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Tools for treatment of carotid stenosis

Tools , Dilatation catheters …

Max AMOR

C. AMICABILE, Z.CHATI , I.MASSON,C.BRETON,

R.ROBERT ,JP SIMON

Institut Lorrain du Cœur et des Vaisseaux

Polyclinique Louis Pasteur

Essey les Nancy, France

max-amor@wanadoo.fr

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Theater , equipment ,patient preparation ,etc

- Radiological equipment : An angiography suite is preferable to an operating room
- An EKG and an intra-arterial pressure monitoring are indispensable .Invasive monitoring is fundamental
- Patient: Head immobilized and a squeeze toy to monitor the consciousness
- The possibility to perform road mapping is useful to reduce contrast medium injection
- The possibility to perform temporary pacing : exceptional need

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Injection &Flushing equipment

- Media-valve line with manifolds to avoid air bubbles and reduce quantity of contrast medium
- Flushing bags of heparinized serum

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Introducers

- For femoral approach
  - With Guiding Catheter
    - Standard length (12cm) ,7 or 8 F
    - Long sheath (23 cm) for diseased iliac
  - With coaxial sheath placement
    - Cook,Terumo ,Cordis Sheath
    - 80 to 90 cm , 5 or 6 or 7 F
- For brachial approach
  - Long sheath introducers
- For Direct puncture
  - Short introducers (6 to 8cm) with markers

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GUIDING CATHETERS

- **SIZE**
  - 90 CM - 100 CM
  - 8F 0.086″ - 0.088″
    2.20 MM - 2.25 MM
- **SHAPE**
  - MULTIPURPOSE
  - OTHERS :
    - VERTEBRAL, ANGLED
    - BENTSON TYPE
    - More frequently HOCKEY STICK
- **LONG INTRODUCERS**
  - 80 CM - 90 CM
  - 5 to7F – 1.60 TO 2.30 MM

FLUSH

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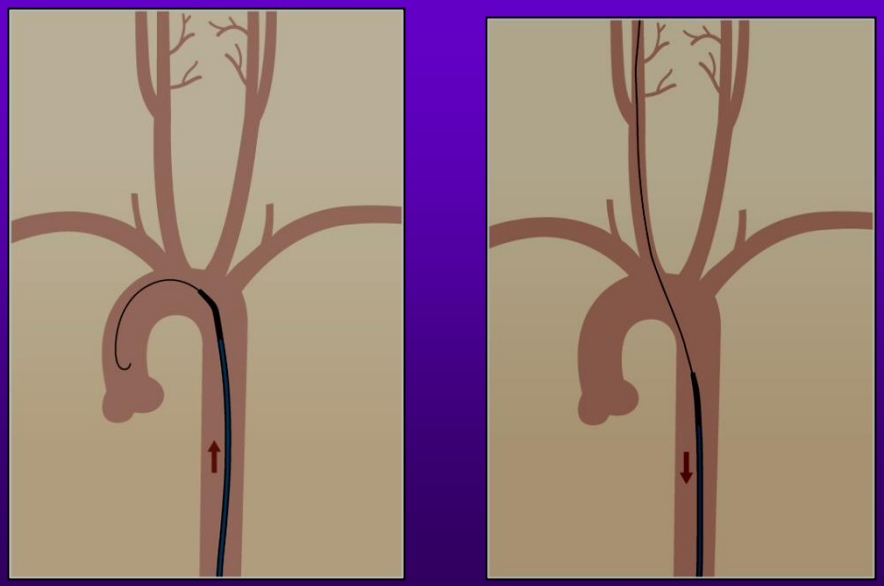
Guidewires (1)

- For Approach ,Exchange (femoral ,brachial, radial)
  - All are 0.035” peripheral guidewires
  - Steerable hydrophilic angled or straight GW
  - Extra stiff Rosen or Amplatz GW



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Guidewires (2)

- For Angioplasty (Pre-dilatation, Buddy wire…)
  - All are 0.014” steerable coronary guidewires with different tips
  - Floppy tip : BM ,Traverse (Guidant)
  - Stiff tip: Cross it 100,200
  - Hydrophilic & soft tip : Pilot 50 , PT Graphx, Asahi
  - Hydrophilic& stiff: Pilot 150, PT stiff

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Catheter selection

Catheters	Left	Right
Simmons (Sidewinder)		
I	+	+++
II	++	+++
III	+++	++
IV	+++	++
Hinck/Berenstein	++	+++
Headhunter		
I	+	+++
II	+++	+
Bentson		
JB1	+	+++
JB2	+++	++
JB3	+++	+
Mani	+++	++
Vitek	++	+++

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Catheter selection & width of the aorta

CATHETERS SHAPE	AORTA TYPE		
	SMALL	STANDARD	LARGE
SIMMONS			
I	+++		
II	+	+++	+
III		++	+++
IV		++	+++
HINCK	+	+	+
HEADHUNTER			
I		++	
II			++
BENTSON			
JB1	+	++	
JB2		+++	
JB3			++
VITEK	+	+++	+

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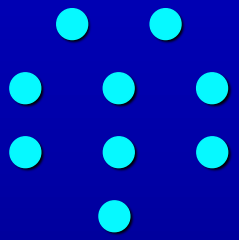
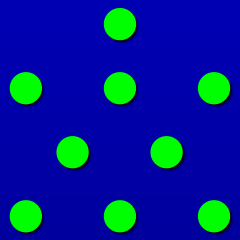
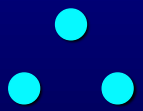
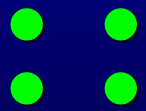
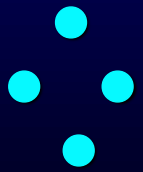
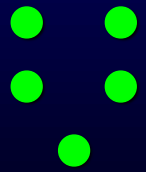
SELECTION OF THE CATHETERS ACCORDING TO THE APPROACH WAY

	BRACHIAL	FEMORAL
SIMMONS 1 2 3 4		
HINCK		
HEADHUNTER 1 3		
BENTSON JB1 JB2 JB3		

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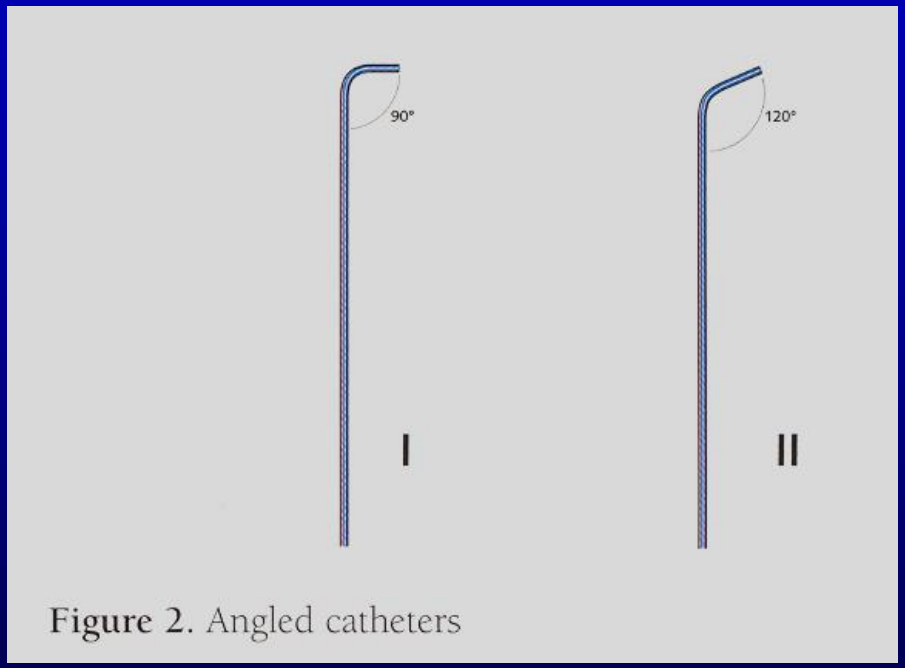

