TRANRADIAL CAROTID ARTERY STENTING

How to do it

An ‘user-friendly’ 5-step algorithm

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Disclosure

Speaker name:
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I have the following potential conflicts of interest to report:

☒ Consulting Medtronic, Boston Scientific
☐ Employment in industry
☐ Stockholder of a healthcare company
☐ Owner of a healthcare company
☐ Other(s)

☐ I do not have any potential conflict of interest
TR CAS: How to do it
*An ‘user-friendly’ 5-step algorithm*

1\textsuperscript{st} Step: Anatomical indication

2\textsuperscript{nd} Step: Cerebral protection device

3\textsuperscript{rd} Step: Vascular approach

4\textsuperscript{th} Step: CAS equipment & technique

5\textsuperscript{th} Step: Anticoagulation & closure technique
TR CAS: How to do it
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An «user-friendly» 5-step algorithm

1st step: Anatomical Indication

Learning curve (1st part): 100 pts

- Bovine aortic arch + LICA
- Type II-III aortic arch + RICA
- Aortic arch disease + RICA/LICA
- Peripheral arterial disease + RICA/LICA
- ‘Pongeant’ innominate artery + RICA

Learning curve (2nd part): ‘All comers’
133 pts up to now (total pts: 233)
TR CAS: How to do it
An «user-friendly» 5-step algorithm

1st Step: Anatomical indication

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2\textsuperscript{nd} Step: Cerebral protection device

1\textsuperscript{st}

Specific anatomy $\rightarrow$ all comers (n=233)

2\textsuperscript{nd}

Distal protection

Proximal protection
An «user-friendly» 5-step algorithm

2\textsuperscript{nd} Step: Cerebral protection device

Distal cerebral protection (filters)

Proximal cerebral protection (Mo.Ma Ultra, \textbf{8F} system)

Mo.Ma Ultra

Mo.Ma Ultra mono balloon
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2nd Step: Cerebral protection device

Decision left at operator discretion, according to ...

- Patient symptoms
- Stenosis severity and composition
- Distal ICA anatomy (target vessel)
- Willis circle anatomy
- CCA anatomy (target vessel)

Doppler US & CT-angiography (in all patients)

TR CAS 2015: 70% Filter, 30% Mo.Ma vs. TF CAS 2015: 50% Filter, 50% Mo.Ma
TR CAS: How to do it

An ‘user-friendly’ 5-step algorithm

1st Step: Anatomical indication

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3rd Step: Vascular approach

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5th Step: Anticoagulation & closure technique
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3rd Step: Vascular approach

- RIGHT RADIAL
- RIGHT BRACHIAL
- LEFT BRACHIAL
- RIGHT ULNAR
- LEFT RADIAL

>90% of pts
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3rd Step: Vascular approach

1st

Specific anatomy → all comers (n=233)

2nd

Filter

Brachial 29/166 (18%)
Radial 137/166 (82%)

Mo.Ma 8F

3rd

Brachial 33/67 (49%)
Radial 34/67 (51%)

- Clinical evaluation, Allen test (± pre-CAS Doppler US if required)
- No right arm angiography
- Wide operator experience in TR PCI (2015: 80%)
TR CAS: How to do it
An ‘user-friendly’ 5-step algorithm

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5th Step: Anticoagulation & closure technique
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4th Step: Equipment

1st Specific anatomy → all comers (n=233)

2nd
Filter
Mo.Ma 8F

3rd
Radial/Brachial
Radial/Brachial

4th
∅ CCA≤8mm
∅ CCA>8mm
∅ CCA≤8 mm ∅ CCA>8 mm

- 6F GC (OD 2.46 mm) *
  + CW 7 Precise 8

- 5F IS (OD 2.49 mm)
  + CW 7 Precise 8 Roadsaver

- 6F IS (OD 2.62 mm)
  + Any stent size

- CW 7 Precise 8 Roadsaver
- Cristallo Ideale Roadsaver

82.5%
17.5%

* Glidesheath Slender (Terumo)
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4th Step: Equipment

6F Sheath
Avanti (Cordis)
11 cm

6F GlideSheath
Slender (Terumo)
10 cm
OD: 2.46 mm

5.5 cm

11 cm

8F Sheath
Avanti (Cordis)
OD: 3.3 mm

Sheath for distal protection

Sheath for Mo.Ma 8F
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4th Step: Technique

- 5-6F right Judkins
- Internal mammary
- Simmons-1

- 5-6F right Judkins (type II)
- Internal mammary (type I)

Simmons-1/2

+ 0.035”, 260 cm-long Terumo wire, seated deep into the ECA (Roadmap)

Diagnostic cath into ECA, exchange Terumo for a stiff/regular wire, diag cath removed

Coaxial system: GC/IS over a 4F 125 cm-long Multipurpose catheter

Cross over to FA: 15/233 (6.4%)
Early part of LC, due to target vessel engagement difficulty
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**CAS equipment & technique**

- **Left ICA stenosis**
- **5F Simmons-1 in left CCA**
- **Terumo wire well deep into the ECA Sim-1 removed**
- **4F MP 125 cm (black arrows) +6FRJ guide (red arrow) loaded on the Terumo wire). Pre-CAS angiography**
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3rd Step: Vascular approach
4th Step: CAS equipment & technique
5th Step: Anticoagulation & closure technique
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**4th Step: Equipment**

1. Specific anatomy → all comers (n=233)

2. Filter
   - Radial/Brachial
   - Mo.Ma 8F

3. Radial/Brachial

4. CAS equipment & technique

5. Radial
   - Heparin iv + Spasmolytic cocktail + TR-BAND (patent hemostasis)

5. Brachial
   - Heparin iv (initial part) *then*
   - Bivalirudin (iv bolus+infusion) + Manual compression after 30’ of end of infusion
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**4th Step: Equipment**

1. **1st**: Specific anatomy → all comers (n=233)

2. **2nd**: Filter
   - **Radial/Brachial**
   - **Mo.Ma 8F**

3. **3rd**: **Radial/Brachial**

4. **4th**: CAS equipment & technique
   - **Vascular complication**

5. **5th**: Radial
   - Acute: 0 (0%)
   - Chronic (RAO): 3.89%
     - 3.2% (5-6FIS/6F short sheath)
     - 6.6% (8F short sheath) by Doppler US

   Brachial
   - Acute: 4 (6.4%)
     - 2 BA thrombosis
     - 2 BA pseudoane.’s
   - Chronic: 0 (0%)

   **Early LC+Heparin**
TR CAS: How to do it

*Take home message*

Systematic CT-angiography + Sound experience in TR/TB interventions + An ‘user-friendly’ 5-step algorithm

*The Gordon Ramsay’s recipe*
CAS through right ulnar artery in post-CEA restenosis

5F Terumo Sheath + 8x25 Roadsaver stent -1

74 yow; Bilateral CEA in the past; RICA PSV >4 m/s

Forearm angio through ulnar artery
Right subclavian-CCA bifurcation angiography
Simmons-1 in RCCA
Distal RCCA stenosis

.035” Emerald wire below bifurcation (wire reshaping technique)
CAS through right ulnar approach in post-CEA restenosis

5F Terumo Sheath + 8x25 Roadsaver stent -2
CAS through right ulnar approach in post-CEA restenosis

*24 hour Doppler US assessment*
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