Challenging the limit of TAVI

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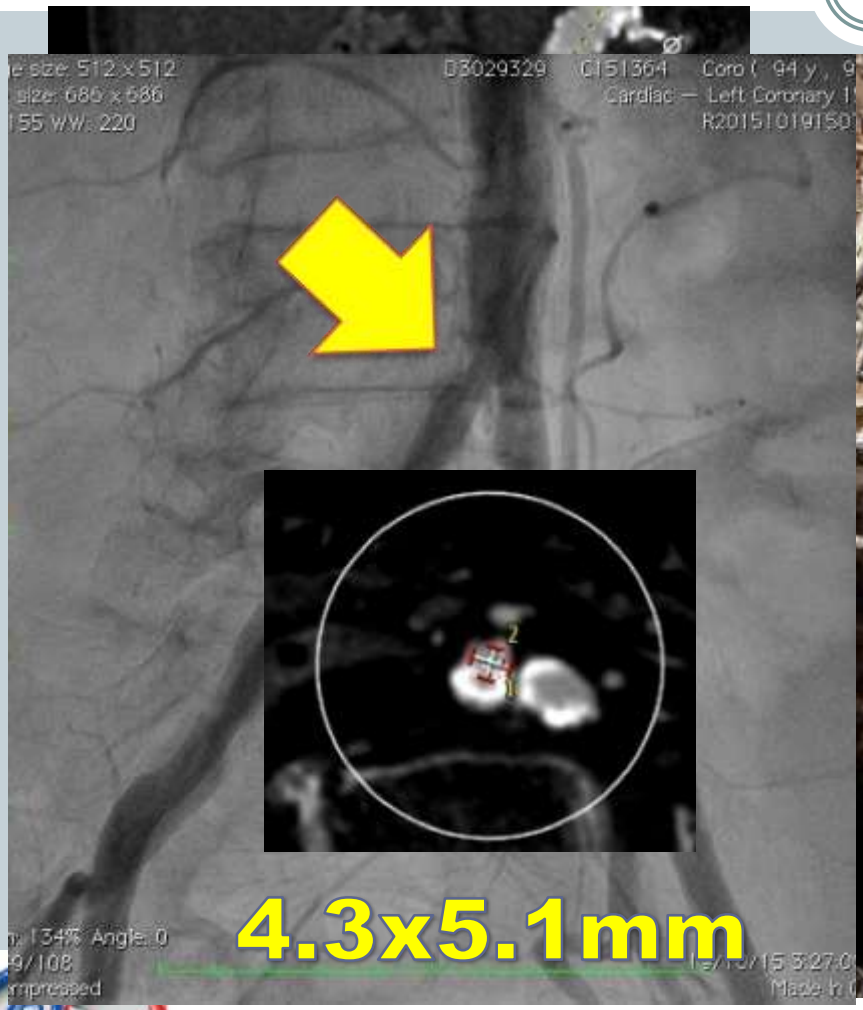
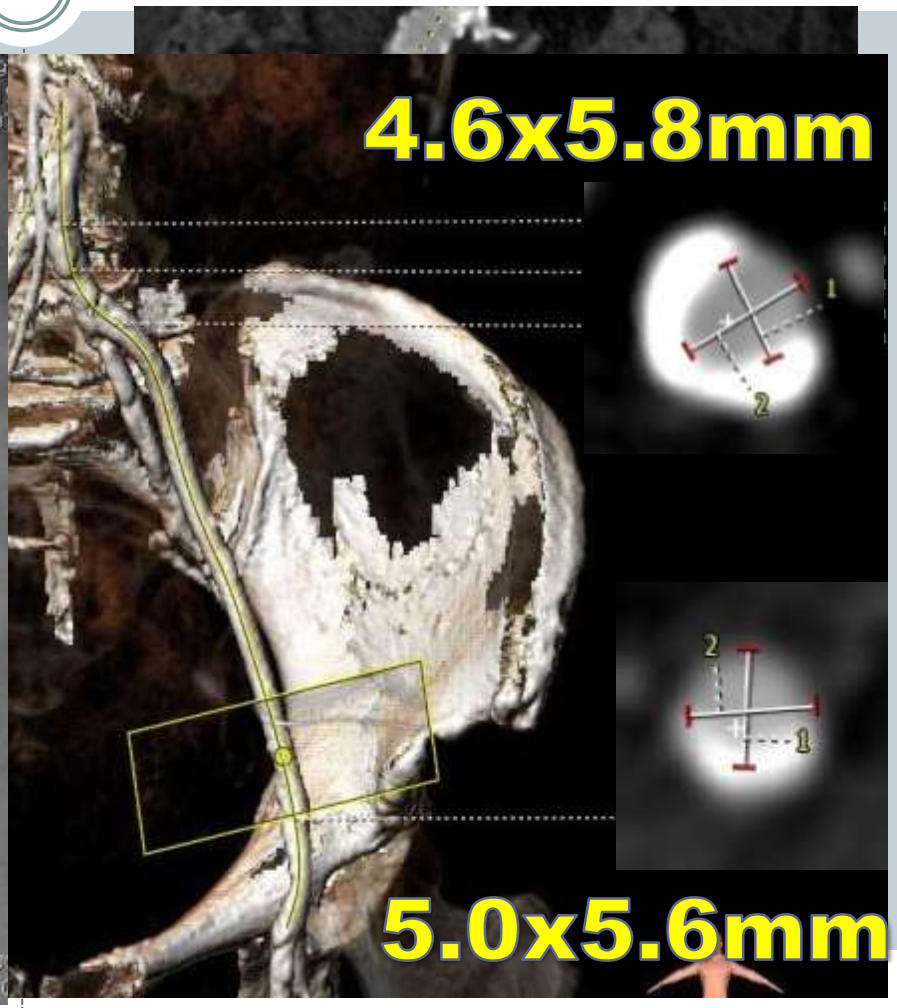
Background

- *94/F*
- *Small body build* (BH 144cm, BW 38kg)
- DM, HT, hyperlipidaemia, renal impairment
- Triple vessel disease with PCI
- *Symptomatic severe aortic stenosis*

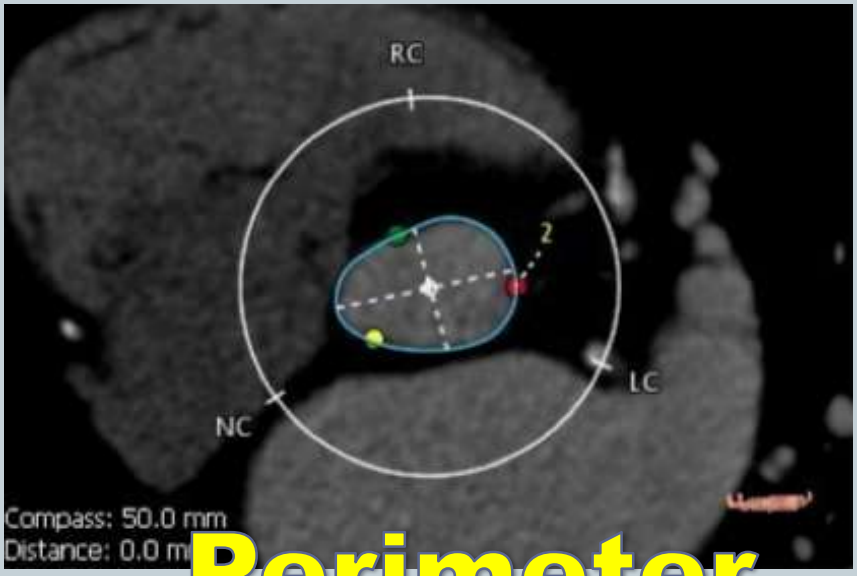
- Echo
  - Severe AS (AVA 0.58cmsq, mean gradient 41mmHg)
  - Preserved LVEF
- *High surgical risk*
  - Euroscore II 19%
  - STS risk score 16%