Figure 2. Angled catheters

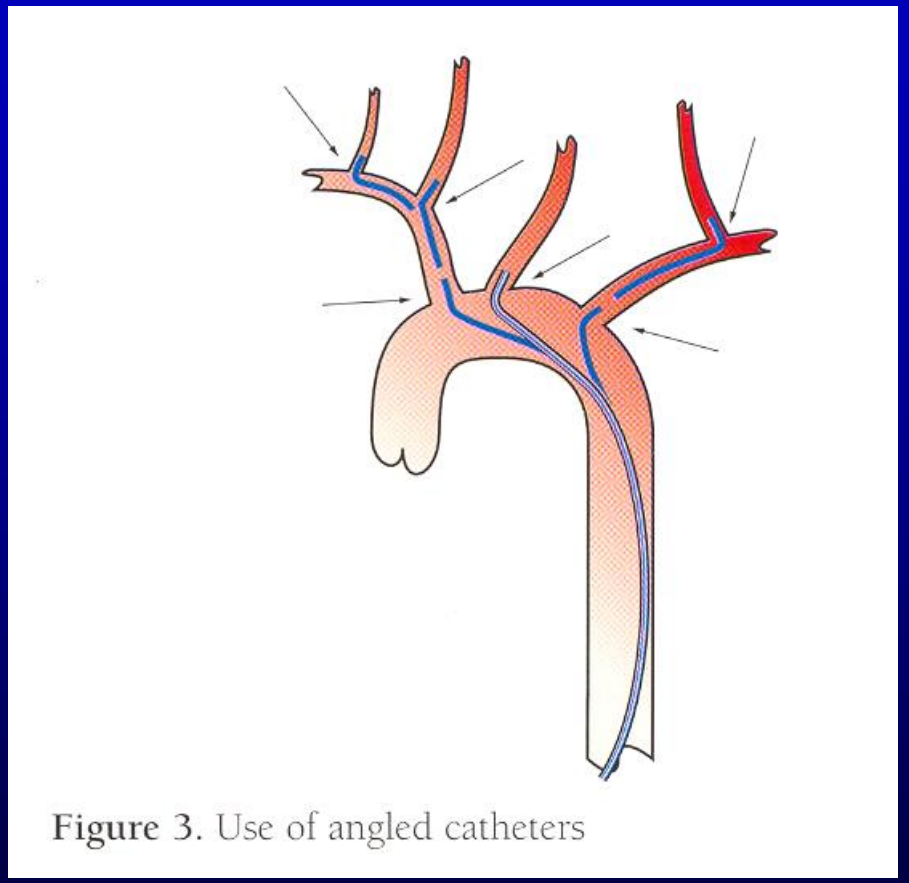

Figure 3. Use of angled catheters

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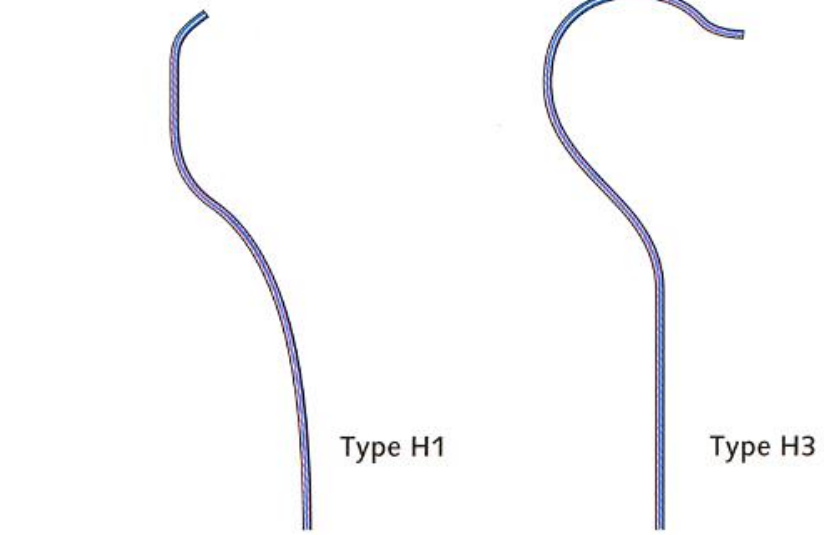

Figure 4. Head hunter

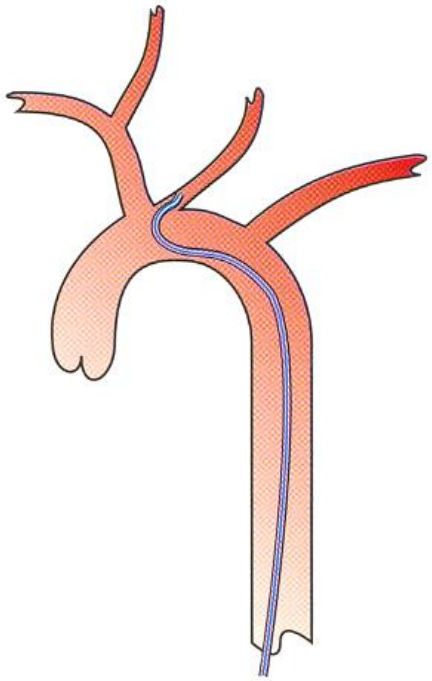

Figure 5. Use of head hunter type H3

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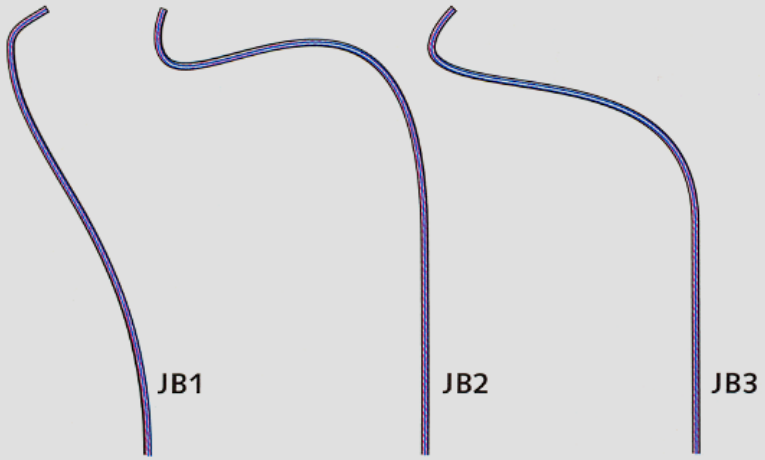

Figure 6. Bentson / Hannafee

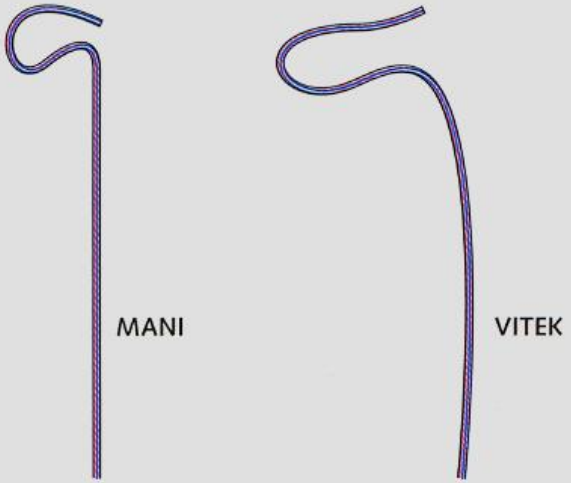

Figure 7. Mani / Vitek

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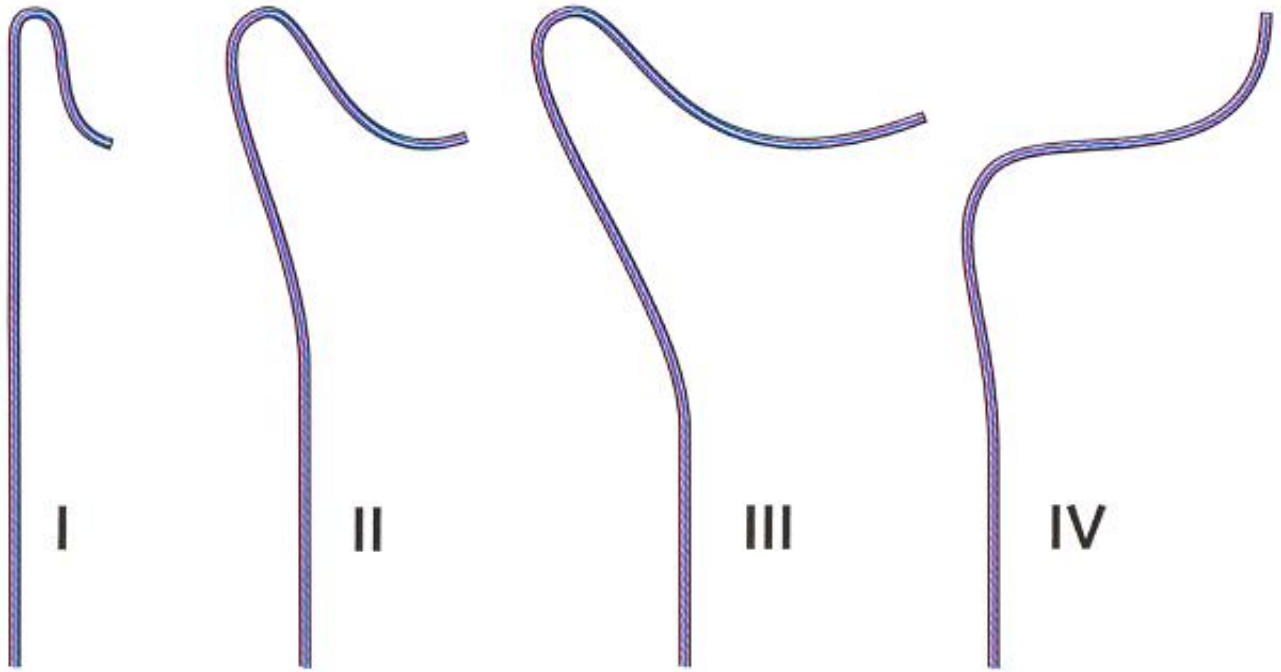

