

# **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 tortuosity at origin
  - Degree of disease at bifurcation
- External carotid artery patency

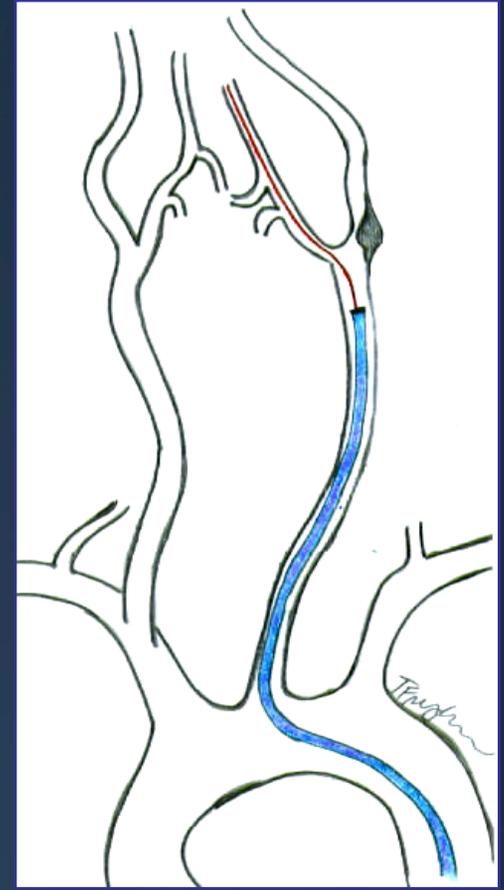
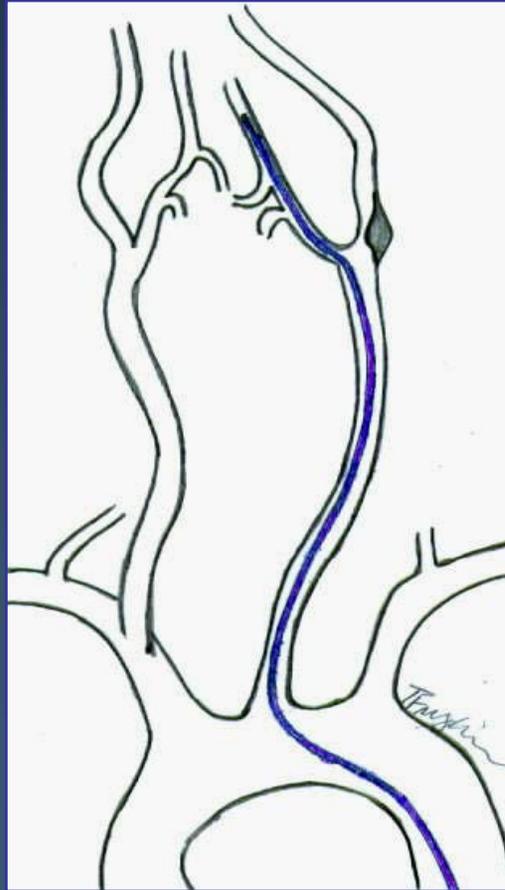
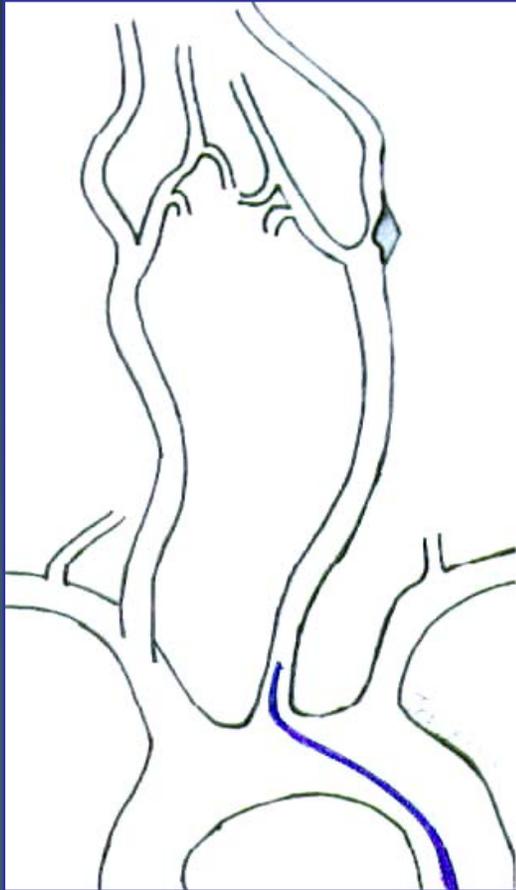
# Defining standard vs. exotic carotid access technique is an empiric endeavor

# 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

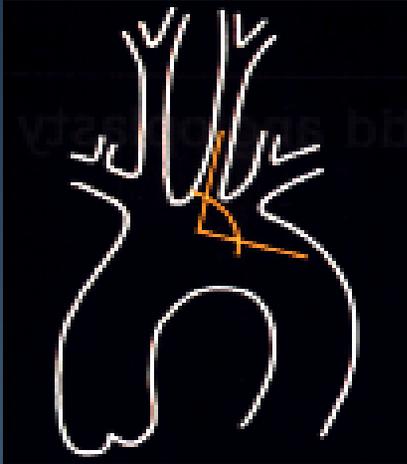
## Why is it needed?

- 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

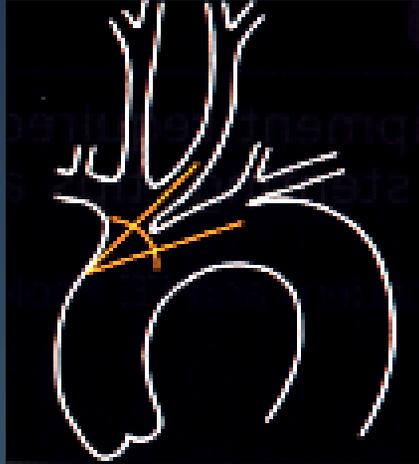
# Exotic Carotid Access Techniques: Why is it needed?

