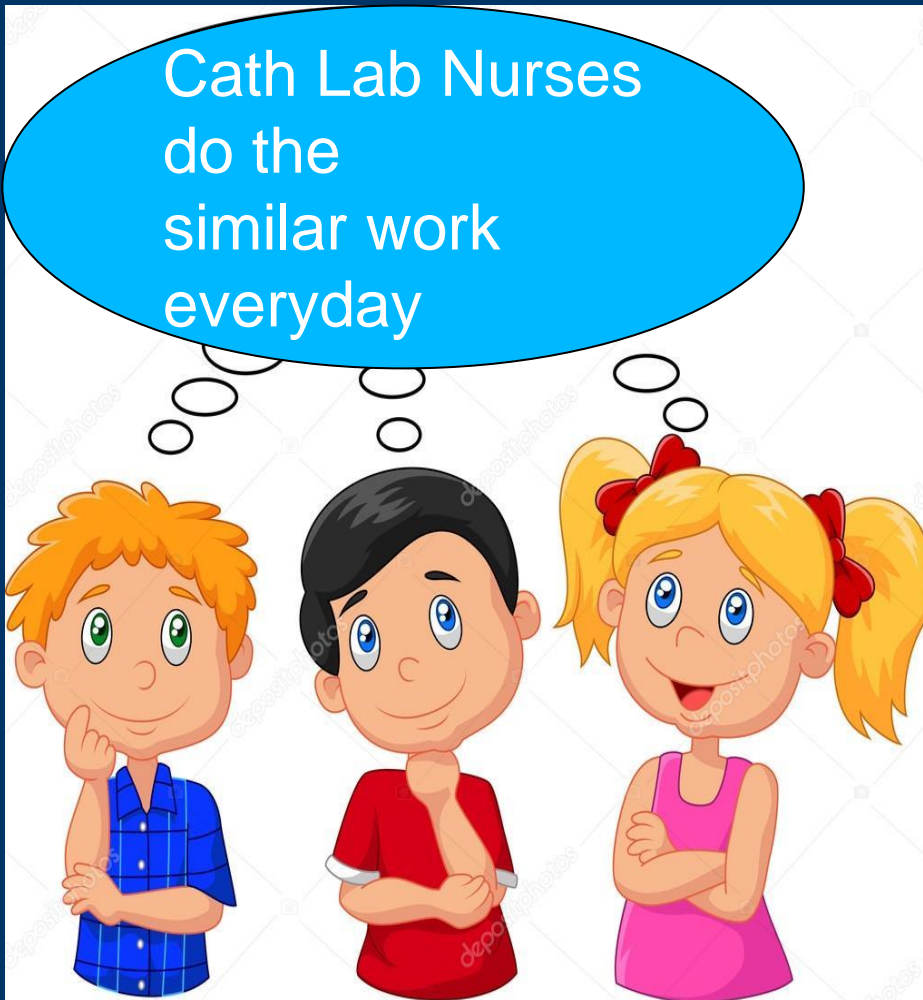


Reverse CART technique

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# Ideal vs Reality





# Unpredictable situations

- Cath Lab nurses are doing similar work everyday **with many uncertainty**
- We need to prepare the cath lab well to handle each case.