Figure 8. Simmons / Sidewinder

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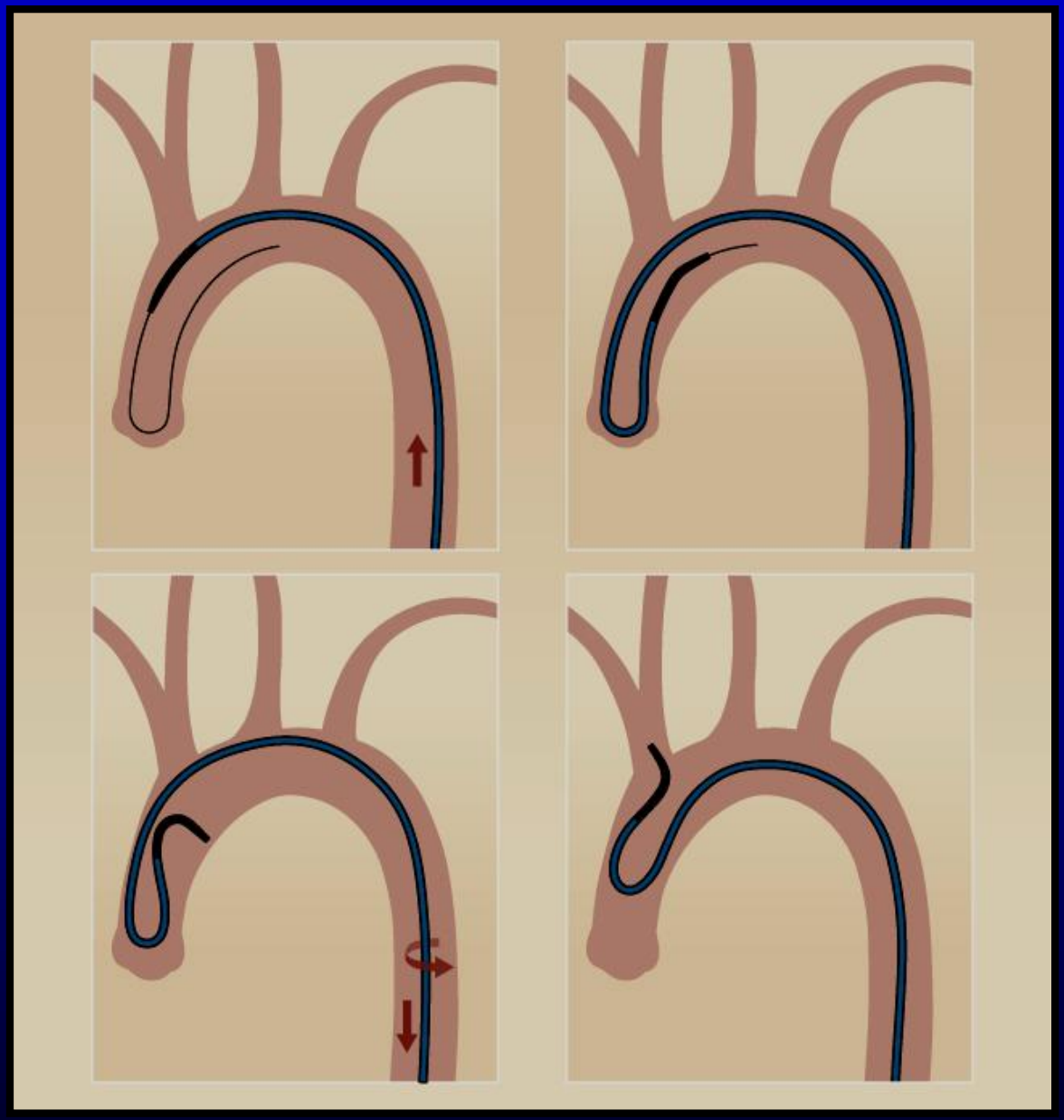

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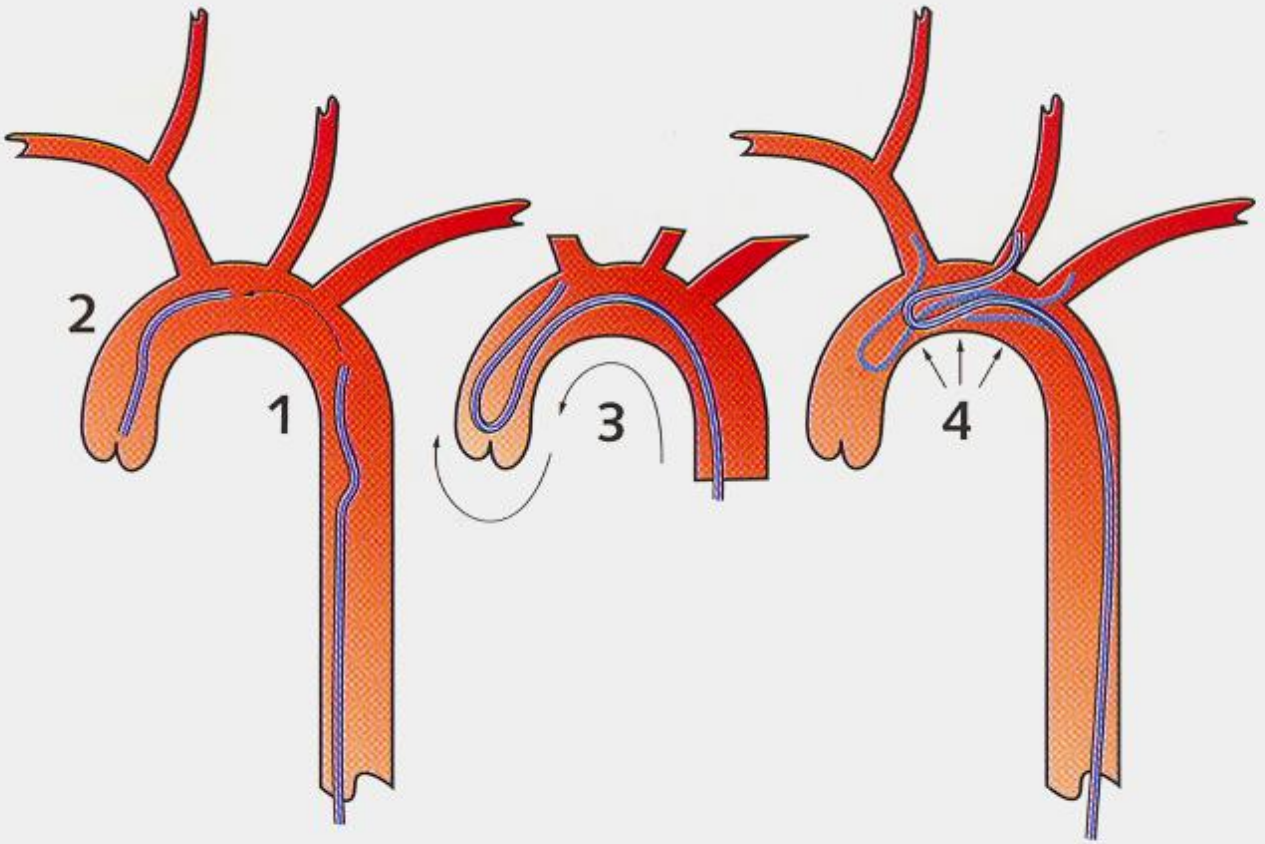

Figure 9. Placement of a Simmons catheters I, II, IV.

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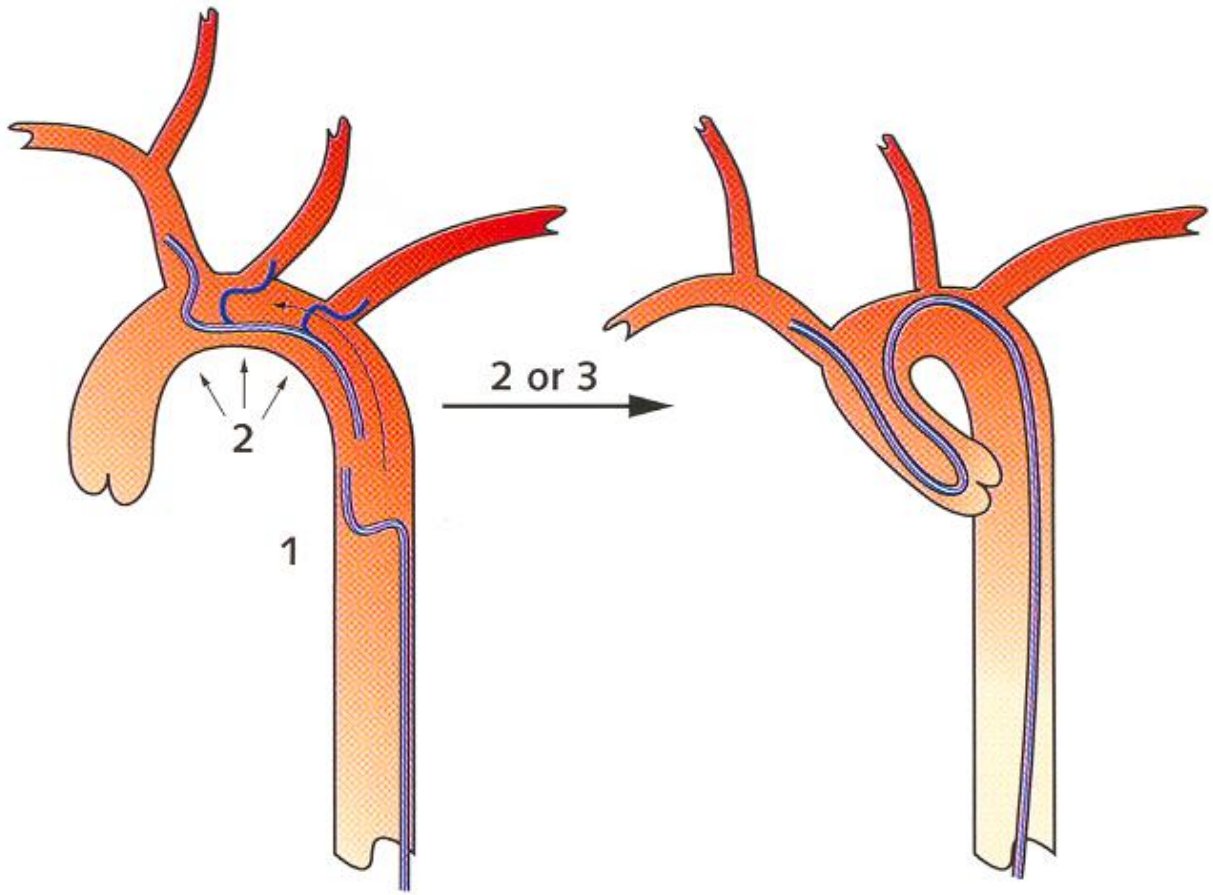

Figure 10. Use of Simmons type IV.