Unfavorable anatomy

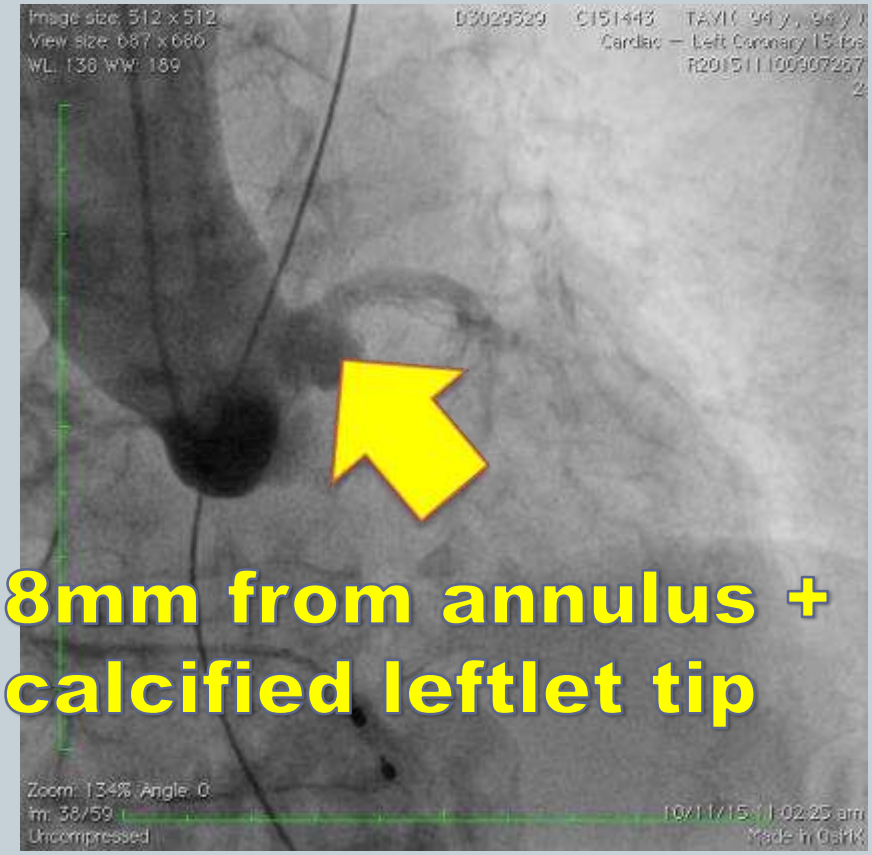




Unfavorable anatomy



Perimeter 20mm



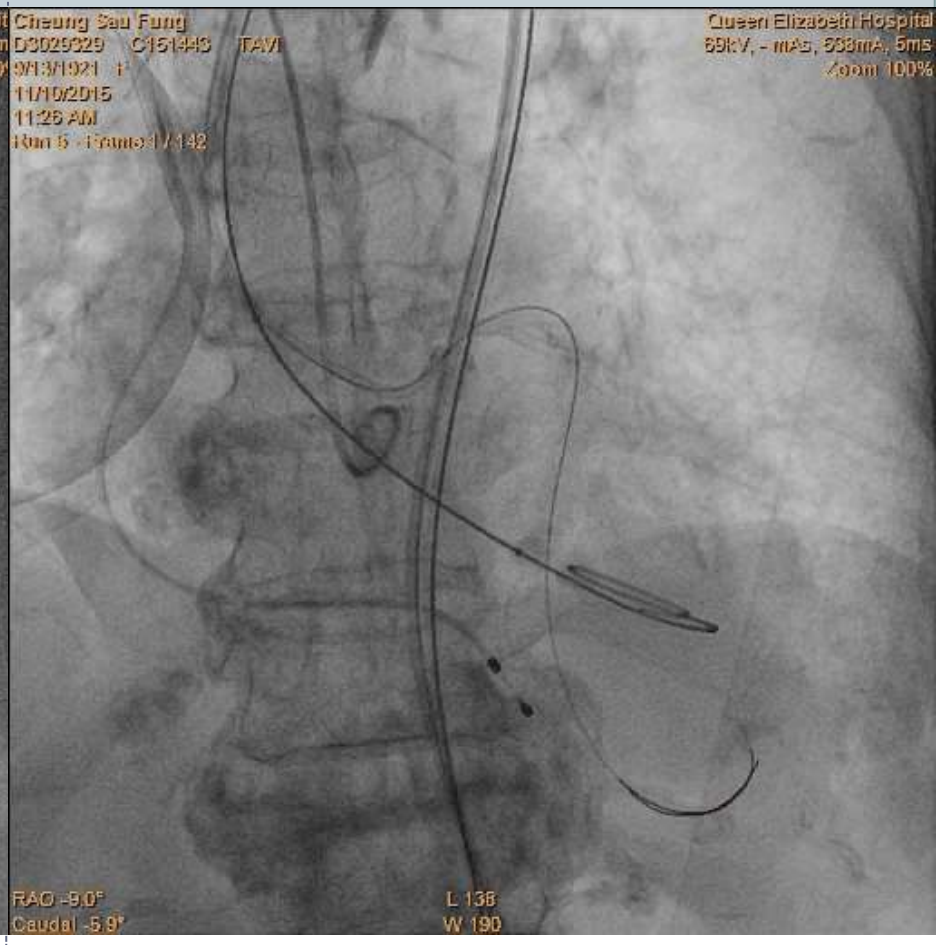
8mm from annulus + calcified leftlet tip