## Complex Aortic Arch

I



II



III



# Exotic Carotid Access Techniques: Why is it needed?

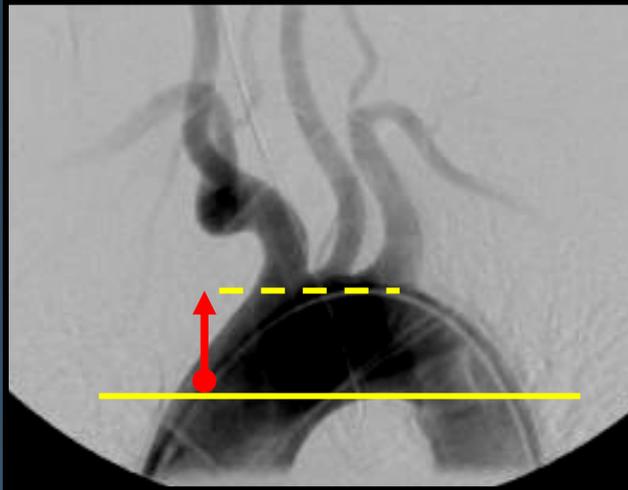
## Severe Tortuosity at the Origin of the CCA



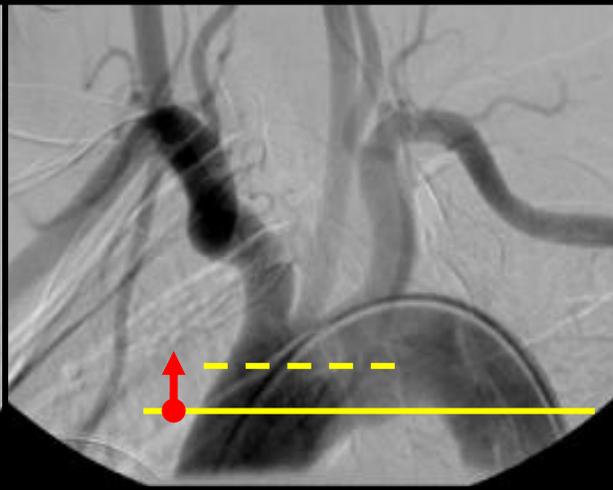
# Exotic Carotid Access Techniques: How is it done?

## Which diagnostic catheter?

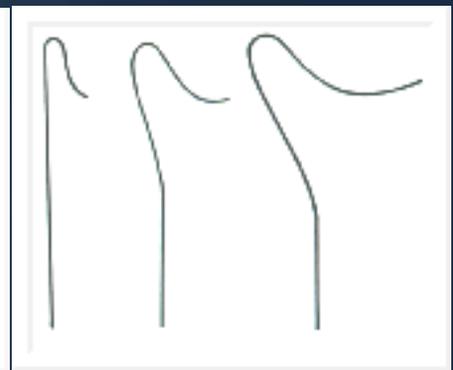
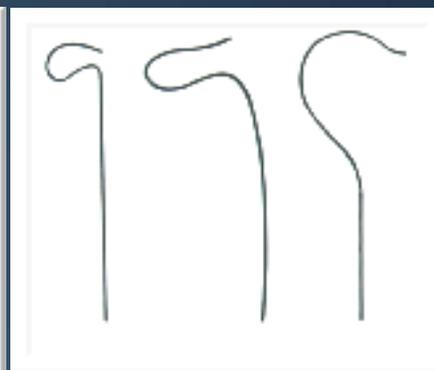
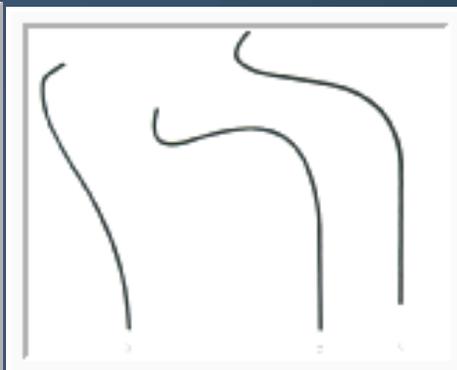
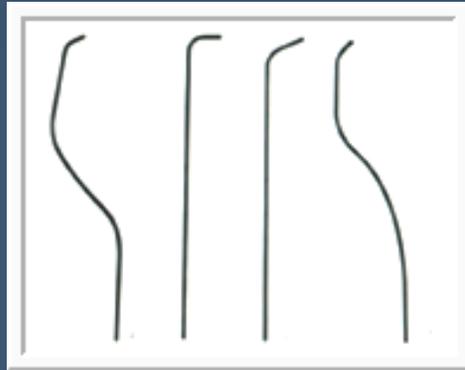
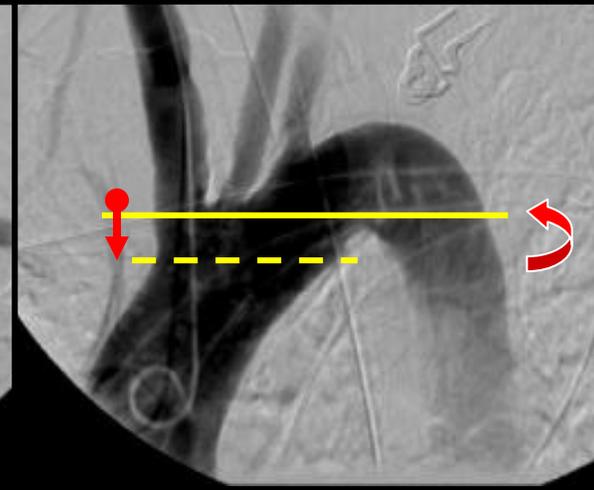
I



