When After Coronary Stenting With A DES Or BMS Is It Safe To Stop Clopidogrel And Perform An Open Operation: The Latest Update

Don Poldermans

5 to 10% of patients with coronary stents undergo noncardiac surgery within 1 year of stent implantation.

Disclosure slide:
Don Poldermans
No disclosures related to this presentation.

The first stent in a human being
28.03.1986
J. Puel
Toulouse

Comparison of Drug-Eluting Stents vs Bare-Metal Stents for Treating MI

KM Curves for Overall Nonpropensity-Matched Patients According to Stent Type (n = 699)
Freedom from all-cause mortality and target lesion revascularization among those receiving drug-eluting compared with bare-metal stents.


The first stent thrombosis


Commonly used antiplatelet agents around non-cardiac surgery

- Aspirin
- Thienopyridines: clopidogrel, prasugrel or ticagrelor
- Dual therapy: aspirin with P2Y12 receptor blocker
**Follow-up DES vs BMS at 28 days**

Endothelial coverage differs among stents. Favoring newer designs over the current generation using thinner struts.

Strut thickness (μm):
- 140
- 97
- 91
- 81
- 81

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**Catastrophic outcomes in bare metal stent patients undergoing surgery**

- 40 patients undergoing non-cardiac surgery after mean of 13 days
- 8 deaths, 7 MI, 11 major bleeding episodes
- Deaths and MI’s due to early stent thrombosis
- Bleeding due to surgery on antiplatelet therapy


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**Thirty-day-outcome event rate**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Overall (N=666)</th>
<th>Antiplatelet discontinuation</th>
<th>No antiplatelet discontinuation</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time from PCI (days)</td>
<td>538±528</td>
<td>568±547</td>
<td>499±501</td>
<td>0.09</td>
</tr>
<tr>
<td>Ischaemic endpoints</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MACE</td>
<td>31 (4.2)</td>
<td>30 (7.5)</td>
<td>1 (0.3)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Bleeding endpoints</td>
<td></td>
<td></td>
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<tr>
<td>BARC bleeding ≥ 2</td>
<td>135 (20.4)</td>
<td>95 (25.6)</td>
<td>41 (13.9)</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

Perioperative antiplatelet discontinuation is the strongest predictor of 30-day cardiac events

Thrombosis and Haemostasis 2015;113:272

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**Pathophysiology of acute perioperative stent thrombosis**

- Premature discontinuation of aspirin / clopidogrel
- Rebound effect: increased inflammatory prothrombotic state
  - increased platelet adhesion and aggregation
- Surgical intervention: increased prothrombotic state
  - Incomplete strut coverage
  - Stent thrombosis
  - Myocardial infarction
  - Death

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**Erasmus MC databases**

**PCI-BMS patients:**

- 11 (6%) pt experienced a MACE
- Inverse relationship between time-interval of PCI-BMS to NCS and postoperative MACE
- Particularly within 2 weeks

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**Influence of antiplatelet therapy during non-cardiac surgery after drug eluting stent placement**

- MACE
- Single antiplatelet
- Dual antiplatelet

Time-interval drug eluting stent placement to surgery
Take home message

1) Defer surgery until the minimal recommended duration of dual antiplatelet therapy for each type of stent

2) Low-risk bleeding: dual antiplatelet therapy: 1 year

3) High-risk bleeding: dual antiplatelet therapy
   - BMS: 4-6 weeks
   - DES: 6 months

4) Continue at least aspirin without interruption

5) Unstable coronary syndromes with urgent surgery: Bare Metal Stents recommended