CAS challenging cases: how techniques and materials helped me to get out of troubles

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*Director: Prof. Roberto Chiesa*
A brief foreword...
CAS: our indication

Post-CEA restenosis
Post-irradiation stenosis
Hostile neck
”High” stenosis

Systemic high-risk conditions
(i.e. cardiac comorbidities)
SO → a lot of SELECTED, HIGH-RISK patients....
...already considered UNFIT for surgery!
What do I need?
1) A lot of materials...

- Closed / open cells
- Flexible / hydroph. sheats
- Hybrid cells
- A lot of catheters...
- Double-layer
- Low profile (5F)
- Drug eluting
- Proximal / distal EPDs
- Straight / tapered
- Reabsorbable
2) A lot of experience...
3) A bail-out strategy
Case #1

- M, 84 yrs
- Symptomatic RICA 80%
- post-irradiation stenosis
- Two failed CAS attempts
  @ other Centers
  (both with femoral access)
Case #1

Access from right radial artery

Inability to advance any catheter
Case #1

ECA “anchoring technique”
(5 x 30mm-balloon + Flexor 6F)
Case #1

Filter positioning (Spider FX + ECA buddy-wire)

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Case #1

Standard open-cell stent attempt
Case #1

Advancing a Roadsaver stent

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Case #1

Stenting (Roadsaver 9 x 30 mm)
Case #1

Final result
Problems during CAS

Mostly related to difficult access
CAS with challenging access

- Anatomical problems
  - Femoral access?
    - Flexible long sheath
    - Telescopic approach
Telescopic approach

0.035” steerable wire
6F hydrophilic long sheath
VTK “shuttle” catheter
CAS with challenging access

Anatomical problems

Femoral access?

Flexible long sheath
Telescopic approach

“Anchoring” in ECA
Double wire technique
Buddy wire technique

Double 0.014” guidewire

Optimal pushability and good support
CAS with challenging access

Anatomical problems

- Femoral access?
- Consider radial access

- Flexible long sheath
- Telescopic approach

- “Anchoring” in ECA
- Double wire technique
Radial access (RICA)

- Smaller sheath
- Better trackability and pushability
- Suitable in difficult anatomies
Radial access (LICA)

Bovine arch
Radial access (LICA)

Right radial artery access
(5 Fr long sheath)
Radial access (LICA)

Stenting (Roadsaver 8 x 30 mm)
CAS with challenging access

- Excessive arch calcification / thrombosis
- Emergency situations (post-CEA)
- Also consider cervical access (surgical)
Neck access

- RICA 95% stenosis
- Symptomatic (TIA)

Right CEA

Intraoperative angiographic check
Neck access

2 hours later
left hemiplegia + hemispatial neglect
Neck access

Urgent neck access  Stenting (Roadsaver)
Final result
## CAS: global results (‘99-'17)

<table>
<thead>
<tr>
<th>Tot. pts</th>
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<tbody>
<tr>
<td></td>
<td>740</td>
</tr>
<tr>
<td>Asymptomatic</td>
<td>467 (65%)</td>
</tr>
<tr>
<td>Stent:</td>
<td></td>
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<tr>
<td>- Closed cells</td>
<td>510 (70%)</td>
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<tr>
<td>- Open cells</td>
<td>179 (24%)</td>
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<tr>
<td>- Double layer</td>
<td>51 (6%)</td>
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<tr>
<td>Mortality</td>
<td>5 (0.7%)</td>
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<tr>
<td>Major stroke</td>
<td>4 (0.6%)</td>
</tr>
<tr>
<td>Minor stroke</td>
<td>7 (1.0%)</td>
</tr>
<tr>
<td>TIA</td>
<td>12 (1.5%)</td>
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### Roadsaver results (‘14-'17)

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<table>
<thead>
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<tbody>
<tr>
<td><strong>Pts.</strong></td>
<td>51</td>
</tr>
<tr>
<td><strong>Asymptomatic</strong></td>
<td>24 (47%)</td>
</tr>
<tr>
<td><strong>Soft / ulcerated plaque</strong></td>
<td>41 (80%)</td>
</tr>
<tr>
<td><strong>Mortality (30d)</strong></td>
<td>0 (0%)</td>
</tr>
<tr>
<td><strong>Major / minor stroke (30d)</strong> *</td>
<td>1 (2%) *</td>
</tr>
<tr>
<td><strong>TIA (30d)</strong></td>
<td>1 (2%)</td>
</tr>
<tr>
<td><strong>TIA or stroke (mean FU 12 mths)</strong> *</td>
<td>0 (0%)</td>
</tr>
<tr>
<td><strong>Stent patency (mean FU 12 mths)</strong> **</td>
<td>50 (98%) **</td>
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</tbody>
</table>

* Treatment of post-CEA thrombosis

** Asymptomatic CCA stent occlusion (simultaneous ICA CEA)
Conclusions

Facing with CAS in challenging cases:

- Accurate planning
- Trained operator
- Advanced techniques
- New materials
- Bail-out strategies
Don’t hurt yourself!
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