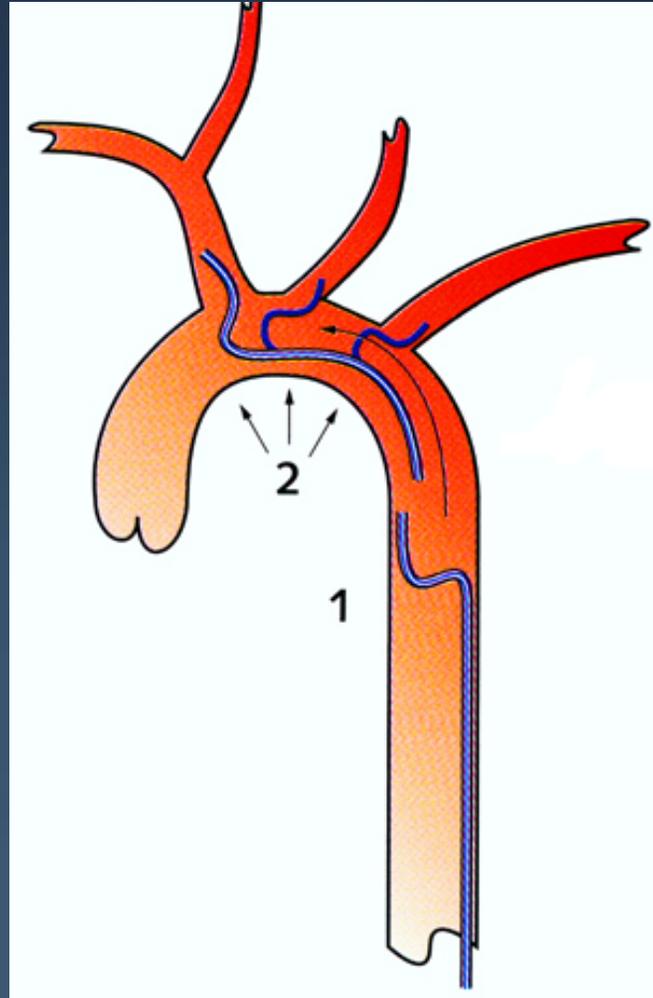
II



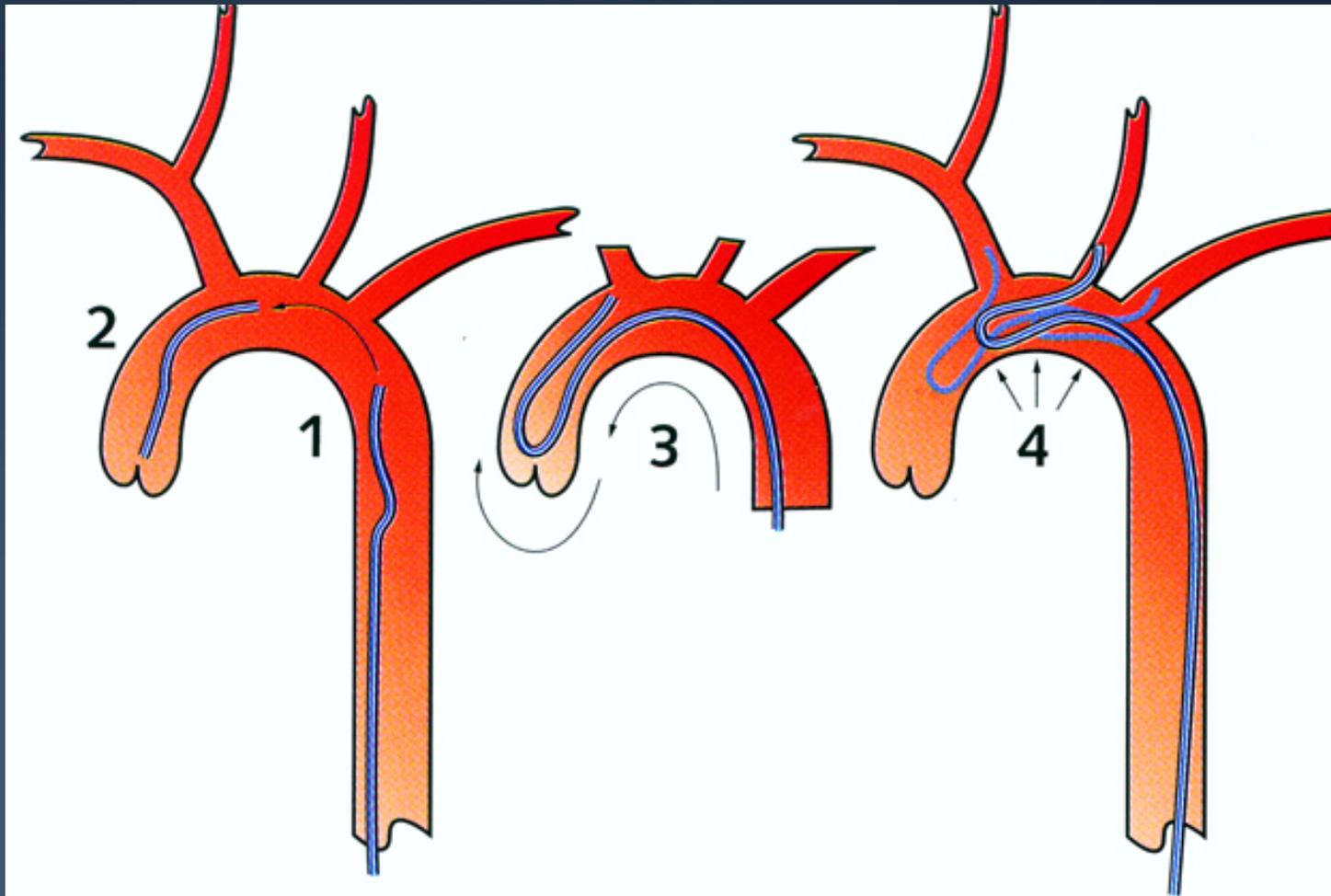
III



# 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



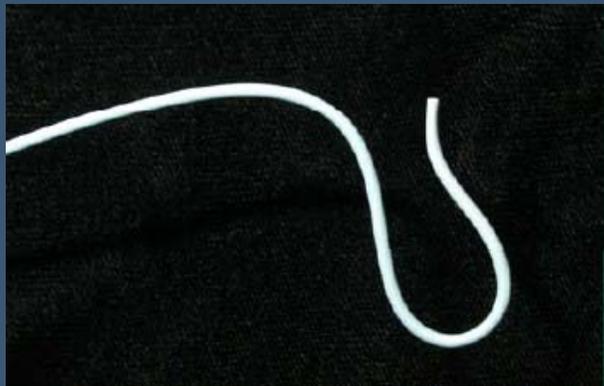
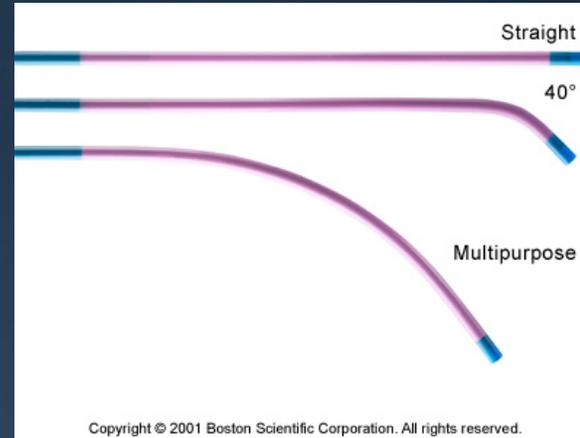
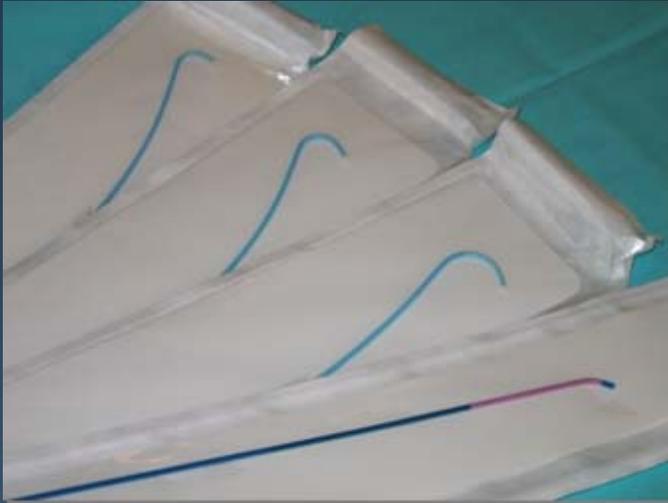
Arrow® sheaths