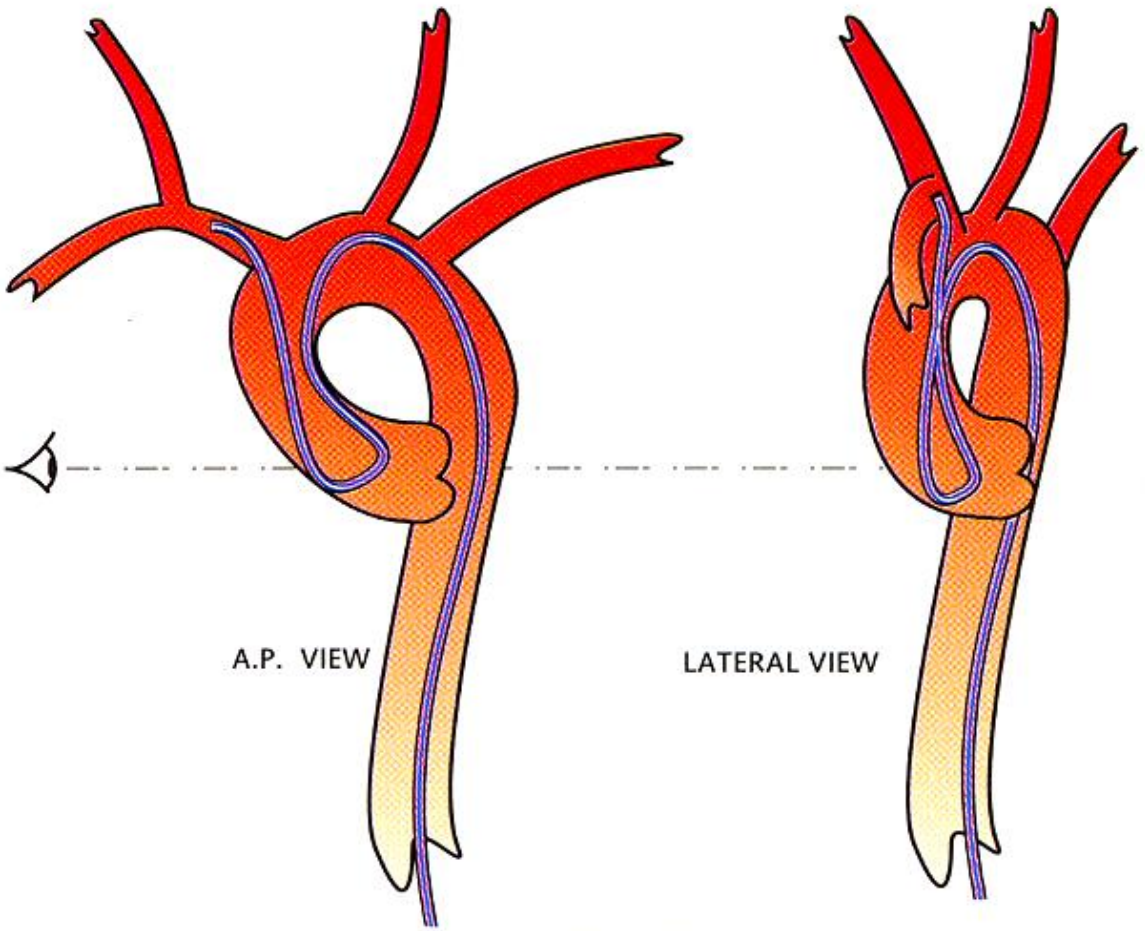

Figure 11. Use of Simmons type III or IV.

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Balloons

- For pre-dilatation :
  - Long coronary monorail balloons .
  - 3 or 4cm long . 3mm diameter
- For post-stenting dilatation:
  - Usually 5 mm X2cm monorail balloons
  - Full deflation ,negative pressure to avoid in case of rupture gaseous emboli

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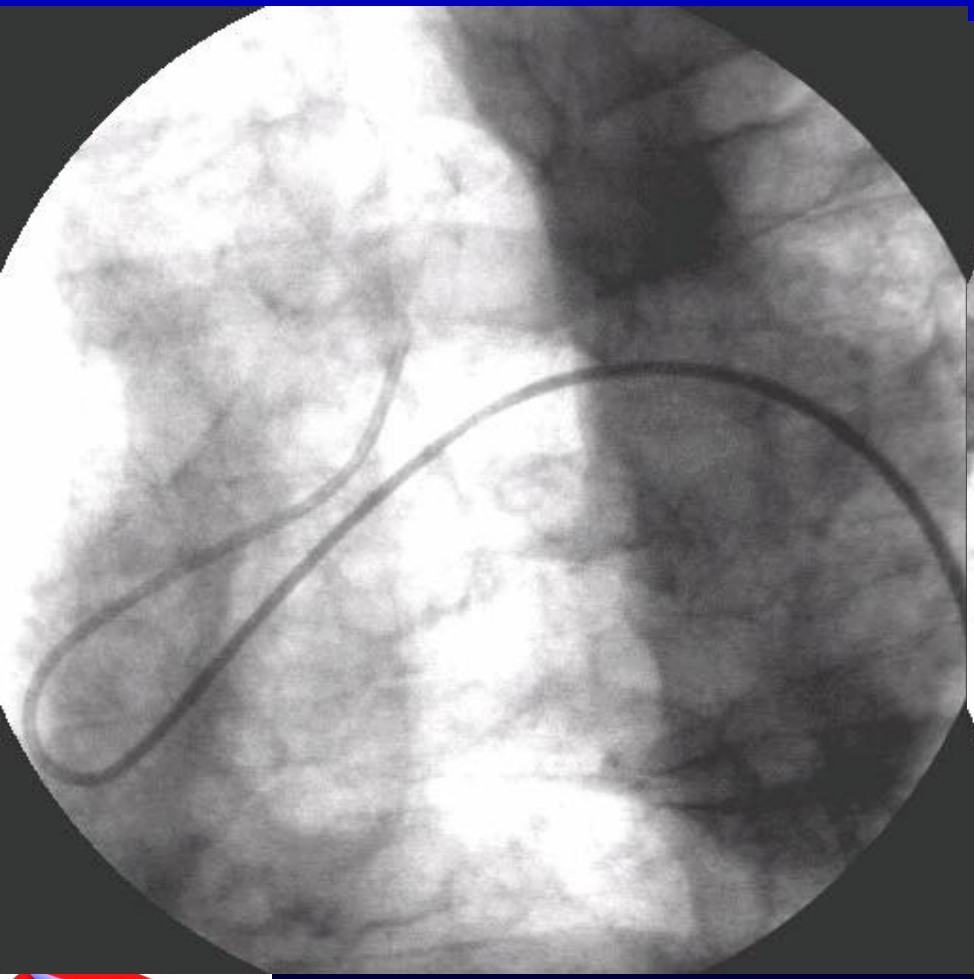