Our ideal plan

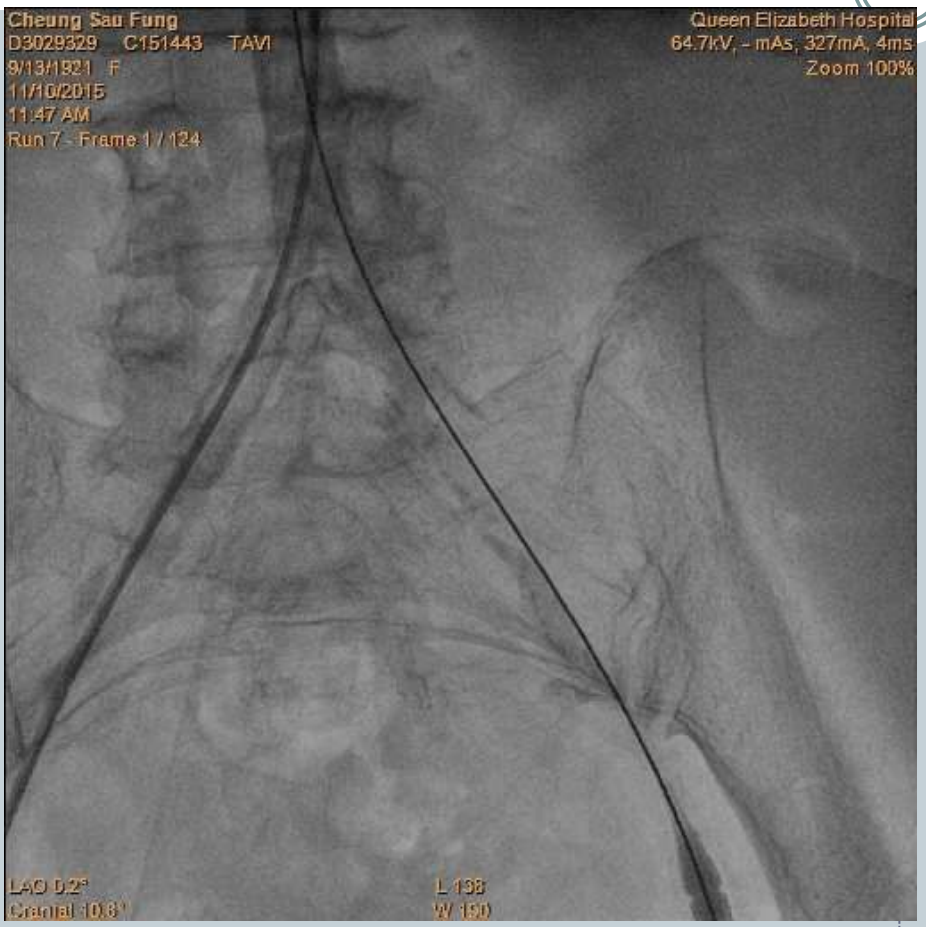
- GA in cath lab
- LFA for vascular access
- RFA for pigtail
- RRA for LCA guide protection +/- bail out LMN stenting

- 23mm Evolute R valve via 14 Fr InLine sheath +/- iliac vessel predilation

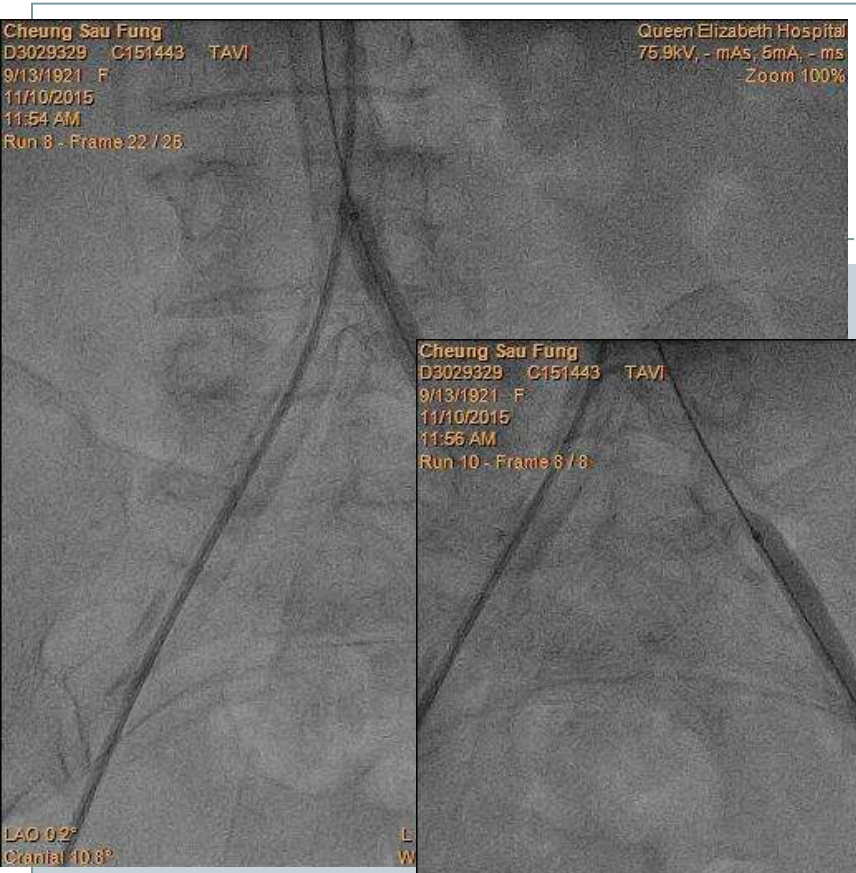
Challenge 1: failed perclose, low LMN



Challenge 2: small and hard tunnel

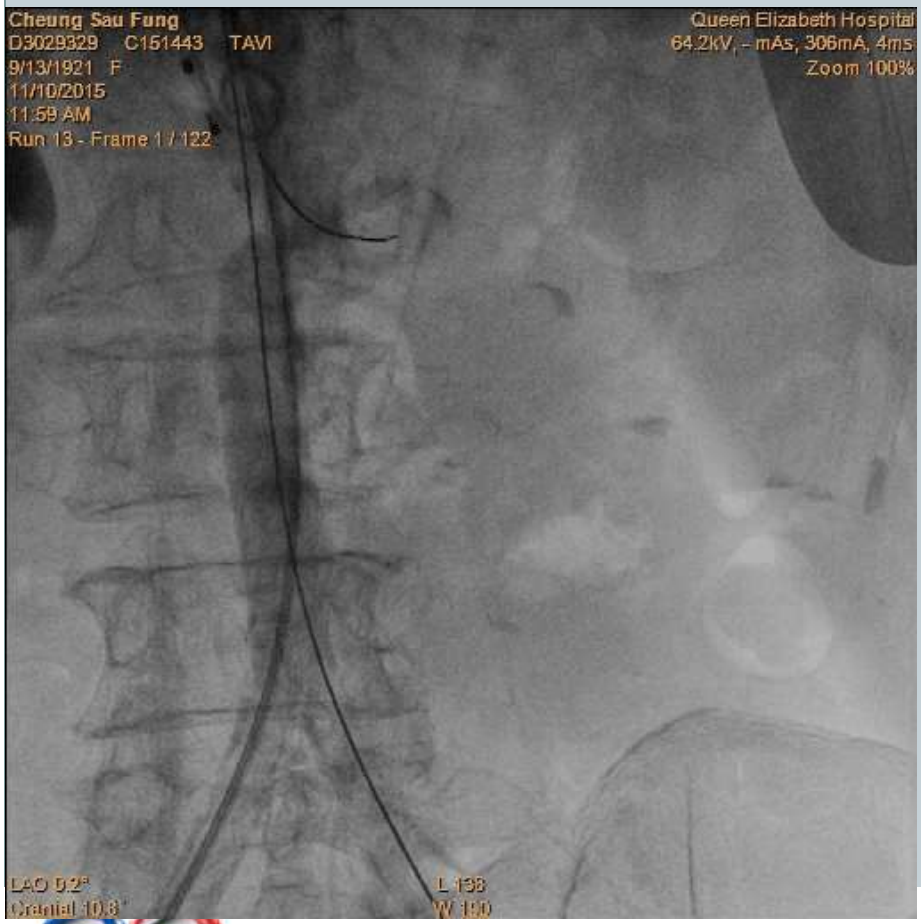


- Evolute R 14 Fr InLine sheath fail to advance with calcified intimal layer pushing up to external iliac artery

