Complex Lesion Subsets: Indications for DES

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MY CONFLICTS OF INTEREST ARE

Advisory Board Boston Scientific
Advisory Board Abbott Vascular
Educational Grants Cordis
Educational Grants Boston Scientific
Complex Lesion Subsets

What is complex?

What is a B2/C lesion?
Type B2/C Lesions

% of lesions Type B2/C

Stent length
Lesion Complexity

**Characteristics of ACC/AHA Type A, B and C lesions**

**TYPE A LESIONS:** (High success, > 85%; low risk)
- Discrete (<10 mm length)
- Concentric
- Readily accessible
- Nonangulated segment <45 degrees
- Smooth contour
- Little or no calcification
- Less than totally occlusive
- Notostial in location
- No major branch involvement
- Absence of thrombus

**TYPE B LESIONS** (Moderate success, 60 to 85%; moderate risk)
- Tubular (10-20 mm length)
- Eccentric
- Moderate tortuosity of prox. segment
- Moderately angulated, 45-90°
- Irregular contour
- Moderate to heavy calcification
- Ostial in location
- Bifurcation lesions requiring double guidewires
- Some thrombus present
- Total occlusion < 3 months old

**TYPE C LESIONS** (low success, < 60%; high risk)
- Diffuse (>2 cm length)
- Excessive tortuosity of prox. segment
- Extremely angulated, >90 degrees
- Inability to protect major side branch
- Degenerated vein grafts with friable lesions.
- Total occlusion > 3 months old

## Complex: B2/C

<table>
<thead>
<tr>
<th>B</th>
<th>C</th>
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</thead>
<tbody>
<tr>
<td>10-20mm length</td>
<td>&gt;20mm length</td>
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<tr>
<td>Eccentric</td>
<td>Excessive tortuosity</td>
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<tr>
<td>Mod tortuosity</td>
<td>Extremely angulated &gt;90°</td>
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<tr>
<td>Mod angulation 45-90°</td>
<td>Inability to protect major branch</td>
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<tr>
<td>Irregular contour</td>
<td>Degenerated vein graft</td>
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<tr>
<td>Mod/heavy calcification</td>
<td>Total occlusion &gt; 3months</td>
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<td>Ostial location</td>
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<td>Bifurcation requiring double wires</td>
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<tr>
<td>Thrombus</td>
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<td>Total occlusion &lt;3months</td>
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</table>
**Complex: B2/C**

- 10-20mm length
- Eccentric
- Mod tortuosity
- Mod angulation 45-90°
- Irregular contour
- Mod/heavy calcification
- Ostial location
- Bifurcation requiring double wires
- Thrombus
- Total occlusion <3months

**B**

- >20mm length
- Excessive tortuosity
- Extremely angulated >90°
- Inability to protect major branch
- Degenerated vein graft
- Total occlusion > 3months

**C**
Complex Lesion Subsets

• Type B2/C
• Long Lesions
• Small Vessels
• CTO
• Vein Grafts
• Bifurcation Lesions
  • LMS
  • In-Stent Restenosis
Data

- Randomised Trial
- Randomised Trials Subgroup Analyses
- Published
Complexity in DES Trials

Data currently all 1st generation DES

Increasing complexity

left main disease
multi-vessel disease
bifurcated lesions
CTO
ISR
TAXUS V ISR
SYNTAX
SYNTAX
SYNTAX
SYNTAX
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SYNTAX
SYNTAX
SYNTAX
TRIAL: randomized, multicenter, blinded, actively controlled trial involving an independent core lab and CEC
TRIAL: feasibility studies involving only 1 to 3 centers often not using an independent core lab or CEC

work-horse
small vessels
long lesions
diabetes
multi-vessel disease
bifurcated lesions
CTO
ISR
TAXUS V ISR
SYNTAX
SYNTAX
SYNTAX
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TRIAL: randomized, multicenter, blinded, actively controlled trial involving an independent core lab and CEC
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Increasing complexity
High Proportion of Type B2/C Lesions

Three-year overall MACE composition

- Control
- TAXUS MR

P-values:
- P=0.72
- P=0.27
- P=0.0082
- P=0.0317
- P=0.92

Patients (%):
- Cardiac death: 2.3, 1.4
- MI: 6.9, 9.9
- TVR–TLR: 21.2
- TVR–Remote: 3.2, 8.0
- MACE: 26.3, 25.8

TAXUS VI 3-Year Results
Dr. Keith Dawkins
TCT, 2006
Complex Lesions

SCANDSTENT: Stenting in non-stress/benestent disease
CTO (36%) /Bifurcation (34%)/Ostial (22%) /Angulated

Kelbaek et al. JACC 2006; 47:449
Long Lesions

Mean lesion length (mm)
Long Lesions

TAXUS VI: 3 yr Target Lesion Revascularisation

![Graph showing results for Long Lesions with statistical significance](chart.png)

- Overall: P=0.0082
- Overlapping Stents: P=0.0041
- Long Lesions: P=0.0088
Long Lesions

C-Sirius (Sirolimus eluting stent in the treatment of long de-novo lesions)

- Single de novo lesion 15-32mm length

9 months outcome

N: 100, randomised

- Restenosis: Cypher 2%, BMS 52%, p<0.001
- TLR: Cypher 4%, BMS 9%, p<0.001
- MACE: Cypher 4%, BMS 18%
- CABG: Cypher 2%, BMS 0%
- MI: Cypher 2%, BMS 4%

C Sirius Investigators JACC 2004; 43: 1110
**Long Lesions**

**E-Sirius** (Sirolimus eluting stents for the treatment of patients with long atherosclerotic lesions in small coronary arteries)

- Single de novo lesion 15-32mm length, Vessel <3mm

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**Schofer et al. Lancet 2003; 362: 1093**
Small Vessels

SES Smart

- Single lesion <2.75mm native coronary

Ardissino et al. JAMA 2004; 292: 2727
Small Vessels

TAXUS V: 2.25 mm Stent Subgroup (n=203) 9-Month Outcomes

Control (n=95)  TAXUS (n=108)

9 month events (%)

TLR  MACE

Clinical Events

21.5  10.4  32.6  26.4

p=0.03  p=0.35

In-stent  In-Segment

Binary Restenosis

44.7  24.7  49.4  31.2

p=0.007  p=0.01

Stone GW et al. JAMA 2005;294:1215-23
Chronic Total Occlusion

PRISON II

- Single CTO >2 weeks, crossed and predilated

Suttorp et al. Circulation 2006;114:921
Chronic Total Occlusion

SCANDSTENT Subgroup analysis

- CTO, crossed and predilated

P<0.001

Kelbaek et al; Am Heart J 2006: 152:882
Saphenous Vein Grafts

RRISC Trial

• Lesions in SVG Grafts

Vermeersch et al JACC 2006; 48:2423
Bifurcation Lesions

SCANDSTENT subgroup

- Bifurcations: 126 pts randomised

Conclusion

• In the complex lesion subsets presented, use of DES significantly reduces the incidence of restenosis and the need for repeat revascularisation, when compared to bare metal stents.