**M/35 yrs**

**Chest pain. Admitted at midnight.**

**ECG on admission was normal.**

**First Troponin was normal.**

**Hemodynamically stable.**

**Chest pain again in the morning.**

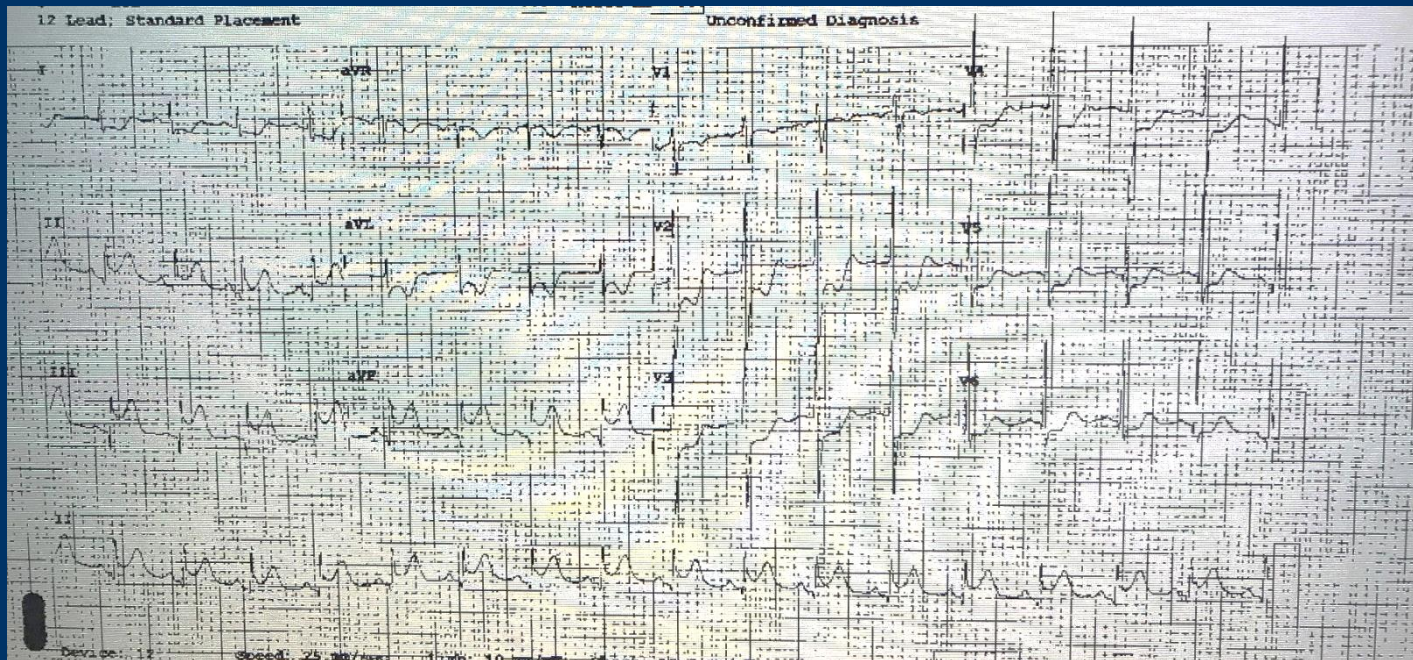
**ECG:**

**Now Troponin elevation!**

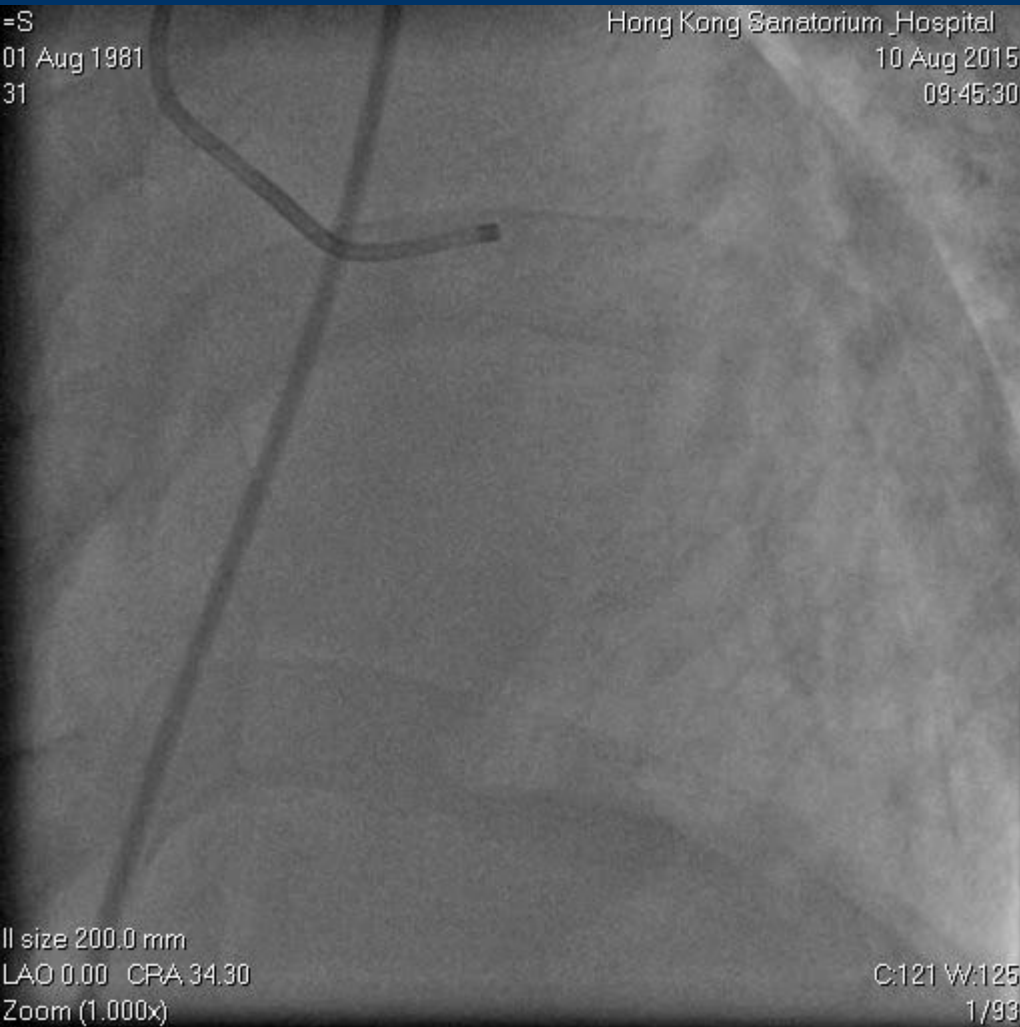


**What do you expect?**

- **Inferior STEMI (culprit: RCA or LCx)**
- **Primary PCI**