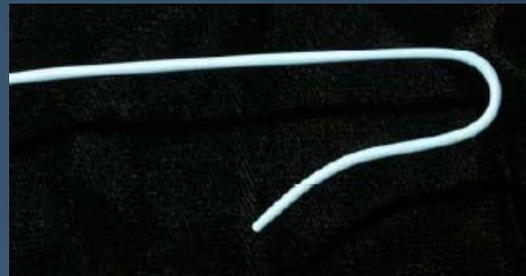
Shuttle Sheath - COOK

# Exotic Carotid Access Techniques

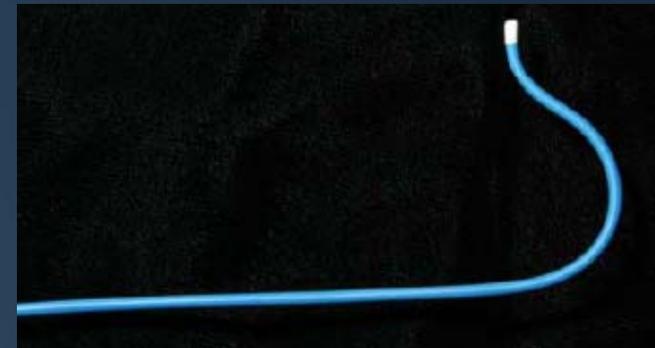
## Tools – Guides



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

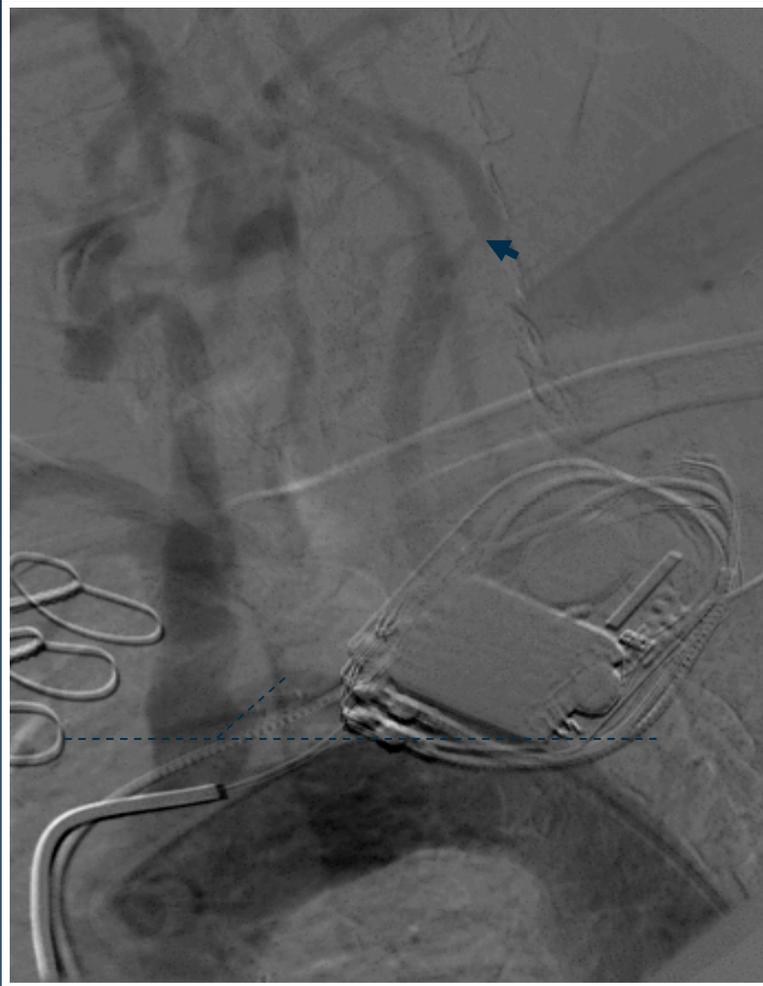
- Introduction of the sheath + diagnostic catheter or guide + diagnostic catheter over a 0.035" wire to the descending thoracic aorta
- Engagement of the ECA / CCA with the wire + diagnostic catheter
- Advancement of the sheath/guide-diagnostic catheter-wire assembly to the CCA