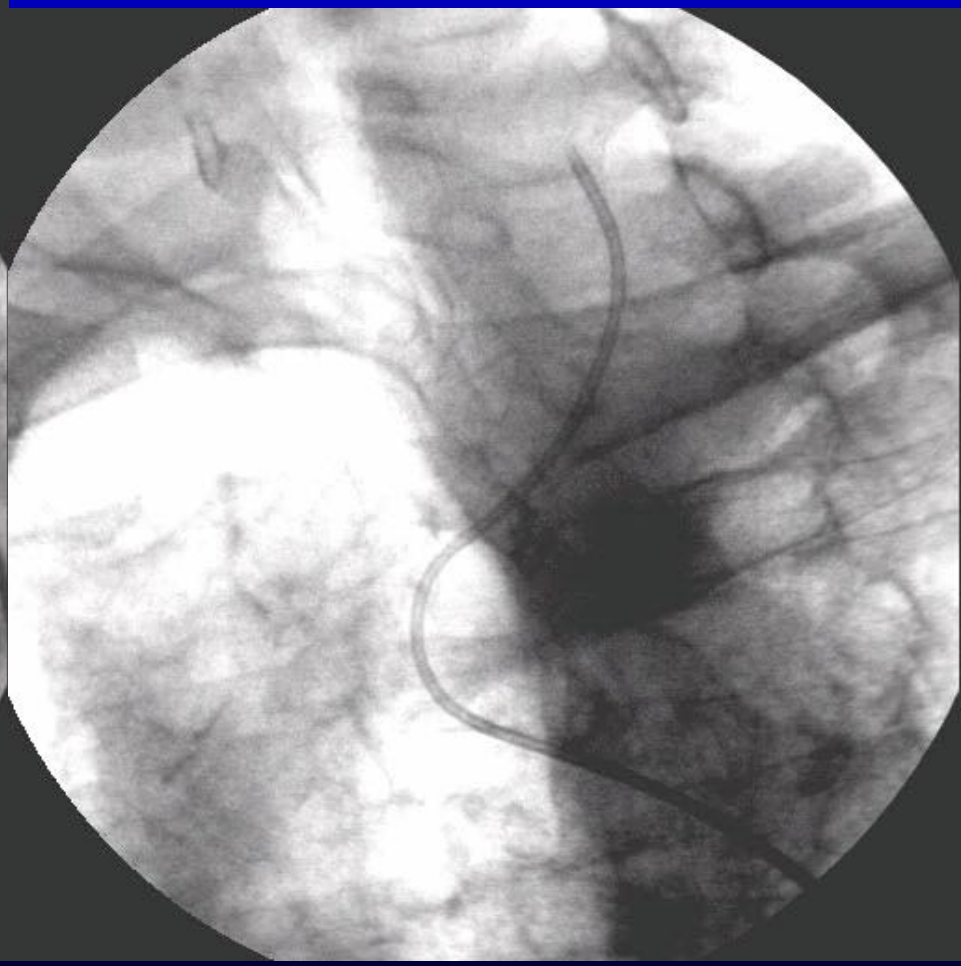

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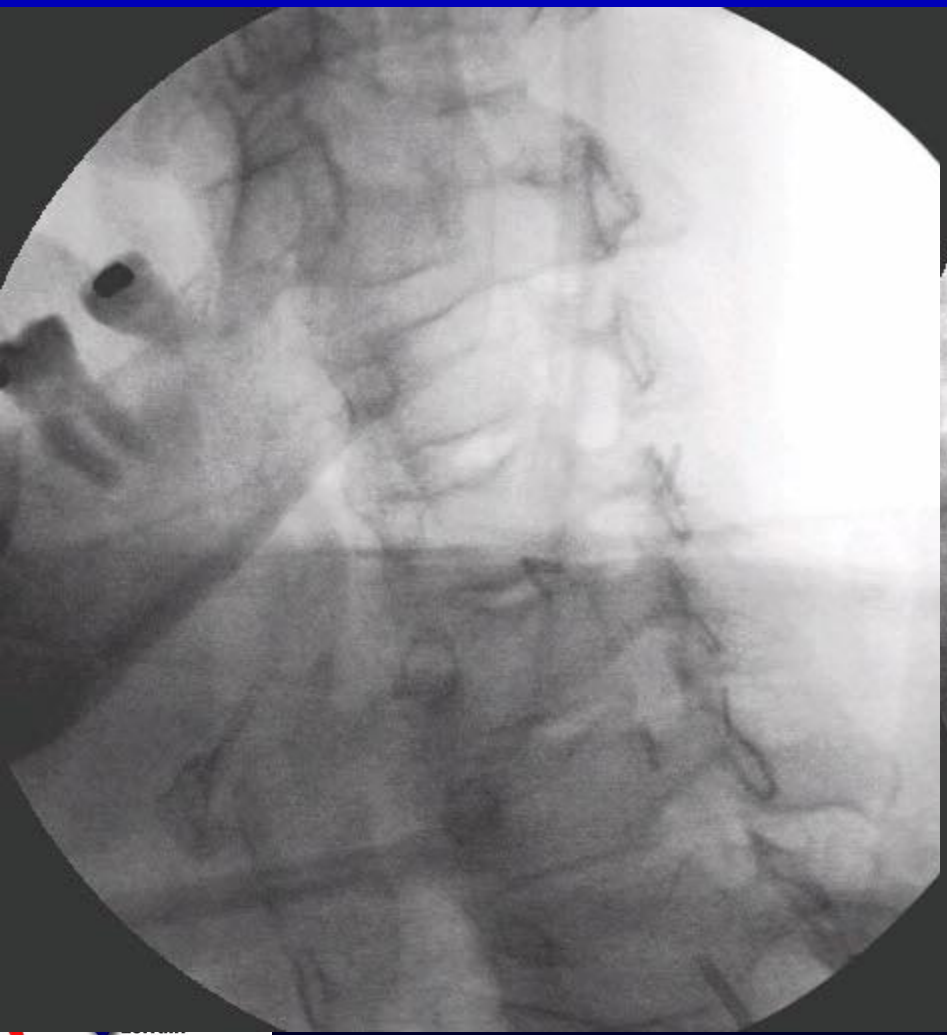

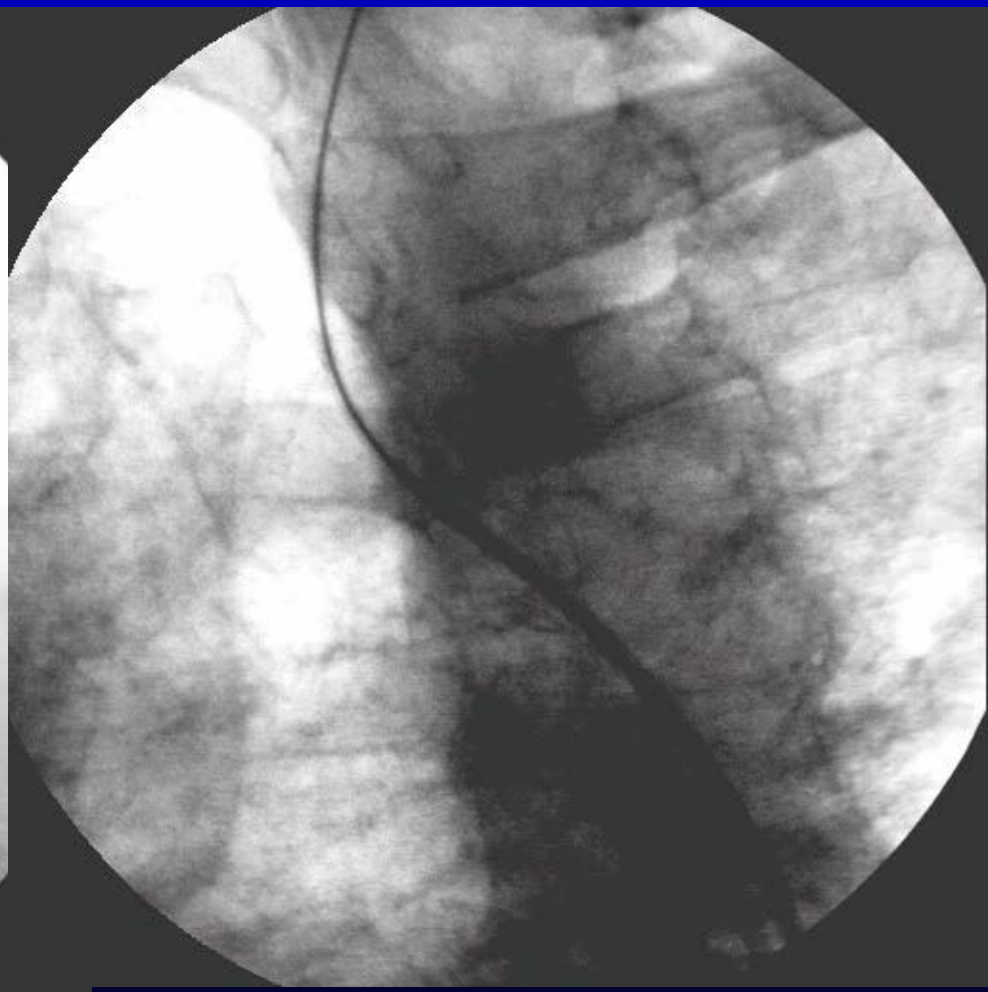

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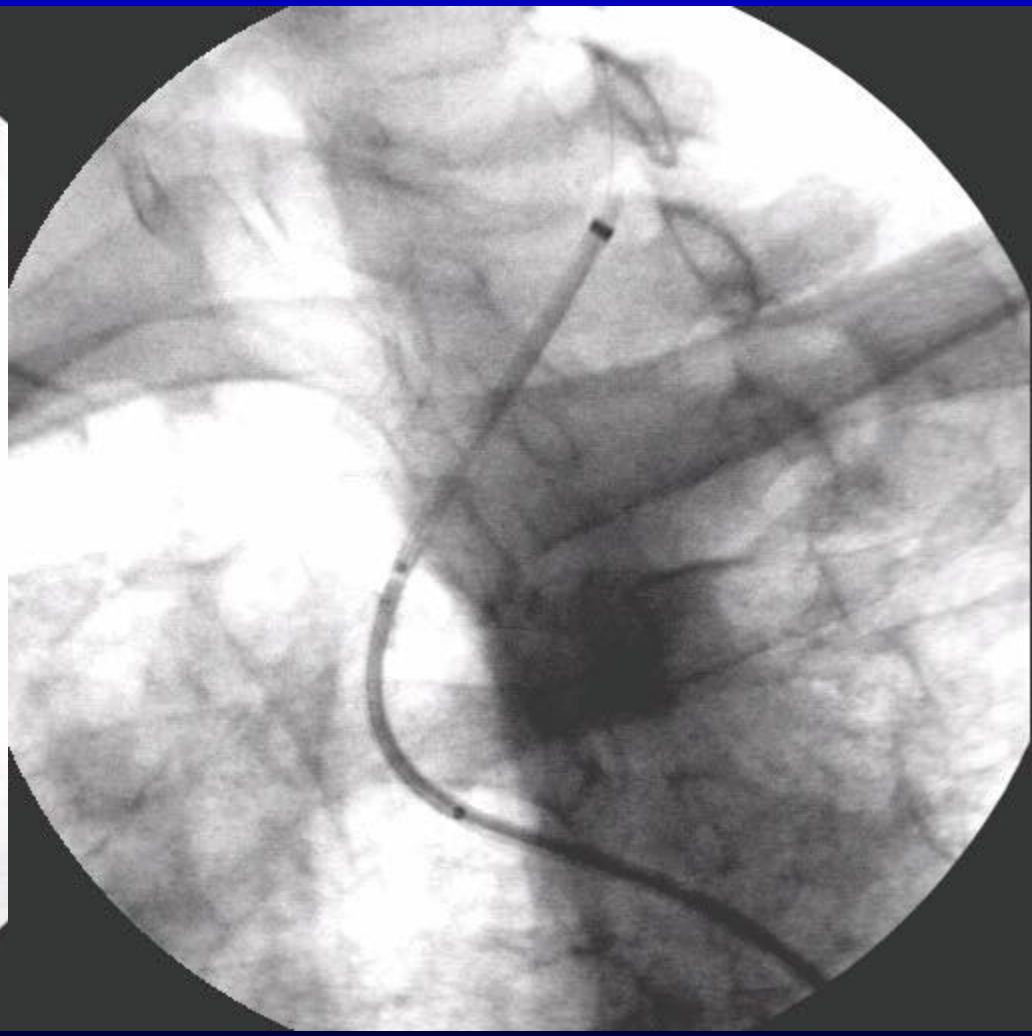

