A Complex Case with Two Challenges: A Tortuous And Calcified Coronary Lesion Together With Extensive Perforation Of Accessory Radial Artery

Dr. Chau Chi Hong
Pamela Youde Nethersole Eastern Hospital
Hong Kong
Introduction

• 82/M, NS
• Known HT, hyperlipidemia and gout
• Admit for NSTEMI and gastric ulcer with Hb drop
  1. ECG: SR, TWI over inferior leads
  2. Elevated TnI
  3. Echo: inferior and inferoseptal hypokinesia of LV with preserved LV systolic function

→ early PCI due to refractory angina
Coronary Angiogram (via Right Radial Artery)
Coronary Angiogram (via Right Radial Artery)

- Summary:
  - tight lesion at pLCx
  - tortuous RCA with calcified lesions at prox. and middle parts

- RCA should be culprit based on ECG and echo findings
Resistance When Exchanging GC

- Exchange tiger catheter with 6Fr AL 0.75 GC
- Resistance encountered at elbow level
- Radial angiogram reveals contrast extravasation
Management Strategies for RA Perforation

- Pressure cuff above the elbow
- Inflate at pressure slightly higher than SBP
- Keep 0.035” J wire inside
- Continuously monitor patient’s forearm

*J Interven Cardiol 2012;24(4):185-187*
PCI Continued via R Femoral Artery

Due to tortuosity and calcification, a 3.0/28 Genous stent cannot go to mRCA. Though balloon dilatation with 2.75 NC and buddy wire technique.
Final Result of RCA

- At the same time, patient c/o pain over right forearm
- POBA result satisfactory
- PCI stops here
What Happens to Patient’s Forearm?
Persistent RA Perforation

- Angiogram shows more extensive contrast extravasation above the elbow level
- Heparin reversed by protamine
- O&T surgeon: no evidence of Compartment Syndrome because of good distal pulse; likely venous ecchymosis due to prolonged cuff inflation
Antegrade Injection via Brachial Artery

- Worry brachial artery (BA) perforation
- 6 Fr JR 4 GC via right femoral artery, through the aortic arch to BA
- Confirms accessory radial artery (RA) with high axillary junction
- No communication between accessory RA and BA
What to Do Next?

1. Inflation of sphygomanometer cuff at site proximal to perforation
2. Prolonged guiding catheter positioning
3. Prolonged inflation of coronary or peripheral balloon
4. Deploy a coronary polytetrafluoroethylene covered stent graft
Sprinter Legend 2.0/20 & 2.5/20

Correct Position

After Prolonged Inflation
Covered stent 2.5/18
Upsize the balloon for prolonged inflation

NC Trek 3.0/15 for post-dilatation

- Inflation of sphygomanometer cuff at site proximal to perforation
- Prolonged guiding catheter positioning
- Prolonged inflation of coronary or peripheral balloon
- Last!
  - Deploy a coronary polytetrafluoroethylene covered stent graft
What is the Result ?
What Should We Do?

- Angiographic findings are getting worse
- Fortunately, patient’s forearm swelling and ecchymosis remain static
- Distal pulse strong
What Should We Do?

• Should we consider surgical repair?

• But before that, let’s take a simple step

Forward flow of blood ➔ let’s have antegrade contrast injection
Life Is Simple, Don’t Make It Complicated!

- Persistent retrograde leakage despite prolonged balloon inflation and covered stent deployment
- In fact, repeated retrograde injection propagates retrograde dissection - *Complicated!*

- Antegrade injected contrast doesn’t go into the perforated vessel (small caliber + vasospasm + compression of true lumen) - *Simple!*
Simple Approach: Conservative Treatment

- Withdraw GW
- Confirm no leakage
- Good distal circulation by brachial artery
- Accessory radial artery to be sacrificed
- Crepe bandage is applied
Outcome: Immediate Clinical Photos
Outcome: A Month Later
Conclusion – I

• Incidence rate of accessory radial artery with high bifurcating origin ~7%
  
  *(Heart 2009;95:410-415)*

• Higher procedure failure rate due to smaller caliber and easier to induce vasospasm

• Vessel **perforation** is one of most severe complications !

• Conventional treatments of RA perforation include prolonged balloon inflation or covered stent deployment
Conclusion - II

- In accessory RA, “failed” conventional treatment may be related to propagation of retrograde dissection by repeated retrograde injection
- Characteristics of small caliber and vasospasm can be protective mechanism
- Early antegrade angiogram helps to decide “simple” or “complicated” approach
- If antegrade angiogram confirms absence of extravasation, conservative treatment is a feasible option