TCTAP 2018
A complicated coronary case

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History

- 57/M
- DM
- Admitted for delayed presentation of anterior STEMI
  - onset of pain 3 days ago
ECG: sinus rhythm; ST elevation over anterior leads

First hsTnI: 56100ng/L
History

- ECHO: EF 50%, anterior and apical severe hypokinetic
- Thrombolytic not given
- Treated with DAPT and LMWH
- Coronary angiogram arranged
RRA approach
5Fr Tiger II

pLAD heavy thrombus load 95%

RCA normal
dLCx 90%
Thrombus
LAD was wired with 0.014” Runthrough floppy wire

Deployment of self expanding DES at pLAD up to 12atm (nominal pressure)
Self expanding DES

• Continue to expand over time to remain apposed to vessel, even if there is positive remodelling or dissolution of thrombus
What happened?

Slow motion?
Disaster #1

• Patient developed severe chest pain, ECG showing ST elevation, and blood pressure drop

• Repeatedly aspirated indeflator, also inflated balloon at higher pressure (i.e. 14atm) and deflate

• However, the stent balloon just failed to deflate, obstructing the LM/LAD flow
Whole system removed enbloc
Back to step 1

• Right femoral access
• LM engaged with 6Fr EBU 3.75
LAD wired with Runthrough guidewire

Evidence of no reflow
Treated with IC Isoptin 100mcg
DES 3.0x26

NOT self expanding stent any more!
IVUS showed no dissection and good apposition
Removal of undeflatable balloon

• The shaft of the stent balloon was cut
• ST–01 catheter (Terumo)
  • Mother–in–child catheter
  • Cut the tip with the metal part exposed
Tip of Terumo Heartrail II guiding catheter
5F ST01 120cm

After cut

Normal
Balloon punctured by the ST-01 catheter

Pull on the balloon

Rotate the ST-01 catheter

Balloon punctured by the ST-01 catheter

And recaptured into the radial sheath
Angiogram showed intact radial artery
Disaster #2

- Where was the stent?
Floppy part of the wire was cut.

Distal to the stent, a 6mm balloon is visible.
Inflated to 14 atm

Stepwise withdrawal force applied to position the stent away from the bifurcation
Immediate outcome

- Right upper limb distal circulation intact

- Consulted vascular surgeon with Doppler USG done
  
  - Right subclavian, axillary, brachial, radial and ulnar arteries with no significant stenosis
Patient outcome

- hsTnI downtrend since PCI

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- Cardiac rehab
CT angiogram after 3 months
Undeflatable balloon

- Excessive twisting / kinking / stretching
- The damaged part became a one way valve
- Sign: difficult to inflate the balloon
- Complications:
  - Ischaemia
  - Dissection
  - Stent dislodgement

References:
JACC: Cardiovascular Interventions Dec 2015, 8(14) e245-e246
Practical Handbook of Advanced Interventional Cardiology: Tips and Tricks
Undeatable balloon

- Solutions
  - Try to deflate with 50cc syringe
  - Inflate to rupture it
  - Puncture with back end of guidewire supported by OTW balloon
  - Puncture by a mother-in-child catheter
  - Open

References:
- JACC: Cardiovascular Interventions Dec 2015, 8(14) e245-e246
- Practical Handbook of Advanced Interventional Cardiology: Tips and Tricks
Dislodged stent

- Incidence of stent loss: 1.3%
  - Decreasing over time due to improved stent design and delivery system
- Causes:
  - Tortuosity / calcification (36%)
  - Failed stent retraction into guiding (28%)
  - Failure to cross the lesion (10%)
  - Crossing old stent (1%)

References:
Dislodged stent

• Solutions:
  • S nare
  • S mall balloon technique
  • Biopsy forceps
  • 2 wires technique
  • C rush stent
  • S tent deployment at other sites

References:
Summary

• Undeflatable balloon & dislodgement of a deployed stent
• Causes
• Management