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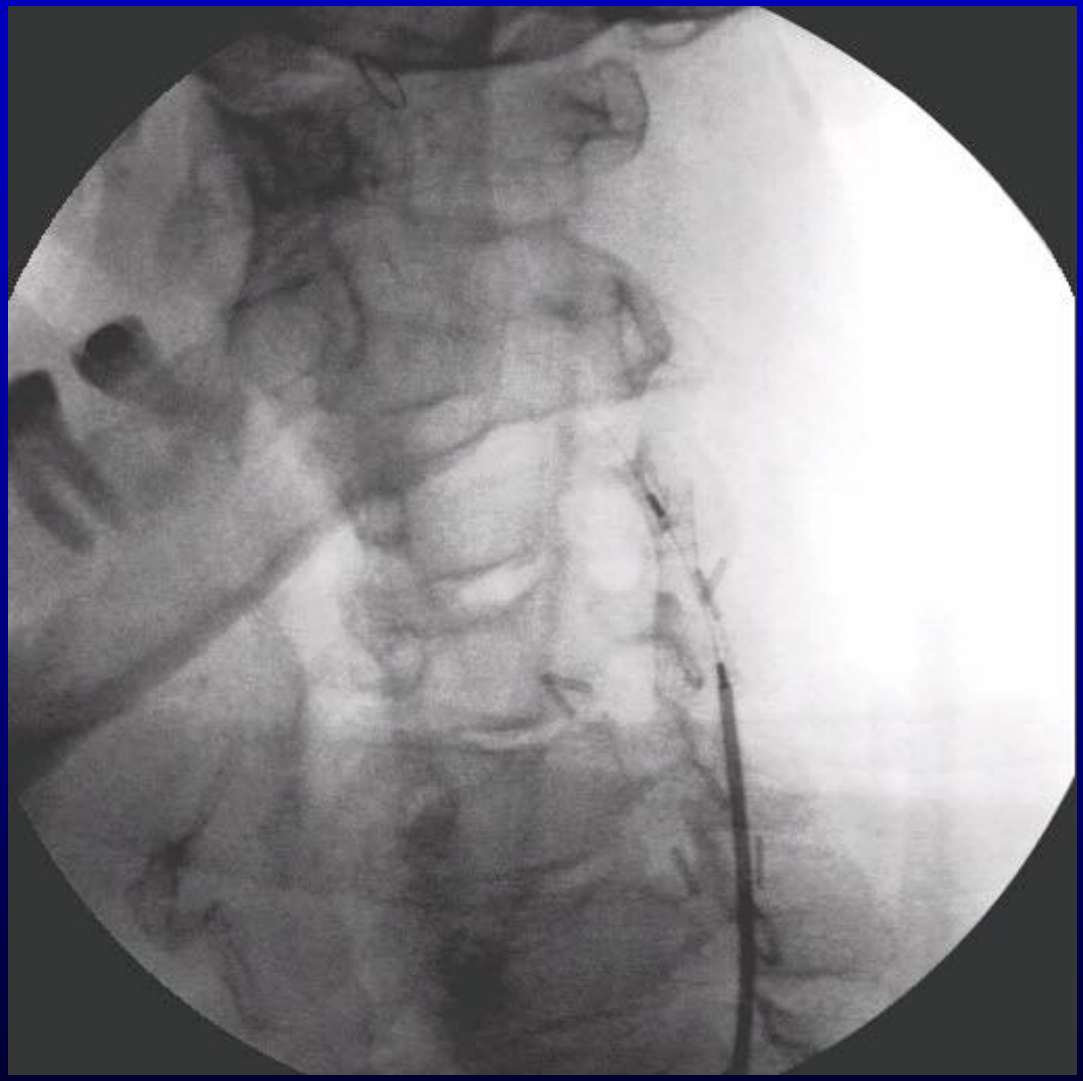

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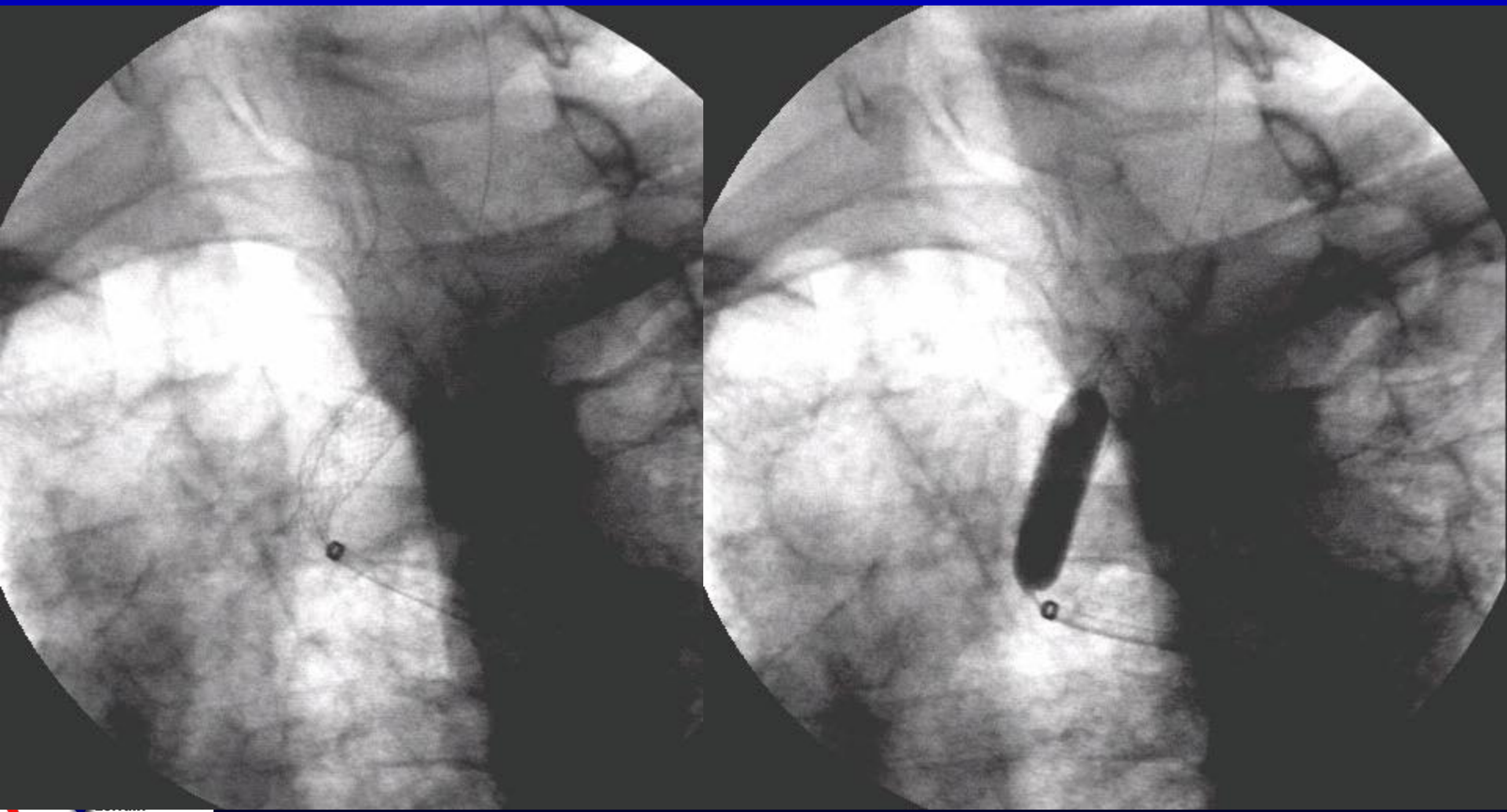