# 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

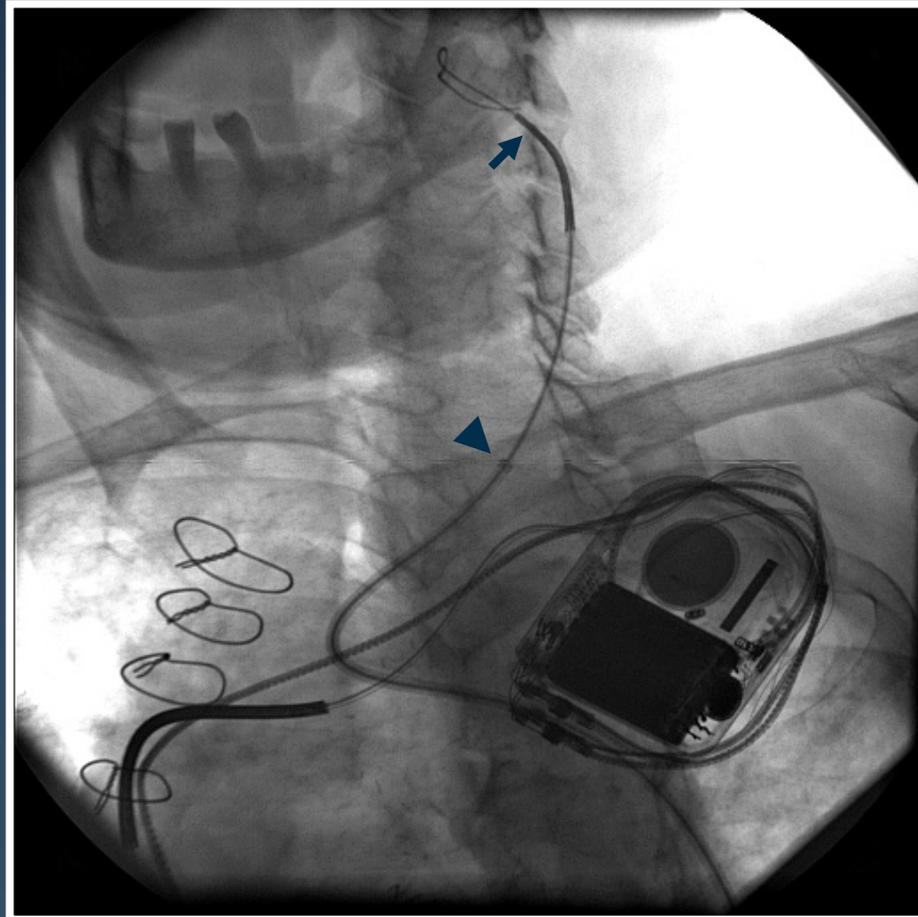
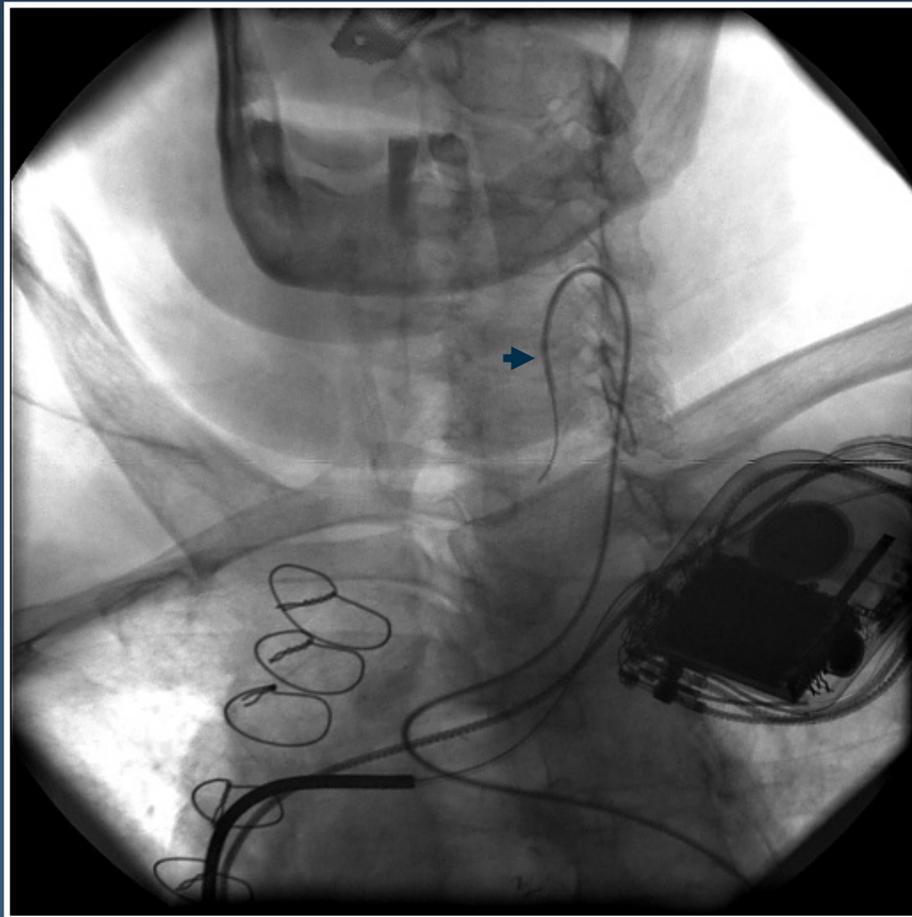
# The Telescoping Technique