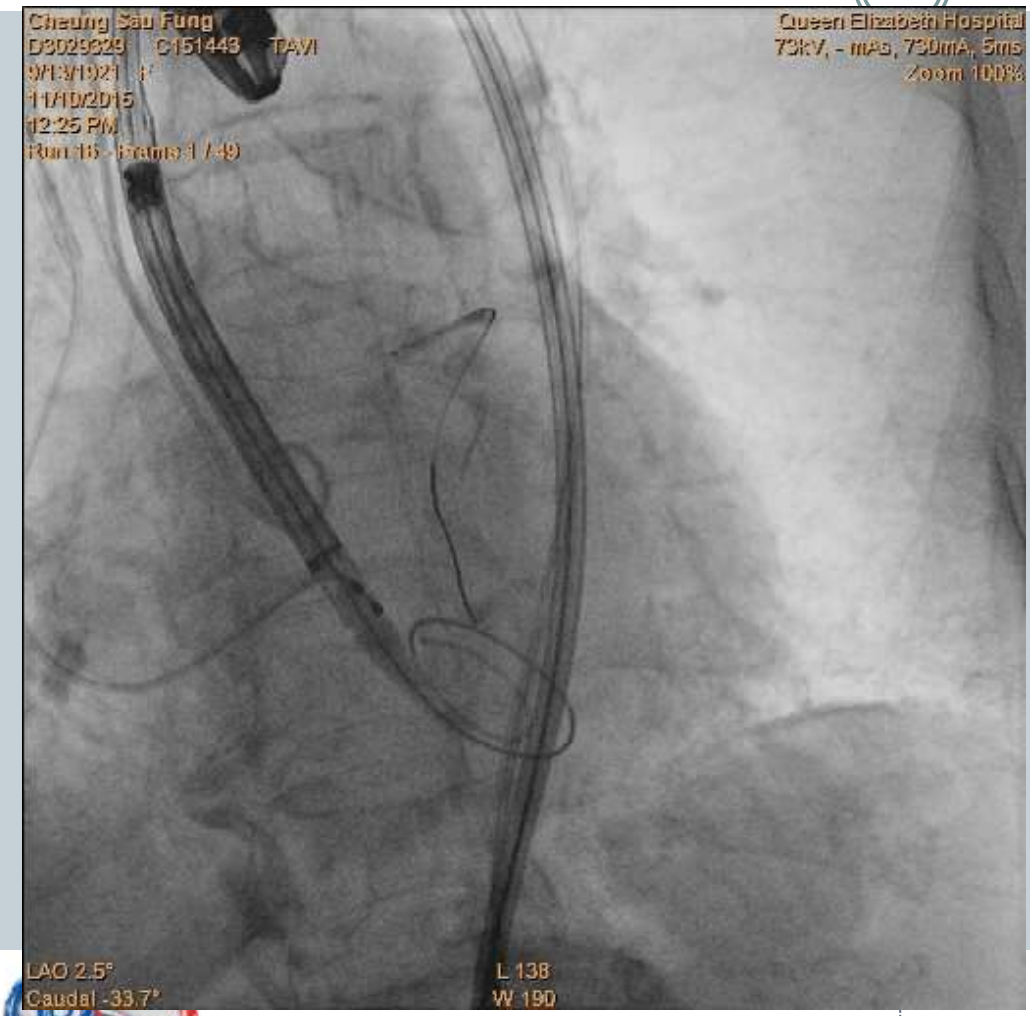

Cheung Sau Fung
D3029329 C151443 TAVI
9/13/1921 F
11/10/2015
11:54 AM
Run 8 - Frame 22 / 26
Queen Elizabeth Hospital
75.9kV, - mAs, 6mA, - ms
Zoom 100%
LAO 0.2°
Cranial 10.8°


Cheung Sau Fung
D3029329 C151443 TAVI
9/13/1921 F
11/10/2015
11:56 AM
Run 10 - Frame 6 / 8
Queen Elizabeth Hospital
73.8kV, - mAs, 4mA, - ms
Zoom 100%
LAO 0.2°
Cranial 10.8°
L 141
W 183


Cheung Sau Fung
D3029329 C151443 TAVI
9/13/1921 F
11/10/2015
12:09 PM
Run 14 - Frame 17 / 30
Queen Elizabeth Hospital
74.8kV, - mAs, 5mA, - ms
Zoom 100%
RAO -8.2°
Cranial 4.0°
L 141
W 183