**Poor radial pulse**  
**Trans-femoral approach**  
**Spontaneous RCA dissection? Primary PCI?**

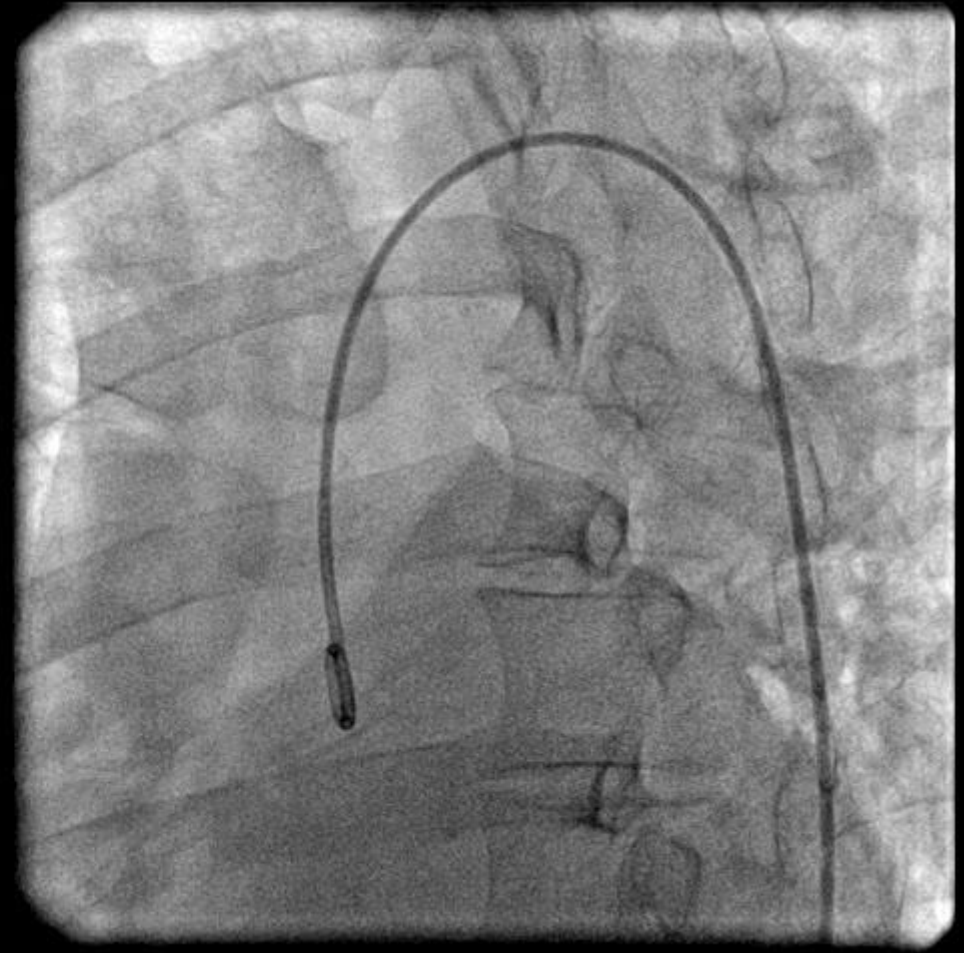
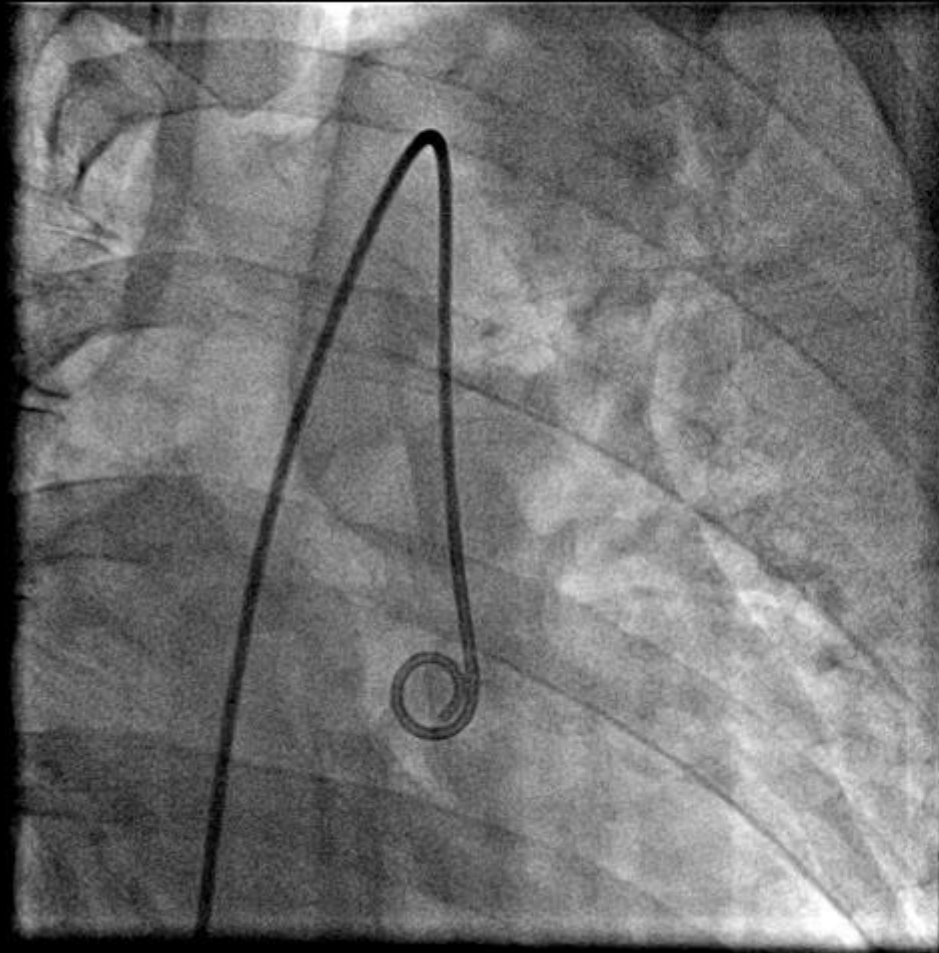