## Guide + Diagnostic Catheter



# The Telescoping Technique

## Guide + Diagnostic Catheter



# The Telescoping Technique

## Guide + Diagnostic Catheter



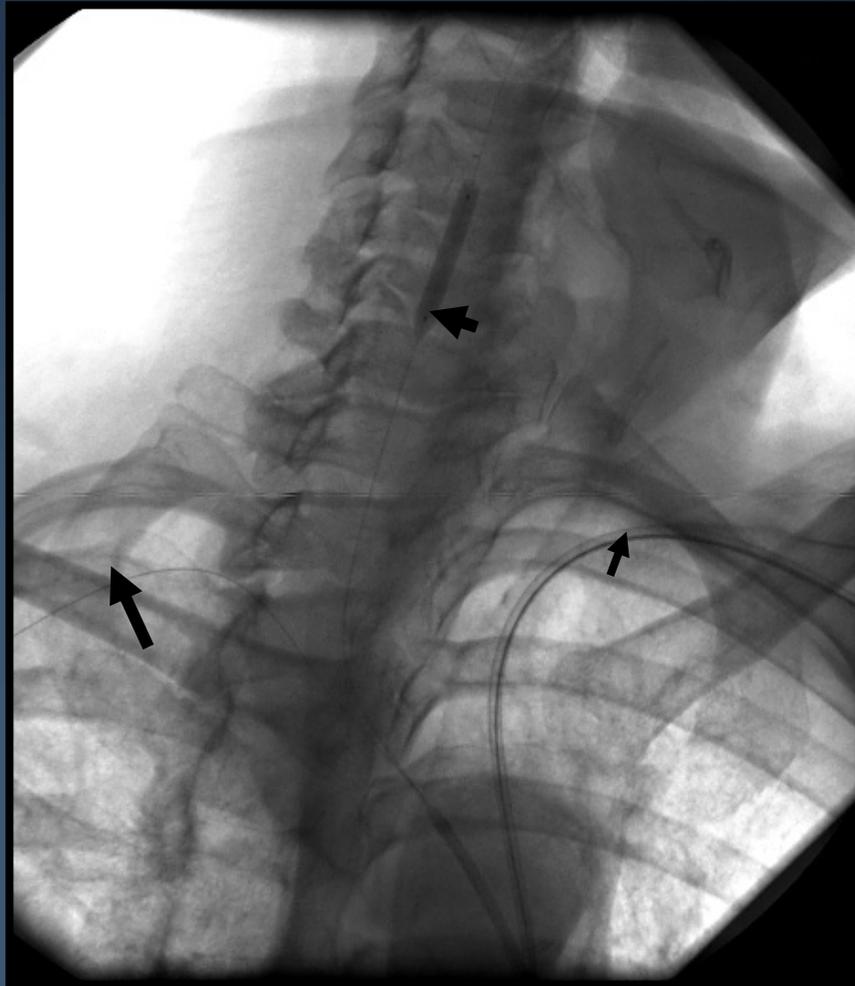
# Carotid Artery Access Techniques

## Remote Carotid Access - Left Brachial



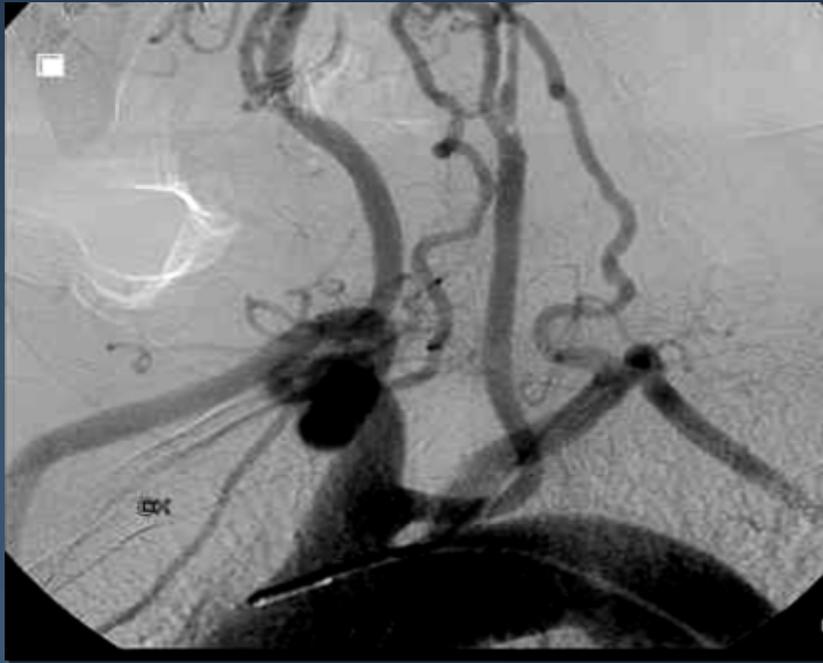
# Carotid Artery Access Techniques

## Remote Carotid Access - Left Brachial

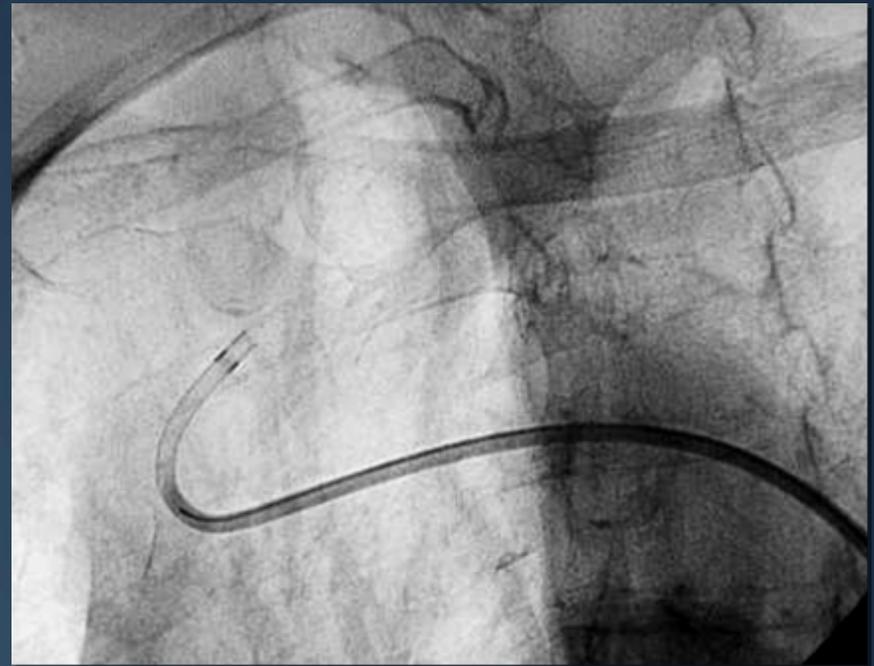