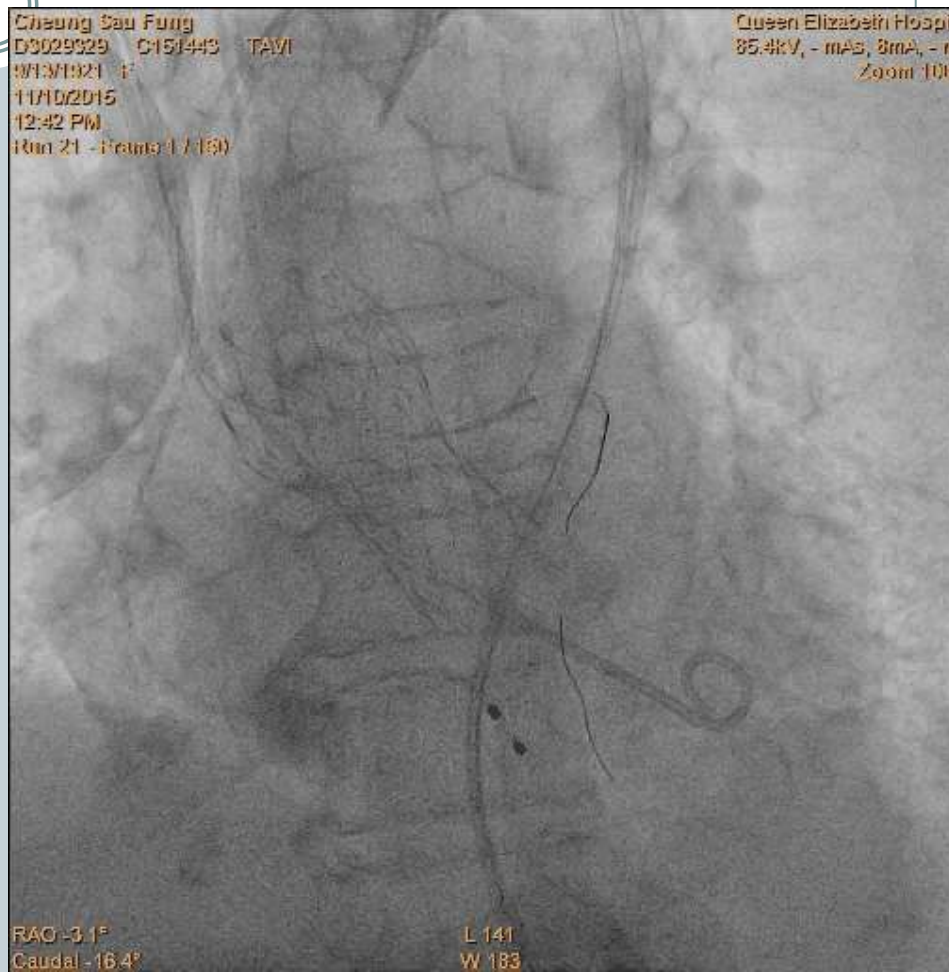


Solopath catheter

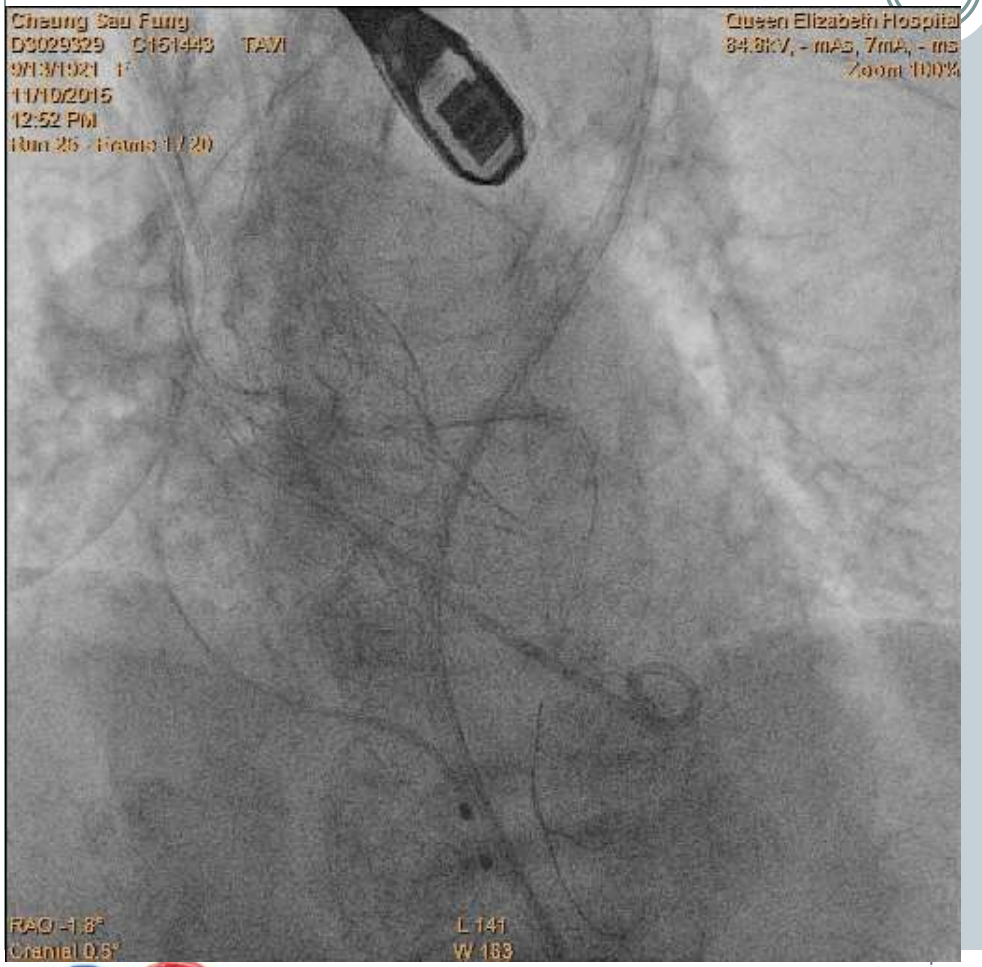


- 23 mm Evolute R valve
- LCA protection with a 3.5 DES for bail out stenting


Cheung Sau Fung
D3029329 C151443 TAVI
11/10/2015
12:40 PM
Queen Elizabeth Hospital
71.6kV, - mAs, 664mA, 5ms
Zoom 100%
LAO 1.5°
Caudal -9.4°
L 138
W 190

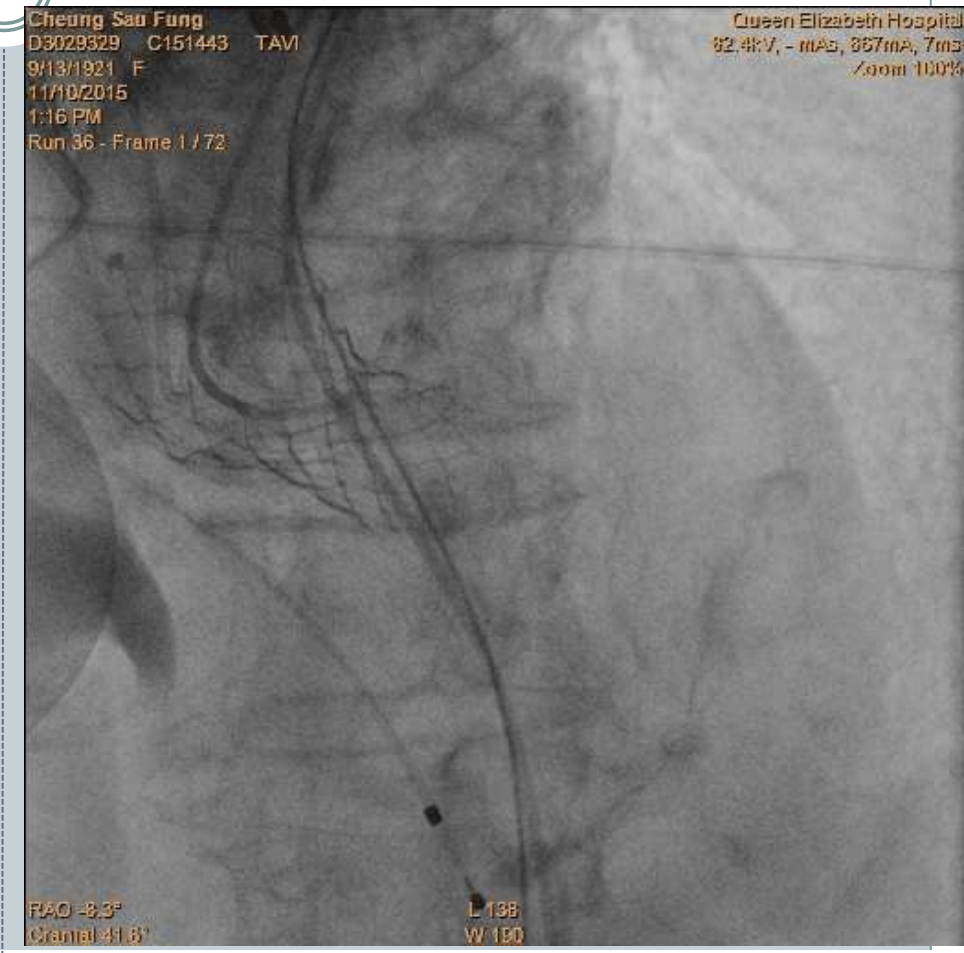

Cheung Sau Fung
D3029329 C151443 TAVI
11/10/2015
12:42 PM
RAO -3.1°
Caudal -16.4°
L 141
W 183