*Wait a minute...*

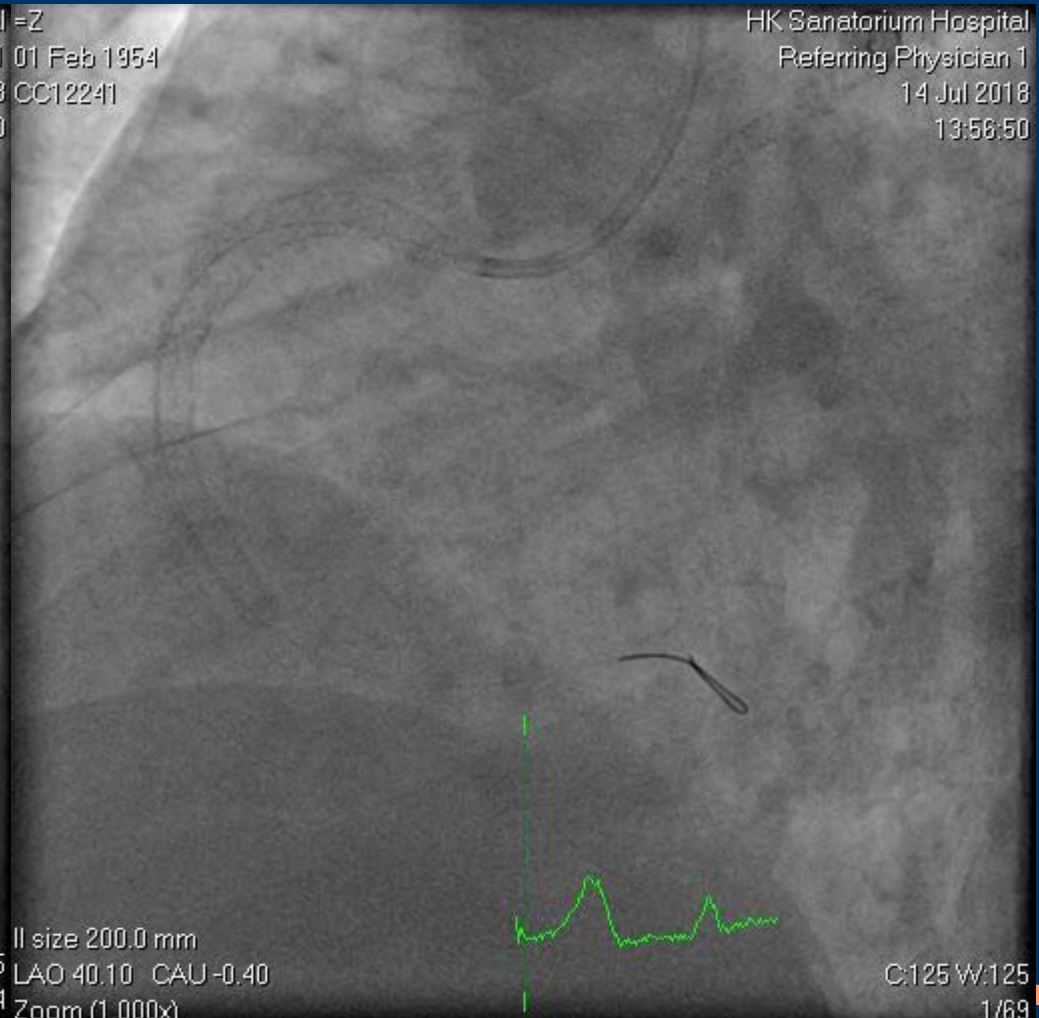
*Type A Aortic Dissection*

*Called surgeon for emergency surgery!*



# No reflow after stenting

## Heart block, BP drop...



“No reflow” after post-dilation at high pressure.