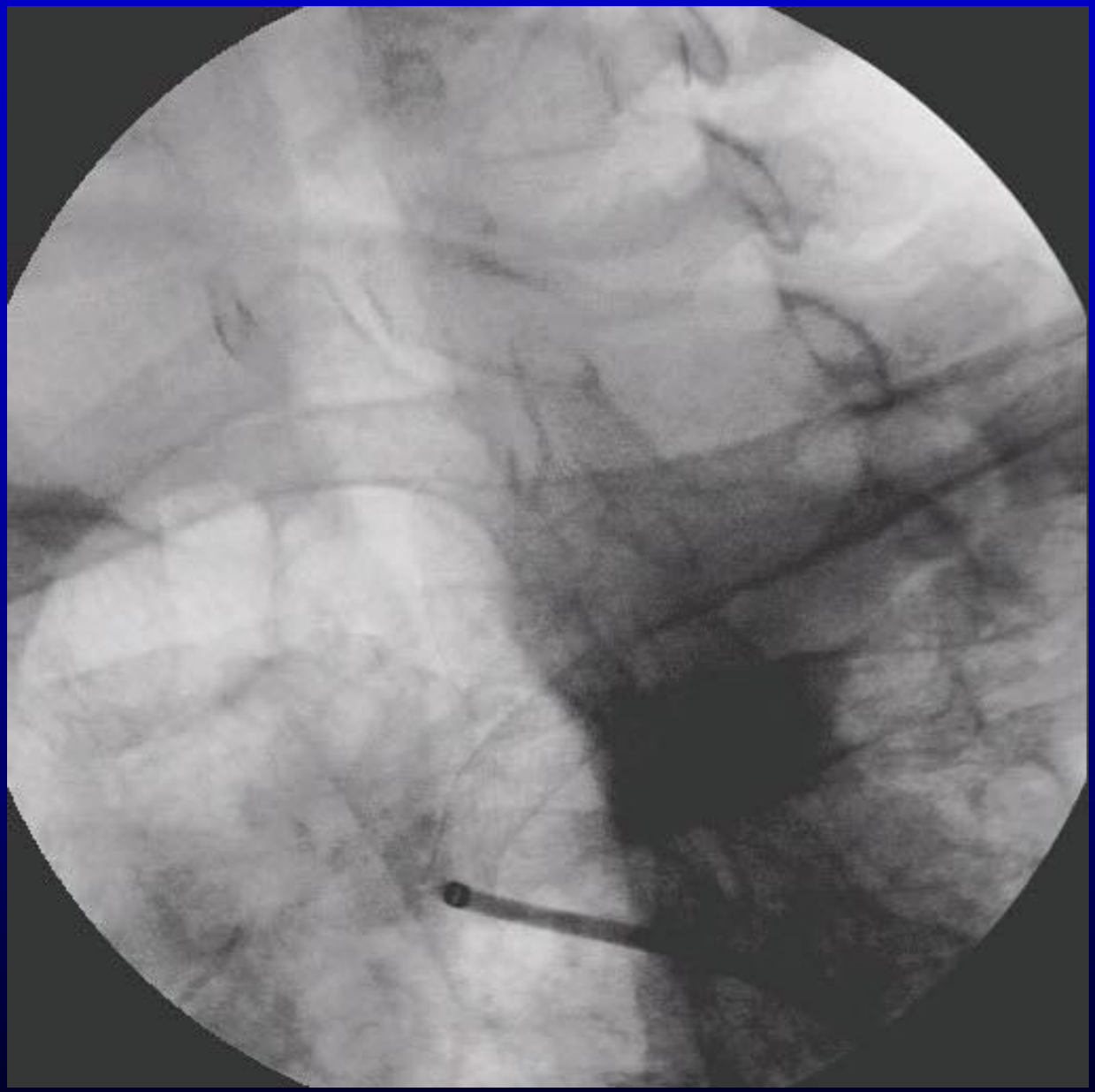

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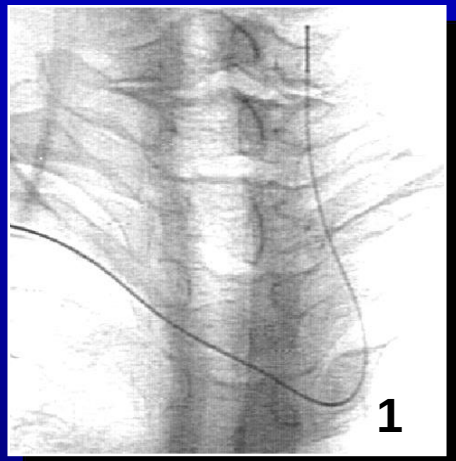
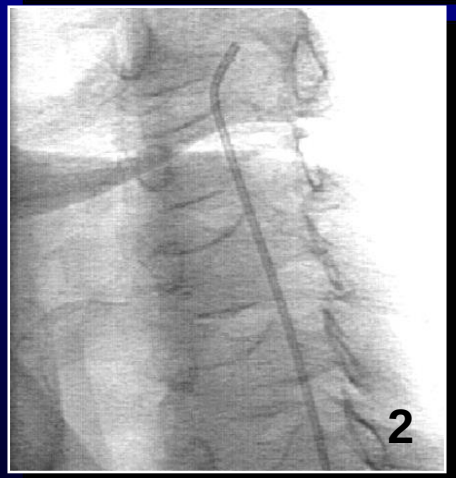
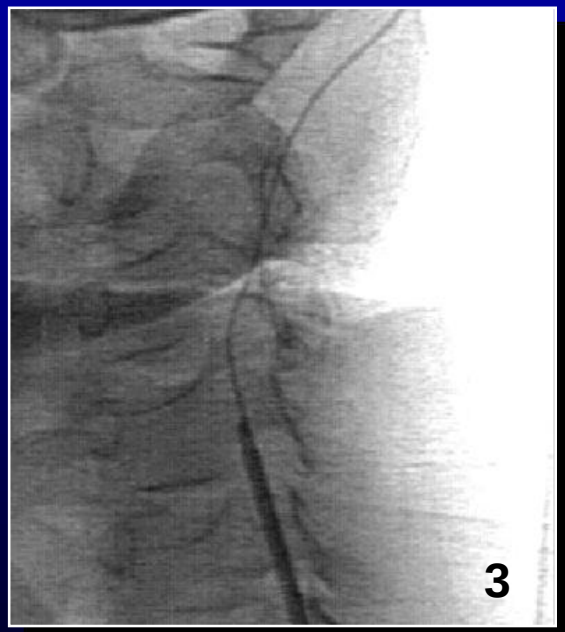
The different steps of carotid angioplasty using the brachial approach







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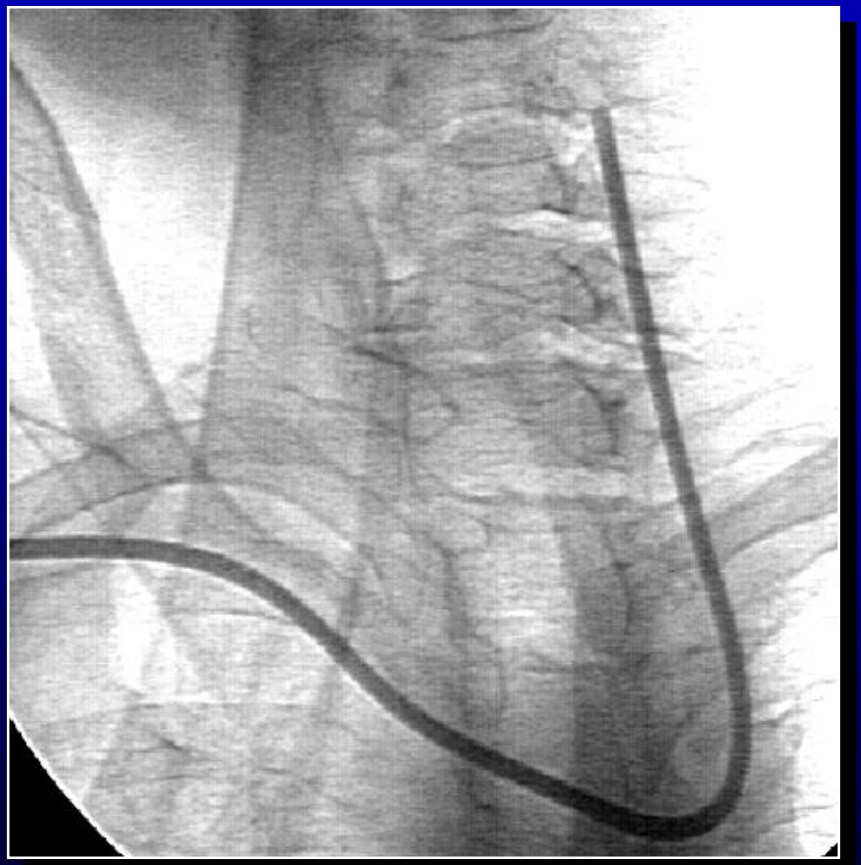
Braided introducer



