Status of dual layer stents for CAS: Is acute occlusion an issue?

Smaller Pore Size – More Material: Enhanced Thrombogenicity?

Acute Oclusions of Dual-Layer Carotid Stents After Endovascular Emergency Treatment of Tandem Lesions

Dual Layer Stent Designs: Early Reports

Disclosure

I have the following potential conflicts of interest to report:

- Consulting – Boston Scientific, Terumo, GE, Eurocor

Dual Layer CAS: The Homburg Experience

Dual-Layer Carotid Stents: 45% ACUTE OCCLUSION!? 
Dual Layer CAS: The Homburg Experience

• Potential explanation for acute occlusion in dual layer stent group by the authors:
  ➢ increase of thrombogenic material
  ➢ insufficient preparation with antiplatelet medication
  ➢ higher platelet counts
  ➢ smaller stent diameters
  ➢ not administered IV r-tPA (Bridging)
  ➢ All patients received 500 mg acetylsalicylic acid peri-interventionally, but the decision when to start the clopidogrel administration was made on an individual case basis!


How to minimize / avoid stent thrombosis I

Emergency treatment:
• Bridging
  ➢ 0.9mg/kg BW r-tPA

• antiplatelet medication
  Pre-procedural
  ➢ 5000 units Heparine (ACT 250s-300s)
  ➢ 500mg ASA i.v.
  ➢ 300mg Clopidogrel after control (conebeam-CT) usually @ day 1

Post-procedural
  ➢ 75mg Clopidogrel for 6 months
  ➢ 100mg ASA life-long

Elective treatment:
• antiplatelet medication
  Pre-procedural
  ➢ 300mg Clopidogrel and 100mg ASA (5 days before or loading dose 300mg Clopidogrel)
  ➢ 5000 units Heparine (ACT 250s-300s)

Post-procedural
  ➢ 75mg Clopidogrel for 6 months
  ➢ 100mg ASA life-long
How to minimize / avoid stent thrombosis II

- **Stent sizing**
  - 7mm or 8mm diameter
  - 18mm to 25mm length

- **Stent deployment**
  - Continuous, no re-sheath manoeuvre

- **Stent ~ post-dilatation**
  - 3mm in all cases!!

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**Double layered stents for carotid angioplasty: A meta-analysis of available clinical data**

Roadsaver subgroup demonstrated very low rates of post procedural AEs at 30-day.

<table>
<thead>
<tr>
<th>Event Rate</th>
<th>N</th>
<th>Death and Stroke Rate 0.02%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Follow-up</td>
<td>299 patients</td>
<td>0.02%</td>
</tr>
</tbody>
</table>

- **Study Design:** Prospective, single-arm, multi-center, observational study of the Roadsaver™ Carotid Stent
- **Primary Objective:** The purpose of ROADSAVER study is to further confirm the safety and efficacy of the Roadsaver™ Carotid Stent device for the treatment of carotid artery stenosis in patients considered eligible for elective stenting procedure.
- **Patient Population:** 2000 patients
- **Enrollment Period:** 2 years + 1 year FU
- **Study Timelines:** First patient enrolled 23-Jan-2018, current 132 patients enrolled
- **Site Locations:** ±/− 50 centers across 14 countries in Europe
- **Study Organization:**
  - Independent Clinical Events Committee (CEC)
  - Steering Committee (SC)
  - Sponsored by Terumo Europe
  - European Medical & Clinical Division (EMCD)

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**CAS - ROADSAVER Study**

- **Pre-procedural (elective treatment)**
  - 500mg ASA i.v.
  - 300mg Clopidogrel after control (conebeam-) CT, usually @ day 1
- **Peri-procedural (stroke treatment) combined with bridging**
  - 75mg Clopidogrel for 6 months
  - 100mg ASA life-long

Be aware of adequate

Stent-sizing, deployment and post-dilatation !!!

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**Status of dual layer stents for CAS: Is acute occlusion an issue?**

No, neither in acute nor in elective cases...

... since you start an immediate preparation with antiplatelet medication!

- **Pre-procedural**
  - 500mg ASA i.v.
- **Peri-procedural**
  - 300mg Clopidogrel after control (conebeam-) CT, usually @ day 1
- **Post-procedural**
  - 75mg Clopidogrel for 6 months
  - 100mg ASA life-long