TIMI 0 flow. Hypotension. AV dissociation  
Managed successfully with dottering, Export  
thrombectomy, IC nitroglycerin, isoptin, adenosine  
via Microcatheter at distal RCA

Poor distal run-off was probably the risk factor

TIMI 3 flow was resumed. HD IVUD: no dissection.

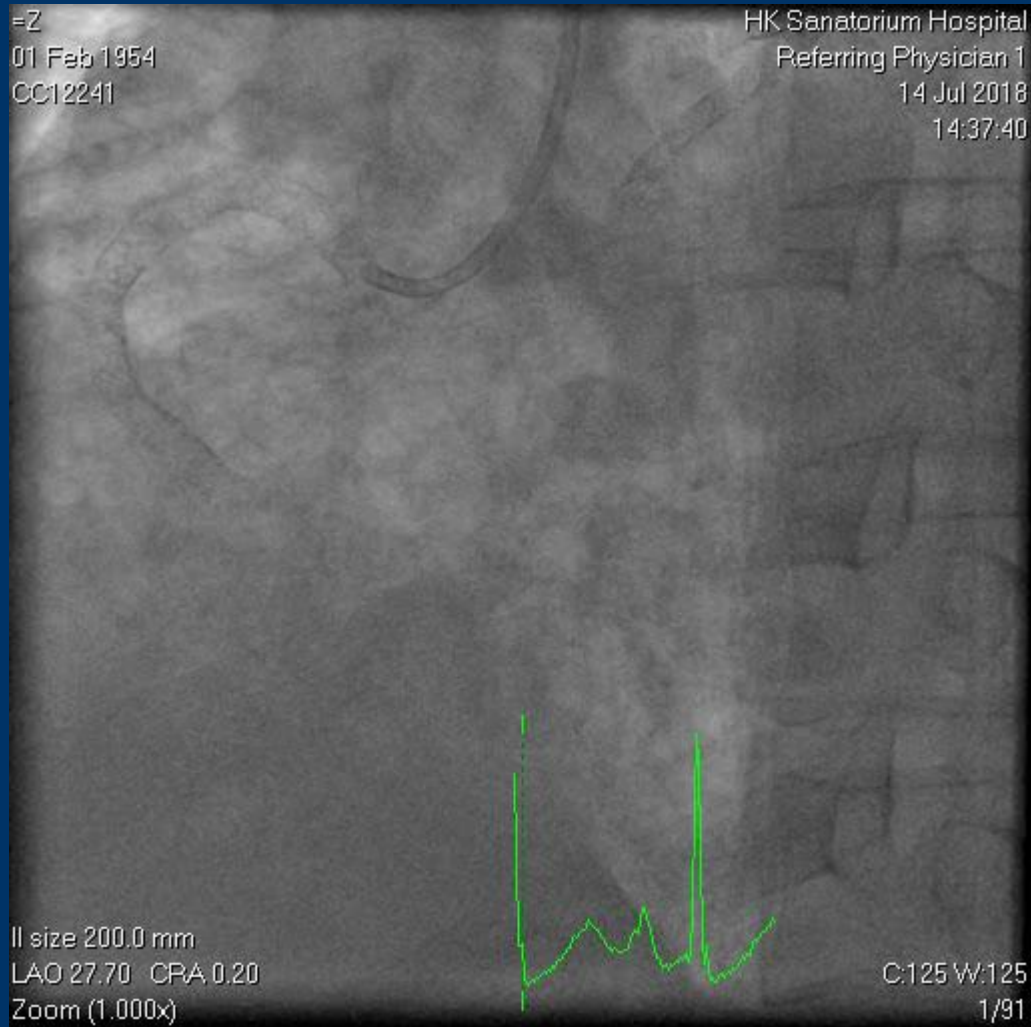
Good stent apposition.