Challenge 3: stuck stent



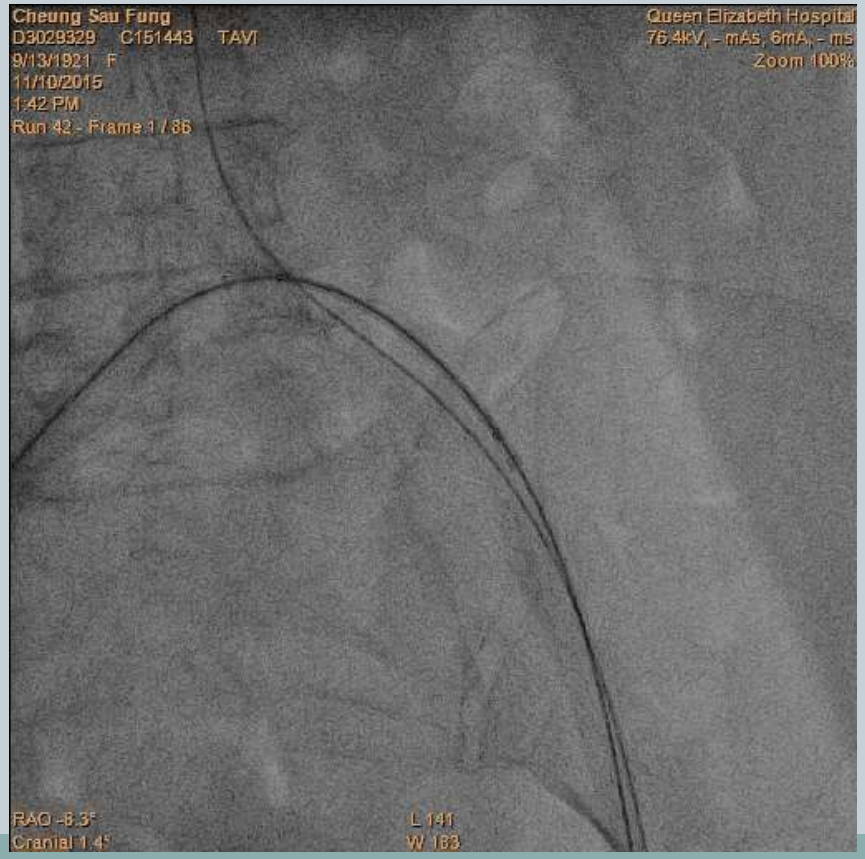
- Buddy GW
- Balloon dilation to re-engage the guide
- All failed with guide pull further away from LCA


Cheung Sau Fung
D3029329 C151443 TAVI
9/13/1921 F
11/10/2015
1:01 PM
Run 30 - Frame 1 / 10
Queen Elizabeth Hospital
85.2kV, - mAs, 7mA, - ms
Zoom 100%
RAO -8.3°
Caudal -2.5°
L 141
W 183

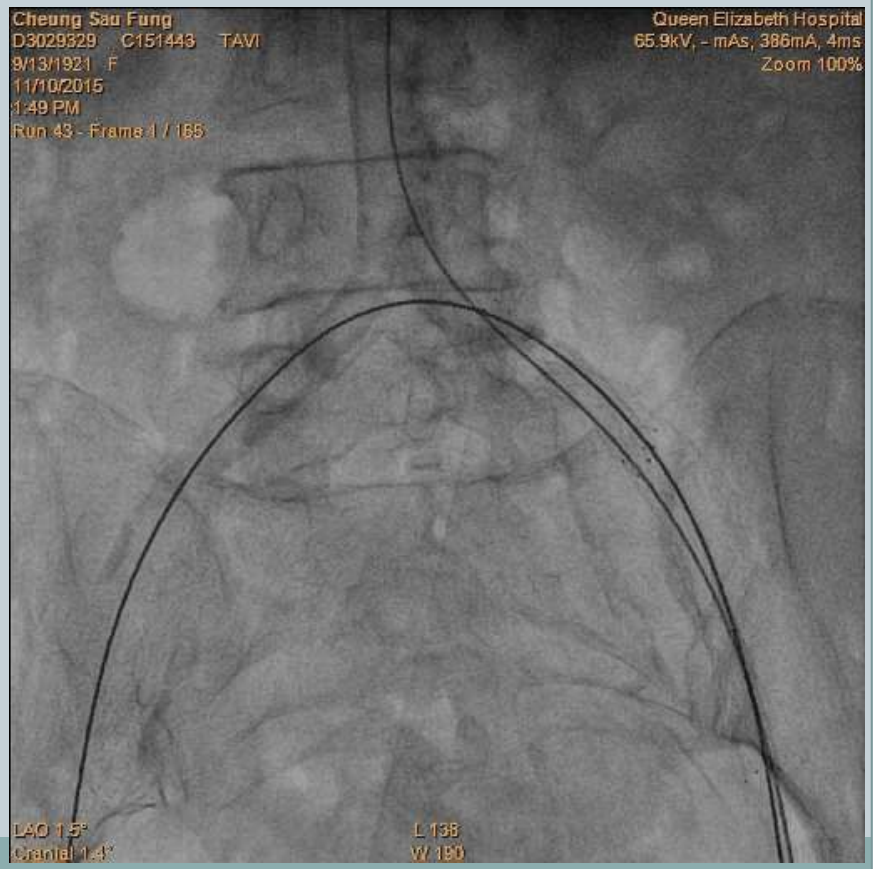

Cheung Sau Fung
D3029329 C151443 TAVI
9/13/1921 F
11/10/2015
1:16 PM
Run 36 - Frame 1 / 72
Queen Elizabeth Hospital
82.4kV, - mAs, 867mA, 7ms
Zoom 100%
RAO -8.3°
Cranial 41.6°
L 138
W 190