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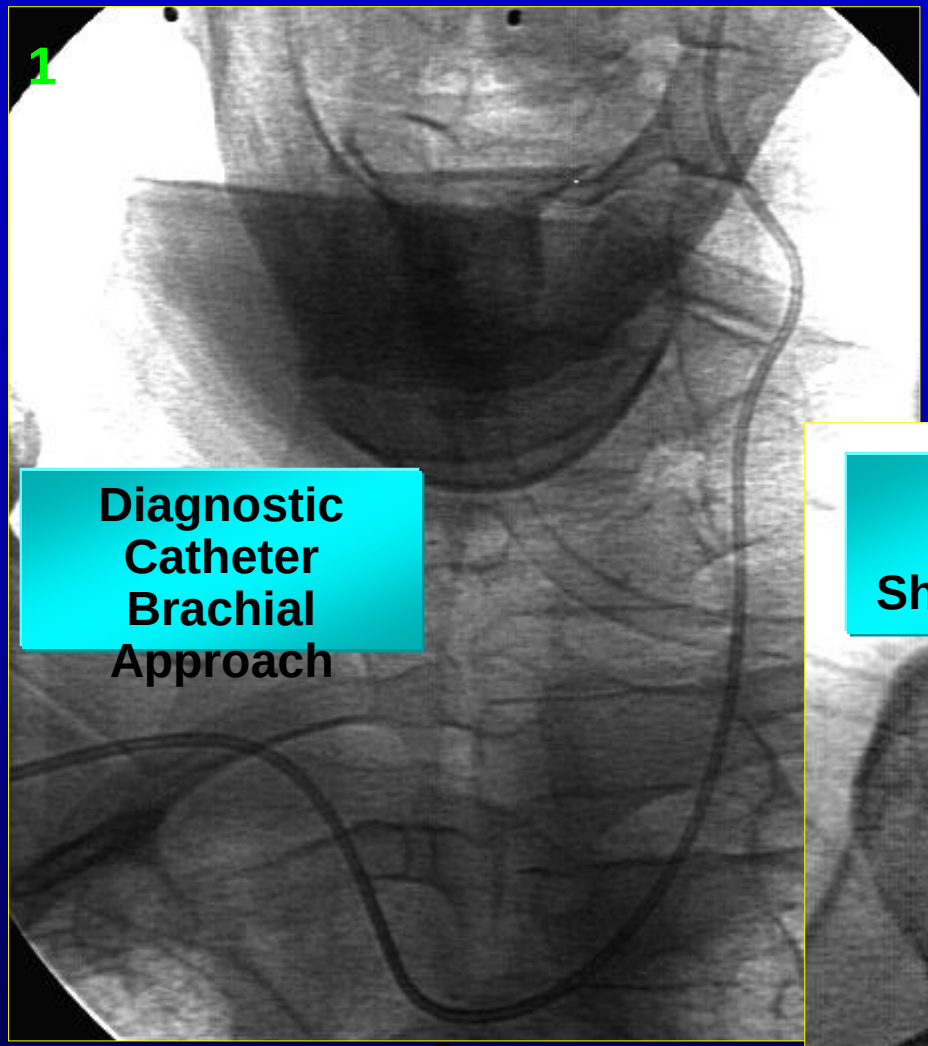

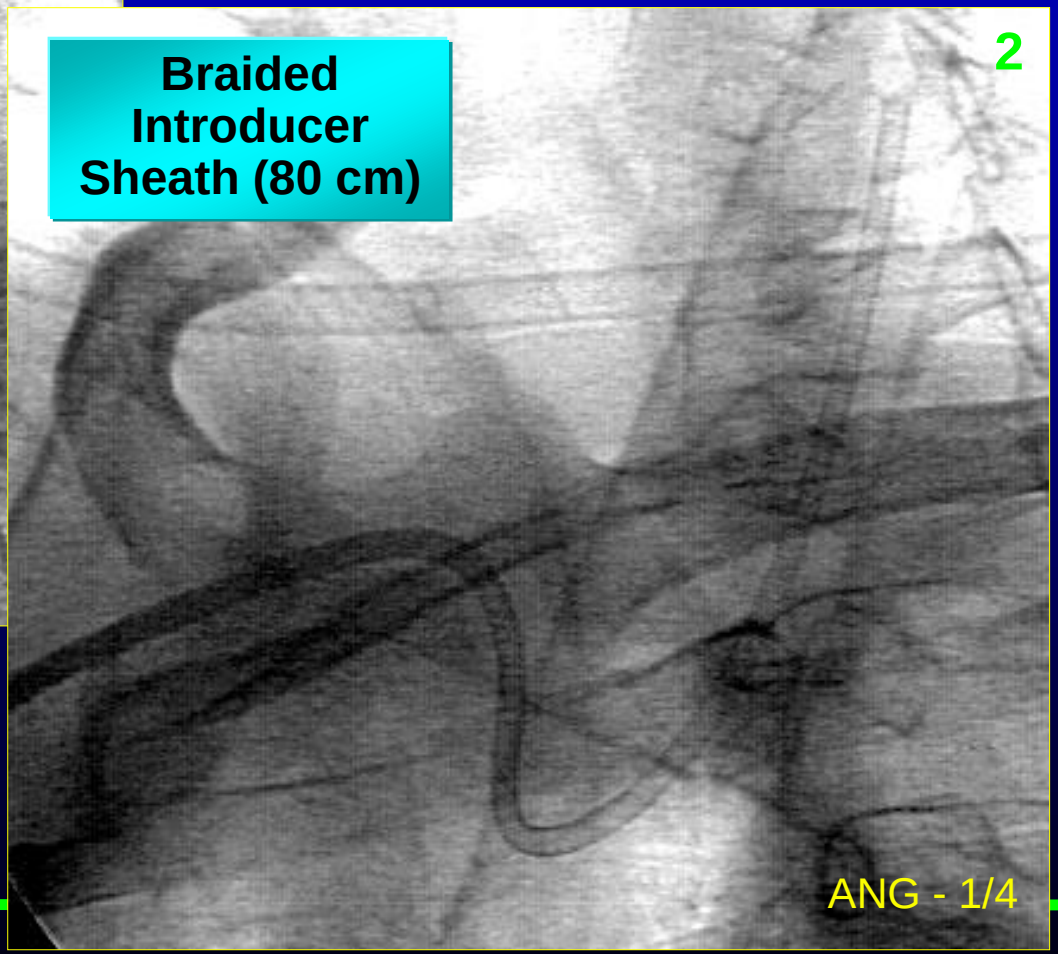

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Left Internal Carotid Stenosis

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After Stenting

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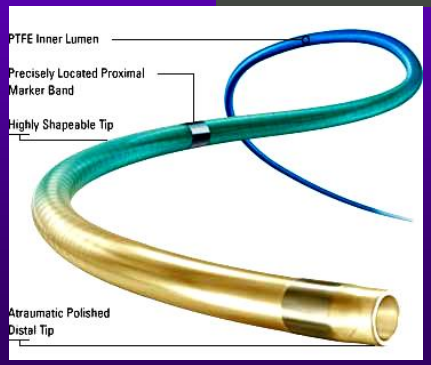
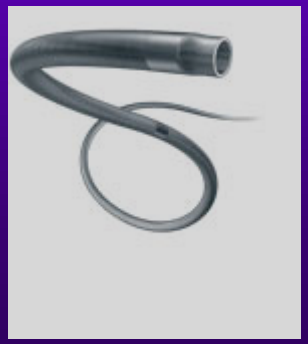
Rescue devices

- Aspiration catheters: monorail 3F with vacuum syringe . 6F guiding compatible
  - Export catheter (Medtronic)
  - Rio catheter (Bsc)
- Microcatheters : embolisation ,thrombolytics infusion
  - Bsc : Renegade , Excelsior : Steam shapeable or pre-formed catheters
  - Cordis : Prowler select : preformed catheter
- Thrombectomy devices (Experimentation)
- Covered stents





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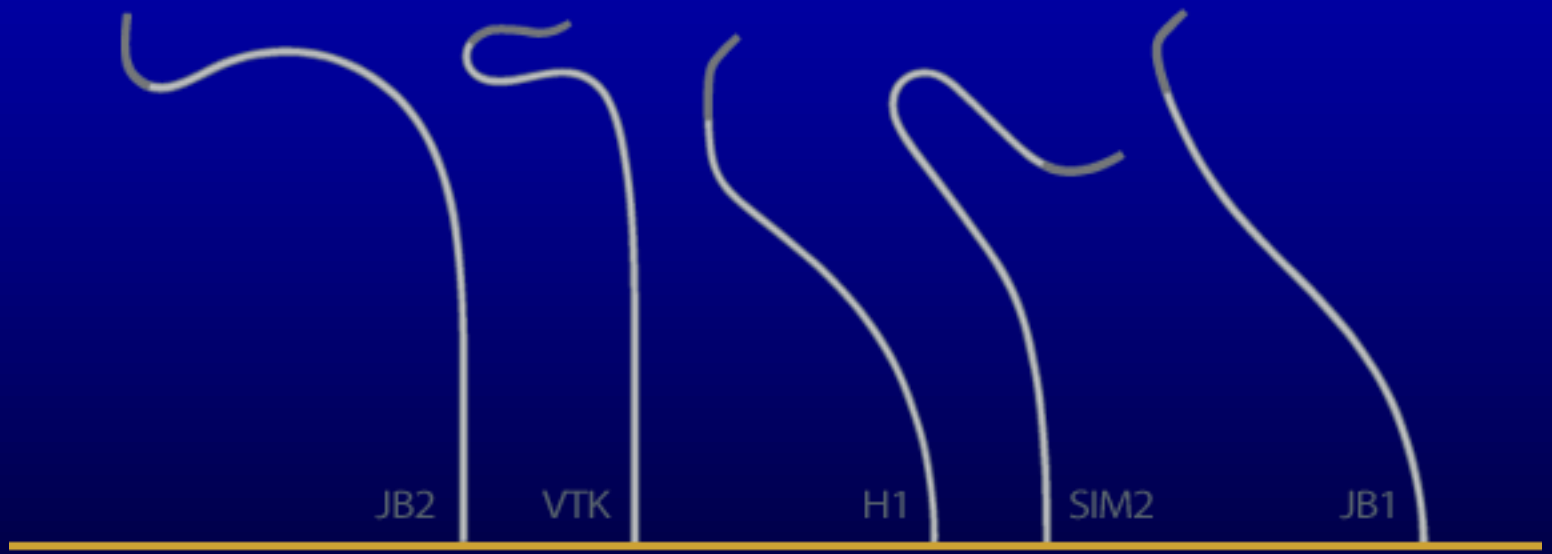
Available selective catheter configurations



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