Uneventful when leaving cath lab. On IV abcixiamb  
infusion for 12hours

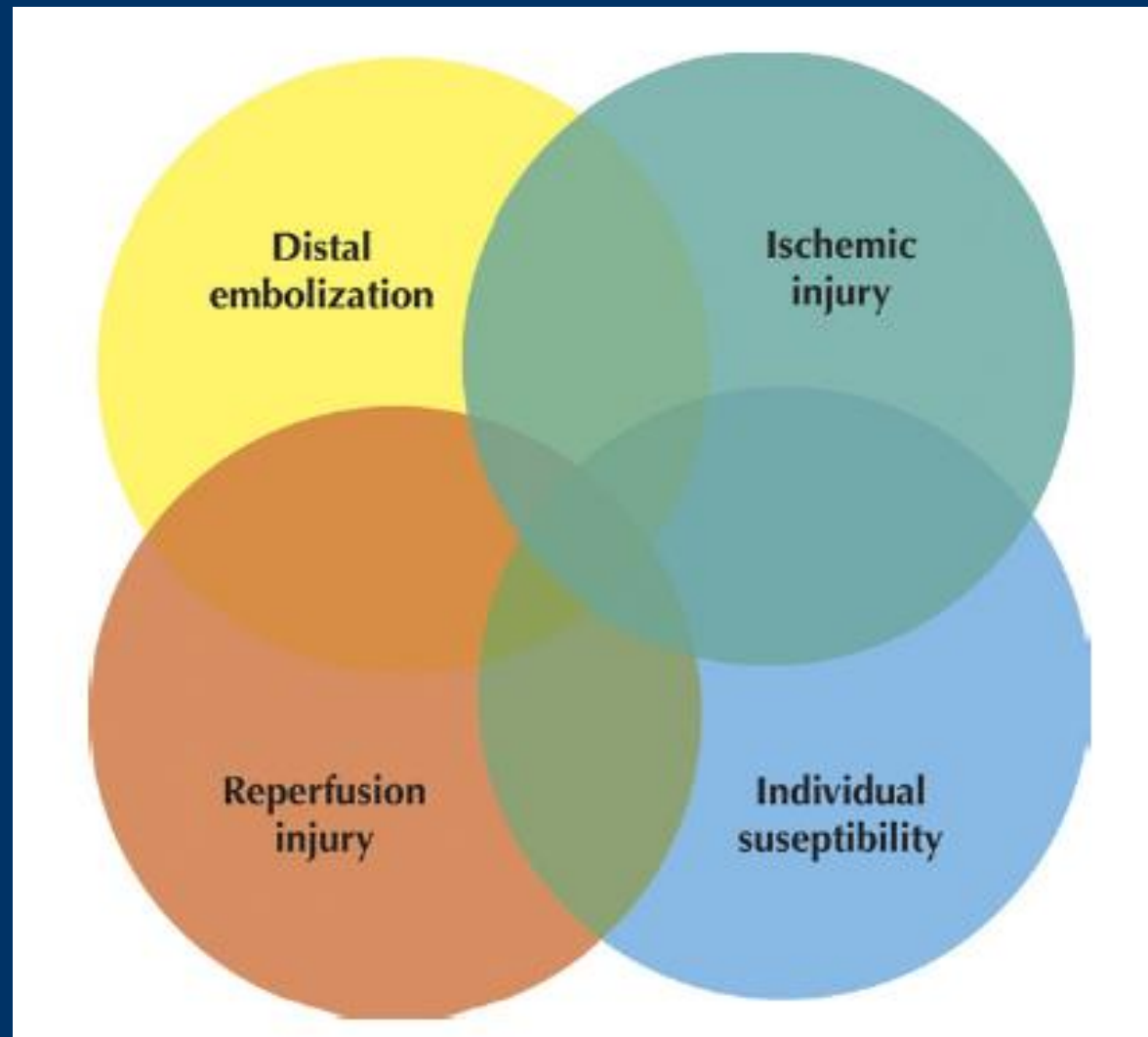




# Final angiogram



# ***MECHANISMS FOR NO REFLOW***



# *Medical Treatment Options*

**Adenosine:** decreases arteriolar resistance, ATP-sensitive  $K^+$  Channels, inhibit neutrophil migration/superoxide generation/endothelin