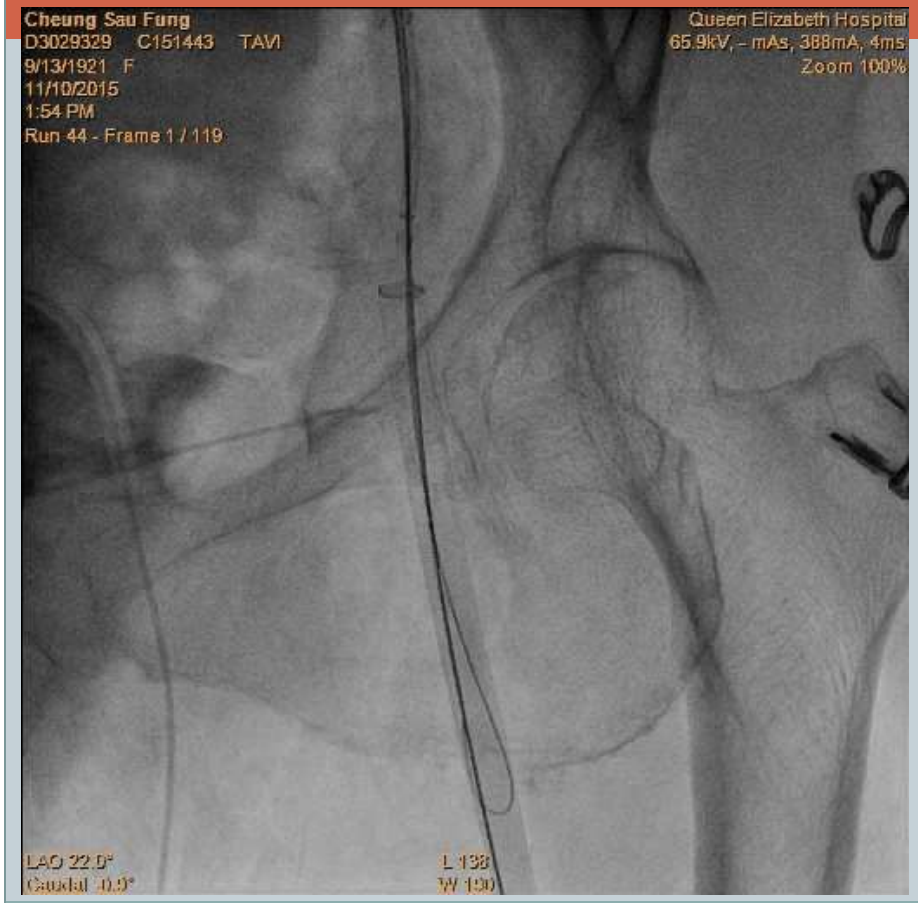
Challenge 4: bad dissection

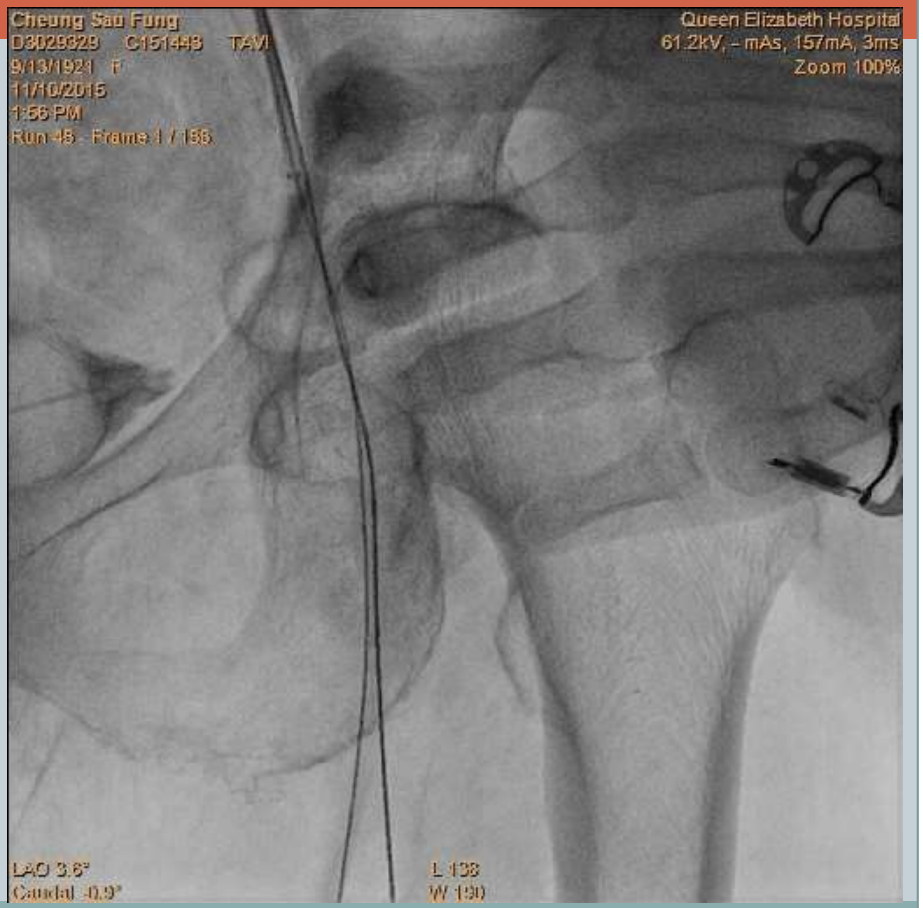
Solopath withdrawn to external iliac



Iliac artery stenting




Cheung Sau Fung
D3029329 C151443 TAVI
9/13/1921 F
11/10/2015
1:54 PM
Run 44 - Frame 1 / 119
Queen Elizabeth Hospital
65.9kV, – mAs, 388mA, 4ms
Zoom 100%
LAO 22.0°
Caudal -0.9°
L 138
W 190


Cheung Sau Fung
D3029329 C151443 TAVI
9/13/1921 F
11/10/2015
1:56 PM
Run 46 - Frame 1 / 155
Queen Elizabeth Hospital
61.2kV, – mAs, 157mA, 3ms
Zoom 100%
LAO 3.6°
Caudal -0.9°
L 138
W 190

- As we fail perclose at the beginning
- To avoid open surgical repair and CFA stenting
- We plan for manual compression of CFA wound
- Heparin was partially reverted

- And Of course we pray for the best

- Patient was transfer back to CCU for close monitoring
- Femoral wound bleeding was controlled by femoral clamp

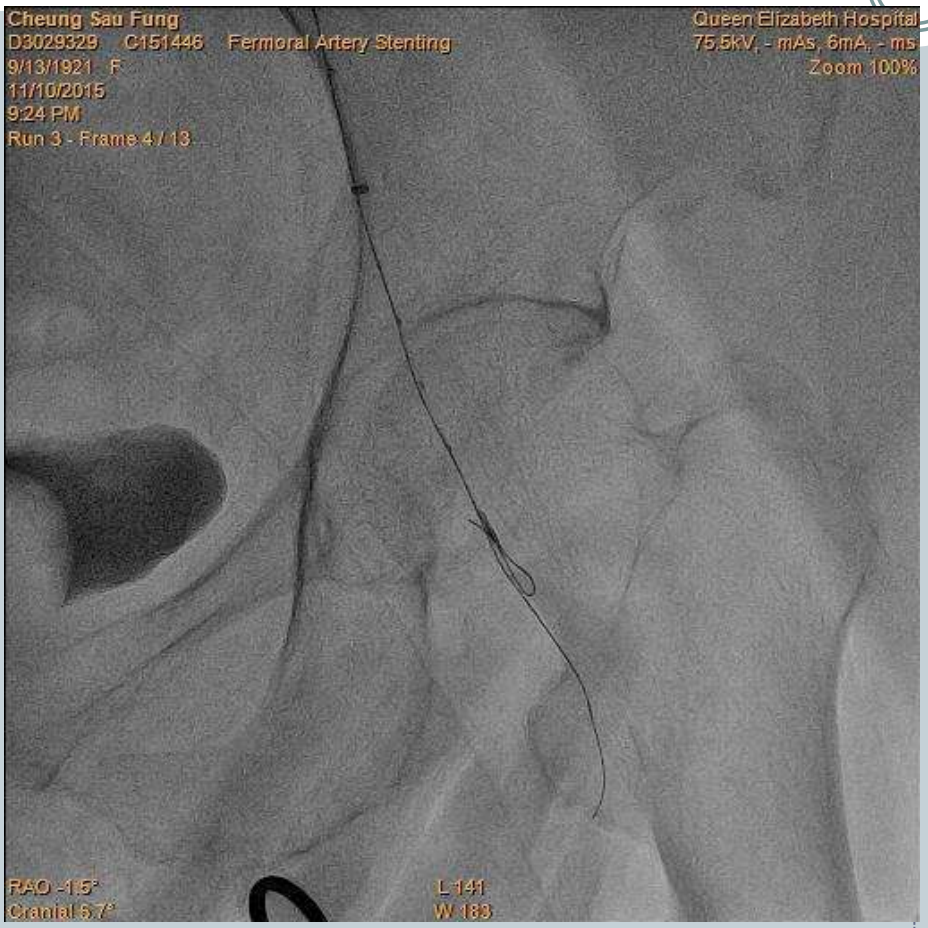
- After few hours later, however, the right lower limb was pale and cold without distal pulse

