Proximal Protection During CAS

The 'No.Ma2' Technique: a Must-Know Technique to Overcome Difficult Anatomy During Transradial Approach

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Disclosure

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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
CAS w proximal protection through TRA/TBA

**Critical issues**

- **IA/LCCA bifurcation**
- **BAAC**
- **IA/LCCA bifurcation**
- **RSA/RCCA bifurcation**
TR/TB CAS w proximal protection

Is it an issue?

1. System stiffness & single wire support
2. Sharp angle & lack of inferior anatomic support

High rate of system prolapse into IA/aortic arch

Solving: Mandrel removal + additional wire
TR/TB CAS with proximal protection

The No.Ma2 technique: How to do it

‘No.Ma2’
No.Mandrel 2 wires technique

- Variation from the standard Mo.Ma system/technique of implantation: Mandrel removal + second wire
- 66 pts submitted to TR/TB CAS with the 8F Mo.Ma system
- NOMA technique used in 20/66 (30%) either after the first attempt failure (10 pts) or as the first choice technique in 10 pts
- 100% technical success

0.035” Emerald wire loaded into the working channel (mandrel withdrawn)

0.035” stiff wire loaded into the distal port
TR CAS w proximal protection
*The 'No.Ma2' technique*

71 y-o-m, right TIA
Bilateral carotid artery disease

Willis circle
TR CAS w proximal protection

*The 'No.Ma2' technique*

Endovascular clamping with 8F Mo.Ma Ultra system (471 sec)
Direct stenting w Carotid Wallstent 7x40mm, postdil 5.5x20
Sharp angle between RSA-RCCA bifurcation

*Mo.Ma placement with the No.Ma technique-1*

71 y-o-m
Asymptomatic right ICA stenosis

Mo.Ma OD: 2.83 mm
8F Short sheath: 3.3 mm

Pre-CAS Doppler US

ΔV = 0.01 m/sec
Dist. = 0.278 cm

ΔV = 0.05 m/sec
Dist. = 0.446 cm
Attempt to position the Mo.Ma system over a .035” stiff wire → prolapase into the IA

Mo.Ma removed. Coaxial system (6FRJ guide+4FMP125 cm) into the ECA over the stiff wire. MP removed.
Sharp angle between RSA-RCCA bifurcation

Mo.Ma placement with the No.Ma technique-1

Two stiff wires in ECA. 6FRJ guide removed

The 2 stiff wires loaded into the ECA channel and the working channel, respectively and Mo.Ma system positioned in RCCA
Sharp angle between RSA-RCCA bifurcation

Mo.Ma placement with the No.Ma technique-3

8F Mo.Ma in place ECA balloon inflation and test for ECA exclusion

Occlusion test

Cristallo Ideale 7-10x40mm Postdil 5.5x20

Final result
72 y-o-m
Right hemisphere minor stroke.

5FRJ cath in RCCA from right radial approach

5FRJ cath in ECA (through Terumo wire)

Terumo exchanged for a stiff wire. MO.MA system did not get around the bifurcation

TR CAS w proximal protection
*The 'No.Ma2’ technique*
Sharp angle of RSA-RCCA bifurcation

*Mo.Ma placement with modified technique*

Additional 0.035” Emerald wire below bifurcation through 6FRJ guide

1 wire

2 wires
Sharp angle of RSA-RCCA bifurcation

*Mo.Ma* placement with modified technique

Additional 0.035” Emerald wire below bifurcation through 6FRJ guide

Both MO.MA balloons inflated

Final result after Cristallo stent 7-10x40mm, post-dil 5.5
Sharp angle between RSA-RCCA bifurcation

*Mo.Ma placement with the No.Ma technique-1*

- **Right subclavian-right common carotid artery bifurcation**
- **Engagement of the RCCA w 5F Simmons-1 diagnostic cath.**
  - Right radial approach
- **0.035” Terumo wire deep into the ECA**
- **Coaxial system (4F 125 cm MP+6FRG) over .035” Terumo wire into ECA**
  - (Road map)
Sharp angle between RSA-RCCA bifurcation

Mo.Ma placement with the No.Ma technique-2

Terumo wire exchanged for two stiff wires in ECA through the 6FRJ.

MO.MA positioning (No.MA technique)

ECA balloon inflation and angio check

Full endovascular clamping

Final result after CW 7x40
CAS with proximal protection from TR/TBA

**LICA stenosis: aortic arch thrombosis**

M.R. 80 y-o-m. Left hemispheric stroke 3 months before
Deemed at too high-surgical risk for CEA for co-morbidities (CAD, COLD type IV)

Left ICA PSV: >4m/s
CAS with proximal protection from TR/TBA
LICA stenosis with aortic arch atherosclerosis (FA contraindicated)

Coaxial system: 6FRJ guide+4FMP 125, loaded on Terumo wire from R brachial approach

6FRJ guide in ECA. 4FMP removed

Terumo wire exchanged for .035” standard wire + .035”stiff wire (Magic Torque, BSI). 6FRJ guide removed.