**Nitroprusside/NTG (nitric oxide donors)**

**CCB:** HR & BP effects, vasospasm

**Glycoprotein IIb/IIIa inhibitors**



# Examples of Unpredictable situations

- Complications e.g. Dissection
  - Equipments requested, not available in our consignment--> e.g. Peripheral stent
  - Machines requested not available e.g. TEE, ICE, CARTO or Cryo machine
  - Uncooperative patient
    - > psychological support
    - > restlessness after IV sedation given
    - > Anaesthetist for MAC or GA
- 
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# Prevention





## Step of Booking Elective Case

- Received booking by Cath Lab Nurse or clerk during office hour
  - Received booking by ICU nurse in non-office hour
  - Most of the case booked by Clinic Nurse
  - Details needed during booking (Patient name & ID, type of procedure, cardiologists, or company involved)
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# Problems

- Most cases booked by clinic nurse
  - > only got the brief information
  - > the details may be ignored
  - > missed the important items to prepare

Start from Booking



# Additional Information

- Duration Time
    - > each session = 2 hour
    - > CTO case, EP with diagnosis
  - Any additional equipment requested for the procedure e.g. mapping system in EP case, TEE or ICE for transseptal, any equipment for CTO case
  - Any anaesthetist will be involved
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# Based on information

- Contact related companies or departments to prepare the equipments or machine
  - Contact anaesthetists and prepare equipments from OT
  - Prelim the time slot for individual session  
--> reduce the rushing time
  - Arrange the appropriate lab  
(Single plane or Biplane)
- 
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# Information on OT date

- Transradial vs Transfemoral
- Left or Right side in pacemaker implantation
- Access site for CTO case
- Patient's position in peripheral intervention case



# Preparation of Patient

- Physical
- Psychological



## Physical Preparation—from ward

- Body Weight & Body Height
  - Allergy History
    - > Steroid Cover
  - Antiplatelet therapy
    - > Plavix, Aspirin, Cartia, Brilinta
  - Informed consent
  - Fasting at least 6 hours
  - Shaving
  - Recent Lab result e.g. CBC, R/LFT, Clotting profile)
  - Related Report (Stress test, MRI or CT Coronary report)
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## Physical Preparation – In CCIC

- Identity
  - Valid consent form
  - Allergy history with steroid cover given
  - On call medication
  - Recent lab result & related report
  - Check peripheral pulse & Allen test
  - Take baseline vital sign & connect ECG monitoring +/- defibrillation pads
  - Puncture sites skin disinfection by scrub nurse
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# Psychological Preparation

- Prelim the procedure time to patient & relatives
  - Settle down the relatives in the waiting area and give reassurance
  - Explain to patient before each step
  - Make sure patient lies in a comfort position
  - Explanation of the procedure to seek patient cooperation
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# Good Partnership



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# Conclusion

**Effective communication &  
Well preparation  
is Critical to build**

**a sense of trust  
&  
increase productivity**





Thank You



# Question 1

Which of the following is the most difficult situation in Cath Lab?

- A. CTO case
- B. Complicated case
- C. Emergency case
- D. Unpredicated case



# Question 1

Ans : D



## Question 2

Which of the following is the best way to prevent such situation?

- A. Increase manpower
  - B. Well preparation
  - C. Increase salary
  - D. Increase holiday
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# Question 2

Ans: B



## Question 3

What is the key component in a successful & uneventful operation?

- A. Effective communication
  - B. Good rapport
  - C. Comfortable environment
  - D. New generation technique
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# Question 3

Ans: A





End

