Carotid Artery Access Techniques
Standard and Exotic

Issam Moussa, MD
Co Director, Endovascular Services
Center for Interventional & Vascular Therapy
New York Presbyterian – Columbia University Medical Center
Realities of Practice

• Physicians tend to develop a preference for one access technique over another and tend to use it in the majority of cases.

• Although this approach enhances skills and familiarity with a given technique there is tendency to adhere to that technique even in cases where another approach might be preferable.

• Access technique should be tailored to the patient-specific anatomy.
What Determines the Optimal Access Technique?

• Point of entry to the vascular system
  - Femoral A.
  - Brachial A.
  - Radial A.
  - Carotid A.
• Aortic arch anatomy and pathology
  - Arch type: I-III
  - Degree of atherosclerotic disease
• Common carotid artery
  - Variant anatomy
  - Degree of torousity at origin
  - Degree of disease at bifurcation
• External carotid artery patency
Defining standard vs. exotic carotid access technique is an empiric endeavor.
What is a Standard Access Technique?

Back loading serial stiffening technique

- Femoral artery access
- Cannulation of the external carotid artery with a 4-5 Fr. diagnostic catheter (various options) and a “glide wire”
- Introduction of a stiff 0.035” wire (various options) and removal of the diagnostic catheter
- Introduction of a 6 Fr. 90 cm sheath/dilator system (various options) to the mid-distal common carotid artery
Standard Access Technique
What is an “Exotic” Carotid Access Technique?

- A carotid access technique can be termed exotic when it varies from standard technique by 1 or more steps.
  - Why is it needed?
  - How is it done
Exotic Carotid Access Techniques

Why is it needed?

• It is typically needed (but not mandatory) in the following circumstances
  ▪ Access point other than the femoral artery
  ▪ Complex Aortic arch
  ▪ Presence of severe tortousity at the origin of CCA or severe disease at the distal CCA
  ▪ Occlusion of ECA
Exotic Carotid Access Techniques: Why is it needed?

Complex Aortic Arch

I

II

III

Images of aortic arches with different access techniques.
Exotic Carotid Access Techniques: Why is it needed?

Severe Tortousity at the Origin of the CCA
Exotic Carotid Access Techniques: How is it done?
Which diagnostic catheter?
Vitek Catheter
Simmons Catheter
Exotic Carotid Access Techniques: How is it done?

Which Wires?

- Wires for diagnostic catheter access to CCA / ECA
  - 0.035” stiff angled glide wire
  - 0.038” stiff angled glide wire

- Wires for Sheath / Guide access to CCA
  - TAD Wire
  - Supra Core wire
Exotic Carotid Access Techniques: How is it done?
The Guide vs. Sheath Controversy

• There should not be a controversy
• Each tool have its application
Guide vs. Sheath

• Individual Preference
  - The sheath works for me most, if not all the time, so that is what I use!
  - The guide works for me most, if not all the time, so that is what I use!

• Facts / Observations
  - Guides allow more torque and therefore can be more deliverable in complex anatomy
  - Guides provide a variety of different tip shapes that align better with CCA wall
  - Guides are more stable than sheaths
  - Sheaths have smaller size and smoother transition with the dilator
Exotic Carotid Access Techniques
Tools – Sheaths

Arrow® sheaths

Shuttle Sheath - COOK
Exotic Carotid Access Techniques Tools – Guides

Vitek

Simmons

Amplatz 1
Carotid Artery Access Techniques

- Standard back loading serial stiffening technique
- Telescopic Technique
- Remote carotid access technique
Carotid Artery Access Techniques

The Telescoping Technique

- Introduction of the sheath + diagnostic catheter or guide + diagnostic catheter over a 0.035” wire to the descending thoracic aorta
- Engagement of the ECA / CCA with the wire + diagnostic catheter
- Advancement of the sheath/guide-diagnostic catheter-wire assembly to the CCA
The Telescoping Technique

• Advantages
  - Saves procedural steps and time

• Disadvantages
  - Theoretically, there is risk of scraping the aortic arch wall at the origin of the CCA
The Telescoping Technique

Guide + Diagnostic Catheter
The Telescoping Technique
Guide + Diagnostic Catheter
Carotid Artery Access Techniques
Remote Carotid Access - Left Brachial
Carotid Artery Access Techniques
Remote Carotid Access - Left Brachial
Carotid Artery Access Techniques
Remote Carotid Access – Guide Based

Bovine Arch
Hockey Stick 1,2,3

Courtesy: A. Cremonese
If you think that the support of a guiding catheter may be not enough.........
Carotid Artery Access Techniques

Remote Carotid Access – Guide Based
“buddy wire” in the external carotid artery

Pre dilatation
Stenting
Post dilatation
Carotid Artery Access Techniques
Remote Carotid Access – Guide Based

Subclavian
Filter’s Wire
BMW 0.014"
Innominate Trunk
Hockey-Stick Guide Cath
CCA
Choice PT 0.014” wire

8Fr HS guideCath

Choice PT Platinum Plus

8Fr HS guideCath
“Balloon Anchoring to ECA”

Successful advancement of the 8F HS GuideCath over both wires supported by the balloon inflated into the ECA