8F MO.MA loaded on the 2 wires (No.Ma technique)

8F MO.MA in place

Final result
Sharp angle of RSA-RCCA bifurcation

Mo.Ma Mono placement with modified technique

- 62 yom
- Systemic vasculopathy
- Suboptimal femoral approaches

Ultrasound Doppler
PSV: 4.18/1.47, 95% DS

CTA
(45° RAO view)

Right brachial approach.
0.035” Terumo wire in RCCA (PA view)

5F Mammary cath in ECA (PA view)

RICA stenosis
Failure to cross the ECA lesion with the wire
Mo.Ma Mono modified technique

- **Standard System set up**
  - Y-connector + MO.MA w mandrel

- **System set up variant #1**
  - No Y-connector

- **System set up variant #2**
  - Mandrel exchanged for a 4F 125cm MP

- Up to 205 mm
- 85 mm
- 15 mm
Sharp angle of RSA-RCCA bifurcation

*Mo.Ma Mono placement with modified technique*

- Standard .035” wire (reshaped tip) below bifurcation
  5FM removed
- 6F RJ guide below bifurcation
- Additional .035” wire (reshaped tip) below bifurcation
  6FRJ guide removed
- 8F Mono MOMA loaded on the two wires. Mandrel withdrawn
- CCA balloon occlusion

78mmHg
Sharp angle of RSA-RCCA bifurcation

Mo.Ma placement with modified technique

Early frame  Mid frame  Late frame

Test for occlusion

Spider 6 mm filter

Predilation (3.0x20mm) + Cristallo Ideale 7-10x40mm + Postdilation 5.5x20mm

Final result
**CAS with proximal protection from TR/TBA**

**LICA stenosis: No.Ma Technique (Mo.Ma mono balloon)**

<table>
<thead>
<tr>
<th>Type I aortic arch</th>
<th>5F Tiger cath into LCCA from right radial approach</th>
<th>0.035” Emerald wire below bifurcation. Tiger exchanged for 4FMP+6FRJ</th>
<th>6F RJ guide into LCCA over 4FMP</th>
<th>Additional 0.035” Emerald wire below bifurcation</th>
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</thead>
</table>
CAS with proximal protection from TR/TBA
LICA stenosis: No.Ma Technique (Mo.Ma mono balloon)
CAS with proximal protection from TR/TBA

*LICA stenosis: No.Ma Technique (Mo.Ma mono balloon)*

- Early frame
- Mid frame
- Late frame
- Spider 6.0mm
- CW 7x30 Post-dil 5.5x20
- Final result

Test for occlusion
CAS with proximal protection

The ‘No.Ma2’ technique from the femoral approach

Left CCA with sharp angle (<45°, ± proximal tortuosity) from the aortic arch
TR CAS w proximal protection
The ‘No.Ma2’ technique: preliminary results

- N° of pts
  - 23 pts (21 male)

- Mean age
  - 73±5.3 yrs

- Symptomatic
  - 6 (26%)

- Target vessel
  - Right ICA: 17
  - Left ICA: 6

- Vascular approach
  - Right radial: 11
  - Right brachial: 9
  - Femoral: 3

- Proximal protection type
  - Mo.Ma Ultra: 21
  - Mo.Ma Ultra mono balloon: 2

- Type of wires used
  - 12 pts: 1 stiff + 1 Emerald
  - 5 pts: 2 Emerald
  - 2 pts: 2 stiff
  - 1 pt: 1 stiff + 1 V18
  - 1 pt: 1 stiff+1 Terumo
  - 1 pt: 1 Emerald + 1 V18
  - 1 pt: mandrel partial removal

- Technical Success
  - 23/23 (100%)
When the ‘No.Ma2’ technique is indicated?

**When**
Any difficult anatomy
TR CAS: Left CCA from the aorta > right CCA > left CCA, bovine
TF CAS: Left CCA origin w sharp angle from the aorta. Right CCA in type III aortic arch (Piton GC may be useful to keep a stable position while wiring the target vessel)

**How**
Try first standard Mo.Ma implantation technique (i.e. stiff wire very distal, well done «push-and-pull» technique, don’t force if resistance)

*If fails*
Slightly removed the mandrel and re-try

*If fails again*
No.Ma2 technique (keep the 2 wires parallel)

**Alternatively** (preferred option according to the anatomy)
No.Ma2 technique as first choice
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