# Carotid Artery Access Techniques

## Remote Carotid Access – Guide Based

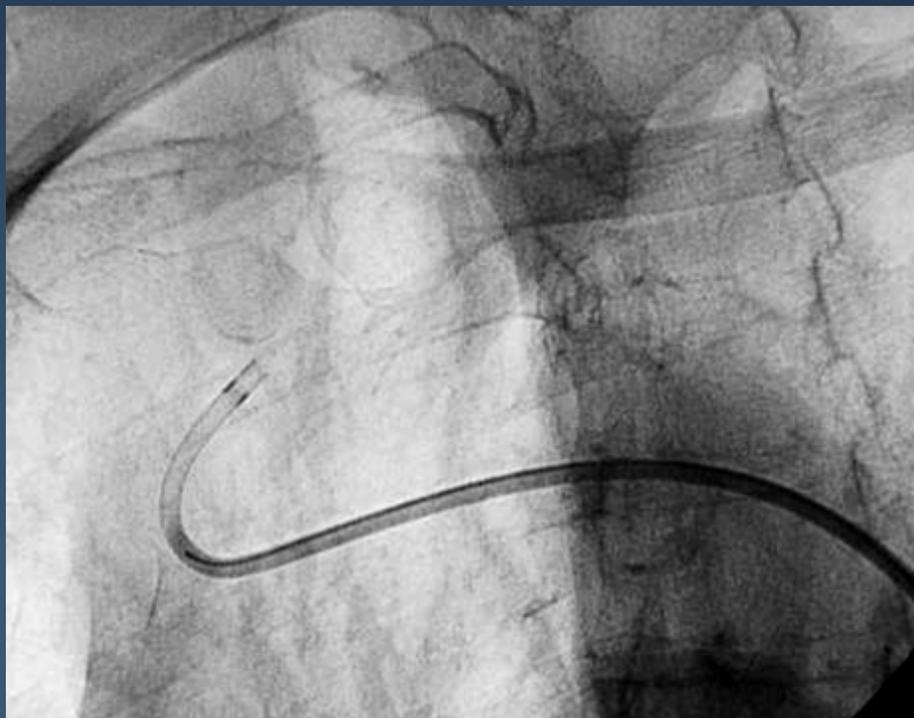


Bovine Arch



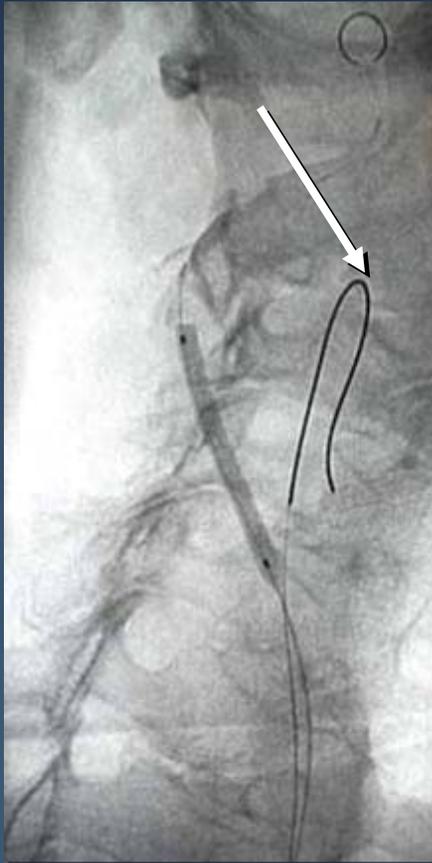
Hockey Stick 1,2,3

If you think that the support of a guiding catheter may be not enough.....



# Carotid Artery Access Techniques

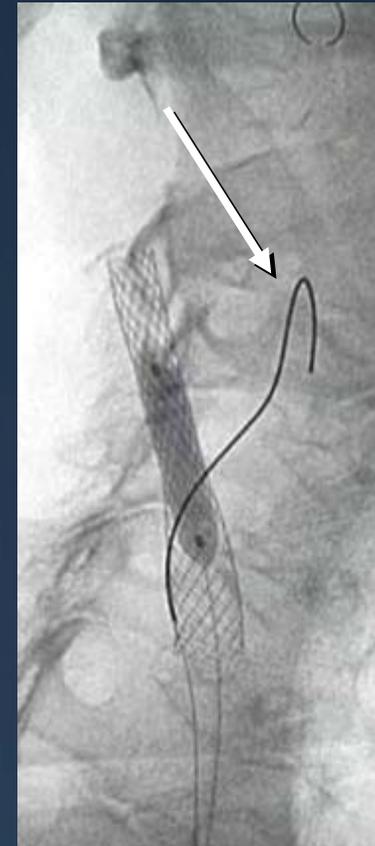
## Remote Carotid Access – Guide Based “buddy wire” in the external carotid artery



