PCI Complications
How to Avoid

Ali E. Denktas, MD, FACC, FSCAI
Associate Professor of Medicine
Baylor College of Medicine
Director, Cardiac Catheterization Laboratories
MEDVA Medical Center
Houston, TX

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How to Avoid and What to Do When They Happen

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Disclosure

Rich Emotional Experiences

Complications
Complications

- Access site complications
- During the procedure
- Post Procedure
- Device related
- Special Procedures
Access Site Complications

- Femoral
  - Bleeding
  - Pseudoaneurysm
  - RP hematoma
  - Dissection
- Radial
  - Hand ischemia
  - Entrapment/Spasm

Post Procedure

- Bleeding
- Embolism
  - Peripheral
  - Stroke
- CIN
Device Related

- Atherectomy
- Thrombus Aspiration
- Filters
- Larger devices TAVR etc
- CTO devices

Special Procedures

- TAVR
- ASD/PFO Closure
- Peripheral Interventions
- ASA
- Foreign Body Retrieval
Take Home Messages

• Do not cut corners
• Follow your protocols
• DO NOT USE EXTRA FORCE
• Always make new mistakes
• Listen to your patient
• If you think “it can’t be done” think again
• Blame yourself but trust yourself
• STAY CALM

Good luck
Access site complications

- AV fistula
- Pseudoaneurysm
- Thromboembolism
- Hematoma formation
- Retroperitoneal hematoma
ACCESS: A Randomised Comparison of PTCA by the Femoral, Brachial and Radial Approaches

<table>
<thead>
<tr>
<th></th>
<th>6F Femoral n=300</th>
<th>Brachial n=300</th>
<th>Radial n=300</th>
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</thead>
<tbody>
<tr>
<td>n=900</td>
<td></td>
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<tr>
<td>Major entry site complications (%)</td>
<td>2.0</td>
<td>2.3</td>
<td>0</td>
</tr>
<tr>
<td>Successful coronary cannulation (%)</td>
<td>99.7</td>
<td>95.7</td>
<td>93.0</td>
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<tr>
<td>Primary PTCA success (%)</td>
<td>90.7</td>
<td>90.7</td>
<td>91.7</td>
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<tr>
<td>Asymptomatic occlusion</td>
<td>-</td>
<td>-</td>
<td>3.0</td>
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</tbody>
</table>

Kiemeneij et al JACC 1997;29:1269-75
Updated Meta-analysis

19,328 ACS patients being randomly allocated to radial or femoral access

Radial Access
Radial Access
Radial Access

Entrapment

Consequences of Spasm and Eversion

Avoiding Radial Spasm

- Keep patient warm and hydrated
- Use anxiolytics
- Minimise manipulation and trauma
- Use hydrophilic sheaths
- Use vasodilators
- (Apply warm saline bag)
- Use coronary (014”) guidewire
- Be prepared to use femoral approach

Pseudoaneurysm

False Aneurysm Sac
Femoral Artery
Human Thrombin Injection for Iatrogenic Pseudoaneurysms

n=14: (10 CFA, 3 SFA, 1 Ax)  
Size 2.5-7.5 cm

1000 IU Human Thrombin under ultrasound guidance  
Repeat colour Doppler at 24h  

14/14 occluded at 24h  
2 additional balloon inflation across neck  
2 required 2nd injection


Managing Pseudoaneurysms

• Conservative
• Ultrasound-Guided Compression
• Human (or Recombinant) Thrombin Injection
• Coil Embolisation
• Stent Graft
• Surgical Repair
During the Procedure

• Abrupt closure
• No reflow
• Perforation
• Air Embolism
• Stent loss
No Reflow

• Acute reduction in coronary flow in the absence of;
  – Dissection
  – Thrombosis
  – Spasm
  – High grade stenosis
No Reflow

- Exclude the no no reflow reasons
- Use vasodilators Adenosine, Nipride, Verapamil, Nicardipine
- Can do saline flushes
- If low BP can use Epinephrine
Perforation

Perforations

• Reversal of heparin*
• Balloon tamponade
• Pericardial drainage
• Second guide and covered stent, coil, clotted blood, vein on stent.
Air Embolism

- Give O2
- Can aspirate
- Support the patient
Stent loss

- Very rare 1.3%
- It can be retrieved
  - Small balloon through it
  - Two wire
  - Snare
- Crushed and deployed
- Pulled and lost in the periphery

Peripheral Embolism
Red Leg After Cath

Artery on a Stick
ASA

ASA
Foreign Body
Foreign Body
Foreign Body Retrieval
Key Procedural Steps

Important reminder on Burr movement

- The directions for use (DFU) for the Rotablator® Rotalink® Burr Catheters specify to **always keep the burr advancing or retracting while it is rotating**.
- Maintaining the burr in one location while it is rotating may lead to excessive tissue removal or damage to the Rotablator system.
- System damage could include wire damage or fracture.

Prior to use, please see the complete ‘Directions For Use’ for more information on Indications, Contraindications, Warnings, Precautions, Adverse Events and Operator’s Instructions.