Challenge 5: occluded CFA

- Option 1. open surgical repair
- option 2 percutaneous angioplasty

- RFA access
- Cross over approach
- 7fr destination sheath

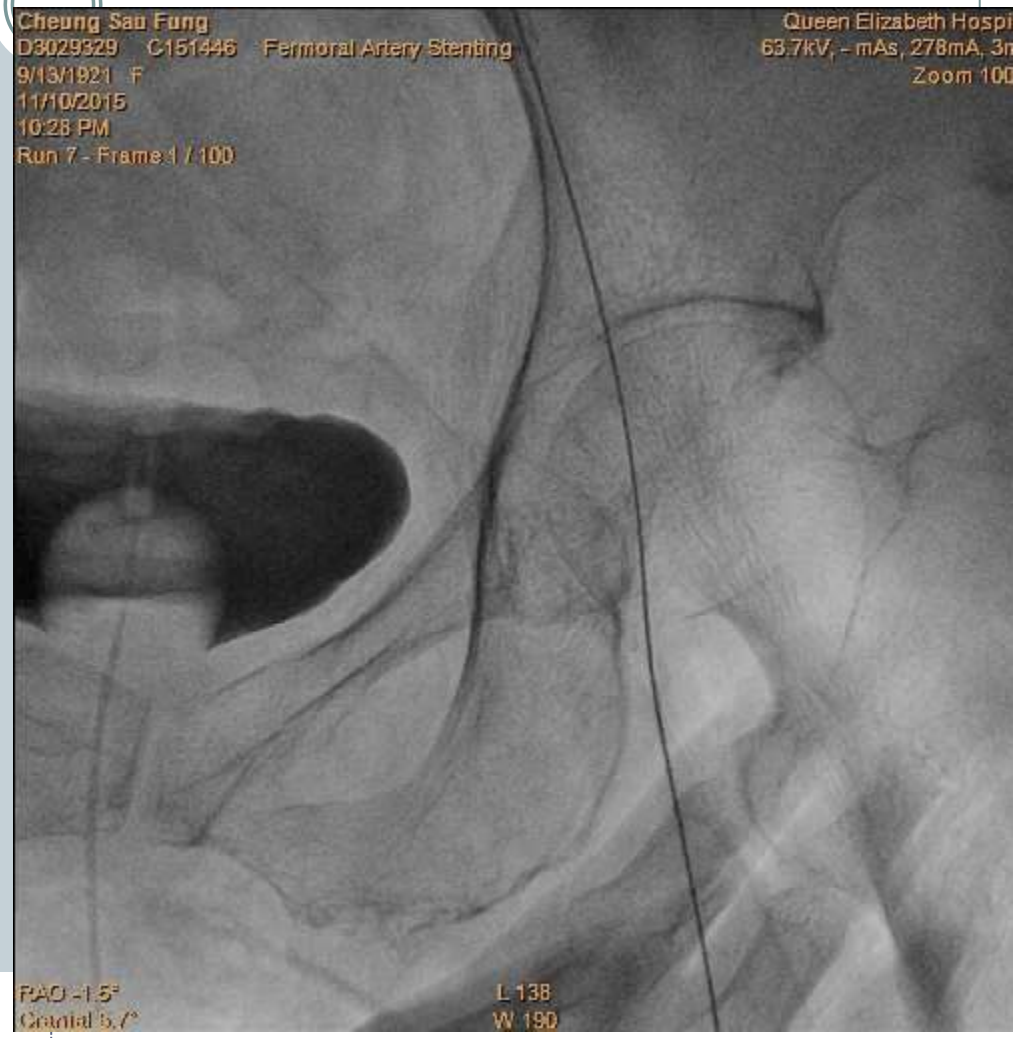
Angioplasty of occluded CFA



- Multiple wiring technique was used
- Parallel wire
- IVUS guide wiring
- CTO coronary GW

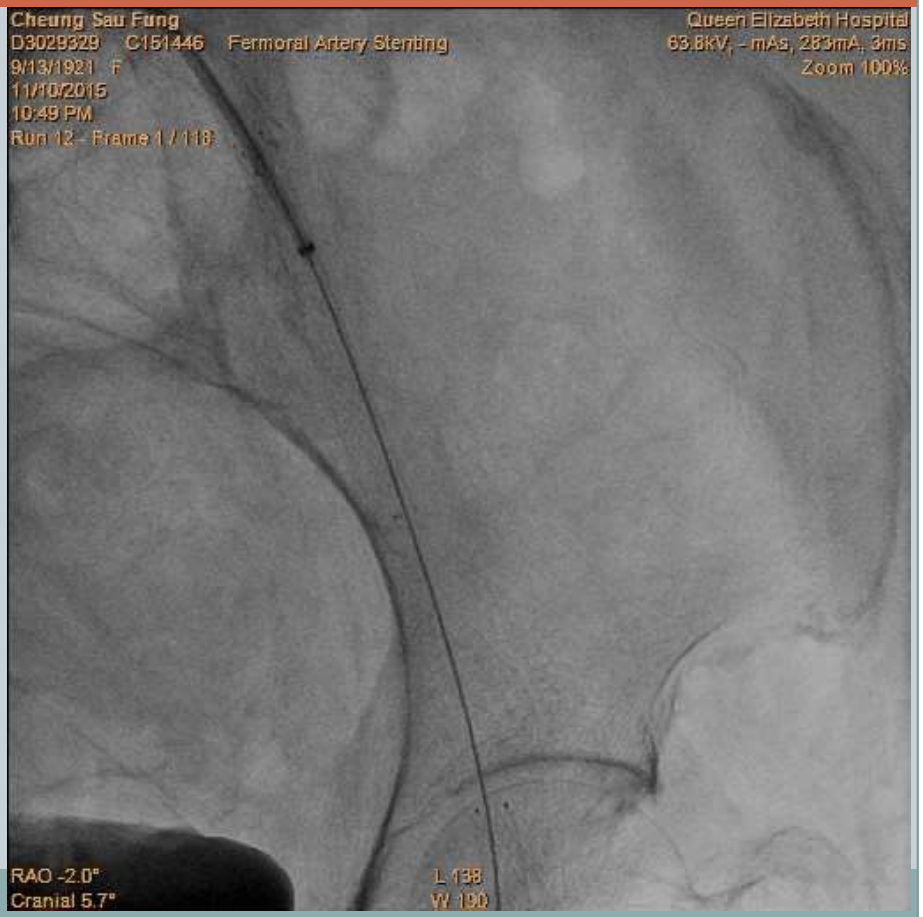
- We also called our vascular surgeon for bail out surgical repair

- Before we gave up for surgical repair
- We try our last approach and we succeed



Externtialization of wire

CFA stenting



Post op course

- Left groin and thigh hematoma require supportive transfusion
- Transient Cr bump to 2.0 g/dl then return to normal
- Extubated 2 days later when groin condition and hemodynamic stabilized
- No Heart block/Stroke post TAVI

- L femoral nerve palsy seen by neurology probably secondary to surrounding hematoma , condition spontaneously and gradually improved
- Discharge 2/52 after TAVI
- Attend our local 5th yr TAVI anniversary lunch event few months later

Case summary

- 94 y.o. lady with symptomatic severe AS for TAVI
- Limited and challenging vascular anatomy (small/heavy Ca vessel, low LMN)
- Multiple challenges (stuck stent, vascular complication)

Learning point

- Know the limit of current TAVI devices and respect the anatomy
- All round technique from coronary, peripheral, CTO are sometimes necessary for successful structural heart intervention

Thank you!