Pre dilatation



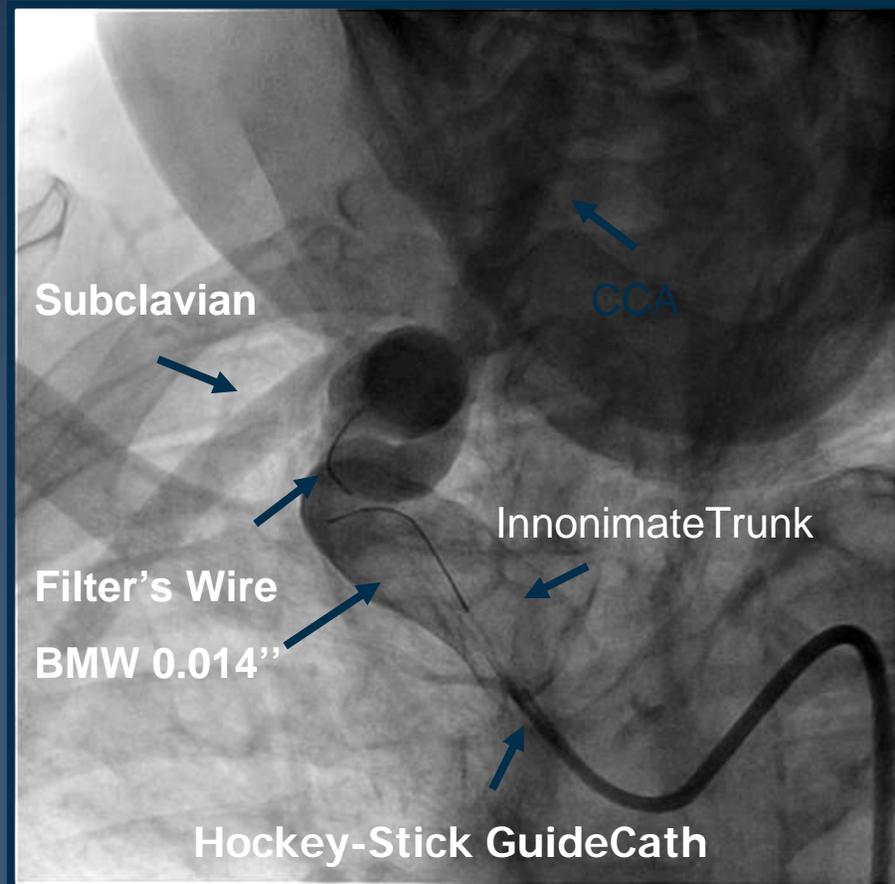
Stenting

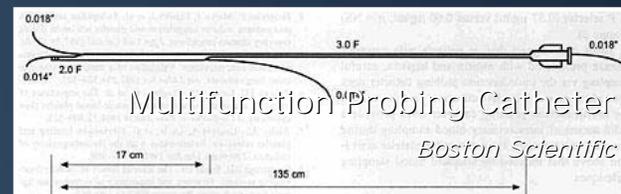
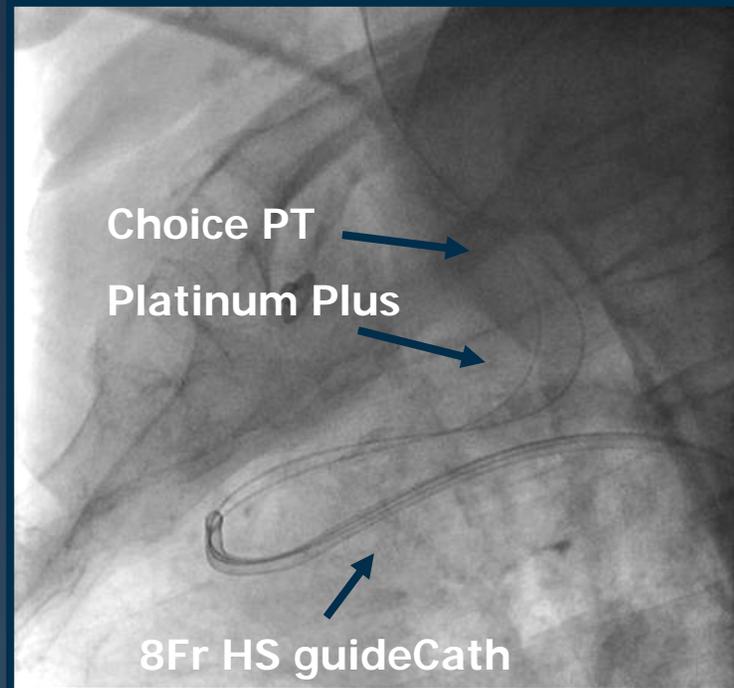
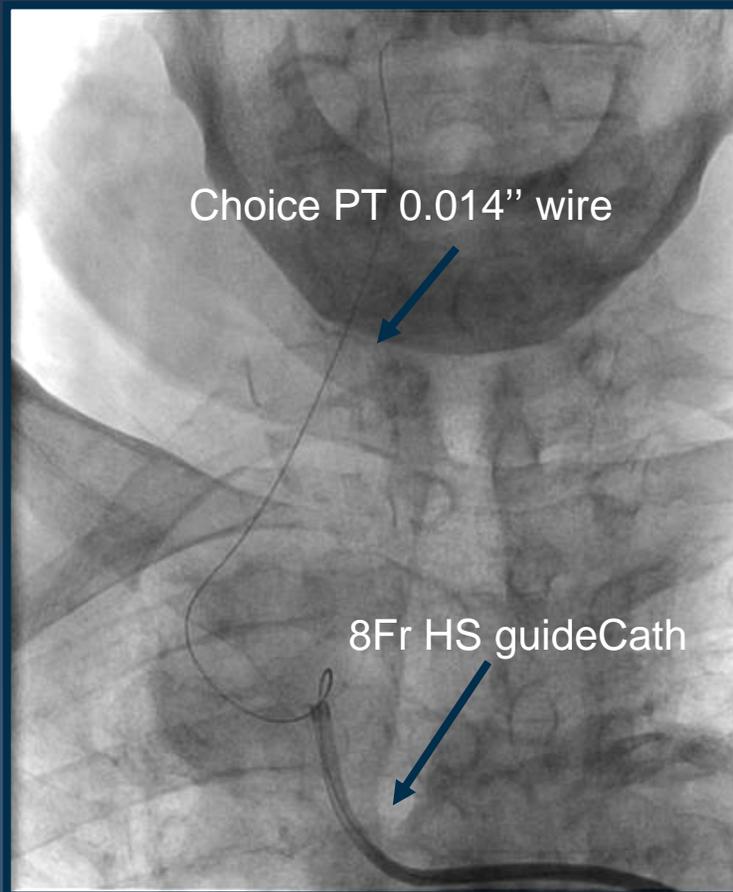


Post dilatation

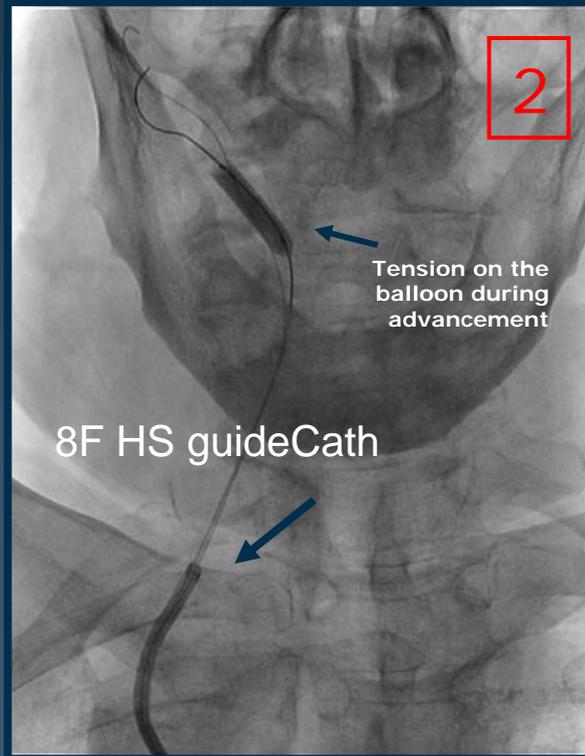
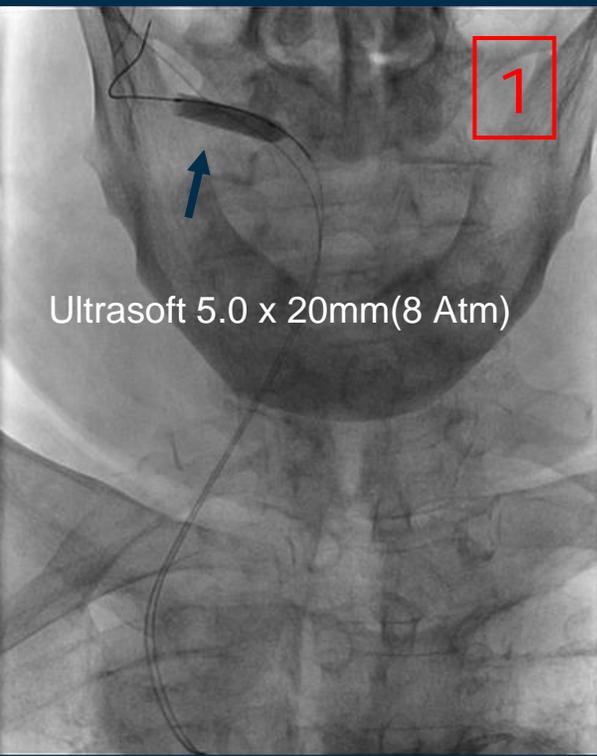
# Carotid Artery Access Techniques

## Remote Carotid Access – Guide Based





# “Balloon Anchoring to ECA”



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

